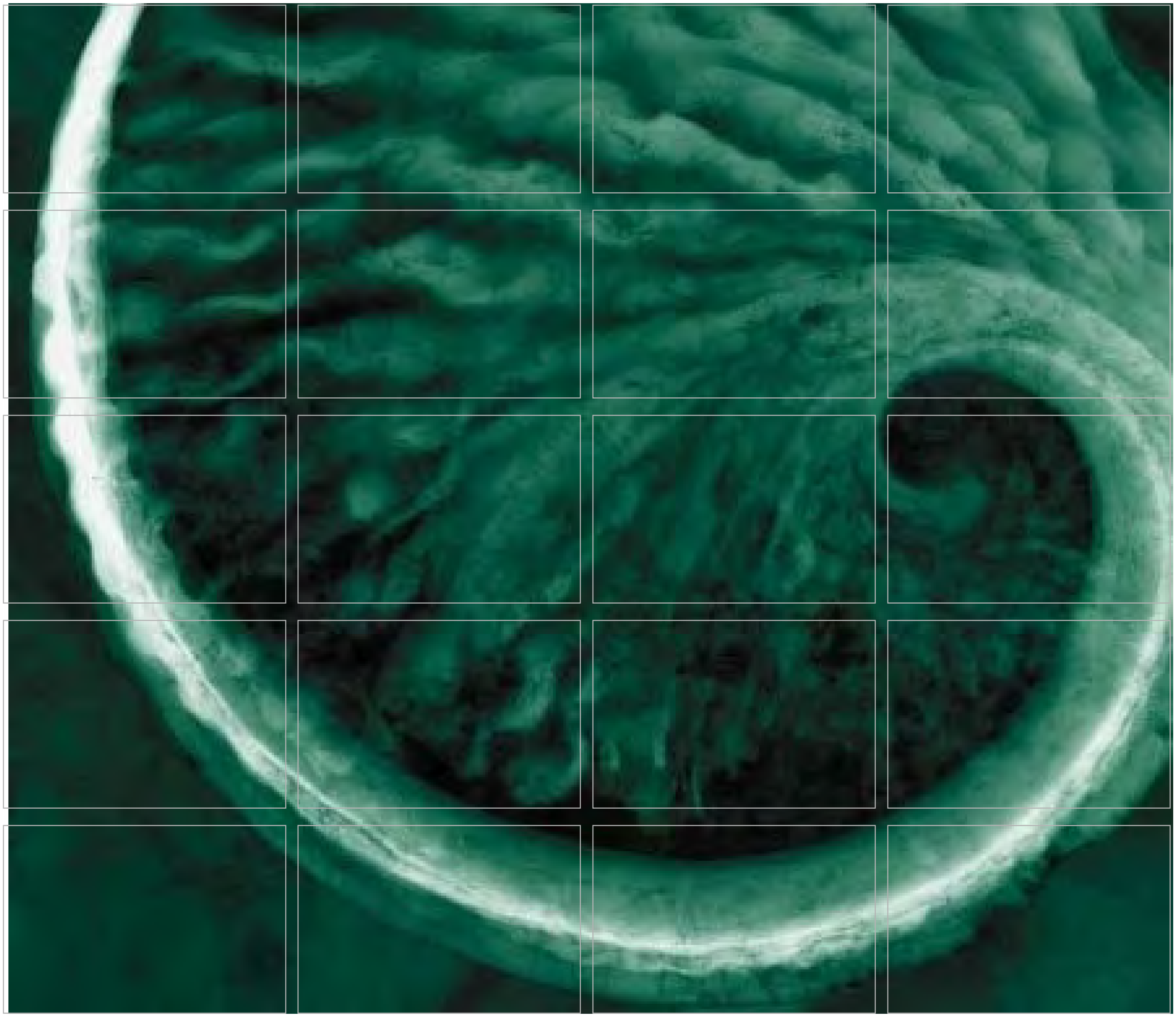

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Phase 1A Data Report for PRI Areas 2 and 8–17

US Magnesium RI/FS
Rowley, Utah

October 2015

Prepared for:
US Magnesium and
USEPA Region 8

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Phase 1A Data Report for PRI Areas 2 and 8–17

US Magnesium RI/FS
Rowley, Utah

October 2015

Project No. 0132320

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LIST OF ACRONYMS

µm	Micrometer(s)
AOC	Administrative Settlement Agreement and Order on Consent
ATI	ATI Titanium
bgs	Below ground surface
BLM	Bureau of Land Management
CAR	Corrective action report
COPC	Chemical of potential concern
Cr VI	Hexavalent chromium
D/F	Dioxin/furan
ERM	ERM-West, Inc.
FS	Feasibility study
GPS	Global Positioning System
HCB	Hexachlorobenzene
HL	High level
HMW	High molecular weight
LCS	Laboratory control sample
LDC	Laboratory Data Consultants
LMW	Low molecular weight
MDL	Method detection limit
MQO	Method quality objective
MS	Matrix spike
MSD	Matrix spike duplicate
ND	Non-detect
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PRI	Preliminary Remedial Investigation
QC	Quality control
RI	Remedial investigation
RPD	Relative percent difference

SAP	Sampling and Analysis Plan
SIM	Selected ion monitoring
SLRA	Screening-level risk assessment
SOP	Standard Operating Procedure
SVOC	Semi-volatile organic compound
TCDD TEQ	2,3,7,8-tetrachlorodibenzo-p-dioxin toxicity equivalence concentration
TOC	Total organic carbon
USEPA	United States Environmental Protection Agency
VOC	Volatile organic compound

1.0 INTRODUCTION

US Magnesium LLC (US Magnesium) is a commercial producer of magnesium and magnesium alloys and operates a facility in Rowley, Tooele County, Utah (Figure 1-1). On 4 August 2011, an Administrative Settlement Agreement and Order on Consent (AOC) for a remedial investigation and feasibility study (RI/FS) was entered into by US Magnesium and United States Environmental Protection Agency (USEPA) Region 8. The AOC (Comprehensive Environmental Response, Compensation, and Liability Act Docket No. CERCLA-08-2011-0013) requires US Magnesium to complete an RI/FS for the US Magnesium Site (Site) and defines the roles, responsibilities, schedule, and administration of the RI/FS to be performed. ERM-West, Inc. (ERM) has been retained by US Magnesium to perform RI/FS services at the Site.

For planning purposes, the USEPA divided the Site into 18 Preliminary Remedial Investigation (PRI) Areas (Figure 1-2). The Inner PRI Areas (PRI Areas 1 and 3 through 7) include areas known to have directly received waste streams from the US Magnesium facility and where existing data indicate high chemical concentrations. The Outer PRI Areas (PRI Areas 2 and 8 through 18) include areas that may be affected by waste streams and air emissions from the US Magnesium facility and/or secondary releases (ERM 2014b).

This *Phase 1A Data Report for PRI Areas 2 and 8–17* (Phase 1A Data Report) presents the results of field sampling activities and laboratory analyses performed as required by the September 2013 USEPA *Phase 1A Remedial Investigation Sampling and Analysis Plan (SAP) to Identify Chemicals of Potential Concern in Soils, Sediment, Solid Waste, Water and Air, and Receptor Surveys, Revision 0 for PRI Areas 2 and 8 through* 17 (hereafter referred to as the SAP).

The Draft Phase 1A Data Report including Appendices A through H was submitted to the USEPA for review on 24 September 2014, and Appendices J and K were submitted to the USEPA on 12 December 2014. The USEPA and the Utah Department of Environmental Quality (collectively, "the Agencies") provided comments on the Appendices J and K on 28 January 2015 and 4 February 2015, respectively. ERM submitted a revised Appendix J to the USEPA on 6 March 2015 and responses to the Agencies' comments on Appendix K on 30 March 2015. On 14 May 2015, the Agencies provided comments on the Draft Phase 1A Data Report, including revised Appendix J and Appendix K, and ERM responded to these comments on 17 June 2015. Final comments from the Agencies were provided to ERM on 9 July 2015. This Phase 1A Data Report has been revised and finalized per that set of comments. Comment and response documentation is included in this report as Appendix L.

1.1 PHASE 1A REMEDIAL INVESTIGATION OBJECTIVES

Per the SAP, the objectives of the Phase 1A RI are to:

1. Obtain sufficient data to support identification of chemicals of potential concern (COPCs) for human and ecological receptors.
2. Acquire human receptor exposure information, including, but not limited to, land use patterns, potential exposure areas, and exposure durations and frequencies.
3. Identify and map ecological habitats for evaluating potential eco-receptor exposures.

This Phase 1A Data Report describes the work performed per the SAP to support the data quality objective number 1 of COPC selection for PRI Areas 2 and 8 through 17. The data presented in this report will be reviewed for data adequacy by the USEPA and, upon a finding of data adequacy, will be used for a screening-level risk assessment (SLRA), as described in the SLRA Technical Memorandum (ERM 2014b). By comparing maximum concentrations to risk-based screening levels or risk-based ecological screening levels, the SLRA will obtain information on exceedances (or lack thereof) to (1) identify constituents in environmental media requiring further evaluation for Outer PRI Areas, (2) support decisions related to conducting an expedited FS, and (3) prioritize/scope potential future investigations/risk analysis efforts. The Phase 1A data collection completed to support objective number 2 will be reported under separate cover when the receptor survey is complete. The data collected to support objective number 3 are provided in the *Final Habitat and Wildlife Survey and Mapping Report* (ERM 2014c).

Per the Agencies' request in their 14 May 2015 comments on the Draft Phase 1A Data Report, surface water sample results will be presented in an addendum to this report together with results for surface water samples collected from the Inner PRI Areas in 2015. The addendum will include a discussion of 2015 surface water sampling activities, data quality assessment, and data adequacy evaluation for the surface water data. Sampling activities associated with surface water samples collected in 2013-2014 are described in this Phase 1A Data Report.

1.2 PHASE 1A SAMPLING AND ANALYSIS PLAN MODIFICATIONS

A total of 21 modifications to the SAP were approved by the USEPA prior to and during the Phase 1A sampling event. These SAP modifications were prepared by both ERM and the USEPA and included, among other topics, corrections to the SAP, changes for sample locations, revisions to sampling and analytical methods, monitoring well construction specifications, and additional data collection requirements. Approved SAP modification requests were incorporated into the SAP as Attachment 17B and were provided by the USEPA to all recipients listed in the SAP distribution list. A copy of SAP Attachment 17B and the 21 approved SAP modification forms are included in Appendix C. Because the modifications were incorporated into the SAP, they are not described in detail in this Phase 1A Data Report; however, the impacts of SAP modifications on representativeness and completeness are discussed for sampling of surface solids, subsurface solids, and water in Sections 4.1.3, 4.2.3, and 4.4.4, respectively.

As provided for in the SAP, changes that were relatively "minor" (e.g., relocating a sampling station a short distance away from the SAP target location) were documented by completing a field modification form. Agreement by the USEPA and ERM was required before implementing any such change. Agreement on minor changes was accomplished through consultation between ERM and the USEPA oversight representative present at the Site or through coordination with the USEPA oversight contractor Project Manager. Completed field modification forms were not incorporated into the SAP; therefore, these changes are described in this Phase 1A Data Report in the section relating to the change. Completed field modification forms are provided in Appendix C.

1.3 REPORT ORGANIZATION

This Phase 1A Data Report is organized as follows:

- Section 1: Introduction;
- Section 2: Background;
- Section 3: Pre-Phase 1A Reconnaissance Activities;
- Section 4: Phase 1A Field Investigation Activities;
- Section 5: Phase 1A Sample Analysis and Data Management;
- Section 6: Phase 1A Investigation Results;

- Section 7: Quality Control Activities; and
- Section 8: References.

2.0 *BACKGROUND*

The Site is located in Lakeside Valley adjacent to Stansbury Bay of the Great Salt Lake, as shown on Figure 1-1. The RI/FS study area is shown on Figure 1-2 and has a 5-mile radius centered on the main stack of the magnesium plant. The RI/FS study area includes portions of Lakeside Valley, the Lakeside Mountains to the west, the Great Salt Lake to the north and northeast, and solar evaporation ponds in Stansbury Bay to the southeast. Elevation across the Site ranges from about 4,210 feet above mean sea level in the Great Salt Lake lakebed and playa to over 6,500 feet above mean sea level in the Lakeside Mountains.

The Site includes an active primary magnesium production facility, which has been in operation since 1972. Magnesium is refined from brine obtained from the Great Salt Lake. The facility includes employee offices, process buildings, and other ancillary structures and facilities. Surrounding the process buildings are a series of evaporation ponds, a concentrator pond, a landfill, and waste disposal areas where smut and calcium sulfate (gypsum) are piled. A series of earthen, open-air ditches convey liquid waste from the process facility to earthen wastewater impoundments. A disposal site for cast house residues containing barium (permitted by the Utah Division of Water Quality, Groundwater Discharge Permit No. UGW450004, terminated 1992) and an inactive waste pond (Utah Pollutant Discharge Elimination System Permit No. UT-0000779, inactive) are located northwest and northeast of the facility, respectively. ATI Titanium (ATI) and Hill Brothers Chemical facilities are located just southwest and south of the operating facility, respectively.

If additional information is desired, the preliminary Conceptual Site Model described in Worksheet #10 of the SAP represents the USEPA's present understanding of the Site (USEPA 2013)[1].

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1 Comments from ERM/US Magnesium on the USEPA's preliminary Conceptual Site Model and USEPA's responses to ERM/US Magnesium comments were included as Attachment 4 to the Cover Letter of the SAP.

3.0 PRE-PHASE 1A RECONNAISSANCE ACTIVITIES

Prior to mobilization for Phase 1A field investigation activities, field reconnaissance activities were performed in September and October 2013 and March 2014. These activities included a cultural resources survey, sample location reconnaissance, and collection of reconnaissance sieve samples that were analyzed for grain size. In March 2014, additional reconnaissance activities were completed when a geophysical survey was performed at subsurface sampling locations at the US Magnesium landfill (PRI 2). These activities are summarized in the following sections. Additional details are provided in Appendix A regarding collection and analysis of reconnaissance samples to evaluate grain size and in Appendix B regarding the landfill geophysical survey.

3.1 CULTURAL RESOURCES SURVEY

Pursuant to Title 36, Section 800 of the Code of Federal Regulations and Utah Code Annotated 9-8-404, a cultural resources survey was completed at sample locations located on United States Bureau of Land Management (BLM) and State of Utah School and Institutional Trust Land Administration lands. The cultural resources survey was conducted by a BLM-certified professional archaeologist of Logan Simpson Design, Inc., under contract to US Magnesium. The archaeologist was accompanied by ERM during the cultural resources surveying field activities.

Prior to field activities, an archaeological literature search and Class III inventory were conducted. The cultural resources survey field activities were conducted between 30 September and 2 October 2013. Twenty-seven sample locations were surveyed in PRI 8, PRI 15, and PRI 16. At each sample location, a 15-meter area was inventoried and inspected for cultural resources.

A report documenting the cultural resources survey was submitted to the BLM (lead agency) and the Utah State Historic Preservation Office on 22 October 2013. The BLM's approval to proceed with sampling in the surveyed locations was provided on 23 October 2013.

3.2 *SAMPLE LOCATION RECONNAISSANCE*

Between 23 September 2013 and 31 March 2014, a reconnaissance of SAP sample locations was completed to confirm sample location accessibility and mark sample locations prior to sampling. Several sample locations were modified based on location inaccessibility (e.g., original SAP location along a cliff face), and the modified sample locations were incorporated into the SAP via a SAP modification request.

3.3 *GRAIN SIZE ANALYSIS*

During the Phase 1A sample location reconnaissance activities, reconnaissance sieve samples were collected at selected sample locations in accordance with SAP Worksheet #11, as modified by SAP Modification 14-C-2-7. Reconnaissance sieve sample locations were selected by dividing each PRI Area into quadrants of approximately even size and then selecting two Phase 1A sample locations in each quadrant at random for a total of eight Phase 1A locations per PRI Area. Reconnaissance samples were collected at between 10 and 20 meters from each selected Phase 1A sample location as five-point composite samples. The reconnaissance sieve samples were field-sieved using a 0.25-inch sieve and material passing the 0.25-inch sieve was submitted to the GeoStrata Engineering and Geosciences (GeoStrata) geotechnical laboratory in Bluffdale, Utah for grain size analysis. The percent of the bulk sample that passed through a 0.25-millimeter (No. 60) sieve was determined by the *Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates ASTM C-136* (ASTM International 2006), modified to use a drying temperature of 80 degrees Celsius for 24 hours and until constant mass was achieved.

Results from the reconnaissance sieve sample analyses were used to evaluate whether analysis of fines fraction samples was required within a PRI Area during the Phase 1A RI. Based on the reconnaissance sieve sample results, analysis of fines fraction was not required for PRI 15 and PRI 16. Fines fraction analysis was required in the other Outer PRI Areas (PRIs 2 and 8 through 14). Technical memoranda summarizing the reconnaissance sieve sample collection procedures and results are provided in Appendix A.

3.4 LANDFILL GEOPHYSICAL SURVEY

The landfill geophysical survey was performed on 5 and 6 March 2014 in accordance with SAP Worksheet #11 and the *Landfill Geophysical Survey Test Plan, Revision 1, January 2014* (ERM 2014a), which was incorporated as Attachment 11I to the SAP on 14 February 2014. The objectives of the landfill geophysical survey were to:

1. Characterize the depth of waste material in the landfill;
2. Identify the presence of large metal objects, cast material, or other debris that would be likely to result in refusal during subsurface sampling within the landfill;
3. Locate subsurface sampling locations where it would be most likely to be able to fully penetrate the waste without encountering refusal; and
4. Evaluate trenching versus drilling methods for obtaining subsurface samples within the landfill for chemical analysis to identify COPCs.

An electrical resistivity survey was performed at the landfill by GeoStrata under subcontract to ERM and the landfill geophysical survey report is included as Appendix B to this report. The survey included three electrical resistivity survey lines to screen Phase 1A RI SAP landfill boring locations PRI2-006, PRI2-009, and PRI2-014 and one survey line to confirm the location of a former diversion ditch beneath the landfill.

The survey identified the depth to native soil material (and thickness of waste in the landfill) to be approximately 25 feet at all survey locations. The survey also confirmed that subsurface materials present within the landfill are heterogeneous, which is consistent with waste disposal practices visible at the active portions of the landfill. Based on the depth and heterogeneity of the landfill, trenching was considered infeasible for obtaining the subsurface samples within the landfill for chemical analysis to identify COPCs as required by the Phase 1A RI SAP. Based on the survey, ERM recommended that subsurface sampling within the landfill be performed using a sonic drill rig. This drilling method was selected as the most likely methodology to penetrate the waste expected within the landfill.

4.0 PHASE 1A FIELD INVESTIGATION ACTIVITIES

The Phase 1A field investigation activities described in this report were conducted between 19 November 2013 and 8 May 2014 in accordance with procedures described in the SAP. Table 4-1 provides a summary of USEPA-approved field modifications and Table 4-2 summarizes quality control (QC) samples collected during Phase 1A. The field modification forms listed in Table 4-1 are provided in Appendix C.

During the Phase 1A field investigation and throughout this Phase 1A Data Report, the term "solids" is used to refer to soil, sediment, or solid waste (i.e., any non-aqueous sample). This generic classification is consistent with SAP Worksheet #11, Section 11.1, which states that "Clearly distinguishing and delineating soil, sediments, and wastes may be difficult. For simplicity, and because these media coexist in many areas, solid media will be jointly referred to as soil/sediment/solid-waste for the purposes of this Phase 1A RI SAP."

4.1 SURFACE SOLIDS SAMPLING

4.1.1 Sampling Activities

Surface solids samples were collected at sampling locations specified in SAP Worksheets #14 and #18. Surface solids sampling was performed in accordance with *Standard Operating Procedure (SOP) USM-01 Surface Soil, Sediment, and Waste Sampling Standard Operating Procedure* provided in Attachment 17A of the SAP. Surface solids samples were collected at the following PRI Areas:

- PRI 2: Fourteen samples were collected from the top 6 inches of material using a hand auger (samples collected on 8 and 9 January and 8 May 2014). Extra volume from five samples was provided to the laboratory for sieving and analysis of fines. No saturated surface solids were encountered at PRI 2 sample locations.
- PRI 8: Eighteen samples were collected from the top 6 inches of material using a hand auger (samples collected between 17 and 19 December 2013, on 25 and 26 March 2014, and on 8 May 2014). As required by SAP Modification 14-C-2-18, in situ soil water pH measurements were collected at four locations during the March and May 2014 sample collection activities at PRI 8 (locations PRI8-005A, PRI8-014, PRI8-015, and PRI8-017). Soil water pH measurements are

provided in the sampling forms (Appendix D). Saturated surface solids were encountered at four PRI 8 sample locations and sampled for volatile organic compound (VOC) analysis: PRI8-005A, PRI8-014, PRI8-015, and PRI8-017.

- PRI 9: Fourteen samples were collected from the top 6 inches of material using a hand auger (samples collected on 20 December 2013 and 6 and 7 January 2014). No saturated surface solids were encountered at PRI 9 sample locations.
- PRI 10: Fourteen samples were collected from the top 6 inches of material using a hand auger (samples collected on 12, 13, 16, and 17 December 2013). No saturated surface solids were encountered at PRI 10 sample locations.
- PRI 11: Fourteen samples were collected from the top 2 inches of material using a flat-bottom scoop (samples collected on 6 and 7 May 2014). No saturated surface solids were encountered at PRI 11 sample locations.
- PRI 12: Fourteen samples were collected from the top 6 inches of material using a hand auger (samples collected between 10 and 12 December 2013). No saturated surface solids were encountered at PRI 12 sample locations.
- PRI 13: Fourteen samples were collected from the top 6 inches of material using a hand auger (samples collected between 5 and 7 December 2013). No saturated surface solids were encountered at PRI 13 sample locations.
- PRI 14: Fifteen samples were collected from the top 6 inches of material using a hand auger (samples collected on 25 November 2013, between 2 and 4 December 2013, and on 11 December 2013). Saturated surface solids were encountered at seven PRI 14 sample locations and sampled for VOC analysis.
- PRI 15: Fourteen samples were collected from the top 2 inches of material using a flat-bottom scoop (samples collected between 22 and 24 November 2013 and on 13 January 2014).
- PRI 16: Fourteen samples collected from the top 2 inches of material using a flat-bottom scoop (samples collected between 19 and 23 November 2013).

Table 4-3 provides a summary of the surface solids samples, and surface solids sampling locations are shown on Figures 4-1 through 4-10. Surface solids sampling forms are provided in Appendix D.

4.1.2 *Quality Control Samples*

Field QC samples associated with surface solids sampling were collected in accordance with requirements provided in SAP Worksheets #12 and #20. A total of 179 solids samples (145 surface solids and 34 subsurface solids samples) were collected, with 18 field duplicate samples collected in association with solids samples. In addition, four field duplicate samples were collected for fines analysis in association with the 40 surface solids samples with fines analysis.

PRI Area	Number of Primary Samples	Number of Surface Solids Field Duplicates
2	42	1
8	26	5 (includes 2 fines)
9	19	9 (includes 2 fines)
10	24	1
11	19	0
12	19	1
13	19	1
14	23	3
15	14	0
16	14	1
All Outer PRIs	219	22

The frequency of field supplicate samples for solids samples (including surface, subsurface, and fines) was 22 out of 219, or 10 percent. This frequency matched the field duplicate sample frequency requirement in SAP Worksheet #12.

Table 4-2 provides a summary of QC samples. At a rate of one equipment blank sample per week, seven equipment blank samples were collected during surface solids sampling activities. These equipment blanks were collected in association with primary solids samples from PRI Areas 2, 8, 9, 10, 14, and 16. Surface solids samples for VOC analyses were collected on 25 November 2013, 4 December 2013, and 11 December 2013 from PRI Area 14 and on 25 and 26 March 2014 and 8 May 2014 from PRI Area 8. Trip blank field QC samples accompanied all but one of the shipments that included samples for VOC analysis. A trip blank was accidentally omitted from the 11 December 2013 shipment that included four surface solids samples from PRI Area 14 for VOC analysis.

4.1.3 *Phase 1A Sampling and Analysis Plan and Field Modifications*

The USEPA approved field modifications to the SAP are summarized in Table 4-1, and field modification forms are included in Appendix C. The field modifications associated with surface solids sampling and their impacts on representativeness and completeness are summarized below.

- Additional aliquot grab samples were collected to provide sufficient volume for USEPA split samples at locations PRI13-003, PRI12-010, PRI14-005, PRI10-003, PRI9-013, PRI9-014, PRI9-002, PRI9-011, and PRI2-003. Because samples were still collected as composites of multiple grabs within a 1-square-meter area, this modification had no impact on representativeness. This modification did not affect the total number of results planned or usable results obtained; therefore, this modification did not impact completeness (14-C-1-8, 14-C-1-10 through 14-C-1-15).
- The original location of PRI15-008 was moved from private property onto ATI property after the pre-Phase 1A sample reconnaissance in an attempt to limit the number of access agreements required to perform Phase 1A sampling activities. As a result of a delay in obtaining an access agreement for sampling at ATI, PRI15-008 was moved back to the original SAP location and the sample was collected after receipt of agreement from the property owner. This modification had no impact on representativeness or completeness (14-C-1-17).
- The sample location at PRI8-005 was adjusted pursuant to the requirements of SAP Modification 14-C-2-18. This location became inaccessible in January 2014 due to the presence of water. Pursuant to SAP Modification 14-C-2-18, an alternate procedure for obtaining sample PRI8-005 was proposed by ERM to relocate the sample outside of the inundated area. As directed by the USEPA, two samples were required: one sample (PRI8-005A) was collected southwest of SAP location PRI8-005 at the edge of the standing water and a second sample (PRI8-005B) was collected at the edge of the "high water mark" from the January 2014 flooding event at PRI 8. Because the target feature was still sampled, SAP modification 14-C-2-18/field modification 14-C-1-20 had negligible impact on representativeness. The increase from one to two surface solids samples at location PRI8-005 was captured in both the planned and usable numbers of results for PRI Area 8, so this SAP modification/field modification had no net impact on completeness (14-C-1-20).

- Surface solids sample locations associated with landfill subsurface boring locations (PRI2-006, PRI2-009, and PRI2-014) were adjusted to coincide with the subsurface boring locations. Because the adjustments to sample locations were minor and were necessary to co-locate surface samples with subsurface boring locations, this field modification had no impact on representativeness. This modification did not affect the total number of results planned or usable results obtained; therefore, this modification did not impact completeness (14-C-1-21).

Surface solids samples at PRI 12 were collected from the top 6 inches of material. SAP Figure 14-10 and SOP USM-01 identify that surface solids samples at PRI 12 should be collected from the top 2 inches of material; however, the 2-inch sample depth is applicable only for PRI Areas where "the only pathway for contaminant deposition is air deposition." PRI 12 is immediately adjacent to the Southeast Ponded Waste Lagoon (PRI 5) and piles of waste salt material are present throughout the western portion of PRI 12. Waste material was present at two PRI 12 sample locations, PRI12-010 and PRI12-011 (Appendix D). Based on site conditions and observations during Phase 1A sampling, air deposition is not the only pathway for potential contaminant deposition at PRI 12 and, accordingly, the collection of samples from the top 6 inches of material was appropriate.

There were four SAP modifications relating to surface solids sampling. These SAP modifications and their impacts on representativeness and completeness are described below.

- SAP Modification 14-C-2-2 corrected an error in the SAP describing that soil pH would be measured in the field. This SAP modification improved data representativeness by ensuring that soil pH would be analyzed following an established laboratory analytical procedure. This SAP modification had no impact on completeness because it did not change the numbers of planned or usable soil pH results.

- SAP Modification 14-C-2-7 described a modified procedure for sieving reconnaissance samples for grain size analysis, provided for the identification of Phase 1A sample locations for fines analysis based on the reconnaissance sample grain size analysis results, and qualified some QC limitations on fines analytical procedures. This SAP modification had a negligible impact on representativeness because the modified procedures were consistently applied in the field and laboratory. Per the SAP modification, the total number of fines-fraction Phase 1A samples analyzed per PRI Area (where fines analysis was indicated based on reconnaissance results) was always five. As originally described in the SAP, the number of fines-fraction samples analyzed at a PRI Area would be based on sieve results. The SAP modification therefore may have resulted in fewer fines-fraction analyses within a PRI Area; however, using reconnaissance sample results to select the locations where fines-fraction samples were analyzed helped ensure that Phase 1A fines-fraction analyses represented the worst-case scenario (i.e., the samples with the greatest coarse material content). SAP Modification 14-C-7 had no impact on completeness because fines-fraction samples were not included in the completeness calculation (Section 7.2.4).

- SAP modification 14-C-2-9 adjusted the locations for multiple surface solids samples. This SAP modification improved sampling representativeness by relocating sample locations to coincide with target features (e.g., seep locations) or to locate samples outside of non-representative areas (e.g., an asphalt parking lot, or a lined process pond). This SAP modification also had a positive impact on completeness because multiple sample locations were relocated from inaccessible locations to accessible locations.
- SAP modification 14-C-2-18 required ERM to identify alternate procedures for collecting surface solids samples from locations that could not be accessed within PRI Area 8. This SAP modification affected one sample location, PRI8-005, as described above for field modification 14-C-1-20. As described above for field modification 14-C-1-20, SAP modification 14-C-2-18 had a negligible impact on representativeness and no net impact on completeness.

4.2 SUBSURFACE SOLIDS SAMPLING

4.2.1 Sampling Activities

Subsurface solids samples were collected from borings advanced at a subset of the solids sampling locations, as specified in SAP Worksheets #14 and #18. Subsurface solids sampling procedures were performed in accordance with *SOP USM-09 Subsurface Soil, Sediment, and Waste Sampling Standard Operating Procedure* provided in Attachment 17A of the SAP. Subsurface solids samples were collected at the following locations:

- PRI2-006: One boring was advanced through the landfill into native material using sonic drilling methods on 6 and 7 May 2014. Samples were collected from depth intervals 0.5 to 2 feet below ground surface (bgs), 2 to 5 feet bgs, 5 to 10 feet bgs, 11 to 17 feet bgs, 20 to 22 feet bgs, 22 to 24 feet bgs, 24 to 26 feet bgs, and 27 to 29 feet bgs.
- PRI2-009: One boring was advanced through the landfill into native material using sonic drilling methods on 6 May 2014. Samples were collected from 0.5 to 2 feet bgs, 10 to 12 feet bgs, 12 to 14 feet bgs, 14 to 18 feet bgs, 18 to 20 feet bgs, 21 to 23 feet bgs, 26 to 28 feet bgs, and 28.5 to 30.5 feet bgs.
- PRI2-014: One boring was advanced through the landfill into native material using sonic drilling methods on 7 May 2014. Samples were collected from 0.5 to 2 feet bgs, 3 to 10 feet bgs, 10 to 20 feet bgs, 22 to 27 feet bgs, 27 to 30 feet bgs, 30 to 31 feet bgs, and 31 to 33 feet bgs.
- PRI8-017SB: Using direct-push drilling methods, three borings were advanced within a 2-square-foot area on 16 December 2013 (multiple borings were required for Phase 1A SAP samples and USEPA oversight split samples). Samples were collected from below the imported roadbase (fill) from 6 to 8 feet bgs, 8 to 10 feet bgs, and 10 to 12 feet bgs.
- PRI10-008: One boring was advanced through the barium sulfate waste disposal cell and into native material using sonic drilling methods on 5 May 2014. Samples were collected from 0.5 to 2 feet bgs, 2 to 4 feet bgs, 4 to 6 feet bgs, 6 to 8 feet bgs, and 8 to 9 feet bgs.
- PRI14-005: Using direct-push drilling methods, three borings were advanced within a 2-square-foot area on 16 December 2013 (additional borings were required to obtain sufficient sample volume for collecting Phase 1A SAP samples and USEPA oversight split samples). Samples were collected from 0.5 to 2 feet bgs, 2 to 4 feet bgs, and 4 to 6 feet bgs.

Table 4-4 provides a summary of the subsurface solids samples collected for laboratory analysis. Subsurface solids sampling locations are shown on Figures 4-1, 4-2, 4-4, and 4-8. Field documentation associated with the subsurface solids sampling is provided in Appendix D, and final borehole logs are included in Appendix E.

4.2.2 *Quality Control Samples*

Two equipment blank and four trip blank samples were collected as QC samples associated with subsurface solids sampling activities (Table 4-2). These QC samples were collected in accordance with SAP Worksheets #12 and #20. Equipment blank samples were collected during surface and subsurface solids sampling activities during the weeks of 10 to 16 December 2013 and 5 to 8 May 2014 and associated with primary surface solids samples from PRI Areas 10 and 8, respectively. Trip blank samples accompanied subsurface samples for VOC analyses collected on 6 December 2013 at PRI Areas 8 and 14, 5 May 2014 at PRI Area 10, and 6 to 7 May 2014 at PRI Area 2.

No filed duplicate QC samples were collected in association with subsurface solids samples. The 10 percent frequency of field duplicate QC samples for solids (including surface and subsurface) was achieved by field duplicate surface solids samples, as described in Section 4.1.2.

4.2.3 *Phase 1A Sampling and Analysis Plan and Field Modifications*

The following field modifications to the SAP are summarized in Table 4-1, and the field modification form is included in Appendix C. The field modification associated with subsurface solids sampling and its impacts on representativeness and completeness are summarized below.

- The PRI 2 boring locations from the SAP were modified based on the results of the landfill geophysical survey (Appendix B), and some sample intervals in the PRI 2 borings were adjusted based on lithological observations during sampling activities. The boring locations from the SAP were adjusted based on the Geophysical Survey Technical Memorandum (Appendix B) and recommendations from the USEPA. The field-modification of landfill subsurface sample intervals was consistent with SAP modification 14-C-2-21, which states "[a]djustments to sample intervals based on the characteristics of the materials encountered will be documented via a field modification form, to be prepared/approved by the USEPA Oversight Contractor present during drilling activities." All deviations from the default 2-foot sample interval at landfill borings were approved in the filed by the USEPA Contractor. These deviations are as follows:

PRI2-006

- 3-foot sample interval (2 to 5 feet bgs) because of uniform material
- 5-foot sample interval (5 to 10 feet bgs) because of uniform material
- No sample 10 to 11 feet bgs because of little recovery consisting of wood and metal debris (no or little soil/material passing 0.25-inch screen)
- 6-foot sample interval (11 to 17 feet bgs) because of uniform material
- No sample 17 to 20 bgs feet because only coarse debris was encountered, including wood and metal debris, tar paper, and plastic (no or little soil/material passing 0.25-inch screen)
- No sample 26 to 27 feet bgs because of poor recovery

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- No sample 2 to 10 feet bgs because of no recovery below 3 feet bgs
- 4-foot sample interval (14 to 18 feet bgs) because of uniform material, same as 12 to 14 feet bgs and 18 to 20 feet bgs intervals
- No sample 20 to 21 feet bgs because wood, metal, and concrete debris at 20 feet bgs with no recovery 20 to 21 feet bgs
- No sample 23 to 26 feet bgs because of coarse material including wood debris and bricks (no or little soil/material passing 0.25-inch screen)
- No sample 28 to 28.5 feet bgs due to coarse material/debris (no or little soil/material passing 0.25-inch screen) and requirement to sample the top 2 feet of native material l encountered at 28.5 to 30.5 feet bgs

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- No sample 2 to 3 feet bgs to facilitate top of sample interval at 3 feet bgs at the top of salt waste layer
- 7-foot sample interval (3 to 10 feet bgs) due to uniform material
- 10-foot sample interval (10 to 20 feet bgs) due to uniform material
- No sample 20 to 22 feet bgs due to no recovery
- 5-foot sample interval (22 to 27 feet bgs) due to uniform material
- 3-foot sample interval (27 to 30 feet bgs) due to uniform material

- 1-foot sample interval (30 to 31 feet bgs) to target saturated waste layer with staining

Boring logs detailing the subsurface conditions at each borehole are provided in Appendix E. The adjustments to sample locations helped ensure that the borings were located within target features and/or successfully penetrated the landfill waste materials, and, because the modified sample intervals adequately characterized the materials encountered, this field modification had no impact on representativeness. The number of planned results used for calculating completeness was based on the actual number of subsurface samples; therefore, this field modification had no impact on completeness (14-C-1-21).

There were two SAP modifications relating to subsurface solids sampling. These SAP modifications and their impacts on representativeness and completeness are described below:

- SAP modification 14-C-2-9 adjusted the locations for drilling at SAP locations PRI8-017 and PRI14-005. This SAP modification improved sampling representativeness by relocating sample location PRI14-005 to coincide with the target seep feature in PRI Area 14. The adjustment to the drilling location at PRI8-017 had a negligible impact on representativeness because subsurface samples were obtained from the targeted zone within PRI Area 8. This SAP modification also had a positive impact on completeness because the PRI8-017 sample location was relocated from an inaccessible location to an accessible location.
- SAP modification 14-C-2-21 documented the completion of the landfill geophysical survey, selection of the drilling method for the landfill, and clarified procedures for handling refusal or variable materials encountered in the landfill during drilling. Field-implementation of SAP modification 14-C-2-21 and its impacts on representativeness and completeness are described above in association with field modification 14-C-1-21.

4.3 MONITORING WELL INSTALLATION AND DEVELOPMENT

4.3.1 Well Installation Activities

Twelve new monitoring wells were installed to improve spatial coverage of the existing groundwater monitoring well network, as discussed in SAP Worksheets #14 and #18. Well installation activities were performed in accordance with *SOP USM-10 Monitoring Well Installation and Development*

Standard Operating Procedure provided in Attachment 17A of the SAP. Well installation activities occurred between 2 and 9 December 2013 using hollow-stem auger drilling methods. Monitoring well MW-16 was installed on 13 January 2014 using hand auger methods. On 24 January 2014, well repair activities were conducted at existing monitoring well PZ-01 to replace the upper portion of the well casing and repair its surface completion.

Table 4-5 provides a summary of the Phase 1A groundwater monitoring well network, and the monitoring well locations are shown on Figure 4-11. Field documentation associated with the well installation activities is provided in Appendix D, and final borehole logs and well completion diagrams are included in Appendix E.

4.3.2 Well Development

New and existing groundwater monitoring wells were developed between 2 and 16 December 2013. Monitoring well PZ-01 was redeveloped on 24 January 2014 after well repairs had been completed. Monitoring well MW-16 was not developed, as discussed in Section 4.3.3.

Well development was completed using a well development rig, purpose-built surge block, and submersible pump. Well development activities were performed in accordance with SOP USM-10, *Monitoring Well Installation and Development Standard Operating Procedure,* provided in Attachment 17A of the SAP, except as noted below. Well development logs are provided in Appendix D.

The following minor deviations from SOP USM-10 were performed during well development:

- A bottom discharge bailer or a surge block were not used; wells were surged by raising and lowering the submersible pump prior to pumping; and
- A flow-through cell was not used with the Horiba U-52 water quality meter; samples for water quality parameter measurement were collected in a bucket at a frequency of approximately one per every borehole volume.

4.3.3 Phase 1A Sampling and Analysis Field Modifications

The following field modifications to the SAP are summarized in Table 4-1, and the field modification forms are included in Appendix C. The deviations associated with well installation and development activities are:

- The screen interval depths were changed from 7 to 17 feet bgs to 12 to 22 feet bgs for monitoring well MW-18 based on observed lithology. The revised screen interval located the screen entirely within sand and not across clay (14-C-1-4).
- "Quickcrete" was used rather than ready-mix cement for MW-18 well construction (14-C-1-5).
- Based on observed lithology, a single well rather than a paired well set was installed at monitoring well MW-14. The top of the upper clay interval was shallower than expected and no saturated zone was present above the upper clay. The screen interval for MW-14 was adjusted to 5 to 15 feet bgs to place the screen within sand (14-C-1-6).
- Based on drilling conditions and observed lithology, a pre-packed well screen was used for construction of monitoring well MW-20B, and the screen interval depths were changed for monitoring well MW-20A. The pre-packed well screen for well MW-20B was necessitated by flowing sands encountered at 24 feet bgs. Per SAP Modification 14-C-2-13, MW-20A was to be screened across the upper saturated sand interval at 10 to 15 feet bgs; however, this sand interval was encountered at 12 to 17 feet bgs and the screened interval was adjusted accordingly (14-C-1-7).
- Based on drilling conditions, a pre-packed well screen was used for construction of monitoring well MW-19B. In addition, monitoring wells MW-17, MW-19A, and MW-19B were completed with 2-foot square concrete pads and were set within 24 hours of drilling (14-C-1-9).
- Based on observed lithology, well construction at MW-16 was modified due to the presence of a clay layer beneath saturated gypsum waste at a depth of 18 inches bgs. The well construction for MW-16 was adjusted per the specifications in SAP modification 14-C-2-13 (14-C-1-16).
- Modifications to proposed well development procedures at MW-16 were necessary due to the very shallow and short screened interval of this well (14-C-1-18).

MW-16 could not be developed due to access limitations and damage to the well. After installation, MW-16 became inundated by acidic wastewater within PRI 6 and was therefore inaccessible. After the wastewater level within PRI 6 receded, well MW-16 was observed to have sustained damage that resulted in the well tilting at an angle of approximately 45 degrees from vertical. Although the well was accessed for monthly water level measurements from April through July, access to MW-16 remains unsuitable for well development and sampling due to saturated gypsum ground conditions around this well and the extended time involved with well development and sampling (as compared to the short duration for water level measurements).

4.4 *WATER SAMPLING*

Surface water and groundwater samples were collected at sampling locations specified in SAP Worksheets #14 and #18.

4.4.1 *Groundwater Sampling Activities*

Groundwater samples were collected at 30 groundwater monitoring wells between 31 January and 17 February 2014. All wells identified in the SAP (see Worksheet #14), as modified, were sampled, with the exception of MW-16. As noted above, MW-16 could not be developed or sampled due to saturated gypsum ground conditions around this well. The locations of monitoring wells sampled as part of the Phase 1A RI activities are shown on Figure 4-11.

Sampling was performed using low-flow (minimal drawdown) sampling methods in accordance with SOP USM-07, *Depth to Water Measurement and Groundwater Sampling Standard Operating Procedure,* provided in Attachment 17A of the SAP. Groundwater sample collection data including water quality parameter measurements are presented in Table 4-6. Groundwater well purging and sampling forms are provided in Appendix D.

4.4.2 *Surface Water Sampling Activities*

Grab surface water samples were collected at 16 locations between 19 November 2013 and 12 February 2014. Surface water sample locations are shown on Figure 4-11. Except as noted in Section 4.4.4, samples were collected at all locations within PRI Areas 4, 7, 8, and 14 that were specified in the SAP (see Worksheet #14), as modified to include four additional surface water sample locations in PRI 8 (see Section 4.8). Sampling was performed in accordance with SOP USM-08*, Surface Water Sampling Standard Operating Procedure,* provided in Attachment 17A of the SAP. Surface water sample collection data including field water quality parameters are presented in Table 4-7. Surface water sampling forms are provided in Appendix D.

Surface water sampling at Inner PRI Areas 1, 3, 5, and 6 was not performed in association with the initial mobilization for the Phase 1A RI. Surface water sampling at PRI areas 1 and 3 was postponed pending resolution of a Resource Conservation and Recovery Act settlement being achieved between US Magnesium, the USEPA, and the United States Department of Justice in 2014 (still pending as of September 2015). Sampling of PRI Areas 5 and 6 was postponed pending a January 2015 decision by US Magnesium to conduct an alternative RI/FS process for one or more of the Inner PRI Areas, as described in Attachment 5 to the SAP cover letter (USEPA 2013); that offer was declined by US Magnesium.

An addendum to this Phase 1A Data Report will be prepared to include the remaining surface water sampling activities and all Phase 1A surface water data results as well as a separate data adequacy evaluation for surface water.

4.4.3 Quality Control Samples

Field QC samples associated with surface water and groundwater sampling were collected in accordance with requirements provided in SAP Worksheets #12 and #20. The number and type of field QC samples are summarized in Table 4-2. A total of 46 water samples (16 surface water and 30 groundwater) were collected during Phase 1A field investigation activities, with five field duplicate samples collected. The frequency of field duplicate samples for water samples met the SAP requirement of 10 percent per Worksheet #12.

Two equipment blank samples were collected during water sampling activities. The collection of equipment blank samples during water sampling was only required when a cone sample splitter was used for USEPA split samples. Trip blanks accompanied all coolers containing water samples for VOC analysis.

4.4.4 Phase 1A Sampling and Analysis Plan and Field Modifications

The following field modifications to the SAP associated with surface water and groundwater sampling are summarized in Table 4-1, and field modification forms are included in Appendix C.

- PRI14-013 was moved to a location where sufficient water was present for sampling. This modification had a positive impact on representativeness and completeness because it allowed for sample collection at the target location specified by the SAP (14-C-1-1).

- Silicone tubing was approved for use for surface water sampling at locations within PRI 14. This modification had no impact on representativeness or completeness (14-C-1-2).
- A pole-mounted dipper was used for surface water sampling at PRI4-013 because the high suspended solids content of the gypsum slurry discharge precluded the use of a peristaltic pump. Because all other Phase 1A surface water samples were collected using a peristaltic pump, this modification may have a minor impact on the sampling representativeness. This modification had no impact on completeness (14-C-1-3).
- For groundwater sampling activities, a pumping rate greater than 500 milliliters per minute was allowed if the water level drawdown in the well was less than 10 centimeters. This modification had no impact on representativeness or completeness (14-C-1-19).

Although not deviations from the SAP, the following two water sampling-related activities warrant reporting:

- Worksheet #19 of the SAP specified that water samples should be "field filtered using a 0.45 micrometer (µm) pre-filter and 0.2 µm disc filter." The 0.2-µm disc filters supplied by the laboratory were not usable during Phase 1A RI water sampling activities, as water could not be forced through the filters. As a result, all Phase 1A RI water samples were filtered using only a 0.45-µm filter[2]. This practice is consistent with the laboratory SOP WS-LC-0012 (SAP Attachment 19B) and USEPA Method SW6850, which specifies that aqueous samples should be filtered using a 0.2-µm filter *when possible*.
- Surface water in sufficient quantity for sampling was not observed at SAP location PRI7-009, and an alternate location within PRI 7 with sufficient water was not identified during the Phase 1A RI sampling

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[2] A 0.2-µm filter was successfully used for one surface water sample collected at location PRI7-013 (sample ID PRI7-013-SW01-112213-02 on Table 4-7). At this location, a sample was also collected using a 0.45-µm filter only (PRI7-013-SW01-112213-45 on Table 4-7).

event. As stipulated in Worksheet #14 and SAP Modification 14-C-2-11, surface water sample locations found to have no water present could be rescinded from the Phase 1A sampling program; therefore, sample PRI7-009 was not collected.

There were four SAP modifications relating to water sampling. These SAP modifications and their impacts on representativeness and completeness are described below:

- SAP Modification 14-C-2-4 corrected an error in the SAP describing the number of planned groundwater samples. This SAP modification had no impact on completeness because the correct number of planned groundwater samples was used for completeness calculations.
- SAP Modification 14-C-2-9 adjusted locations for multiple surface water samples in PRI Areas 7 and 14. This modification had a positive impact on representativeness and completeness because it allowed for sample collection at the target location specified by the SAP.
- SAP Modification 14-C-2-11 recognized that surface water sample locations may be adjusted in order to meet the rationale/objective stated in the SAP and that certain water samples could be rescinded from the initial Phase 1A RI sampling effort in the event that water is not present. This modification had a positive impact on representativeness because it helped align the planned samples with actual/current site conditions. There was no net impact on completeness from this SAP modification because locations without water were not included calculations. Revised completeness calculations will be included with the surface water sampling addendum to this Phase 1A Data Report upon completion of the remaining Phase 1A surface water sampling and analyses.
- SAP modification 14-C-2-18 identified four additional surface water samples to be collected at PRI 8 in response to a release of wastewater into PRI 8. This modification had a negative impact on overall representativeness because these sample locations were selected outside of the Data Quality Objective process for COPC selection that was the basis for the Phase 1A RI. This modification had no net impact on completeness because the completeness calculations accounted for the increase in planned sample results that resulted from this modification.

4.5 STAFF GAUGE INSTALLATION

Five staff gauges were installed for measuring water levels within active and inactive waste lagoons. The staff gauges were installed on 11 December 2013 and 31 January 2014. The staff gauge locations are shown on Figure 4-11, and a summary of staff gauge installation dates and locations is provided in Table 4-8.

4.5.1 *Staff Gauge Installation Activities*

Staff gauges (Type M) measuring 0 to 6 feet with 0.01-foot measurement intervals were installed by attaching the staff gauges to 2-inch schedule 80 polyvinyl chloride pipes that had been driven into the lagoon bottom using a hammer or using an screw auger tip.

4.5.2 *Phase 1A Sampling and Analysis Field Modifications*

No USEPA-approved field modifications to the SAP are associated with the installation of the staff gauges, and no deviations from the SAP occurred during installation.

4.6 WATER LEVEL MEASUREMENTS

4.6.1 *Water Level Measurement Activities*

Beginning in January 2014, water level measurements, including surface water levels at staff gauges and depths to groundwater at monitoring wells, have been recorded on a monthly basis (collected on 27 January, 24 February, 24 March, 25 April, 23 May, 13 June, 15 July, 21 August, 30 September, 24 October, 21 November, and 18 December in 2014, and 13 January, 13 February, and 6 March in 2015). Groundwater level measurement was performed in accordance with SOP USM-07, *Depth to Water Measurement and Groundwater Sampling Standard Operating Procedure,* provided in Attachment 17A of the SAP. Monthly water level measurement data are presented in Table 4-9.

4.6.2 *Phase 1A Sampling and Analysis Field Modifications*

No USEPA-approved field modifications to the SAP are associated with collection of monthly water level measurements; however, the following deviations from the SAP occurred:

- During the first round of monthly water level measurements on 27 January 2014, staff gauge SG-1 was not present and therefore no water level was recorded for SG-1 on this day. It was subsequently discovered that this staff gauge had fallen over, and it was re-installed on 31 January 2014 using an auger screw-tip instead of a hammer.
- Depth to groundwater measurements at MW-16 were not recorded during the January, February, March, and August 2014 through March 2015 gauging events because the well was not accessible due to inundation by acidic wastewater from PRI 6 and/or saturated gypsum ground conditions around this well.

4.7 SURVEYING

4.7.1 Solids and Surface Water Sample Locations

Horizontal location data for solids and surface water sample locations were verified using a handheld Global Positioning System (GPS) unit based on coordinates provided in SAP Worksheet #14. Where sample locations deviated from the original SAP locations, horizontal location data presented in field modification forms (Appendix C) were collected in accordance with SOP USM-11, *Global Positioning System Field Data Collection Standard Operating Procedure*.

4.7.2 Staff Gauges and Groundwater Monitoring Wells

Horizontal location data for new monitoring wells and staff gauges were verified using a handheld GPS unit based on coordinates provided in SAP Worksheet #14. Horizontal and vertical survey data were collected for 11 new monitoring wells (i.e., all except MW-16), one existing monitoring well that was repaired (PZ-01), and five new staff gauges on 12 and 13 February 2014 by Anderson Engineering Co., Inc., a Utah licensed surveyor. Survey data are presented in Appendix F.

4.7.3 Phase 1A Sampling and Analysis Plan and Field Modifications

Survey data collection procedures during Phase 1A did not deviate from the SAP.

4.8 SURVEY OF SURFACE WATER EXTENT AT PRI AREA 8

During the Phase 1A sampling event, acidic water was encountered in portions of PRI 8. The extent of acidic water within PRI 8 prevented safe access to several Phase 1A SAP sample locations during December 2013 and January 2014, when surface solids sampling was being performed at this PRI Area. As a result of the inundation by acidic water, and as provided by Section 34.b of the AOC, the USEPA prepared SAP Modification 14-C-2-18 that required the collection of additional surface water samples within PRI 8, a survey of the extent and estimated depth of waters within PRI 8, the in situ measurement of pH during surface solids sampling, and the requirement to submit a field sampling modification form to address sample collection methods at locations that remained inaccessible due to acidic water.

A survey of the extent and approximate depth of waters within PRI 8 was performed on 6 February 2014. The extent of waters within PRI 8 was surveyed by logging a path using a Trimble GPS while walking the perimeter of the inundated portion of the PRI Area. The extent of surface water in PRI 8 as of 6 February 2014 is shown in Figure 4-2. Water depth estimates were made around the perimeter at the time of the survey; in most places, the water depth was less than 6 inches. Based on an obvious high water mark, it was evident on 6 February 2014 that the surface water was rapidly receding prior to and at the time the survey was conducted. The surface water samples and adjustments to surface soil samples required by SAP Modification 14-C-2-18 are incorporated into the surface solids and surface water sampling descriptions provided in Sections 4.1 and 4.4.2, respectively.

5.0 PHASE 1A SAMPLE ANALYSIS AND DATA MANAGEMENT

Phase 1A samples were analyzed by the TestAmerica laboratory located in West Sacramento, California, with selected analyses subcontracted to TestAmerica laboratories located in Denver, Colorado (total organic carbon [TOC]) and Savannah, Georgia (cyanide and haloacetic acids). Hexavalent chromium (Cr VI) analyses were performed by Applied Speciation in Bothell, Washington. TestAmerica is accredited by the National Environmental Laboratory Accreditation Program and is certified by the Utah Department of Health to perform these analyses, where possible. Applied Speciation is accredited by the National Environmental Laboratory Accreditation Program through the State of New Jersey. Laboratory certifications are found in Attachment 19B of the SAP. The analyses performed by TestAmerica and Applied Speciation and the applicable USEPA method references are listed in Worksheet #30 of the SAP.

5.1 LABORATORY ANALYSES

Lists of sample IDs and analyses performed for surface solid, subsurface solid, groundwater, and surface water samples are provided in Tables 4-3, 4-4, 4-6, and 4-7, respectively. Analyses were performed according to laboratory SOPs and project-specific Work Instructions, provided in Attachment 19A of the Phase 1A SAP. The Work Instructions were developed based on the results of the *Draft Phase 1A Laboratory Demonstration of Method Applicability Technical Memorandum for Soil, Sediment, Waste, and Water* (ERM 2013) included as Attachment 11E to the SAP.

There were no significant deviations from the SAP and associated SAP modifications during the Phase 1A analytical program. Two corrective action reports (CARs) were issued by TestAmerica West Sacramento laboratory and are included in Appendix G. Descriptions are provided in Section 7.1.3.

5.1.1 Deviations from Phase 1A Sampling and Analysis Plan

Laboratory analytical deviations from the SAP included the following:

- Perchlorate analysis was not performed for 12 surface solids samples collected 23 and 24 November 2013 because perchlorate analysis was not requested on the chain-of-custody accompanying these samples.

Affected samples include 11 samples from PRI 15 (PRI15-009, PRI15-012, PRI15-014, PRI15-013, PRI15-001, PRI15-003, PRI15-006, PRI15-011, PRI15-002, PRI15-004, and PRI15-010) and one sample from PRI 16 (PRI16-011-SS01). Perchlorate analysis using remaining volume of affected samples was not requested because ERM did not identify this QC issue until well outside of the 28-day holding time for perchlorate analysis. Corrective actions taken to address this deviation from the SAP are described in Section 7.1.3.

- Alkalinity and total dissolved solids were not analyzed in surface water samples from locations PRI14-013 and PRI14-008.
- Atrazine was erroneously included in the list of semi-volatile organic compound (SVOC) analytes included in SAP Worksheet 15 Attachment 15A. Because atrazine is not included in TestAmerica's SVOC analytical method, atrazine was not reported for any Phase 1A samples.

5.1.2 *Laboratory Analytical Issues*

While not deviations from the SAP, there were several laboratory incidents that impacted the schedule/turnaround time for results, required special attention by the laboratory, or are otherwise noteworthy. These items are summarized below.

- Collision cell technology was used with the 6020 inductively coupled plasma mass spectrometry method for the Phase 1A analyses for total and dissolved metals (per the Work Instructions). Due to the high sensitivity of the collision cell detector and the high levels of salts present in all Phase 1A samples, physical clogging of the collision cell resulted in an Internal Standard response that was lower than the acceptable levels. To avoid this, the laboratory diluted samples more than 10x on the initial runs. The laboratory subsequently optimized the operating conditions to prevent clogging of the collision cell interface and reduce the required dilution. A method detection limit (MDL) study was then performed to update MDLs and reporting limits under the new conditions before analyzing and reporting the metals data for the Phase 1A samples. To expedite reporting of other analytical results, metals results for a number of sample delivery groups were reported separately from the other Phase 1A analyses. The optimized collision cell interface also eliminated the necessity for dilutions for samples submitted for high-level (HL) analysis per the project-specific Work Instructions (WS-WI-0037 in SAP Attachment 19A).

- One of the high-resolution gas chromatography/mass spectrometry instruments was not operational for a few weeks, and Method 1668 (polychlorinated biphenyl [PCB]) analyses were delayed for some sample delivery groups. This was during the same period the laboratory was catching up on metals analyses on the collision cell instrument, so these PCB analyses were also split off and reported with the metals results to allow reporting of the completed analyses.
- Per the project-specific Work Instructions (WS-WI-0037 in SAP Attachment 19A), a cleanup step was added to the anion analyses, using the On-Guard Ba/Ag/H ion removal cartridges to remove chloride, bromide, and sulfate before analyzing for the remaining anions. Based on laboratory spike results, it appears that a small amount of nitrite is converted to nitrate, and spike results were frequently just outside of control limits.
- TestAmerica sometimes analyzed and reported SVOCs by selected ion monitoring (SIM) even if they were detected in scan mode. Both results are reported in the prevalence tables and data summary tables. The appropriate result will be selected at the time of data use (i.e., during risk assessment activities).
- Surface water sample PRI4-013-SW01-112513 was collected at the gypsum slurry outfall and contained a high amount of solids. This sample was extracted three times because of QC issues and the hexachlorobenzene (HCB) concentration increased in each of the re-extractions of the sample. Sample aliquots were taken from different containers for each extraction, and each container contained some amount of solids. During validation, Laboratory Data Consultants (LDC) selected the HCB from the third extraction as the most useable, though it was extracted outside of the holding time. However, LDC selected the SVOC SIM screen result from the first extraction as the most useable, a finding which appears inconsistent and that indicates a much lower HCB concentration. During evaluation of data usability for risk assessment, all the results will be reviewed, and the most appropriate value will be selected.
- Selected Phase 1A samples were submitted for HL analysis per the criteria provided in the Work Instructions. The Work Instructions specified that if all constituents in an analytical method were not detected in a HL sample, it should be re-analyzed as a low-level sample. Of the solid samples that were submitted as HL for PCB and dioxin/furan (D/F) analysis, four were re-extracted and analyzed as low-level samples (surface water samples PRI8-018-SW-01-021214, PRI8-019-SW-01-021214, PRI8-020-SW01-021114, and PRI8-021-SW01-

021114). In addition, there were two samples analyzed for SVOCs (Scan mode, 8270C) that were prepared as low-level samples, but were re-extracted as HL samples due to high HCB concentrations (subsurface solids samples PRI2-009-SB01-0.5-050614 and PRI2-006-SB01-0.5-050614). As stated previously, the optimized collision cell interface also eliminated the necessity for dilutions for samples submitted for HL analysis of metals by Method 6020/ inductively coupled plasma mass spectrometry.

5.2 *DATA VALIDATION*

Data validation criteria are presented in Worksheet #36 of the SAP. As required, cursory (Stage 2B) data validation was conducted on 90 percent of the data, and full Stage 4 data validation was conducted on 10 percent of the data by a third-party data validation contractor. Worksheets #12, #24, #25, #28, and #36, along with the analytical methods and laboratory SOPs, list the QC checks and criteria that were reviewed for both cursory and full data validation. The data validation criteria were consistent with the project-specific analytical methods referenced in Worksheet #19 and SAP modifications. The laboratories submitted a case narrative with every data package listing any QC criteria that were not met or other issues potentially affecting data quality.

LDC, an independent third-party subcontractor, was subcontracted to conduct all the data validation. All data validation reports can be found in Appendix H.

Based on data validation and review, data qualifiers were placed in the electronic database to signify whether the data were acceptable, acceptable with qualification, or rejected. Validation qualifiers and definitions are based on those used by the USEPA in the validation guidelines (USEPA 2005; 2008; 2010; 2011). The validated results are contained in the project database and are summarized in the prevalence tables in Section 6.0 (Tables 6-1 through 6-12). Full data tables are found in Appendix I.

5.3 *DATA MANAGEMENT*

Data management was conducted according to the Data Management Plan incorporated in the SAP as Attachment 14A. All analytical results are available in the project database (EQuIS).

Summations for certain chemical classes were performed as described in the SLRA Technical Memorandum (ERM 2014b). In order to allow comparison to risk-based concentrations during the SLRA, some compounds will be evaluated as a class and concentrations will be calculated by summing the results from individual compounds within the chemical class, including:

- 2,3,7,8-tetrachlorodibenzo-p-dioxin toxicity equivalence concentration (TCDD TEQ) for D/F and dioxin-like co-planar PCB congeners;
- Total Low Molecular Weight/Total High Molecular Weight (LMW/HMW) polycyclic aromatic hydrocarbons (PAHs); and
- Total PCBs.

The methodology used to calculate the sums and address non-detected (ND) constituents is described below for each class.

- *TCDD TEQ* is calculated using concentrations for D/F congeners and World Health Organization coplanar PCBs as follows:

  $\text{TCDD TEQ} = \Sigma\ \text{TEF}_i \times \text{C}_i$

  …where C_i is the concentration of the i^{th} dioxin congener, furan congener, or coplanar PCB congener. HCB is also included in the calculation of the TCDD TEQ for birds. To bracket the potential ranges of TCDD TEQs when one or more contributing species is ND, NDs are assigned a surrogate value of either zero or one-half of the detection limit.

- *Total LMW/Total HMW* PAHs is calculated using concentrations as follows:

  $\text{Total LMW PAHs} = \Sigma\ C_{jlow}$

  $\text{Total HMW PAHs} = \Sigma\ C_{jhigh}$

  …where C_{jlow} is the concentration of the j^{th} less-than-4-ring PAH, C_{jhigh} is the concentration of the j^{th} 4-or-more-ring PAH. To bracket the potential ranges of Total PAHs when one or more PAH is ND, NDs are assigned a surrogate value of either zero or one-half of the detection limit.

- *Total PCBs* is calculated and reported by the laboratory using concentrations for PCB homologues as follows:

  $\text{Total PCBs} = \Sigma\ C_j$

  …where C_j is the concentration of the j^{th} PCB homologue. NDs are assigned the value of zero.

6.0 PHASE 1A INVESTIGATION RESULTS

Phase 1A RI analytical results are presented in prevalence tables, which provide statistical summaries for each constituent per PRI Area. The statistical summaries listed in the prevalence tables are:

- The number of samples and number of detections;
- The minimum and maximum detected concentration;
- The average, standard deviation, and coefficient of variation for detected results;
- The minimum and maximum detection limits for ND results; and
- The sample location corresponding to the maximum detected concentration.

Analytical data summary tables are provided in Appendix I.

6.1 SURFACE AND SUBSURFACE SOLIDS

Solids analytical results are summarized in the following prevalence tables:

- Table 6-1 for samples collected in all Outer PRI Areas;
- Table 6-2 for samples collected in PRI 2;
- Table 6-3 for samples collected in PRI 8;
- Table 6-4 for samples collected in PRI 9;
- Table 6-5 for samples collected in PRI 10;
- Table 6-6 for samples collected in PRI 11;
- Table 6-7 for samples collected in PRI 12;
- Table 6-8 for samples collected in PRI 13;
- Table 6-9 for samples collected in PRI 14;
- Table 6-10 for samples collected in PRI 15; and
- Table 6-11 for samples collected in PRI 16.

6.2 SURFACE WATER AND GROUNDWATER

Groundwater analytical results are summarized in the following prevalence table:

- Table 6-12 for groundwater samples.

Surface water analytical results will be summarized in a surface water results addendum.

6.3 BULK VERSUS FINES ANALYSES OF SURFACE SOLIDS

As described in SAP Worksheet #11 and the associated SAP Modification 14-C-2-7, analyses of fines fraction (less than 0.25 millimeter, or passing 60 mesh) were performed for selected samples to investigate potential differences in concentration as a function of particle size. Fines fraction analyses were performed for five samples per PRI Area for PRI Areas 2 and 8 through 14. The PRI Areas and specific samples for fines fraction analyses were identified based on pre-Phase 1A reconnaissance sampling and grain size analyses (see Section 3.3 and Appendix A). The results for fines fraction analyses are presented in the data summary tables included in Appendix I. The evaluation of bulk versus fines fraction concentrations is presented in Appendix J.

7.0 QUALITY CONTROL ACTIVITIES

QC activities were conducted during field activities and laboratory preparation and analysis. These activities included field and laboratory surveillance. Some corrective actions were taken during the Phase 1A activities in the field and in the laboratory to remedy actions that led to error. A summary of data quality findings during validation is also provided.

7.1 PROJECT ASSESSMENTS AND CORRECTIVE ACTIONS

Field and laboratory surveillance was performed by the ERM Field Team Leader and Project Chemist, and the findings are described in the following sections.

7.1.1 Field Surveillance

Field surveillance visits were performed by the ERM Field Team Leader on 16 December 2013 and by the ERM Project Coordinator on 6 February 2014. The field surveillance included a review of field sampling procedures, field documentation, field QC activities, and health and safety. No corrective actions were identified during the ERM field surveillance activities.

Field surveillance was performed by the USEPA throughout the Phase 1A RI sampling program, as described in the *Phase 1A Remedial Investigation Oversight Quality Assurance Project Plan, Revision 0, US Magnesium NPL Site, EPA Site Identification No. UTN000802704, Tooele County, Utah* (USEPA 2014).

7.1.2 Laboratory Surveillance

The TestAmerica West Sacramento laboratory was visited by the ERM Project Chemist and two representatives of the USEPA on 18 and 19 March 2014, in accordance with the laboratory surveillance requirement in Worksheets #31 and #32 of the SAP. The surveillance started with a discussion of objectives with TestAmerica staff, including Eric Redman (Technical Director), Lisa Stafford (Quality Assurance Manager), Karla Buechler (Operations Manager), Gary Costley (Quality Assurance), and David Alltucker (Project Manager for the US Magnesium project).

Each area of the lab was visited, including sample receipt and check-in, sample preparation for each type of analysis, analytical areas, and data reduction for high-resolution mass spectrometry analyses. Chemists conducting activities in each area demonstrated record-keeping and access to SOPs and project-specific Work Instructions. In each area, at least one chemist walked and/or talked through the process, whether checking in samples, moving samples from storage to prep, preparing samples, cleaning up, conducting analysis and data reduction, etc. All personnel could readily access the applicable SOP and Work Instructions on a computer in their work area and were familiar with the specific project requirements for the US Magnesium samples.

Several topics were discussed during the surveillance visit, including:

- Changes to analytical procedures (preparation and analytical) based on Demonstration of Method Applicability findings, and impacts on data quality;
- Adjustments to operating conditions for collision cell technology to keep dilutions as low as possible and associated MDL study; and
- PCB spike recovery issue for a few samples (associated CAR).

The only action item identified during the lab visit was that the Worksheet #15 MDL and reporting limit values should be reviewed during development of future SAPs to maintain Worksheet #15 values as current and accurate as possible.

An additional CAR was issued prior to the lab visit, related to perchlorate extraction and analysis. The CARs are discussed in Section 7.1.3.

The external (USEPA) laboratory surveillance was conducted concurrently with the ERM laboratory visit on 18 and 19 March 2014. Findings from the USEPA laboratory audit and USEPA's recommended corrective actions were provided to ERM on 28 March 2014. ERM and TestAmerica provided corrective action response documentation to the USEPA on 7 April 2014. The USEPA accepted the response for ERM/TestAmerica as meeting the requirement of Worksheet #32 on 14 May 2014.

7.1.3 *Corrective Actions*

In March 2014, ERM became aware that perchlorate analysis was not requested on the chain-of-custody form for 12 surface solids samples collected 23 and 24 November 2013 and, consequently, these samples were not analyzed for perchlorate. Affected samples include 11 samples from

PRI 15 (PRI15-009, PRI15-012, PRI15-014, PRI15-013, PRI15-001, PRI15-003, PRI15-006, PRI15-011, PRI15-002, PRI15-004, and PRI15-010) and one sample from PRI 16 (PRI16-011-SS01). Perchlorate analysis using remaining volume of affected samples was not requested because ERM did not identify this QC issue until well outside of the 28-day holding time for perchlorate analysis. As a corrective action, ERM revised the project-specific chain-of-custody forms to help ensure all appropriate Phase 1A analyses are requested for each sample.

As noted previously, TestAmerica issued two CARs during the field event. The first was issued because the holding time for perchlorate analysis was missed in a few samples. The SOP and the laboratory information management system indicated that the holding time for Method 6850 is 28 days. This is the holding time from sampling to analysis; there is not a separate holding time for sample preparation in the method. Because samples were sometimes prepared very close to the holding time expiration, a few samples were analyzed 1 to 3 days past holding time. To remedy this, the laboratory information management system was changed to alert the preparation lab at 14 days that the perchlorate samples needed to be prepared. The second CAR was related to PCB analyses: it was noted in some samples that isotope dilution internal standards and laboratory control sample (LCS) recoveries were low. It was found that the solvent used in the post-extraction rinse of the soxhlet apparatus was methylene chloride and acetone instead of toluene, which adversely impacted the performance of subsequent cleanup steps. The staff received additional training, and the lab SOPs are being revised to clarify the correct solvent to use at this rinse step. CARs are included in Appendix G.

A third CAR was issued on 11 September 2015, after several calculation errors were found for Total PCBs and PCB homolog group results in select Phase 1A solids samples from PRI 2. The calculation errors were limited to samples requiring a combination of multiple runs to quantify PCB congeners and were a result of summing congeners results from different dilutions. The effected PRI 2 results have been updated in Table 6-2, Appendix I, and Appendix K. Revised data reports are included in Appendix G, as well as the CAR.

7.2 *DATA USABILITY ASSESSMENT*

Data usability is evaluated through review of the method quality objectives (MQOs) specified in Worksheet #37 of the SAP for precision, accuracy, representativeness, completeness, and comparability. More detailed discussion of data usability for risk assessment will be provided in the SLRA for OU-1.

7.2.1 *Precision*

Precision was assessed by the analysis of field duplicates, laboratory duplicates, and matrix spike/matrix spike duplicate (MS/MSD) samples. Precision goals from Worksheets #12 and #28 were used to evaluate field duplicates, laboratory duplicates, and MS/MSD samples during data validation, as described in the data validation reports (Appendix H).

Data qualified based on precision-related MQOs have been summarized on a PRI Area and analyte basis. Tables 7-1 and 7-2 provide summaries of results qualified based on MS/MSD and field duplicate precision in each PRI Area for each analyte. Table 7-3 shows these summaries for groundwater results. No solids or groundwater data were qualified based on LCS/ laboratory control sample duplicate precision. The majority of the qualifiers based on MS/MSD relative percent difference (RPD) were for metals analyses. The remaining analytes with precision qualifiers generally had only one or two results qualified; very few had three or four results qualified.

The number of Phase 1A results qualified based on precision-related MQOs are summarized below.

Precision MQO	**Number of Results Qualified**	**Analytical Groups with Qualified Results**
MS/MSD RPD	225 total (205 solids, 20 water)	Solids: Metals, D/F, PCBs, SVOCs, PAHs, and VOCs Groundwater: VOCs and cyanide
Field Duplicate RPD	36 total (25 solid, 11 water)	Solids: D/F, PCBs, metals, SVOCs, TOC Groundwater: PCBs, metals, cyanide, total dissolved solids, TOC, VOCs

Sample results qualified due to exceedances of precision-related MQOs represent less than one percent of the total Phase 1A sample results. Based on the results of the duplicate analyses performed for Phase 1A, the general level of precision appears to be high and does not appear to limit the usability of any particular analyte, method, or matrix.

7.2.2 *Accuracy*

Field accuracy is assessed by collecting and analyzing equipment rinsate blank and trip blank samples. Laboratory accuracy is assessed by the analysis of MS, laboratory spike samples, surrogate spikes (organic methods), method blanks, calibration, and estimated maximum potential concentrations (applicable to PCBs and D/F), as well as holding times and sample temperatures. Accuracy objectives from Worksheets #12 and #28 were used to evaluate sampling results during data validation, as described in the data validation reports (Appendix H).

Data qualified based on accuracy-related MQOs are summarized on a PRI Area and analyte basis in Tables 7-4 through 7-13. These tables provide summaries of solids results qualified based on 10 accuracy factors in each PRI Area for each analyte. Table 7-14 shows summaries for groundwater results. A general description of accuracy-related qualifiers is provided below.

- No solids or groundwater data were qualified based on temperature.
- Most of the holding time qualifiers were due to the need for re-extraction and re-analysis for SVOCs. These issues were addressed by the lab by extracting and analyzing the samples well before the extraction holding time expires so that there is time to re-extract a sample if needed. Most of the samples affected were collected early in the Phase 1A event; the lab greatly reduced the occurrence of holding time violations for SVOCs after December 2013. Some holding time misses were related to perchlorate samples being extracted at the holding time (28 days) and not running the same day. This was remedied during Phase 1A by setting a holding time for extraction of 14 days so that there was time to run the extracts by 28 days. In groundwater, two samples missed holding time for Cr VI because the sample pH could not be adequately raised within 24 hours of collection.
- Qualifiers based on lab blank contamination were mostly applied to metals results, particularly mercury in solids and beryllium in groundwater, as well as PAHs, D/F, and PCBs. These organic analyses have very low detection limits, and trace amounts in blanks can be

detected. In the case of equipment blanks, the greatest number of qualifiers was applied to metals results in solids, particularly lead. In groundwater, carbon disulfide presence in field blanks required qualifiers, as well as Cr VI and a few other analytes.

- LCS issues were mostly associated with SVOCs, 3-nitroaniline and p-chloroaniline in particular in solids, and hexachloroethane and hexachlorobutadiene in groundwater. It appears that the use of cleanup cartridges (to remove chloride and sulfate and reduce the need for sample dilution) prior to analysis of nitrite and nitrate causes some conversion of nitrite to nitrate. Nitrite LCS results were slightly low for some sample delivery groups, while nitrate LCS recovery was slightly high for a few samples for this reason. In addition, PAH results for most of the samples from PRI 9 were qualified for LCS failure; these samples appear to have been in the same batch. MS issues were mainly related to metals (as well as bromide and cyanide in groundwater) and are likely due to interference from high concentrations of calcium, sodium, magnesium, and iron in many of the samples. MS issues were seen at much lower rates for organic constituents.

- By far the most qualifiers related to surrogate compound recovery were for SVOC results for PRI 2 samples. Small numbers of samples in PRI 9, PRI 10, PRI 13, and PRI 14 also had SVOC results qualified due to surrogate recovery results. A few groundwater results for phenol and substituted phenols were qualified due to surrogate recovery. PAHs were also qualified due to surrogate results in PRI 9.

- Qualifiers based on EMPC results were relatively evenly distributed among the various D/F, and PCB congeners and among the PRI Areas.

- Calibration range exceedances were mainly seen for PCB-209 and octachlorodienzofuran results. A few other constituents had qualifiers related to calibration: primarily 1,4-dioxane in solids and groundwater, acetone in solids, and methyl chloride in groundwater. In addition, qualifiers based on internal standards results were seen for a few samples for PCB congeners, D/F, and a few PAHs in solids, as well as perchlorate in groundwater.

- In addition, a few groundwater samples were qualified because the difference between results on two columns did not meet criteria for monobromoacetic acid.

The number of Phase 1A results qualified based on accuracy-related MQOs are summarized below.

Accuracy MQO	Number of Results Qualified	Analytical Groups with Qualified Results
Temperature on Receipt	0	
Holding Times/Sample Preservation	Solids: 878; Groundwater: 2	Solids: mercury, SVOCs, SVOC-SIM, PAHs, perchlorate Groundwater: Cr VI
Laboratory (Method) Blanks	Solids: 230; Groundwater: 55	Solids and groundwater: D/F, PCBs, metals, SVOCs, VOCs Solids only: PAHs, TOC Groundwater only: Cr VI
Field Equipment or Trip Blanks	Solids: 233; Groundwater: 26	Solids: metals, VOCs, cyanide, TOC Groundwater: D/F, PCBs, Cr VI, VOCs, PAH
LCS	Solids: 882; Groundwater: 104	Solids: Mercury, SVOCs, PAHs Groundwater: SVOCs, SVOC-SIM, anions
MS	Solids: 991; Groundwater: 373	Solids and groundwater: PCBs, metals, SVOCs, SVOC-SIM, PAHs, VOCs Solids only: D/F Groundwater only: Cyanide and anions
Surrogate Spikes	Solids: 968; Groundwater: 50	Solids: SVOCs, SVOC-SIM, PAHs

Accuracy MQO	Number of Results Qualified	Analytical Groups with Qualified Results
		Groundwater: SVOCs and SVOC-SIM
Estimated Maximum Potential Concentrations	Solids: 736; Groundwater: 84	Solids and groundwater: D/F, PCBs
Concentration Exceeds Calibration Range	Solids: 160	D/F, PCBs, HCB
Calibration	Solids: 114; Groundwater: 58	Solids: PCBs, SVOCs, PAHs, VOCs; Groundwater: SVOCs, VOCs
Internal Standard	Solids: 124; Groundwater: 9	Solids: D/F, PCBs, , PAHs, Groundwater: perchlorate
Column Difference	Groundwater: 4	Haloacetic acids

As discussed above, the majority of accuracy issues are related to sample matrix issues and high concentrations of some analytes. Some are also related to method adjustments and additional cleanups employed based on results of the *Draft Phase 1A Laboratory Demonstration of Method Applicability Technical Memorandum for Soil, Sediment, Waste, and Water* (ERM 2013). Many analytes were qualified more than once in a sample because of matrix and concentration issues, so the total number of qualifiers is higher than the number of results qualified. The analytical methods have been optimized to the extent possible to reduce matrix effects and minimize dilutions.

7.2.3 *Representativeness*

As described in SAP Worksheet #37, representative data were obtained by the following means:

- Collecting samples at the locations specified in the SAP or, when necessary, at modified locations that were approved by the USEPA;
- Analyzing samples by the analytical methods specified in the SAP;
- Collecting and handling samples to avoid interference and minimize contamination;

- Analysis of field blank QC samples (equipment blanks and trip blanks) and laboratory blanks to verify the absence of contaminants; and
- Consistent application of established field and laboratory SOPs.

There are no quantitative criteria for representativeness identified in the SAP; however, validation criteria are available for field and laboratory blank samples and were referenced during data validation activities. Blank sample results are discussed in the previous section and are described in the data validation reports (Appendix H).

Impacts of SAP and field modifications on representativeness are described in the relevant subsections of Section 4.0 of this Report.

7.2.4 *Completeness*

Completeness is calculated as the percentage of project-specific data that are valid. The calculated completeness for the Phase 1A RI data set is 99 percent, based on 37,881 useable primary sample results out of 38,380 total primary sample results planned. The difference between usable versus planned sample results is due to the following:

- Atrazine was not reported with the SVOC analyte list for any of the 265 samples analyzed;
- Thirteen PAH results were rejected in a single fines-fraction sample from PRI Area 9 during data validation due to surrogate recoveries;
- Phosphate results were rejected in one groundwater sample during data validation due to MS;
- Perchlorate analysis was not performed for 11 surface solids samples from PRI Area 15 and one surface solids sample from PRI Area 16; and
- No groundwater sample was collected from monitoring well MW-16 (224 results).

The completeness for each PRI and overall completeness are presented in Table 7-15. The list of samples and rejected results is shown in Table 7-16. The total sample result count does not include results for the SIM confirmation analysis or for perchlorate confirmation analysis, because it could not be predicted how many of these analyses would be needed. It also does not include results for field QC samples or for calculated results, such as D/F TEQs or low-molecular weight/high-molecular weight PAH sums.

Impacts of SAP and field modifications on completeness are described in the relevant subsections of Section 4.0 of this Report.

7.2.5 Comparability

Comparability of data was achieved by consistently following standard field and laboratory SOPs and by using standard measurement units in reporting analytical data. No quantitative MQO is available for comparability.

7.3 DATA ADEQUACY

As required by SAP Worksheet #37, a data adequacy evaluation was performed to determine whether data quality objectives had been met. The data adequacy evaluation was performed following USEPA's guidance for data quality assessment (USEPA 2006) to verify that the type, quality, and quantity of data obtained are appropriate for their intended use (i.e., COPC selection). The data adequacy evaluation for the Phase 1A RI data for PRI Areas 2 and 8–17 is provided in Appendix K.

8.0 REFERENCES

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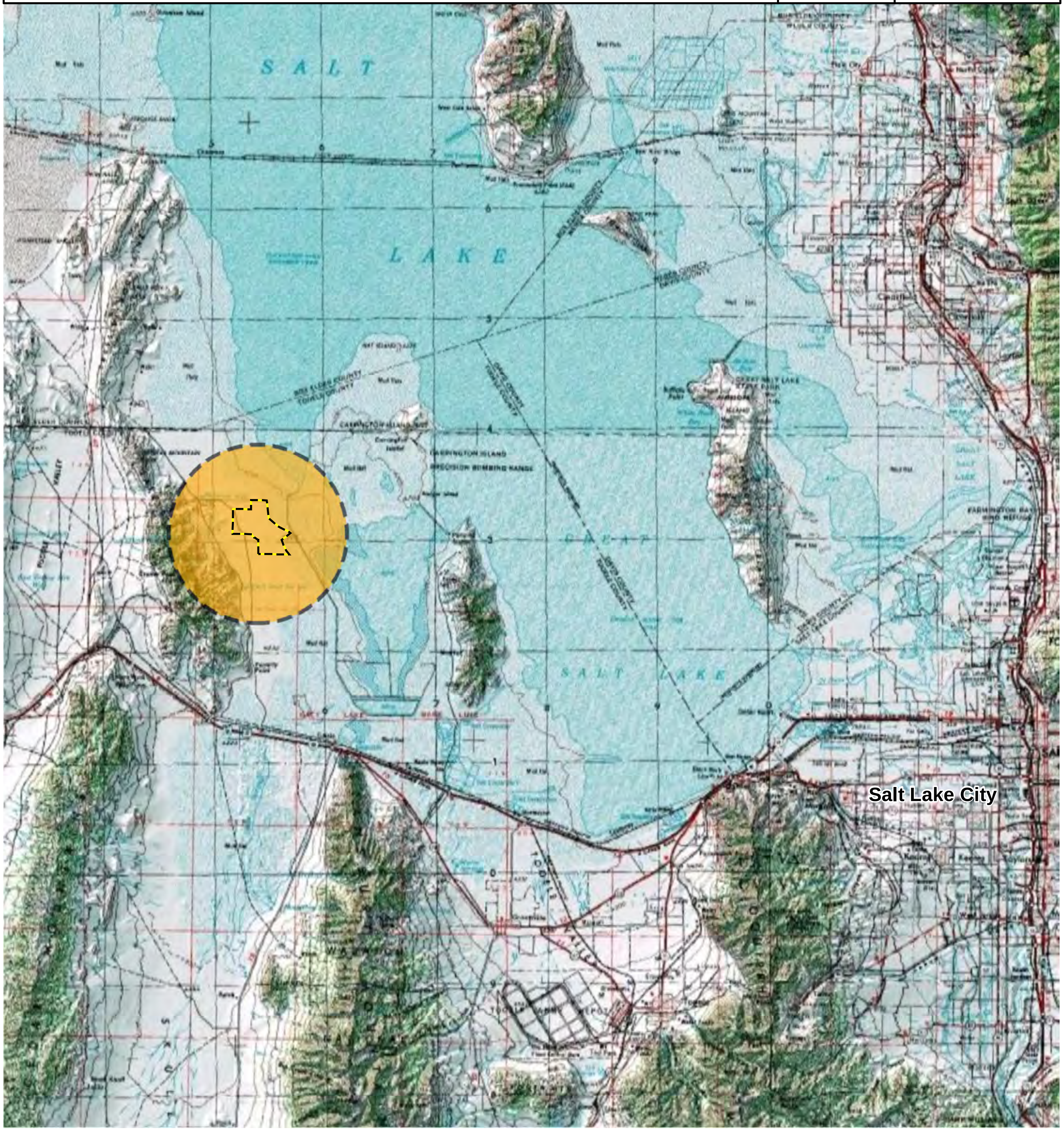
Figures

File: F:\Projects\0132320_US Magnesium - CONFIDENTIAL\GIS_data\MXDs\Phase1A Completion Memo\Fig 1-1 SiteLocation.mxd	By: Austin Phelps	Date: 8/20/2014 8:43:05 AM



RI/FS Study Area Boundary

US Magnesium Property

0 10 20 Miles

1:500,000

N

Figure 1-1

Site Location Map

Phase 1A Data Report for PRI Areas 2 and 8-17

U.S. Magnesium, LLC

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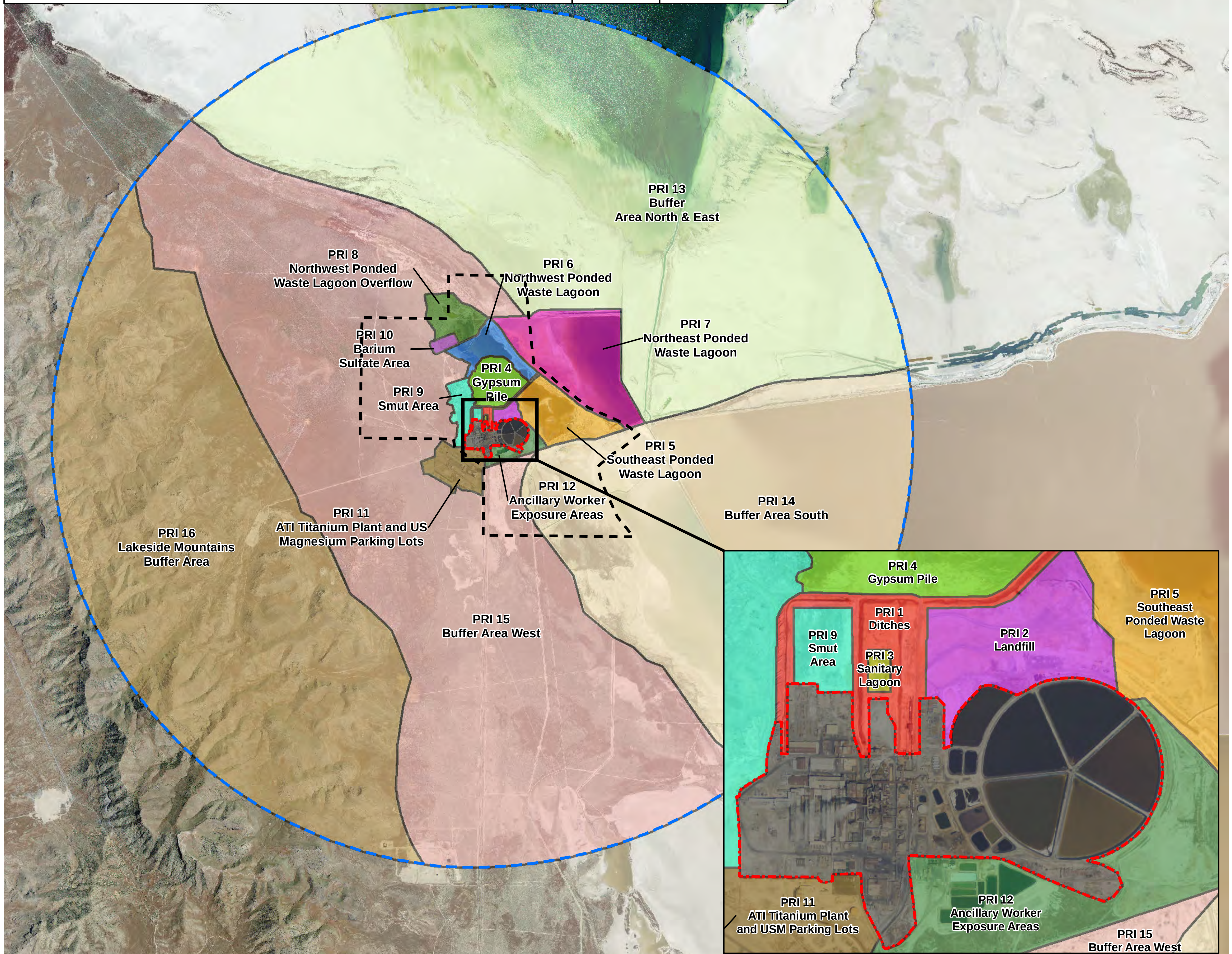

Magnesium Plant
RI/FS Study Area Boundary
US Magnesium Property
PRI-1: Ditches
PRI-2: Landfill
PRI-3: Sanitary Lagoon
PRI-4: Gypsum Pile
PRI-5: Southeast Ponded Waste Lagoon
PRI-6: Northwest Ponded Waste Lagoon
PRI-7: Northeast Ponded Waste Lagoon
PRI-8: Northwest Ponded Waste Lagoon Overflow
PRI-9: Smut Area
PRI-10: Barium Sulfate Area
PRI-11: ATI Titanium Plant and US Magnesium Parking Lots
PRI-12: Ancillary Worker Exposure Areas
PRI 13: Buffer Area North & East
PRI-14: Buffer Area South
PRI-15: Buffer Area West
PRI-16: Lakeside Mountains Buffer Area
PRI 17: Site-Wide Surface and Groundwater (Not Shown)
PRI 18: Site-Wide Ambient Air (Not Shown)

Notes:
All boundaries approximate, originally provided by EPA
Revised Buffer Areas - April 2012.
Aerial Photo: NAIP (USDA) July 3, 2011

N

0 1 2 Miles

Figure 1-2
Preliminary Remedial Investigation Areas
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Legend

- Reconnaissance Sieve Sample
- Surface Solids Sample
- Surface Solids Sample with Fines Analysis
- Co-Located Surface Solids and Subsurface Boring Sample
- Co-Located Surface Solids with Fines Analysis and Subsurface Boring Sample
- Resistivity Survey Lines
- Former Diversion Ditch
- Preliminary Remedial Investigation Areas
- PRI-2 Landfill
- Magnesium Plant

Explanation:
Each resistivity profile included placement of 56 electrodes at equal spacing (Wenner array).

Notes:
All boundaries approximate, originally provided by EPA
Aerial Photo: NAIP (USDA) July 3, 2011

Figure 4-1
PRI-2 Landfill Phase 1A Sample Locations
Phase 1A Data Report for PRI Areas 2 and 8-17
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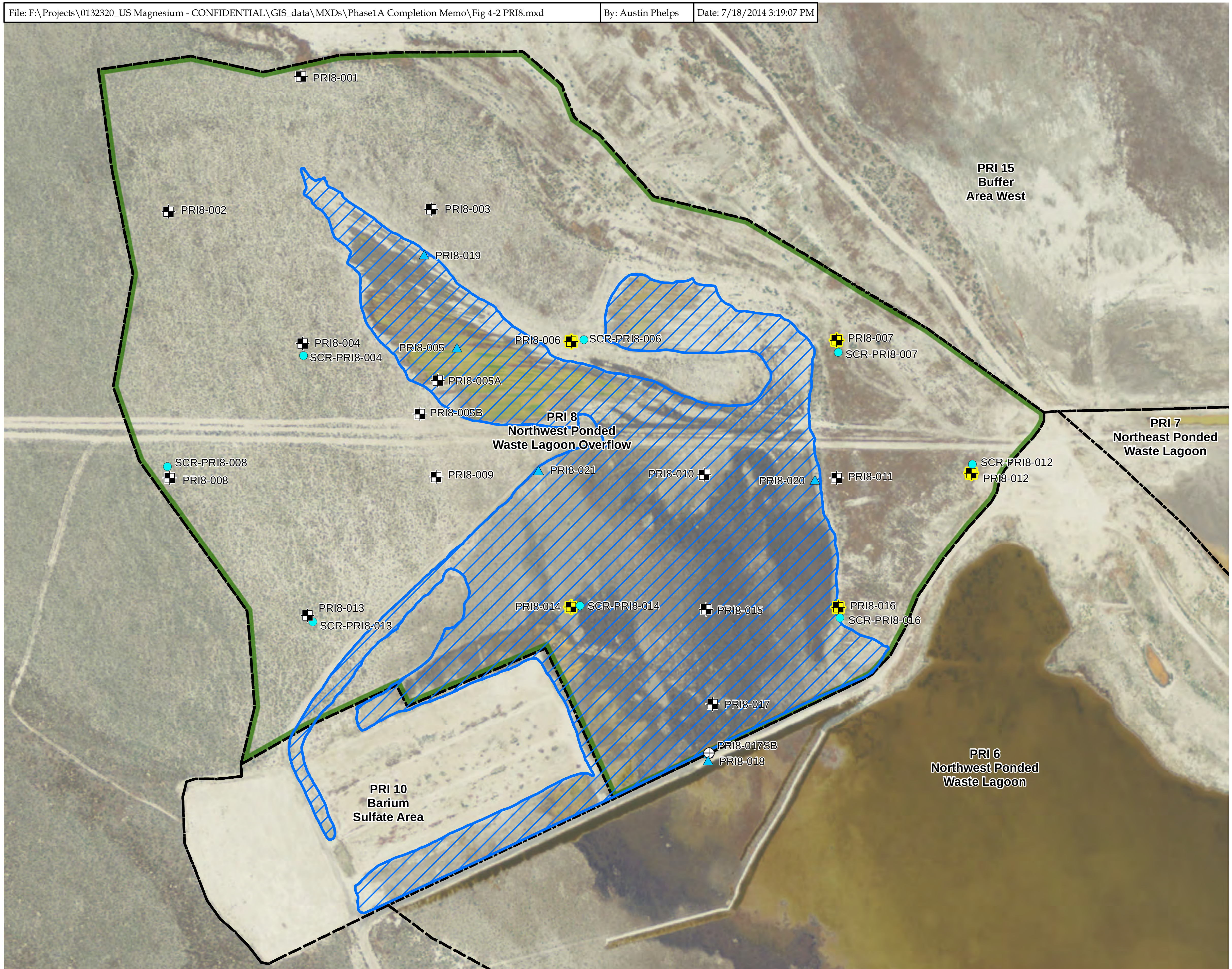

Legend

- Reconnaissance Sieve Sample
- Surface Solids Sample
- Surface Solids Sample with Fines Analysis
- Subsurface Boring Sample
- Surface Water Sample
- Extent of Surface Waters in PRI-8 (2/6/2014)
- Preliminary Remedial Investigation Areas
- PRI-8 Northwest Lagoon Overflow

Notes:
All boundaries approximate, originally provided by EPA
Aerial Photo: NAIP (USDA) July 3, 2011

N

0 400 800
Feet

Figure 4-2
PRI-8 Northwest Ponded Waste Lagoon Overflow
Phase 1A Sample Locations
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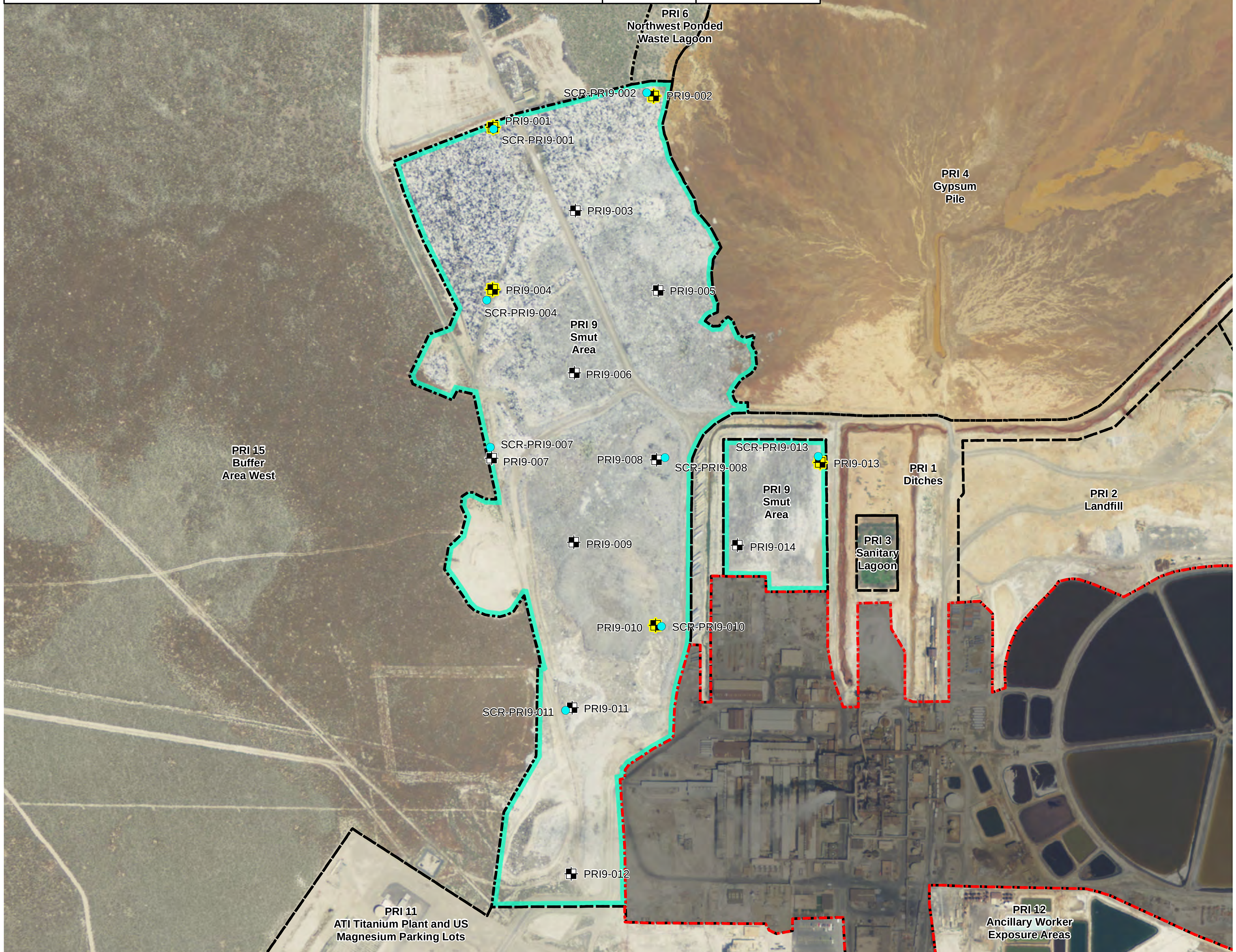

Legend

- Reconnaissance Sieve Sample
- Surface Solids Sample
- Surface Solids Sample with Fines Analysis
- Preliminary Remedial Investigation Areas
- PRI-9 Smut Area
- Magnesium Plant

Notes:
All boundaries approximate, originally provided by EPA
Aerial Photo: NAIP (USDA) July 3, 2011

N

0 500 1,000
Feet

Figure 4-3
PRI-9 Smut Area Phase 1A Sample Locations
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Legend

- Reconnaissance Sieve Sample
- Surface Solids Sample
- Surface Solids Sample with Fines Analysis
- Co-Located Surface Solids Sample with Fines Analysis and Subsurface Boring Sample
- Preliminary Remedial Investigation Areas
- PRI-10 Barium Sulfate Area

Notes:
All boundaries approximate, originally provided by EPA
Aerial Photo: NAIP (USDA) July 3, 2011

N

0 200 400
Feet

Figure 4-4
PRI-10 Barium Sulfate Area
Phase 1A Sample Locations
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Legend

- Reconnaissance Sieve Sample
- Surface Solids Sample
- Surface Solids Sample with Fines Analysis
- Preliminary Remedial Investigation Areas
- PRI-11 ATI Titanium and USM Parking Lots
- Magnesium Plant

Notes:
All boundaries approximate, originally provided by EPA
Aerial Photo: NAIP (USDA) July 3, 2011

N

0 400 800 Feet

Figure 4-5

PRI-11 ATI Titanium Plant and US Magnesium Parking Lots Phase 1A Sample Locations
Phase 1A Data Report for PRI Areas 2 and 8-17
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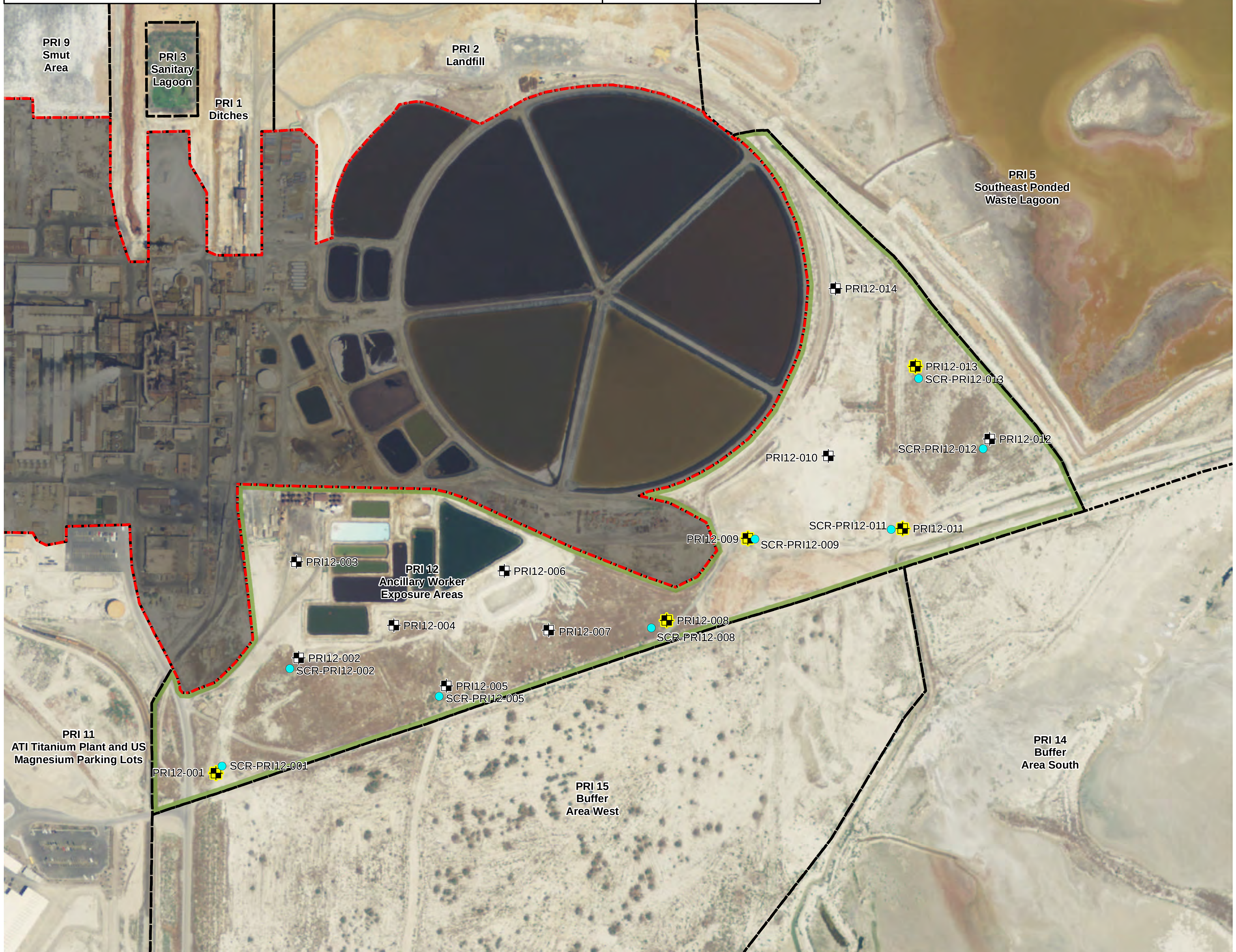

Legend

- Reconnaissance Sieve Sample
- Surface Solids Sample
- Surface Solids Sample with Fines Analysis
- Preliminary Remedial Investigation Areas
- PRI-12 Ancillary Worker Exposure Area
- Magnesium Plant

Notes:
All boundaries approximate, originally provided by EPA
Aerial Photo: NAIP (USDA) July 3, 2011

N

0 400 800 Feet

Figure 4-6
PRI-12 US Magnesium Ancillary Worker Exposure Area Phase 1A Sample Locations
Phase 1A Data Report for PRI Areas 2 and 8-17
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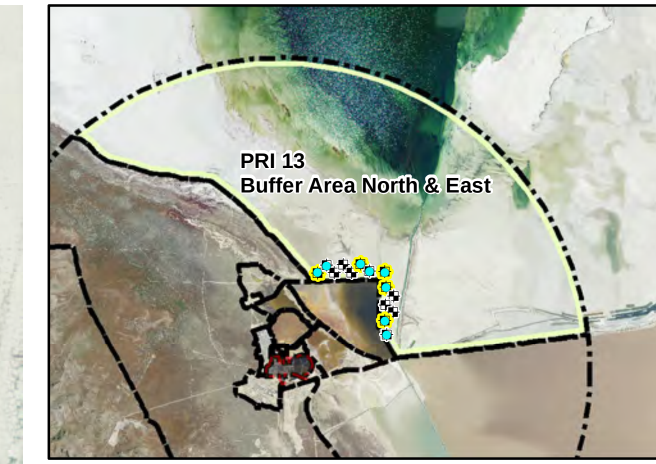

Legend

- Reconnaissance Sieve Sample
- Surface Solids Sample
- Surface Solids Sample with Fines Analysis
- Preliminary Remedial Investigation Areas
- PRI 13: Buffer Area North & East

Notes:
All boundaries approximate, originally provided by EPA
Aerial Photo: NAIP (USDA) July 3, 2011

N

0 800 1,600 Feet

Figure 4-7
PRI-13 Buffer Area North and East
Phase 1A Sample Locations
Phase 1A Data Report for PRI Areas 2 and 8-17
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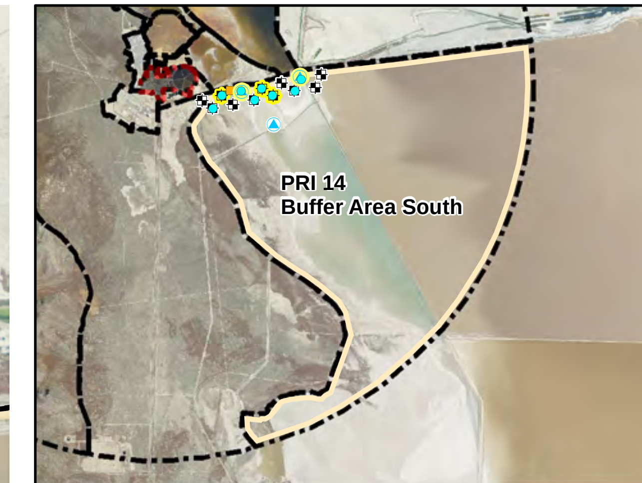

Legend

- Reconnaissance Sieve Sample
- Surface Solids Sample
- Surface Solids Sample with Fines Analysis
- Co-Located Surface Solids and Surface Water Sample
- Co-Located Surface Solids with Fines Analysis and Surface Water Sample
- Co-Located Surface Solids, Surface Water, and Subsurface Boring Sample
- Preliminary Remedial Investigation Areas
- PRI-14 Buffer Area South
- Magnesium Plant

Notes:
All boundaries approximate, originally provided by EPA
Aerial Photo: NAIP (USDA) July 3, 2011

N

0 800 1,600 Feet

Figure 4-8
PRI-14 Buffer Area South
Phase 1A Sample Locations
Phase 1A Data Report for PRI Areas 2 and 8-17
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Rowley, Utah

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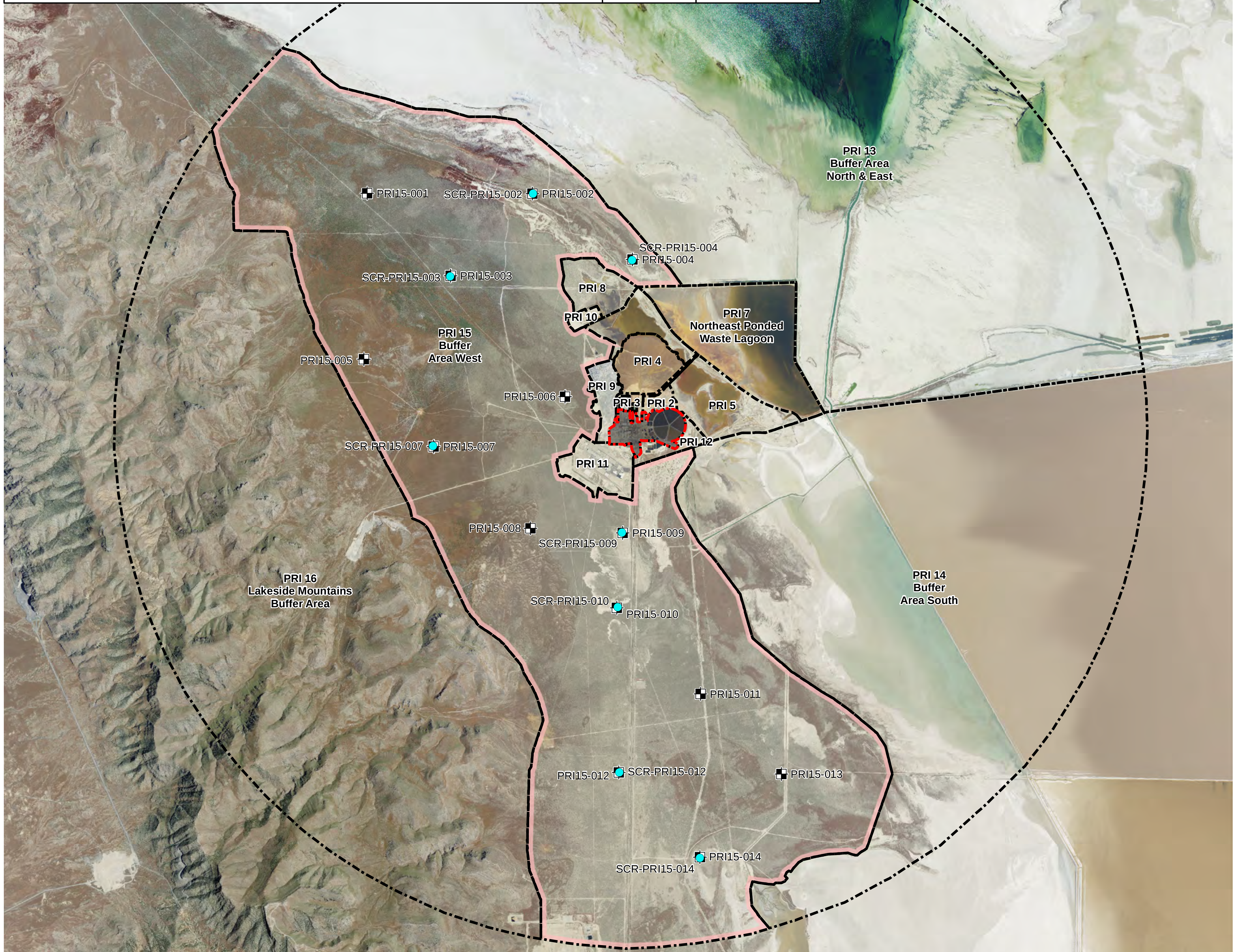
File: F:\Projects\0132320_US Magnesium - CONFIDENTIAL\GIS_data\MXDs\Phase1A Completion Memo\Fig 4-9 PRI15.mxd | By: Austin Phelps | Date: 7/18/2014 3:27:56 PM



Legend

- Reconnaissance Sieve Sample
- Surface Solids Sample
- Preliminary Remedial Investigation Areas
- PRI-15 Buffer Area West
- Magnesium Plant

Notes:
All boundaries approximate, originally provided by EPA
Aerial Photo: NAIP (USDA) July 3, 2011

N

0 5,000 10,000 Feet

Figure 4-9
PRI-15 Buffer Area West
Phase 1A Sample Locations
Phase 1A Data Report for PRI Areas 2 and 8-17
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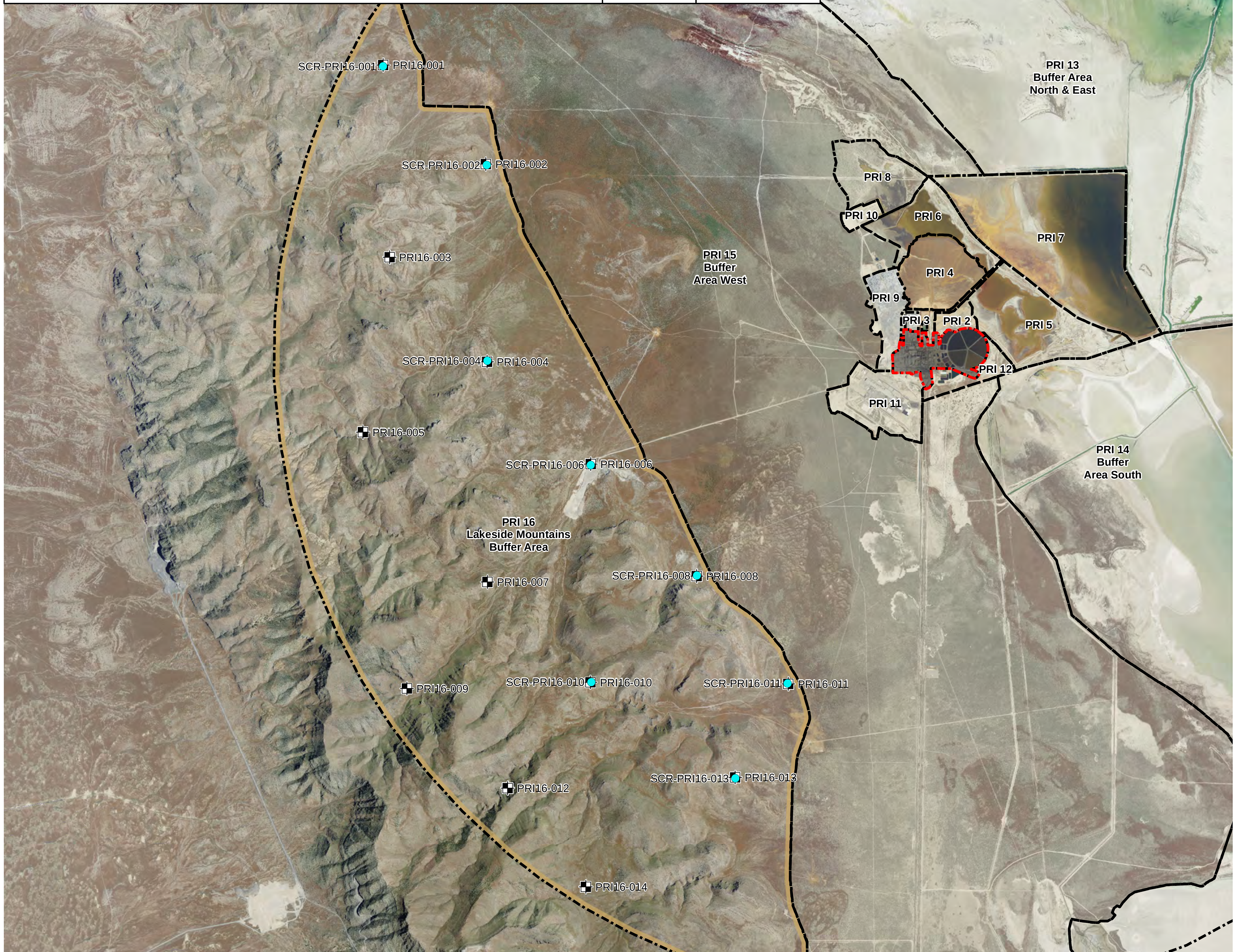
File: F:\Projects\0132320_US Magnesium - CONFIDENTIAL\GIS_data\MXDs\Phase1A Completion Memo\Fig 4-10 PRI16.mxd | By: Austin Phelps | Date: 7/18/2014 3:29:53 PM



Legend

- Reconnaissance Sieve Sample
- Surface Solids Sample
- Preliminary Remedial Investigation Areas
- PRI-16 Lakeside Mountains Buffer Area
- Magnesium Plant

Notes:
All boundaries approximate, originally provided by EPA
Aerial Photo: NAIP (USDA) July 3, 2011

N

0 4,000 8,000
Feet

Figure 4-10

PRI-16 Lakeside Mountains Buffer Area
Phase 1A Sample Locations
Phase 1A Data Report for PRI Areas 2 and 8-17
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File: F:\Projects\0132320_US Magnesium - CONFIDENTIAL\GIS_data\MXDs\Phase1A Completion Memo\Fig 4-11 PRI17.mxd | By: Austin Phelps | Date: 7/18/2014 3:47:49 PM

Legend

- Monitoring Well
- Piezometer
- Staff gauge
- Surface Water
- Preliminary Remedial Investigation Areas

Preliminary Remedial Investigation Areas

- PRI-1: Ditches
- PRI-2: Landfill
- PRI-3: Sanitary Lagoon
- PRI-4: Gypsum Pile
- PRI-5: Southeast Ponded Waste Lagoon
- PRI-6: Northwest Ponded Waste Lagoon
- PRI-7: Northeast Ponded Waste Lagoon
- PRI-8: Northwest Ponded Waste Lagoon Overflow
- PRI-9: Smut Area
- PRI-10: Barium Sulfate Area
- PRI-11: ATI Titanium and USM Parking Lots
- PRI-12: Ancillary Worker Exposure Areas
- PRI 13: Buffer Area North & East
- PRI-14: Buffer Area South
- PRI-15: Buffer Area West
- PRI-16: Lakeside Mountains Buffer Area
- Magnesium Plant

Notes:
All boundaries approximate, originally provided by EPA
Aerial Photo: NAIP (USDA) July 3, 2011

N

0 1,500 3,000
Feet

Figure 4-11
PRI-17 Site-Wide Surface Water and Groundwater
Phase 1A Sample Locations
Phase 1A Data Report for PRI Areas 2 and 8-17
U.S. Magnesium, LLC
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Tables

Table 4-1
Summary of USEPA-Approved Field Modifications
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Field Modification Number	Date	Description of Modification	Subject Locations
14-C-1-1	11/19/2013	Adjust location of PRI14-013 to allow surface water sampling	PRI14-013
14-C-1-2	11/19/2013	Use of silicone tubing for surface water sampling at PRI14	PRI14-013, PRI14-008
14-C-1-3	11/25/2013	Use of pole-mounted dipper for sampling gypsum outfall (PRI4-013)	PRI4-013
14-C-1-4	12/3/2013	Modify depth of screen interval at MW-18	MW-18
14-C-1-5	12/4/2013	Modify well construction materials for use of bentonite chips and "quickcrete" at MW-18	MW-18
14-C-1-6	12/5/2013	Cancel installation of MW-14A; modify depth of screen interval at MW-14B; change name MW-14B to MW-14	MW-14
14-C-1-7	12/6/2013	Use pre-pack well screen at MW-20B; modify depth of screen interval at MW-20A	MW-20A, MW-20B
14-C-1-8	12/6/2013	Additional aliquot grab samples for surface solids sampling	PRI13-003
14-C-1-9	12/9/2013	Use pre-pack well screen at MW-19B; construct well pads prior to 24 hours after well drilling at MW-17, MW-19A, and MW-19B; use of 2-foot by 2-foot concrete pads	MW-17, MW-19A, MW-19B
14-C-1-10	12/10/2013	Additional aliquot grab samples for surface solids sampling	PRI12-010
14-C-1-11	12/11/2013	Additional aliquot grab samples for surface solids sampling	PRI14-005
14-C-1-12	12/12/2013	Additional aliquot grab samples for surface solids sampling	PRI10-003
14-C-1-13	12/20/2013	Additional aliquot grab samples for surface solids sampling	PRI9-013, PRI9-014
14-C-1-14	1/6/2014	Additional aliquot grab samples for surface solids sampling	PRI9-002, PRI9-011
14-C-1-15	1/8/2014	Additional aliquot grab samples for surface solids sampling	PRI2-003
14-C-1-16	1/13/2014	Modify MW-16 construction details based on observed lithology	MW-16
14-C-1-17	1/13/2014	Adjust location of PRI15-008 back to original SAP location	PRI15-008
14-C-1-18	1/16/2014	Modify procedures for MW-16 development	MW-16
14-C-1-19	2/6/2014	Allow change to pumping rate during low-flow groundwater sampling based on well drawdown	PRI-17 (Site-wide groundwater)
14-C-1-20	5/12/2014	Modify surface solids location PRI8-005	PRI8-005
14-C-1-21	5/12/2014	Modify PRI2 boring locations	PRI2-006, PRI2-009, PRI2-014

Notes:
Field modification forms are provided in Appendix C
USEPA = United States Environmental Protection Agency

Table 4-2
Field Quality Control Samples
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Sample ID	Sample Date	Sample Matrix	Quality Control Sample Type	Notes
PRI7-003-SW22-112013	11/20/2013	Water	Equipment Blank	Water sampling 11/19 - 11/26/2013
PRI16-014-SS21-112113	11/21/2013	Water	Equipment Blank	Solids sampling 11/19 - 11/26/2013
PRI14-005-SS21-120413	12/4/2013	Water	Equipment Blank	Solids sampling 12/2 - 12/7/2013
PRI10-009-SS21-121313	12/13/2013	Water	Equipment Blank	Solids sampling 12/10 - 12/16/2013
PRI9-012-SS21-122013	12/20/2013	Water	Equipment Blank	Solids sampling 12/17 - 12/20/2013
PRI2-012-SS21-010814	1/8/2014	Water	Equipment Blank	Solids sampling 1/6 - 1/13/2014
LF-01-21-021814	2/18/2014	Water	Equipment Blank	Water sampling 2/11-2/18/14
PRI8-010-SS22-032614	3/26/2014	Water	Equipment Blank	Solids sampling 3/25 - 3/26/14
PRI8-005B-SS21-050814	5/8/2014	Water	Equipment Blank	Solids sampling 5/5 - 5/8/14
PRI16-003-SS11-112013	11/20/2013	Solid	Field Duplicate	Primary sample = PRI16-003-SS01-112013
PRI14-012-SS11-112513	11/25/2013	Solid	Field Duplicate	Primary sample = PRI14-012-SS01-112513
PRI14-001-SS11-120213	12/2/2013	Solid	Field Duplicate	Primary sample = PRI14-001-SS01-120213
PRI13-010-SS11-120513	12/5/2013	Solid	Field Duplicate	Primary sample = PRI13-010-SS01-120513
PRI12-007-SS11-121013	12/10/2013	Solid	Field Duplicate	Primary sample = PRI12-007-SS01-121013
PRI14-007-SS11-121113	12/11/2013	Solid	Field Duplicate	Primary sample = PRI14-007-SS01-121113
PRI10-014-SS11-121613	12/16/2013	Solid	Field Duplicate	Primary sample = PRI10-014-SS01-121613
PRI9-012-SS11-122013	12/20/2013	Solid	Field Duplicate	Primary sample = PRI9-012-SS01-122013
PRI9-013-SS11-122013	12/20/2013	Solid	Field Duplicate	Primary sample = PRI9-013-SS01-122013
PRI9-014-SS11-122013	12/20/2013	Solid	Field Duplicate	Primary sample = PRI9-014-SS01-122013
PRI9-003-SS11-010614	1/6/2014	Solid	Field Duplicate	Primary sample = PRI9-003-SS01-010614
PRI9-004-SS11-010714	1/7/2014	Solid	Field Duplicate	Primary sample = PRI9-004-SS01-010714
PRI9-007-SS11-010714	1/7/2014	Solid	Field Duplicate	Primary sample = PRI9-007-SS01-010714
PRI9-009-SS11-010714	1/7/2014	Solid	Field Duplicate	Primary sample = PRI9-009-SS01-010714
PRI2-004-SS11-010914	1/9/2014	Solid	Field Duplicate	Primary sample = PRI2-004-SS01-010914
PRI8-006-SS11-032514	3/25/2014	Solid	Field Duplicate	Primary sample = PRI8-006-SS01-032514
PRI8-014-SS11-032614	3/26/2014	Solid	Field Duplicate	Primary sample = PRI8-014-SS01-032614
PRI8-005A-SS11-050814	5/8/2014	Solid	Field Duplicate	VOCs only, Primary sample = PRI8-005A-SS01-050814

Table 4-2
Field Quality Control Samples
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Sample ID	Sample Date	Sample Matrix	Quality Control Sample Type	Notes
PRI9-013-SS11-122013 FINES	12/20/2013	Solid - Fines	Field Duplicate	Primary sample = PRI9-013-SS01-122013 FINES
PRI9-004-SS11-010714 FINES	1/7/2014	Solid - Fines	Field Duplicate	Primary sample = PRI9-004-SS01-010714 FINES
PRI8-006-SS11-032514 FINES	3/25/2014	Solid - Fines	Field Duplicate	Primary sample = PRI8-006-SS01-032514 FINES
PRI8-014-SS11-032614 FINES	3/26/2014	Solid - Fines	Field Duplicate	Primary sample = PRI8-014-SS01-032614 FINES
PRI7-007-SW21-112113, PRI7-007-SW21-112113-FF	11/21/2013	Water	Field Duplicate	Primary samples = PRI7-007-SW01-112113, PRI7-007-SW01-112113-FF
PZ-16-11-020314, PZ-16-11-020314-FF	2/3/2014	Water	Field Duplicate	Primary samples = PZ-16-01-020314, PZ-16-01-020314-FF
MW-14-11-020514, MW-14-11-020514-FF	2/5/2014	Water	Field Duplicate	Primary samples = MW-14-01-020514, MW-14-01-020514-FF
MW-8A-11-021814, MW-8A-11-021814-FF	2/18/2014	Water	Field Duplicate	Primary samples = MW-8A-01-021814, MW-8A-01-021814-FF
MW-8B-11-021814, MW-8B-11-021814-FF	2/18/2014	Water	Field Duplicate	Primary samples = MW-8B-01-021814, MW-8B-01-021814-FF
PRI14-008-SW21-111913	11/19/2013	Water	Trip Blank	
PRI7-003-SW21-112013	11/20/2013	Water	Trip Blank	
PRI7-007-SW22-112113	11/21/2013	Water	Trip Blank	
PRI7-014-SW22-112213	11/22/2013	Water	Trip Blank	
PRI8-005-SW21-112513	11/25/2013	Water	Trip Blank	
PRI4-008-SW21-112613	11/26/2013	Water	Trip Blank	
PRI14-004-SS21-120413	12/4/2013	Water	Trip Blank	
PRI14-005-SB21-0.5-121613	12/16/2013	Water	Trip Blank	
PZ-06-21-013114	1/31/2014	Water	Trip Blank	
PZ-22-21-020314	2/3/2014	Water	Trip Blank	
PZ-10-21-020414	2/4/2014	Water	Trip Blank	
MW-4A-21-02514	2/5/2014	Water	Trip Blank	
MW-7-21-020614	2/6/2014	Water	Trip Blank	
MW-5A-21-020714	2/7/2014	Water	Trip Blank	
PRI14-005-SW21-021114	2/11/2014	Water	Trip Blank	
PRI8-018-SW-21-021214	2/12/2014	Water	Trip Blank	

Table 4-2
Field Quality Control Samples
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Sample ID	Sample Date	Sample Matrix	Quality Control Sample Type	Notes
PZ-04-21-021314	2/13/2014	Water	Trip Blank	
MW-19B-21-021414	2/14/2014	Water	Trip Blank	
LF-03-21-021714	2/17/2014	Water	Trip Blank	
MW-8A-21-021814	2/18/2014	Water	Trip Blank	
PRI8-017-SS21-032514	3/25/2014	Water	Trip Blank	
PRI8-010-SS21-032614	3/26/2014	Water	Trip Blank	
PRI10-008-SB21-050514	5/5/2014	Water	Trip Blank	
PRI2-006-SB21-050614	5/6/2014	Water	Trip Blank	
PRI2-014-SB21-050714	5/7/2014	Water	Trip Blank	
PRI8-005B-SS22-050814	5/8/2014	Water	Trip Blank	

Notes:
VOC = Volatile organic compound
Analytical results are provided in Appendix I.
Field Quality Control sample results are compared to Project Quality Objectives in the Data Validation Reports provided in Appendix H.

Total numbers of Field Quality Control samples = 9 Equipment Blanks
18 Solids Field Duplicates
4 Solids - Fines Field Duplicates
5 Water Field Duplicates
26 Trip Blanks

Table 4-3
Surface Solids Samples
Phase 1A Data Report for PRI Areas 2 and 8 – 17
US Magnesium RI/FS
Rowley, Utah

Location	X Coordinate	Y Coordinate	Sample ID	Sample Date	Sample Interval (inches)	Analysis
PRI2-001	1299971	7505958	PRI2-001-SS01-010914	1/9/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI2-002	1300185	7505746	PRI2-002-SS01-010914	1/9/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI2-003	1300206	7507830	PRI2-003-SS01-010814	1/8/2014	0-6	PCB (HL), DF (HL), SVOC (HL), PAH, Metals, CN, TOC, ClO4, pH
PRI2-004	1300384	7505944	PRI2-004-SS01-010914	1/9/2014	0-6	PCB (HL), DF (HL), SVOC (HL), PAH, Metals, CN, TOC, ClO4, pH
PRI2-005	1300385	7506374	PRI2-005-SS01-010914	1/9/2014	0-6	PCB (HL), DF (HL), SVOC (HL), PAH, Metals, CN, TOC, ClO4, pH
PRI2-006	1300592	7506162	PRI2-006-SS01-050814	5/8/2014	0-6	PCB (HL), DF (HL), SVOC (HL), PAH, Metals, CN, TOC, ClO4, pH
PRI2-007	1300811	7505943	PRI2-007-SS01-010914	1/9/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI2-008	1300822	7506364	PRI2-008-SS01-010914	1/9/2014	0-6	PCB (HL), DF (HL), SVOC (HL), PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI2-009	1300909	7506413	PRI2-009-SS01-050814	5/8/2014	0-6	PCB (HL), DF (HL), SVOC (HL), PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI2-010	1301182	7506494	PRI2-010-SS01-010814	1/8/2014	0-6	PCB (HL), DF (HL), SVOC (HL), PAH, Metals, CN, TOC, ClO4, pH
PRI2-011	1301167	7506221	PRI2-011-SS01-010814	1/8/2014	0-6	PCB (HL), DF (HL), SVOC (HL), PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI2-012	1301026	7506158	PRI2-012-SS01-010814	1/8/2014	0-6	PCB (HL), DF (HL), SVOC (HL), PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI2-013	1301234	7505933	PRI2-013-SS01-010914	1/9/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI2-014	1301335	7506096	PRI2-014-SS01-050814	5/8/2014	0-6	PCB (HL), DF (HL), SVOC (HL), PAH, Metals, CN, TOC, ClO4, pH
PRI8-001	1296546	7513370	PRI8-001-SS01-121713	12/17/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI8-002	1296001	7512816	PRI8-002-SS01-121713	12/17/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI8-003	1297081	7512825	PRI8-003-SS01-121713	12/17/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI8-004	1296553	7512274	PRI8-004-SS01-121813	12/18/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI8-005A	1297110	7506096	PRI8-005A-SS01-050814	5/8/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
PRI8-005B	1297034	7511986	PRI8-005B-SS01-050814	5/8/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI8-006	1297656	7512282	PRI8-006-SS01-032514	3/25/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI8-007	1298745	7512287	PRI8-007-SS01-121813	12/18/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI8-008	1296008	7511723	PRI8-008-SS01-121813	12/18/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI8-009	1297101	7511726	PRI8-009-SS01-121813	12/18/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI8-010	1298201	7511736	PRI8-010-SS01-032614	3/26/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI8-011	1298745	7511723	PRI8-011-SS01-121713	12/17/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI8-012	1299296	7511743	PRI8-012-SS01-121713	12/17/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI8-013	1296573	7511159	PRI8-013-SS01-121813	12/18/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI8-014	1297654	7511194	PRI8-014-SS01-032614	3/26/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC, Fines
PRI8-015	1298208	7511184	PRI8-015-SS01-032514	3/25/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
PRI8-016	1298751	7511191	PRI8-016-SS01-121913	12/19/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI8-017	1298235	7510795	PRI8-017-SS01-032514	3/25/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
PRI9-001	1297507	7508020	PRI9-001-SS01-010614	1/6/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI9-002	1298330	7508180	PRI9-002-SS01-010614	1/6/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI9-003	1297930	7507593	PRI9-003-SS01-010614	1/6/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI9-004	1297505	7507190	PRI9-004-SS01-010714	1/7/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI9-005	1298352	7507185	PRI9-005-SS01-010714	1/7/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI9-006	1297925	7506763	PRI9-006-SS01-010714	1/7/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI9-007	1297501	7506327	PRI9-007-SS01-010714	1/7/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI9-008	1298344	7506319	PRI9-008-SS01-010714	1/7/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI9-009	1297920	7505896	PRI9-009-SS01-010714	1/7/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH

Table 4-3
Surface Solids Samples
Phase 1A Data Report for PRI Areas 2 and 8 – 17
US Magnesium RI/FS
Rowley, Utah

Location	X Coordinate	Y Coordinate	Sample ID	Sample Date	Sample Interval (inches)	Analysis
PRI9-010	1298340	7505472	PRI9-010-SS01-010714	1/7/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI9-011	1297912	7505050	PRI9-011-SS01-010614	1/6/2014	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI9-012	1297907	7504200	PRI9-012-SS01-122013	12/20/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI9-013	1299181	7506304	PRI9-013-SS01-122013	12/20/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI9-014	1298757	7505882	PRI9-014-SS01-122013	12/20/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI10-001	1296317	7510008	PRI10-001-SS01-121213	12/12/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI10-002	1296354	7510406	PRI10-002-SS01-121213	12/12/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI10-003	1296529	7510216	PRI10-003-SS01-121213	12/12/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI10-004	1296714	7510014	PRI10-004-SS01-121213	12/12/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI10-005	1296569	7510611	PRI10-005-SS01-121313	12/13/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI10-006	1296741	7510428	PRI10-006-SS01-121313	12/13/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI10-007	1296926	7510225	PRI10-007-SS01-121313	12/13/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI10-008	1296956	7510639	PRI10-008-SS01-121713	12/17/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI10-009	1297141	7510437	PRI10-009-SS01-121313	12/13/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI10-010	1297309	7510339	PRI10-010-SS01-121713	12/17/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI10-011	1297162	7510824	PRI10-011-SS01-121713	12/17/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI10-012	1297353	7510648	PRI10-012-SS01-121613	12/16/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI10-013	1297538	7510469	PRI10-013-SS01-121213	12/12/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI10-014	1297539	7510836	PRI10-014-SS01-121613	12/16/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI11-001	1296986	7503839	PRI11-001-SS01-050714	5/7/2014	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI11-002	1297887	7503893	PRI11-002-SS01-050714	5/7/2014	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI11-003	1298441	7503890	PRI11-003-SS01-050614	5/6/2014	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI11-004	1298370	7503418	PRI11-004-SS01-050714	5/7/2014	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI11-005	1298900	7503468	PRI11-005-SS01-050714	5/7/2014	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI11-006	1298868	7502948	PRI11-006-SS01-050714	5/7/2014	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI11-007	1296482	7503318	PRI11-007-SS01-050714	5/7/2014	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI11-008	1296022	7502825	PRI11-008-SS01-050714	5/7/2014	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI11-009	1296966	7502874	PRI11-009-SS01-050714	5/7/2014	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI11-010	1296465	7502364	PRI11-010-SS01-050714	5/7/2014	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI11-011	1297415	7502421	PRI11-011-SS01-050614	5/6/2014	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI11-012	1297877	7501951	PRI11-012-SS01-050614	5/6/2014	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI11-013	1298343	7501520	PRI11-013-SS01-050614	5/6/2014	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI11-014	1298860	7501995	PRI11-014-SS01-050614	5/6/2014	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI12-001	1299651	7502960	PRI12-001-SS01-121013	12/10/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI12-002	1299989	7503431	PRI12-002-SS01-121013	12/10/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI12-003	1299980	7503825	PRI12-003-SS01-121013	12/10/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI12-004	1300379	7503565	PRI12-004-SS01-121013	12/10/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI12-005	1300594	7503317	PRI12-005-SS01-121013	12/10/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI12-006	1300831	7503788	PRI12-006-SS01-121013	12/10/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI12-007	1301013	7503546	PRI12-007-SS01-121013	12/10/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI12-008	1301495	7503585	PRI12-008-SS01-121013	12/10/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines

Table 4-3
Surface Solids Samples
Phase 1A Data Report for PRI Areas 2 and 8 – 17
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Rowley, Utah

Location	X Coordinate	Y Coordinate	Sample ID	Sample Date	Sample Interval (inches)	Analysis
PRI12-009	1301827	7503922	PRI12-009-SS01-121013	12/10/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI12-010	1302157	7504258	PRI12-010-SS01-121013	12/10/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI12-011	1302460	7503961	PRI12-011-SS01-121113	12/11/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI12-012	1302816	7504328	PRI12-012-SS01-121213	12/12/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI12-013	1302512	7504625	PRI12-013-SS01-121213	12/12/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, Fines
PRI12-014	1302185	7504944	PRI12-014-SS01-121213	12/12/2013	0-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI13-001	1302460	7512766	PRI13-001-SS01-120613	12/6/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH, Fines
PRI13-002	1303217	7513437	PRI13-002-SS01-120713	12/7/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
PRI13-003	1303910	7512850	PRI13-003-SS01-120613	12/6/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
PRI13-004	1304631	7513524	PRI13-004-SS01-120713	12/7/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
PRI13-005	1305383	7512866	PRI13-005-SS01-120713	12/7/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
PRI13-006	1306094	7513572	PRI13-006-SS01-120713	12/7/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH, Fines
PRI13-007	1306856	7512960	PRI13-007-SS01-120713	12/7/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
PRI13-008	1308208	7512942	PRI13-008-SS01-120613	12/6/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH, Fines
PRI13-009	1308292	7511603	PRI13-009-SS01-120613	12/6/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH, Fines
PRI13-010	1308976	7510866	PRI13-010-SS01-120513	12/5/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
PRI13-011	1308271	7510087	PRI13-011-SS01-120513	12/5/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
PRI13-012	1308912	7509481	PRI13-012-SS01-120613	12/6/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
PRI13-013	1308230	7508781	PRI13-013-SS01-120513	12/5/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH, Fines
PRI13-014	1308369	7507577	PRI13-014-SS01-120513	12/5/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
PRI14-001	1302480	7503420	PRI14-001-SS01-120213	12/2/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
PRI14-002	1303225	7502936	PRI14-002-SS01-120213	12/3/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
PRI14-003	1303830	7503753	PRI14-003-SS01-120413	12/4/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH, VOC, Fines
PRI14-004	1304641	7503164	PRI14-004-SS01-120413	12/4/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH, VOC
PRI14-005	1304465	7504149	PRI14-005-SS01-121113	12/11/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH, VOC
PRI14-006	1305252	7504090	PRI14-006-SS01-120313	12/3/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH, Fines
			PRI14-006-SS01-121113	12/11/2013	0-6	VOC
PRI14-007	1306113	7503475	PRI14-007-SS01-120313	12/3/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
			PRI14-007-SS01-121113	12/11/2013	0-6	VOC
PRI14-008	1307543	7501829	PRI14-008-SS01-120213	12/2/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
			PRI14-008-SS01-121113	12/11/2013	0-6	VOC
PRI14-009	1306698	7504295	PRI14-009-SS01-120213	12/2/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH, Fines
PRI14-010	1307466	7503811	PRI14-010-SS01-120213	12/2/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH, Fines
PRI14-011	1308025	7504700	PRI14-011-SS01-120213	12/2/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
PRI14-012	1308927	7504148	PRI14-012-SS01-112513	11/25/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
PRI14-013	1309322	7505150	PRI14-013-SS01-112513	11/25/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH, VOC, Fines
PRI14-014	1310419	7504413	PRI14-014-SS01-112513	11/25/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
PRI14-015	1310817	7505278	PRI14-015-SS01-112513	11/25/2013	0-6	PCB, DF, SVOC, PAH, Metals (HL), CN, TOC, ClO4, pH
PRI15-001	1285788	7516777	PRI15-001-SS01-112313	11/23/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, pH
PRI15-002	1294242	7516763	PRI15-002-SS01-112413	11/24/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, pH
PRI15-003	1290060	7512560	PRI15-003-SS01-112313	11/23/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, pH

Table 4-3
Surface Solids Samples
Phase 1A Data Report for PRI Areas 2 and 8 – 17
US Magnesium RI/FS
Rowley, Utah

Location	X Coordinate	Y Coordinate	Sample ID	Sample Date	Sample Interval (inches)	Analysis
PRI15-004	1299365	7513404	PRI15-004-SS01-112413	11/24/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, pH
PRI15-005	1285626	7508303	PRI15-005-SS01-112213	11/22/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI15-006	1295919	7506390	PRI15-006-SS01-112313	11/23/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, pH
PRI15-007	1289191	7503829	PRI15-007-SS01-112213	11/22/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI15-008	1294141	7499645	PRI15-008-SS01-011314	1/13/2014	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI15-009	1298868	7499421	PRI15-009-SS01-112313	11/23/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, pH
PRI15-010	1298566	7495583	PRI15-010-SS01-112413	11/24/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, pH
PRI15-011	1302839	7491188	PRI15-011-SS01-112313	11/23/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, pH
PRI15-012	1298653	7487160	PRI15-012-SS01-112413	11/24/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, pH
PRI15-013	1306969	7487085	PRI15-013-SS01-112413	11/24/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, pH
PRI15-014	1302804	7482827	PRI15-014-SS01-112413	11/24/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, pH
PRI16-001	1277333	7516552	PRI16-001-SS01-112213	11/22/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI16-002	1281528	7512495	PRI16-002-SS01-112213	11/22/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI16-003	1277600	7508684	PRI16-003-SS01-112013	11/20/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI16-004	1281587	7504400	PRI16-004-SS01-112013	11/20/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI16-005	1276502	7501518	PRI16-005-SS01-112013	11/20/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI16-006	1285823	7500215	PRI16-006-SS01-111913	11/19/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI16-007	1281589	7495386	PRI16-007-SS01-111913	11/19/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI16-008	1290152	7495634	PRI16-008-SS01-112013	11/20/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI16-009	1278298	7491034	PRI16-009-SS01-111913	11/19/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI16-010	1285814	7491276	PRI16-010-SS01-111913	11/19/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI16-011	1293907	7491210	PRI16-011-SS01-112313	11/23/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, pH
PRI16-012	1282421	7486951	PRI16-012-SS01-111913	11/19/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI16-013	1291725	7487384	PRI16-013-SS01-112213	11/22/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH
PRI16-014	1285625	7482907	PRI16-014-SS01-112113	11/21/2013	0-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH

Notes:
Analytical results are provided in Appendix I.
ClO4 = Perchlorate
CN = Cyanide
DF = Dioxins and Furans
Fines = Analysis of sample particles finer than 0.25 mm (No. 60) sieve
HL = High level analysis
PAH= Polycyclic aromatic hydrocarbons
PCB = Polychlorinated biphenyls
SVOC = Semi-volatile organic compound
TOC = Total organic carbon
VOC = Volatile organic compound
X and Y Coordinates = U.S. State Plane, NAD 83, Utah North Zone (U.S. Survey Feet)

Table 4-4
Subsurface Solids Samples
Phase 1A Data Report for PRI Areas 2 and 8 – 17
US Magnesium RI/FS
Rowley, Utah

Location	X Coordinate	Y Coordinate	Sample Date	Sample ID	Sample Interval (feet)	Analysis
PRI2-006	1300592	7506162	5/6-7/2014	PRI2-006-SB01-0.5-050614	0.5-2	PCB (HL), DF (HL), SVOC (HL), PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-006-SB02-2-050614	2-5	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-006-SB03-5-050614	5-10	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-006-SB04-11-050614	11-17	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-006-SB05-20-050714	20-22	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-006-SB06-22-050714	22-24	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-006-SB07-24-050714	24-26	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-006-SB08-27-050714	27-29	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
PRI2-009	1300909	7506413	5/6/2014	PRI2-009-SB01-0.5-050614	0.5-2	PCB (HL), DF (HL), SVOC (HL), PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-009-SB02-10-050614	10-12	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-009-SB05-12-050614	12-14	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-009-SB06-14-050614	14-18	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-009-SB07-18-050614	18-20	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-009-SB08-21-050614	21-23	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-009-SB04-26-050614	26-28	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-009-SB03-28.5-050614	28.5-30.5	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
PRI2-014	1301335	7506096	5/7/2014	PRI2-014-SB01-0.5-050714	0.5-2	PCB (HL), DF (HL), SVOC (HL), PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-014-SB02-3-050714	3-10	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-014-SB03-10-050714	10-20	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-014-SB04-22-050714	22-27	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-014-SB05-27-050714	27-30	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-014-SB06-30-050714	30-31	PCB (HL), DF (HL), SVOC (HL), PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI2-014-SB07-31-050714	31-33	PCB (HL), DF (HL), SVOC (HL), PAH, Metals, CN, TOC, ClO4, pH, VOC
PRI8-017SB	1298220	7510594	12/16/2013	PRI8-017-SB01-6-121613	6-8	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI8-017-SB02-8-121613	8-10	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI8-017-SB03-10-121613	10-12	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
PRI10-008	1296956	7510639	5/5/2014	PRI10-008-SB01-0.5-050514	0.5-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI10-008-SB02-2-050514	2-4	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI10-008-SB03-4-050514	4-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI10-008-SB04-6-050514	6-8	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI10-008-SB05-8-050514	8-9	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
PRI14-005	1304465	7504149	12/16/2013	PRI14-005-SB01-0.5-121613	0.5-2	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI14-005-SB02-2-121613	2-4	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC
				PRI14-005-SB03-4-121613	4-6	PCB, DF, SVOC, PAH, Metals, CN, TOC, ClO4, pH, VOC

Notes:
Analytical results are provided in Appendix I.
ClO4 = Perchlorate
CN = Cyanide
DF = Dioxins and furans
HL = High level analysis
PAH= Polycyclic aromatic hydrocarbons
PCB = Polychlorinated biphenyls
SVOC = Semi-volatile organic compound
TOC = Total organic carbon
VOC = Volatile organic compound
X and Y Coordinates = U.S. State Plane, NAD 83, Utah North Zone (U.S. Survey Feet)

Table 4-5
Monitoring Well Summary
Phase 1A Data Report for PRI Areas 2 and 8 – 17
US Magnesium RI/FS
Rowley, Utah

Well ID	Installation Date	Top of Casing Elevation	X Coordinate	Y Coordinate	Total Depth (ft btoc)*	Top of Screen Interval (ft bgs)	Bottom of Screen Interval (ft bgs)	Screen Length (ft)
New Monitoring Wells								
MW-13A	12/4/2013	4221.96	1299498	7511526	11.04	2.5	7.5	5
MW-13B	12/4/2013	4221.88	1299492	7511522	21.34	9	19	10
MW-14	12/5/2013	4219.60	1300042	7511069	18.86	5	15	10
MW-15A	12/5/2013	4220.98	1301049	7509690	10.98	2	7	5
MW-15B	12/5/2013	4220.71	1301053	7509687	21.08	9	19	10
MW-16	1/13/2014	NS	NS	NS	4.26	0.5	1.5	1
MW-17	12/9/2013	4219.78	1301539	7506829	21.10	7	17	10
MW-18	12/3/2013	4229.29	1298256	7504882	24.38	12	22	10
MW-19A	12/9/2013	4218.51	1301866	7506319	19.48	7	17	10
MW-19B	12/9/2013	4218.35	1301868	7506316	35.90	23	33	10
MW-20A	12/6/2013	4227.83	1300411	7504087	20.24	12	17	5
MW-20B	12/6/2013	4228.14	1300405	7504087	32.26	19	29	10
Existing Monitoring Wells								
LF-01	6/10/2003	4224.10	1300634	7505771	18.24	5.4	15.4	10
LF-03	6/12/2003	4220.06	1300940	7506606	15.18	2	12	10
MW-04A	4/27/2004	4224.03	1299042	7506526	16.78	4	14	10
MW-05A	4/29/2004	4226.48	1299919	7506531	20.84	8	18	10
MW-06	4/29/2004	4225.77	1299844	7506044	18.94	7	17	10
MW-07	4/29/2004	4227.05	1299852	7505711	19.65	7.5	17.5	10
MW-08A	5/11/2004	4225.62	1300401	7506516	22.40	6	21	15
MW-08B	5/12/2004	4225.22	1300406	7506516	39.46	27	37	10
PZ-01	6/10/2003	4224.94	1302371	7503752	21.18	9.2	19.2	10
PZ-04	6/11/2003	4224.40	1297774	7507872	19.80	6.5	16.5	10
PZ-06	6/11/2003	4214.22	1307692	7512138	17.32	3.5	13.5	10
PZ-08	4/20/2004	4218.71	1302052	7508960	16.24	3.5	13.5	10
PZ-10	4/21/2004	4218.72	1303141	7507906	16.92	4	14	10
PZ-12	4/21/2004	4219.23	1304463	7507038	16.82	4	14	10
PZ-16	4/22/2004	4218.44	1304712	7505173	16.80	4	14	10
PZ-18	4/22/2004	4217.96	1303883	7504495	16.22	3.3	13.3	10
PZ-22	5/13/2004	4220.26	1302067	7505822	15.86	3	13	10
PZ-24	5/13/2004	4219.53	1301343	7507153	15.82	3	13	10
PZ-26	4/20/2004	4220.85	1302171	7508114	16.44	3.5	13.5	10

Notes:

* Monitoring well total depth measurements were collected after well development during Phase 1A field activities

bgs = Below ground surface

btoc = Below top of casing

ft = feet

NS = Not surveyed (MW-16 was not surveyed due to inaccessibility of the well following construction)

Top of Casing Elevation = Feet above sea level, NAVD88

X and Y Coordinates = U.S. State Plane, NAD 83, Utah North Zone (U.S. Survey Feet)

Table 4-6
Groundwater Samples
Phase 1A Data Report for PRI Areas 2 and 8 – 17
US Magnesium RI/FS
Rowley, Utah

Well Identifier	Sample Date	Temperature (°C)	Conductivity (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Chlorine (mg/L)	Sample ID	Analysis
LF-01	2/17/2014	14.48	44.0	0.00	7.17	-97	5.1	0.00	LF-01-01-021714	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									LF-01-01-021714-FF	Dissolved Metals, CN
LF-03	2/17/2014	14.52	84.5	0.00	6.89	-121	7.6	0.00	LF-03-01-021714	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									LF-03-01-021714-FF	Dissolved Metals, CN
MW-13A	2/4/2014	4.60	58.9	0.00	5.73	97	9.8	0.05	MW-13A-01-020414	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									MW-13A-01-020414-FF	Dissolved Metals, CN
MW-13B	2/4/2014	10.22	69.5	0.01	5.87	26	206	0.04	MW-13B-01-020414	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									MW-13B-01-020414-FF	Dissolved Metals, CN
MW-14	2/5/2014	11.35	61.7	0.00	5.34	-8	2.6	0.03	MW-14-01-020514	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									MW-14-01-020514-FF	Dissolved Metals, CN
MW-15A	2/5/2014	5.76	51.1	0.00	5.5	77	96.7	0.01	MW-15A-01-020514	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									MW-15A-01-020514-FF	Dissolved Metals, CN
MW-15B	2/5/2014	9.21	56.0	0.00	5.34	-12	130	0.00	MW-15B-01-020514	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									MW-15B-01-020514-FF	Dissolved Metals, CN
MW-17	2/5/2014	12.79	156	0.00	6.41	-253	0.0	0.11	MW-17-01-020514	PCB, DF, SVOC, PAH, Total Metals (HL), CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									MW-17-01-020514-FF	Dissolved Metals (HL), CN
MW-18	2/13/2014	17.03	28.8	0.00	7.40	103	8.0	0.07	MW-18-01-021314	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									MW-18-01-021314-FF	Dissolved Metals, CN
MW-19A	2/14/2014	13.01	171	0.00	7.07	-250	0.0	0.08	MW-19A-01-021414	PCB, DF, SVOC, PAH, Total Metals (HL), CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									MW-19A-01-021414-FF	Dissolved Metals (HL), CN
MW-19B	2/14/2014	15.89	83.3	0.00	8.21	-409	0.0	0.02	MW-19B-01-021414	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									MW-19B-01-021414-FF	Dissolved Metals, CN
MW-20A	1/31/2014	18.24	73.8	0.00	6.22	-117	7.1	0.02	MW-20A-01-013114	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									MW-20A-01-013114-FF	Dissolved Metals, CN
MW-20B	1/31/2014	14.88	414	0.36	5.30	69	121	0.14	MW-20B-01-013114	PCB, DF, SVOC, PAH, Total Metals (HL), CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, CrIV
									MW-20B-01-013114-FF	Dissolved Metals (HL), CN
MW-4A	2/5/2014	14.10	51.0	0.00	6.02	-24	2.5	0.00	MW-4A-01-020514	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									MW-4A-01-020514-FF	Dissolved Metals, CN
MW-5A	2/7/2014	15.12	82.0	0.0	6.95	-171	9.8	0.00	MW-5A-01-020714	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									MW-5A-01-020714-FF	Dissolved Metals, CN
MW-6	2/7/2014	15.17	36.1	0.00	7.16	-217	0.0	0.00	MW-6-01-020714	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									MW-6-01-020714-FF	Dissolved Metals, CN
MW-7	2/6/2014	15.69	145	0.26	5.31	-387	0.0	0.00	MW-7-01-020614	PCB, DF, SVOC, PAH, Total Metals (HL), CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									MW-7-01-020614-FF	Dissolved Metals (HL), CN
MW-8A	2/18/2014	16.12	67.5	0.00	6.51	-124	0.0 *	0.00	MW-8A-01-021814	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									MW-8A-01-021814-FF	Dissolved Metals, CN

Table 4-6
Groundwater Samples
Phase 1A Data Report for PRI Areas 2 and 8 – 17
US Magnesium RI/FS
Rowley, Utah

Well Identifier	Sample Date	Temperature (°C)	Conductivity (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Chlorine (mg/L)	Sample ID	Analysis
MW-8B	2/18/2014	17.43	94.4	2.95	7.39	-364	0.0 *	0.00	MW-8B-01-021814	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									MW-8B-01-021814-FF	Dissolved Metals, CN
PZ-01	2/4/2014	13.59	358	3.75	6.32	14	0.0	0.06	PZ-01-01-020414	PCB, DF, SVOC, PAH, Total Metals (HL), CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									PZ-01-01-020414-FF	Dissolved Metals (HL), CN
PZ-04	2/13/2014	17.98	164	3.32	7.20	184	0.0	0.06	PZ-04-01-021314	PCB, DF, SVOC, PAH, Total Metals (HL), CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									PZ-04-01-021314-FF	Dissolved Metals (HL), CN
PZ-06	1/31/2014	11.12	83.2	0.00	7.42	-238	0.3	0.02	PZ-06-01-013114	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									PZ-06-01-013114-FF	Dissolved Metals, CN
PZ-08	2/5/2014	12.09	44.4	0.00	5.74	-25	0.0	0.00	PZ-08-01-020514	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									PZ-08-01-020514-FF	Dissolved Metals, CN
PZ-10	2/4/2014	13.62	52.2	0.00	6.24	-125	0.0	0.00	PZ-10-01-020414	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									PZ-10-01-020414-FF	Dissolved Metals, CN
PZ-12	2/4/2014	12.85	48.3	0.00	5.91	-58	0.0	0.10	PZ-12-01-020414	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									PZ-12-01-020414-FF	Dissolved Metals, CN
PZ-16	2/3/2014	12.09	74.4	0.00	6.61	-97	0.2	0.02	PZ-16-01-020314	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									PZ-16-01-020314-FF	Dissolved Metals, CN
PZ-18	2/3/2014	14.08	150.0	1.15	7.78	-371	10.9	0.00	PZ-18-01-020314	PCB, DF, SVOC, PAH, Total Metals (HL), CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									PZ-18-01-020314-FF	Dissolved Metals (HL), CN
PZ-22	2/3/2014	12.59	253	0.00	7.24	-245	0.0	0.11	PZ-22-01-020314	PCB, DF, SVOC, PAH, Total Metals (HL), CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									PZ-22-01-020314-FF	Dissolved Metals (HL), CN
PZ-24	2/7/2014	12.29	87.3	0.00	6.40	-64	9.4	0.00	PZ-24-01-020714	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									PZ-24-01-020714-FF	Dissolved Metals, CN
PZ-26	2/5/2014	13.11	55.3	0.00	5.73	-50	4.5	0.00	PZ-26-01-020514	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr IV
									PZ-26-01-020514-FF	Dissolved Metals, CN

Notes:
Analytical results for Groundwater samples are provided in Appendix I.
* Value noted as suspect due to inconsistency with sample appearance
°C = degree Celsius
ClO4 = Perchlorate
CN = Cyanide
Cr IV = Hexavalent chromium
DF = Dioxins and furans
DO = Dissolved oxygen
HAA = Haloacetic acid
HL = High level analysis
mg/L = Milligrams per liter
NTU = Nephelometric turbidity units
ORP = Oxidation-reduction potential
PAH = Polycyclic aromatic hydrocarbons
PCB = Polychlorinated biphenyls
SVOC = Semi-volatile organic compound
TDS = Total dissolved solids
TOC = Total organic carbon
VOC = Volatile organic compound

Table 4-7
Surface Water Samples
Phase 1A Data Report for PRI Areas 2 and 8 – 17
US Magnesium RI/FS
Rowley, Utah

Location	Sample Date	Temperature (°C)	Conductivity (mS/cm)	DO (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Chlorine (mg/L)	Sample ID	Analysis
PRI4-008	11/26/2013	9.84	245	3.20	5.36	420	3250	0.00	PRI4-008-SW01-112613	PCB (HL), DF (HL), SVOC (HL), PAH (HL), Total Metals (HL) CN, TOC, VOC, HAA ClO4, Anions, Alkalinity, TDS, Cr(VI)
									PRI4-008-SW01-112613-FF	Dissolved Metals (HL)
PRI4-013	11/25/2013	21.49	371	3.25	5.62	33.6	3520	0.00	PRI4-013-SW01-112513	PCB (HL), DF (HL), SVOC (HL), PAH (HL), Total Metals (HL) CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr(VI)
									PRI4-013-SW01-112513-FF	Dissolved Metals (HL)
PRI7-001	11/20/2013	7.70	217	5.30	6.85	2860	5.2	0.07	PRI7-001-SW01-11201-112013	PCB, DF, SVOC, PAH, Total Metals (HL), CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr(VI)
									PRI7-001-SW01-11201-112013-FF	Dissolved Metals (HL)
PRI7-003	11/20/2013	12.57	6.82	3.20	6.82	-66	123	0.17	PRI7-003-SW01-11201-112013	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr(VI)
									PRI7-003-SW01-11201-112013-FF	Dissolved Metals
PRI7-007	11/21/2013	12.10	85.6	1.20	5.45	30	0.1	0.00	PRI7-007-SW01-112113	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr(VI)
									PRI7-007-SW01-112113-FF	Dissolved Metals
PRI7-013	11/22/2013	12.49	58.1	0.70	5.60	-38	0	0.00	PRI7-013-SW01-112213	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, Anions, Alkalinity, TDS, Cr(VI)
									PRI7-013-SW01-112213-FF	Dissolved Metals
									PRI7-013-SW01-112213-02 [1]	ClO4
									PRI7-013-SW01-112213-45 [1]	ClO4
PRI7-014	11/22/2013	5.66	54.8	4.50	6.25	-56	64.5	0.00	PRI7-014-SW01-112213	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr(VI)
									PRI7-014-SW01-112213-FF	Dissolved Metals
PRI8-005	11/25/2013	4.60	65.4	7.99	6.15	56	30.1	0.00	PRI8-005-SW01-112513	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr(VI)
									PRI8-005-SW01-112513-FF	Dissolved Metals
PRI8-018	2/12/2014	9.36	60.1	2.86	0.70	510	48.1	0.08	PRI8-018-SW-01-021214	PCB (HL), DF (HL), SVOC (HL), PAH (HL), Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr(VI)
									PRI8-018-SW-01-021214-FF	Dissolved Metals, CN
PRI8-019	2/12/2014	9.53	54.2	4.36	1.07	511	8.2	0.10	PRI8-019-SW-01-021214	PCB (HL), DF (HL), SVOC (HL), PAH (HL), Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr(VI)
									PRI8-019-SW-01-021214-FF	Dissolved Metals, CN
PR18-020	2/11/2014	9.02	58.6	4.36	0.44	508	23.8	0.12	PRI8-020-SW01-021114	PCB (HL), DF (HL), SVOC (HL), PAH (HL), Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr(VI)
									PRI8-020-SW01-021114-FF	Dissolved Metals, CN
PR18-021	2/11/2014	11.08	58.3	5.66	0.39	513	1.5	0.11	PRI8-021-SW01-021114	PCB (HL), DF (HL), SVOC (HL), PAH (HL), Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr(VI)
									PRI8-021-SW01-021114-FF	Dissolved Metals, CN
PR114-005	2/11/2014	11.70	5.98	3.54	5.98	-57	>1000	0.11	PRI14-005-SW01-021114	PCB, DF, SVOC, PAH, Total Metals, CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr(VI)
									PRI14-005-SW01-021114-FF	Dissolved Metals, CN
PRI14-006	11/20/2013	6.85	195	5.95	7.18	230	1.2	0.03	PRI14-006-SW01-11201-112013	PCB, DF, SVOC, PAH, Total Metals (HL), CN, TOC, VOC, HAA, ClO4, Anions, Alkalinity, TDS, Cr(VI)
									PRI14-006-SW01-11201-112013-FF	Dissolved Metals (HL)
PRI14-008	11/19/2013	7.76	568	2.35	6.48	207	0	0.00	PRI14-008-SW01-111913	PCB, DF, SVOC, PAH (HL), Total Metals (HL) CN, TOC, VOC, HAA ClO4, Anions, Cr(VI)
									PRI14-008-SW01-111913-FF	Dissolved Metals (HL)
PRI14-013	11/19/2013	7.11	516	2.30	6.90	175	0.6	0.00	PRI14-013-SW01-111913	PCB, DF, SVOC, PAH (HL), Total Metals (HL) CN, TOC, VOC, HAA ClO4, Anions, Cr(VI)
									PRI14-013-SW01-111913-FF	Dissolved Metals (HL)

Notes:

[1] Sample PRI7-013-SW01-112213-02 was field filtered using a 0.45 µm pre-filter and 0.2 µm disc filter. Sample PRI7-013-SW01-112213-45 was field filtered using a 0.45-µm filter only. All other water samples for perchlorate analysis were field filtered using a 0.45-µm filter.

Analytical results for Groundwater samples are provided in Appendix I.

°C = degree Celsius
ClO4 = Perchlorate
CN = Cyanide
Cr(VI) = Hexavalent chromium
DF = Dioxins and furans
DO = Dissolved oxygen
HAA = Haloacetic acid
HL = High level analysis
mg/L = Milligrams per liter
mV = Millivolts
NTU = Nephelometric Turbidity Units
ORP = Oxidation-reduction potential
PAH= Polycyclic aromatic hydrocarbons
PCB = Polychlorinated biphenyls
SVOC = Semi-volatile organic compound
TDS = Total dissolved solids
TOC = Total organic carbon
VOC = Volatile organic compound

Table 4-8
Staff Gauge Summary
Phase 1A Data Report for PRI Areas 2 and 8 – 17
US Magnesium RI/FS
Rowley, Utah

Staff Gauge ID	Installation Date	X Coordinate	Y Coordinate	Elevation*
SG-1	1/31/2014	1307519	7511950	4205.53
SG-2	12/11/2013	1299009	7510854	4214.34
SG-3	12/11/2013	1302093	7508074	4214.13
SG-4	12/11/2013	1302200	7508091	4214.00
SG-5	12/11/2013	1304838	7506620	4214.35

Notes:

X and Y Coordinates = U.S. State Plane, NAD 83, Utah North Zone (U.S. Survey Feet)

* NAVD88 (U.S. Survey Feet), elevation recorded to the "zero" mark

Table 4-9
Water Level Measurements
US Magnesium RI/FS
Rowley, Utah

Well / Staff Gauge ID	Reference Elevation*	27-Jan-14		24-Feb-14		24-Mar-14		25-Apr-14		23-May-14		13-Jun-14		15-Jul-14		21-Aug-14	
		Measured Water Level (ft)**	Water Level Elevation (ft)	Measured Water Level (ft)**	Water Level Elevation (ft)	Measured Water Level (ft)**	Water Level Elevation (ft)	Measured Water Level (ft)**	Water Level Elevation (ft)	Measured Water Level (ft)**	Water Level Elevation (ft)	Measured Water Level (ft)**	Water Level Elevation (ft)	Measured Water Level (ft)**	Water Level Elevation (ft)	Measured Water Level (ft)**	Water Level Elevation (ft)
LF-01	4224.10	8.14	4215.96	8.10	4216.00	8.25	4215.85	8.26	4215.84	8.34	4215.76	8.35	4215.75	8.43	4215.67	8.52	4215.58
LF-03	4220.06	4.46	4215.60	4.52	4215.54	4.63	4215.43	4.72	4215.34	4.82	4215.24	4.92	4215.14	4.98	4215.08	5.01	4215.05
MW-04A	4224.03	7.85	4216.18	7.73	4216.30	7.83	4216.20	7.89	4216.14	7.95	4216.08	7.60	4216.43	8.01	4216.02	8.21	4215.82
MW-05A	4226.48	10.60	4215.88	10.52	4215.96	10.61	4215.87	10.71	4215.77	10.81	4215.67	10.76	4215.72	10.97	4215.51	11.00	4215.48
MW-06	4225.77	9.63	4216.14	9.59	4216.18	9.70	4216.07	9.73	4216.04	9.76	4216.01	9.79	4215.98	9.81	4215.96	9.91	4215.86
MW-07	4227.05	10.72	4216.33	10.74	4216.31	10.92	4216.13	10.92	4216.13	10.96	4216.09	10.96	4216.09	10.97	4216.08	11.09	4215.96
MW-08A	4225.62	9.91	4215.71	9.86	4215.76	9.98	4215.64	10.08	4215.54	10.18	4215.44	10.20	4215.42	10.35	4215.27	10.37	4215.25
MW-08B	4225.22	9.58	4215.64	9.56	4215.66	9.66	4215.56	9.75	4215.47	9.85	4215.37	9.86	4215.36	9.96	4215.26	10.01	4215.21
MW-13A	4221.96	7.96	4214.00	7.59	4214.37	8.79	4213.17	8.27	4213.69	8.55	4213.41	8.62	4213.34	9.26	4212.70	9.51	4212.45
MW-13B	4221.88	7.81	4214.07	7.53	4214.35	7.92	4213.96	8.18	4213.70	8.45	4213.43	8.53	4213.35	9.05	4212.83	9.26	4212.62
MW-14	4219.60	5.55	4214.05	5.53	4214.07	5.92	4213.68	5.88	4213.72	6.26	4213.34	6.77	4212.83	7.08	4212.52	7.15	4212.45
MW-15A	4220.98	6.19	4214.79	6.36	4214.62	6.67	4214.31	6.83	4214.15	6.98	4214.00	7.12	4213.86	7.39	4213.59	7.51	4213.47
MW-15B	4220.71	5.93	4214.78	6.11	4214.60	6.40	4214.31	6.55	4214.16	6.70	4214.01	6.84	4213.87	7.09	4213.62	7.20	4213.51
MW-16	NS	NR	NR	NR	NR	NR	NR	2.92	NS	3.15	NS	3.10	NS	2.73	NS	NR	NR
MW-17	4219.78	4.49	4215.29	4.63	4215.15	4.77	4215.01	4.90	4214.88	5.02	4214.76	5.15	4214.63	5.24	4214.54	5.19	4214.59
MW-18	4229.29	14.13	4215.16	13.98	4215.31	14.03	4215.26	13.95	4215.34	13.95	4215.34	13.94	4215.35	13.84	4215.45	14.19	4215.10
MW-19A	4218.51	3.31	4215.20	3.55	4214.96	3.75	4214.76	3.86	4214.65	3.96	4214.55	4.10	4214.41	4.18	4214.33	4.10	4214.41
MW-19B	4218.35	2.53	4215.82	2.74	4215.61	2.93	4215.42	3.10	4215.25	3.26	4215.09	3.40	4214.95	3.49	4214.86	3.46	4214.89
MW-20A	4227.83	13.21	4214.62	13.10	4214.73	13.27	4214.56	13.12	4214.71	13.28	4214.55	13.30	4214.53	13.34	4214.49	13.63	4214.20
MW-20B	4228.14	14.10	4214.04	14.00	4214.14	14.14	4214.00	13.99	4214.15	14.13	4214.01	14.13	4214.01	14.13	4214.01	14.40	4213.74
PZ-01	4224.94	13.43	4211.51	12.84	4212.10	13.08	4211.86	13.13	4211.81	13.09	4211.85	13.21	4211.73	13.50	4211.44	13.64	4211.30
PZ-04	4224.40	8.95	4215.45	8.93	4215.47	9.05	4215.35	9.11	4215.29	9.29	4215.11	9.36	4215.04	9.61	4214.79	9.68	4214.72
PZ-06	4214.22	10.53	4203.69	10.23	4203.99	10.18	4204.04	9.96	4204.26	10.04	4204.18	10.42	4203.80	10.49	4203.73	10.99	4203.23
PZ-08	4218.71	4.63	4214.08	4.54	4214.17	4.42	4214.29	5.19	4213.52	5.55	4213.16	5.98	4212.73	6.25	4212.46	5.90	4212.81
PZ-10	4218.72	5.88	4212.84	5.74	4212.98	5.99	4212.73	6.19	4212.53	6.35	4212.37	6.50	4212.22	6.64	4212.08	6.68	4212.04
PZ-12	4219.23	6.81	4212.42	6.66	4212.57	6.74	4212.49	6.90	4212.33	7.27	4211.96	7.60	4211.63	7.75	4211.48	7.83	4211.40
PZ-16	4218.44	4.92	4213.52	4.56	4213.88	4.94	4213.50	5.21	4213.23	5.48	4212.96	5.82	4212.62	6.10	4212.34	6.18	4212.26
PZ-18	4217.96	6.02	4211.94	5.43	4212.53	5.04	4212.92	5.46	4212.50	5.92	4212.04	6.31	4211.65	6.54	4211.42	6.59	4211.37
PZ-22	4220.26	5.38	4214.88	5.45	4214.81	5.67	4214.59	5.72	4214.54	5.84	4214.42	5.95	4214.31	6.05	4214.21	6.00	4214.26
PZ-24	4219.53	4.05	4215.48	4.19	4215.34	4.32	4215.21	4.44	4215.09	4.56	4214.97	4.69	4214.84	4.78	4214.75	4.74	4214.79
PZ-26	4220.85	5.48	4215.37	5.57	4215.28	6.02	4214.83	6.35	4214.50	6.55	4214.30	6.76	4214.09	6.86	4213.99	6.83	4214.02
SG-1	4205.53	NR	NR	0.95	4206.48	1.10	4206.63	0.68	4206.21	0.38	4205.91	NR	NR	NR	NR	NR	NR
SG-2	4214.34	1.20	4215.54	1.10	4215.44	0.90	4215.24	0.76	4215.10	0.60	4214.94	0.40	4214.74	0.36	4214.70	0.36	4214.70
SG-3	4214.13	1.44	4215.57	1.29	4215.42	1.10	4215.23	0.96	4215.09	0.81	4214.94	0.66	4214.79	0.59	4214.72	0.60	4214.73
SG-4	4214.00	1.55	4215.55	1.44	4215.44	1.26	4215.26	1.02	4215.02	0.97	4214.97	0.78	4214.78	0.71	4214.71	0.71	4214.71
SG-5	4214.35	1.17	4215.52	1.06	4215.41	0.85	4215.20	0.66	4215.01	0.58	4214.93	0.40	4214.75	0.36	4214.71	0.36	4214.71

Table 4-9
Water Level Measurements
US Magnesium RI/FS
Rowley, Utah

Well / Staff Gauge ID	Reference Elevation*	30-Sep-14		24-Oct-14		21-Nov-14		18-Dec-14		13-Jan-15		13-Feb-15		6-Mar-15	
		Measured Water Level (ft)**	Water Level Elevation (ft)	Measured Water Level (ft)**	Water Level Elevation (ft)	Measured Water Level (ft)**	Water Level Elevation (ft)	Measured Water Level (ft)**	Water Level Elevation (ft)	Measured Water Level (ft)**	Water Level Elevation (ft)	Measured Water Level (ft)**	Water Level Elevation (ft)	Measured Water Level (ft)**	Water Level Elevation (ft)
LF-01	4224.10	8.15	4215.95	8.43	4215.67	8.26	4215.84	8.38	4215.72	8.08	4216.02	8.24	4215.86	8.36	4215.74
LF-03	4220.06	4.74	4215.32	4.87	4215.19	4.73	4215.33	4.58	4215.48	4.28	4215.78	4.47	4215.59	4.64	4215.42
MW-04A	4224.03	8.14	4215.89	8.26	4215.77	8.28	4215.75	8.18	4215.85	8.09	4215.94	7.84	4216.19	8.17	4215.86
MW-05A	4226.48	10.78	4215.70	10.90	4215.58	10.82	4215.66	10.74	4215.74	10.57	4215.91	10.50	4215.98	10.70	4215.78
MW-06	4225.77	9.50	4216.27	9.80	4215.97	9.72	4216.05	9.82	4215.95	9.54	4216.23	9.67	4216.10	9.84	4215.93
MW-07	4227.05	10.63	4216.42	10.95	4216.10	10.85	4216.20	11.01	4216.04	10.66	4216.39	10.98	4216.07	11.06	4215.99
MW-08A	4225.62	10.12	4215.50	10.23	4215.39	10.15	4215.47	10.00	4215.62	9.82	4215.80	9.83	4215.79	9.99	4215.63
MW-08B	4225.22	9.76	4215.46	9.89	4215.33	9.80	4215.42	9.72	4215.50	9.51	4215.71	9.55	4215.67	9.70	4215.52
MW-13A	4221.96	9.15	4212.81	8.98	4212.98	8.44	4213.52	7.94	4214.02	7.38	4214.58	7.55	4214.41	7.89	4214.07
MW-13B	4221.88	8.92	4212.96	8.74	4213.14	8.39	4213.49	7.88	4214.00	7.34	4214.54	7.55	4214.33	7.85	4214.03
MW-14	4219.60	6.59	4213.01	6.53	4213.07	6.36	4213.24	5.83	4213.77	5.07	4214.53	6.10	4213.50	5.60	4214.00
MW-15A	4220.98	7.18	4213.80	7.36	4213.62	7.15	4213.83	6.64	4214.34	6.10	4214.88	6.53	4214.45	6.70	4214.28
MW-15B	4220.71	6.85	4213.86	7.00	4213.71	6.83	4213.88	6.35	4214.36	5.84	4214.87	6.25	4214.46	6.41	4214.30
MW-16	NS	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
MW-17	4219.78	4.91	4214.87	4.93	4214.85	4.79	4214.99	4.59	4215.19	4.24	4215.54	4.54	4215.24	4.69	4215.09
MW-18	4229.29	14.10	4215.19	14.32	4214.97	14.23	4215.06	14.35	4214.94	14.22	4215.07	14.25	4215.04	14.25	4215.04
MW-19A	4218.51	3.89	4214.62	3.91	4214.60	3.74	4214.77	3.45	4215.06	NR	NR	NR	NR	NR	NR
MW-19B	4218.35	3.14	4215.21	3.22	4215.13	3.05	4215.30	2.79	4215.56	NR	NR	NR	NR	NR	NR
MW-20A	4227.83	13.35	4214.48	13.69	4214.14	13.42	4214.41	13.64	4214.19	13.39	4214.44	13.57	4214.26	13.63	4214.20
MW-20B	4228.14	14.17	4213.97	14.41	4213.73	14.21	4213.93	14.39	4213.75	14.15	4213.99	14.35	4213.79	14.40	4213.74
PZ-01	4224.94	13.60	4211.34	13.65	4211.29	13.65	4211.29	13.53	4211.41	12.73	4212.21	12.53	4212.41	13.20	4211.74
PZ-04	4224.40	9.55	4214.85	9.58	4214.82	9.53	4214.87	9.40	4215.00	9.29	4215.11	9.22	4215.18	9.32	4215.08
PZ-06	4214.22	10.86	4203.36	11.21	4203.01	11.63	4202.59	11.25	4202.97	11.03	4203.19	10.62	4203.60	9.39	4204.83
PZ-08	4218.71	6.15	4212.56	6.01	4212.70	5.90	4212.81	5.31	4213.40	4.57	4214.14	5.00	4213.71	4.60	4214.11
PZ-10	4218.72	6.45	4212.27	6.40	4212.32	6.23	4212.49	5.93	4212.79	5.65	4213.07	5.75	4212.97	5.94	4212.78
PZ-12	4219.23	7.62	4211.61	7.61	4211.62	7.40	4211.83	6.76	4212.47	6.34	4212.89	6.56	4212.67	6.93	4212.30
PZ-16	4218.44	5.80	4212.64	5.67	4212.77	5.45	4212.99	4.88	4213.56	3.85	4214.59	4.35	4214.09	4.74	4213.70
PZ-18	4217.96	6.21	4211.75	6.15	4211.81	6.01	4211.95	4.81	4213.15	NR	NR	NR	NR	4.68	4213.28
PZ-22	4220.26	5.62	4214.64	5.83	4214.43	5.63	4214.63	5.39	4214.87	4.79	4215.47	5.26	4215.00	5.47	4214.79
PZ-24	4219.53	4.48	4215.05	4.51	4215.02	4.36	4215.17	4.14	4215.39	3.82	4215.71	4.09	4215.44	4.23	4215.30
PZ-26	4220.85	6.49	4214.36	6.40	4214.45	6.19	4214.66	5.54	4215.31	5.24	4215.61	5.46	4215.39	5.74	4215.11
SG-1	4205.53	0.39	4205.92	NR	NR	NR	NR	NR	NR	0.30	4205.83	0.66	4206.19	0.80	4206.33
SG-2	4214.34	0.71	4215.05	0.80	4215.14	0.96	4215.30	1.21	4215.55	1.38	4215.72	1.25	4215.59	1.06	4215.40
SG-3	4214.13	0.96	4215.09	1.01	4215.14	1.16	4215.29	1.40	4215.53	1.60	4215.73	1.43	4215.56	1.26	4215.39
SG-4	4214.00	1.08	4215.08	1.13	4215.13	1.28	4215.28	1.54	4215.54	1.73	4215.73	1.66	4215.66	1.39	4215.39
SG-5	4214.35	0.75	4215.10	0.76	4215.11	0.90	4215.25	1.16	4215.51	1.36	4215.71	1.19	4215.54	1.01	4215.36

Notes:

* Well elevations were measured from the top of casing. Staff gauge elevations were measured from the "zero" mark. Elevations were surveyed in feet above sea level (NAVD88).

** Water levels in wells were measured as depth to water from the top of casing. Staff gauge water levels were measured as heights above the "zero" mark.

ft = Feet

NR = No measurement recorded. MW-16 and MW-19A/B were not accessible during several gauging events. Surface water bodies at SG-1 and SG5 were dry where noted that measurements were not recorded.

NS = Not surveyed (MW-16 was not surveyed due to inaccessibility of the well following construction).

Table 6-1
Prevalence Table for Solids Sample Analysis – All Outer PRIs
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
2,3,7,8-TCDD	ug/kg	179	12	7	0.0046	0.00042	0.0022	0.0029	3.8	0.000016	0.034	PRI2-006
1,2,3,7,8-PeCDD	ug/kg	179	54	30	0.097	0.000053	0.0071	0.015	4.0	0.000027	0.17	PRI2-005
1,2,3,4,7,8-HxCDD	ug/kg	179	53	30	0.034	0.000054	0.0054	0.014	3.5	0.000011	0.13	PRI2-004
1,2,3,6,7,8-HxCDD	ug/kg	179	86	48	0.31	0.00009	0.019	0.030	2.8	0.0000097	0.093	PRI2-005
1,2,3,7,8,9-HxCDD	ug/kg	179	87	49	0.43	0.000041	0.023	0.044	3.0	0.00002	0.27	PRI2-005
1,2,3,4,6,7,8-HpCDD	ug/kg	179	151	84	2	0.00022	0.074	0.20	2.9	0.000081	0.96	PRI2-005
OCDD	ug/kg	179	136	76	6.3	0.00028	0.27	0.61	2.7	0.00034	1.7	PRI2-005
2,3,7,8-TCDF	ug/kg	179	146	82	2.4	0.00012	0.085	0.25	3.6	0.000056	0.0018	PRI2-005
1,2,3,7,8-PeCDF	ug/kg	179	135	75	6.9	0.0001	0.27	0.70	3.5	0.000016	0.0041	PRI2-005
2,3,4,7,8-PeCDF	ug/kg	179	135	75	4.5	0.000039	0.17	0.47	3.7	0.000022	0.0014	PRI2-005
1,2,3,4,7,8-HxCDF	ug/kg	179	156	87	32	0.00018	0.88	3.0	3.9	0.000055	0.072	PRI2-005
1,2,3,6,7,8-HxCDF	ug/kg	179	153	85	18	0.000097	0.50	1.6	3.8	0.000049	0.042	PRI2-005
1,2,3,7,8,9-HxCDF	ug/kg	179	89	50	3.4	0.000028	0.13	0.29	4.3	0.000012	0.019	PRI2-005
2,3,4,6,7,8-HxCDF	ug/kg	179	145	81	4.2	0.00011	0.14	0.43	3.7	0.000035	0.0077	PRI2-005
1,2,3,4,6,7,8-HpCDF	ug/kg	179	160	89	120	0.00018	3.8	12	3.6	0.0002	0.038	PRI2-005
1,2,3,4,7,8,9-HpCDF	ug/kg	179	150	84	43	0.00012	1.5	4.4	3.6	0.000083	0.27	PRI2-005
OCDF	ug/kg	179	178	99	980	0.001	30	99	3.4	0.016	0.016	PRI2-005
Calculated TEQ (ND=0), Mammalian	ug/kg	179	179	100	9.8	0.000001	0.26	0.95	3.7			PRI2-005
Calculated TEQ (ND=1/2 DL), Mammalian	ug/kg	179	179	100	9.9	0.0001	0.26	0.96	3.7			PRI2-005
Calculated TEQ (ND=0), Avian	ug/kg	179	179	100	990	0.00000035	20	94	4.8			PRI2-014
Calculated TEQ (ND=1/2 DL), Avian	ug/kg	179	179	100	990	0.011	20	94	4.8			PRI2-014
PCB-81	ug/kg	179	33	18	2.3	0.00022	0.16	0.20	4.9	0.0001	0.51	PRI2-014
PCB-77	ug/kg	179	118	66	4.8	0.00054	0.19	0.47	3.7	0.00033	0.084	PRI2-014
PCB-105	ug/kg	179	140	78	39	0.00077	0.93	3.4	4.6	0.00021	0.2	PRI2-006
PCB-114	ug/kg	179	63	35	4.9	0.00029	0.33	0.51	4.3	0.000088	0.3	PRI2-014
PCB-118	ug/kg	179	156	87	61	0.00055	1.4	5.4	4.5	0.00027	0.44	PRI2-006
PCB-123	ug/kg	179	63	35	3	0.00011	0.19	0.31	4.2	0.000091	1	PRI2-014
PCB-126	ug/kg	179	58	32	3.2	0.00028	0.18	0.32	4.2	0.0001	1	PRI2-014
PCB-156 & 157	ug/kg	179	131	73	15	0.00033	0.59	1.8	4.0	0.0002	0.49	PRI2-014
PCB-167	ug/kg	179	115	64	14	0.00012	0.49	1.4	4.4	0.00014	0.0026	PRI2-014
PCB-169	ug/kg	179	39	22	2.3	0.00016	0.12	0.21	4.7	0.00005	1.2	PRI2-014
PCB-189	ug/kg	179	89	50	19	0.00016	0.73	1.8	4.8	0.00011	0.22	PRI2-014
Monochlorobiphenyls, Total	ug/kg	179	168	94	2.9	0.00063	0.086	0.34	4.2	0.00032	0.11	PRI2-006 PRI2-014
Dichlorobiphenyls, Total	ug/kg	179	146	82	45	0.0031	1.2	5.0	5.1	0.0053	0.49	PRI2-002
Trichlorobiphenyls, Total	ug/kg	179	172	96	150	0.0016	2.8	14	5.2	0.00099	0.0023	PRI2-002
Tetrachlorobiphenyls, Total	ug/kg	179	179	100	150	0.00071	4.7	19	4.0			PRI2-002
Pentachlorobiphenyls, Total	ug/kg	179	179	100	300	0.0013	8.7	34	3.9			PRI2-006
Hexachlorobiphenyls, Total	ug/kg	179	178	99	280	0.00067	7.8	31	3.9	0.00049	0.00049	PRI2-014
Heptachlorobiphenyls, Total	ug/kg	179	178	99	410	0.00028	8.8	39	4.5	0.00051	0.00051	PRI2-014
Octachlorobiphenyls, Total	ug/kg	179	175	98	560	0.0019	13	56	4.3	0.00025	0.00039	PRI2-014
Nonachlorobiphenyls, Total	ug/kg	179	178	99	1,200	0.00074	27	120	4.3	0.00031	0.00031	PRI2-014
Decachlorobiphenyl (PCB-209)	ug/kg	179	179	100	8,900	0.01	190	830	4.3			PRI2-005
Total PCBs	ug/kg	179	179	100	11,000	0.019	270	1,100	4.2			PRI2-005
Total Aluminum	ug/kg	179	179	100	20,000,000	160,000	7,400,000	4,800,000	0.65			PRI8-017
Total Antimony	ug/kg	179	117	65	8,700	160	570	670	1.4	130	570	PRI12-003
Total Arsenic	ug/kg	179	177	99	23,000	340	6,800	3,900	0.58	470	510	PRI11-014 PRI2-009
Total Barium	ug/kg	179	179	100	4,000,000	5,800	250,000	310,000	1.3			PRI10-008
Total Beryllium	ug/kg	179	176	98	200,000	26	2,300	16,000	7.2	21	25	PRI9-003
Total Cadmium	ug/kg	179	132	74	590	78	270	130	0.55	60	280	PRI2-009
Total Calcium	ug/kg	179	179	100	880,000,000	6,100,000	130,000,000	93,000,000	0.70			PRI13-012
Total Chromium	ug/kg	179	179	100	72,000	530	13,000	11,000	0.82			PRI2-006
Total Cobalt	ug/kg	179	178	99	24,000	150	3,400	2,700	0.81	150	150	PRI9-013
Total Copper	ug/kg	179	179	100	330,000	310	22,000	43,000	1.9			PRI2-009
Total Iron	ug/kg	179	179	100	68,000,000	750,000	12,000,000	11,000,000	0.91			PRI9-009
Total Lead	ug/kg	179	179	100	69,000	910	12,000	8,800	0.74			PRI9-014
Total Magnesium	ug/kg	179	179	100	180,000,000	2,100,000	33,000,000	33,000,000	1.00			PRI9-003 PRI9-013
Total Manganese	ug/kg	179	179	100	7,300,000	4,900	300,000	570,000	1.9			PRI9-003
Total Mercury	ug/kg	179	94	53	640	9	33	50	2.2	8	35	PRI2-006
Total Molybdenum	ug/kg	179	146	82	29,000	47	2,800	4,300	1.9	35	550	PRI11-007
Total Nickel	ug/kg	179	179	100	190,000	260	16,000	27,000	1.7			PRI9-001
Total Potassium	ug/kg	179	178	99	140,000,000	460,000	8,200,000	17,000,000	2.1	130,000	130,000	PRI2-014
Total Selenium	ug/kg	179	77	43	720	160	290	78	0.31	120	570	PRI14-005
Total Silver	ug/kg	179	30	17	860	43	110	62	0.85	36	170	PRI2-006
Total Sodium	ug/kg	179	179	100	220,000,000	63,000	11,000,000	23,000,000	2.0			PRI14-013
Total Thallium	ug/kg	179	21	12	200	82	140	28	0.24	60	280	PRI11-006 PRI11-014
Total Vanadium	ug/kg	179	178	99	45,000	1,000	19,000	8,900	0.48	740	740	PRI9-009
Total Zinc	ug/kg	179	178	99	390,000	2,500	43,000	38,000	0.90	1,500	1,500	PRI11-003
1,1'-Biphenyl	ug/kg	179	0	0				440	1.3	170	2,500	
1,2,4,5-Tetrachlorobenzene	ug/kg	179	2	1	960	33	500	94	1.7	26	360	PRI2-014
2,3,4,6-Tetrachlorophenol	ug/kg	179	0	0				220	1.3	83	1,200	
2,4,5-Trichlorophenol	ug/kg	179	0	0				220	1.3	84	1,200	
2,4,6-Trichlorophenol	ug/kg	179	0	0				230	1.4	85	1,300	
2,4,6-Trichlorophenol (SIM Screen)	ug/kg	179	2	1	8.7	7.1	7.9	12	1.3	4	66	PRI9-014
2,2-Oxybis(1-chloropropane)	ug/kg	179	0	0				210	1.3	80	1,200	
2,4-Dichlorophenol	ug/kg	179	0	0				230	1.3	90	1,300	
2,4-Dimethylphenol	ug/kg	179	0	0				440	1.3	170	2,500	
2,4-Dinitrophenol	ug/kg	179	6	3	340	250	290	570	1.3	220	3,200	PRI9-011
2,4-Dinitrotoluene	ug/kg	179	0	0				230	1.3	90	1,300	
2,6-Dinitrotoluene	ug/kg	179	0	0				260	1.3	100	1,500	

Table 6-1
Prevalence Table for Solids Sample Analysis – All Outer PRIs
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
2-Chloronaphthalene	ug/kg	179	0	0				220	1.3	82	1,200	
2-Chlorophenol	ug/kg	179	0	0				230	1.3	89	1,300	
2-Methylphenol	ug/kg	179	0	0				150	1.3	58	870	
2-Nitroaniline	ug/kg	179	0	0				230	1.4	85	1,300	
2-Nitrophenol	ug/kg	179	0	0				220	1.3	83	1,200	
3,3'-Dichlorobenzidine	ug/kg	179	0	0				250	1.3	95	1,400	
3-Nitroaniline	ug/kg	179	0	0				440	1.3	170	2,500	
4,6-Dinitro-2-methylphenol	ug/kg	179	1	1	320	320	320	220	1.3	82	1,200	PRI8-005B
4-Bromophenyl-phenylether	ug/kg	179	0	0				230	1.3	86	1,300	
4-Chloro-3-methylphenol	ug/kg	179	0	0				250	1.4	93	1,400	
4-Chloroaniline	ug/kg	179	0	0				150	1.3	58	870	
4-Chlorophenyl-phenylether	ug/kg	179	0	0				250	1.4	94	1,400	
3 & 4 Methylphenol	ug/kg	179	0	0				880	1.3	330	4,900	
4-Nitroaniline	ug/kg	179	0	0				230	1.3	89	1,300	
4-Nitrophenol	ug/kg	179	0	0				750	1.3	280	4,200	
Acetophenone	ug/kg	179	19	11	570	38	180	98	1.4	25	370	PRI2-009
Benzaldehyde	ug/kg	179	5	3	2,700	200	1,000	480	1.4	170	2,500	PRI2-006
Benzylbutylphthalate	ug/kg	179	4	2	1,100	110	430	260	1.3	96	1,400	PRI11-004
Bis(2-chloroethoxy)methane	ug/kg	179	0	0				230	1.3	89	1,300	
bis(2-Chloroethyl) ether	ug/kg	179	0	0				220	1.3	82	1,200	
Bis(2-ethylhexyl)phthalate	ug/kg	179	33	18	1,100	120	310	280	1.2	99	1,500	PRI2-014
Carbazole	ug/kg	179	0	0				250	1.3	96	1,400	
Dibenzofuran	ug/kg	179	2	1	160	110	140	230	1.3	87	1,300	PRI2-006
Diethyl phthalate	ug/kg	179	4	2	4,100	150	1,800	400	1.9	91	1,300	PRI2-006
Dimethylphthalate	ug/kg	179	0	0				230	1.3	88	1,300	
Di-n-butylphthalate	ug/kg	179	2	1	550	110	330	260	1.3	98	1,400	PRI2-009
Di-n-octylphthalate	ug/kg	179	1	1	140	140	140	260	1.3	98	1,400	PRI9-010
Hexachlorobenzene	ug/kg	179	37	21	98,000	140	9,200	9,200	4.6	90	250	PRI2-014
Hexachlorobenzene (SIM Screen)	ug/kg	156	73	47	6,900	2.5	420	910	4.6	2	6	PRI2-008
Hexachlorobutadiene	ug/kg	179	0	0				220	1.3	83	1,200	
Hexachlorobutadiene (SIM Screen)	ug/kg	179	4	2	440	4.5	140	34	3.5	4	43	PRI2-014
Hexachlorocyclopentadiene	ug/kg	179	0	0				170	1.3	62	930	
Hexachloroethane	ug/kg	179	1	1	100	100	100	220	1.3	82	1,200	PRI2-009
Isophorone	ug/kg	179	3	2	480	160	270	250	1.3	94	1,400	PRI2-006
Nitrobenzene	ug/kg	179	0	0				200	1.3	76	1,100	
N-Nitrosodimethylamine	ug/kg	179	0	0				250	1.3	97	1,400	
n-Nitrosodimethylamine (SIM Screen)	ug/kg	179	0	0				250	1.3	97	1,400	
N-Nitroso-di-n-propylamine	ug/kg	179	0	0				230	1.4	85	1,300	
N-Nitrosodiphenylamine	ug/kg	179	0	0				230	1.3	87	1,300	
Pentachlorophenol	ug/kg	179	3	2	280	250	270	140	1.3	51	760	PRI9-011
Pentachlorophenol (SIM Screen)	ug/kg	179	17	9	520	27	100	78	1.5	24	390	PRI9-011
Phenol	ug/kg	179	2	1	170	120	150	220	1.3	84	1,200	PRI14-013
2-Methylnaphthalene	ug/kg	179	62	35	160	0.55	14	17	3.3	0.41	1.5	PRI2-006
Acenaphthene	ug/kg	179	12	7	61	1.2	14	6.0	3.9	0.45	1.3	PRI2-006
Acenaphthylene	ug/kg	179	5	3	22	2.7	12	2.3	3.1	0.32	2	PRI2-006
Anthracene	ug/kg	179	30	17	84	0.47	6.9	8.1	5.1	0.38	2.4	PRI2-006
Benzo(a)anthracene	ug/kg	179	51	28	150	0.32	8.4	14	5.4	0.29	1.9	PRI2-006
Benzo(a)pyrene	ug/kg	179	38	21	89	0.46	7.5	8.9	4.4	0.38	2.5	PRI2-006
Benzo(b)fluoranthene	ug/kg	179	44	25	140	0.55	11	15	4.6	0.48	3.1	PRI2-006
Benzo(g,h,i)perylene	ug/kg	179	22	12	38	1.1	7.1	4.0	2.0	0.96	6.1	PRI2-006
Benzo(k)fluoranthene	ug/kg	179	25	14	100	0.85	12	10	3.9	0.73	4.7	PRI2-006
Chrysene	ug/kg	179	94	53	180	0.38	7.5	18	4.3	0.33	2.1	PRI2-006
Dibenzo(a,h)anthracene	ug/kg	179	12	7	13	1.5	5.0	1.5	0.85	1.2	7.4	PRI2-009
Fluoranthene	ug/kg	179	91	51	670	0.34	18	63	7.0	0.28	0.82	PRI2-006
Fluorene	ug/kg	179	25	14	44	0.63	6.0	4.1	3.0	0.47	2.7	PRI2-006
Indeno(1,2,3-cd)pyrene	ug/kg	179	28	16	53	0.53	6.1	5.4	3.7	0.46	2.9	PRI2-006
Naphthalene	ug/kg	179	81	45	150	0.39	6.7	13	3.7	0.29	9	PRI2-006
Phenanthrene	ug/kg	179	123	69	930	0.37	21	90	6.1	0.34	4.7	PRI2-006
Pyrene	ug/kg	179	85	47	470	0.38	15	44	6.0	0.34	0.98	PRI2-006
Low Molecular Weight PAH (ND=0)	ug/kg	179	146	82	1,300	0.37	32	130	4.9	0.47	9	PRI2-006
Low Molecular Weight PAH (ND=1/2DL)	ug/kg	179	146	82	1,300	1.6	33	130	4.7	1.3	7.9	PRI2-006
High Molecular Weight PAH (ND=0)	ug/kg	179	105	59	1,900	0.35	52	180	5.9	1.2	3.4	PRI2-006
High Molecular Weight PAH (ND=1/2DL)	ug/kg	179	105	59	1,900	3.3	54	180	5.5	2.7	7.9	PRI2-006
1,4-Dioxane	ug/kg	45	0	0				13	0.23	38	100	
1,1-Dichloroethane	ug/kg	45	2	4	2.7	0.97	1.8	0.36	0.73	0.28	0.76	PRI2-009
1,1-Dichloroethene	ug/kg	45	1	2	1.7	1.7	1.7	0.22	0.52	0.25	0.68	PRI2-009
1,2-Dibromo-3-chloropropane	ug/kg	45	0	0				0.30	0.23	0.86	2.3	
1,2-Dibromoethane	ug/kg	45	0	0				0.092	0.23	0.26	0.71	
1,2-Dichlorobenzene	ug/kg	45	0	0				0.22	0.23	0.62	1.7	
1,2-Dichloroethane	ug/kg	45	0	0				0.25	0.23	0.71	1.9	
cis-1,2-Dichloroethene	ug/kg	45	1	2	2.7	2.7	2.7	0.37	0.27	0.87	2.3	PRI2-014
trans-1,2-Dichloroethene	ug/kg	45	0	0				0.13	0.23	0.37	0.99	
1,2-Dichloropropane	ug/kg	45	0	0				0.20	0.23	0.58	1.6	
1,3-Dichlorobenzene	ug/kg	45	0	0				0.10	0.23	0.29	0.78	
cis-1,3-Dichloropropene	ug/kg	45	0	0				0.22	0.23	0.62	1.7	
trans-1,3-Dichloropropene	ug/kg	45	0	0				0.25	0.23	0.73	2	
1,4-Dichlorobenzene	ug/kg	45	0	0				0.27	0.23	0.76	2	
1,1,1-Trichloroethane	ug/kg	45	4	9	2.7	1.5	2.2	0.51	0.75	0.35	0.94	PRI2-006
1,1,2-Trichloroethane	ug/kg	45	0	0				0.15	0.24	0.43	1.2	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-11	ug/kg	45	0	0				0.29	0.24	0.81	2.2	
1,2,3-Trichlorobenzene	ug/kg	45	4	9	6.2	1.1	3.3	0.91	0.71	0.73	2	PRI2-014
1,2,4-Trichlorobenzene	ug/kg	45	5	11	19	1.3	7.4	3.1	1.7	0.73	2	PRI2-014
1,1,2,2-Tetrachloroethane	ug/kg	45	0	0				0.24	0.24	0.66	1.8	

Table 6-1
Prevalence Table for Solids Sample Analysis – All Outer PRIs
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
2-Butanone	ug/kg	45	34	76	190	4.9	21	30	1.8	1.6	2.9	PRI2-006
2-Hexanone	ug/kg	45	15	33	45	1.1	9.3	7.6	2.0	0.78	1.6	PRI2-006
4-Methyl-2-pentanone	ug/kg	45	15	33	53	1.5	12	9.8	2.0	0.97	2	PRI2-006
Acetone	ug/kg	45	35	78	410	7.3	85	88	1.3	1.7	22	PRI2-006
Benzene	ug/kg	45	9	20	6.8	0.43	2.0	1.1	1.5	0.25	0.57	PRI2-006
Bromochloromethane	ug/kg	45	3	7	7.3	1.9	4.6	1.1	0.66	0.91	2.5	PRI8-017SB
Bromodichloromethane	ug/kg	45	8	18	220	1.2	38	33	4.4	0.52	1.4	PRI8-014
Bromoform	ug/kg	45	8	18	570	0.84	110	88	4.5	0.39	1	PRI8-014
Bromomethane	ug/kg	45	0	0				0.29	0.23	0.84	2.2	
Carbon disulfide	ug/kg	45	13	29	20	0.71	5.0	4.3	1.7	0.57	12	PRI2-006 PRI8-017SB
Carbon tetrachloride	ug/kg	45	1	2	0.98	0.98	0.98	0.19	0.24	0.52	1.4	PRI8-015
Chlorobenzene	ug/kg	45	0	0				0.099	0.23	0.28	0.76	
Cyclohexane	ug/kg	45	0	0				0.89	0.23	2.6	6.9	
Dibromochloromethane	ug/kg	45	9	20	390	0.36	61	59	4.8	0.2	0.55	PRI8-014
Chloroethane	ug/kg	45	1	2	0.92	0.92	0.92	0.16	0.24	0.44	1.2	PRI2-009
Chloroform	ug/kg	45	26	58	110	0.35	10	18	2.9	0.27	0.68	PRI8-014
Chloromethane	ug/kg	45	11	24	21	0.6	5.0	3.7	2.1	0.53	1.1	PRI2-006
Dichlorodifluoromethane (Freon-12)	ug/kg	45	0	0				0.30	0.23	0.87	2.3	
Ethyl benzene	ug/kg	45	11	24	2.3	0.54	1.4	0.46	0.64	0.36	0.75	PRI2-006
Isopropylbenzene	ug/kg	45	5	11	5.2	0.87	2.7	0.80	0.81	0.51	1.4	PRI2-009
Methyl tertbutyl ether (MTBE)	ug/kg	45	0	0				0.20	0.23	0.58	1.6	
Dichloromethane (Methylene chloride)	ug/kg	45	8	18	5.6	1	2.5	0.81	0.55	0.82	2.2	PRI2-006
Styrene	ug/kg	45	5	11	2.3	0.98	1.8	0.46	0.75	0.3	0.81	PRI2-006 PRI2-009
Tetrachloroethene	ug/kg	45	9	20	5.5	1.5	2.5	0.85	0.70	0.59	1.6	PRI2-014
Toluene	ug/kg	45	12	27	12	1.1	4.4	2.4	1.3	0.64	1.3	PRI2-006
Trichloroethene	ug/kg	45	4	9	2.5	0.92	1.7	0.37	0.39	0.58	1.6	PRI2-014
Trichlorofluoromethane (Freon-11)	ug/kg	45	0	0				0.12	0.23	0.33	0.89	
Vinyl chloride	ug/kg	45	1	2	1.3	1.3	1.3	0.17	0.31	0.35	0.94	PRI2-006
o-Xylene	ug/kg	45	17	38	4.8	0.53	2.4	1.2	0.98	0.35	0.72	PRI2-006
m,p Xylenes	ug/kg	45	15	33	7.7	1.2	3.8	1.7	0.81	0.85	1.8	PRI2-006
Perchlorate	ug/kg	167	3	2	90	55	70	56	1.2	20	280	PRI8-003
Total Organic Carbon	g/kg	179	132	74	120	1.9	15	18	1.6	1.7	3.9	PRI2-009
pH	pH units	179	179	100	12.4	6.84	8.4	0.76	0.092			PRI12-006
Cyanide, Total	ug/kg	179	15	8	1,000	210	450	98	0.36	210	600	PRI9-003

Notes:

µg/kg = micrograms per kilogram	PAH = Polycyclic aromatic hydrocarbon
Empty cells = No results	PCB = Polychlorinated biphenyl
g/kg = Grams per kilograms	PeCDD = Pentachlorodibenzo-p-dioxin
HpCDD = Heptachlorodibenzo-p-dioxin	PeCDF = Pentachlorodienzofuran
HpCDF = Heptachlorodibenzofuran	pH = pH units
HxCDD = Hexachlorodibenzo-p-dioxin	SIM = Selected ion monitoring
HxCDF = Hexachlorodienzofuran	TCDD = Tetrachlorodibenzodioxin
OCDD = Octachlorodibenzo-p-dioxin	TCDF = Tetrachlorodienzofuran
OCDF = Octachlorodienzofuran	TEQ = Toxicity equivalence

Table 6-2
Prevalence Table for Solids Sample Analysis – PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
2,3,7,8-TCDD	ug/kg	37	7	19	0.0046	0.00095	0.0028	0.0059	1.9	0.00007	0.034	PRI2-006
1,2,3,7,8-PeCDD	ug/kg	37	23	62	0.097	0.00084	0.015	0.031	1.8	0.00029	0.17	PRI2-005
1,2,3,4,7,8-HxCDD	ug/kg	37	21	57	0.034	0.00076	0.012	0.027	1.5	0.00018	0.13	PRI2-004
1,2,3,6,7,8-HxCDD	ug/kg	37	28	76	0.31	0.0081	0.051	0.052	1.1	0.00017	0.093	PRI2-005
1,2,3,7,8,9-HxCDD	ug/kg	37	31	84	0.43	0.0027	0.058	0.079	1.2	0.00016	0.27	PRI2-005
1,2,3,4,6,7,8-HpCDD	ug/kg	37	35	95	2	0.0079	0.28	0.35	1.2	0.00021	0.96	PRI2-005
OCDD	ug/kg	37	35	95	6.3	0.0023	0.96	1.0	1.1	0.42	1.7	PRI2-005
2,3,7,8-TCDF	ug/kg	37	37	100	2.4	0.00071	0.32	0.48	1.5			PRI2-005
1,2,3,7,8-PeCDF	ug/kg	37	37	100	6.9	0.0017	0.93	1.3	1.4			PRI2-005
2,3,4,7,8-PeCDF	ug/kg	37	36	97	4.5	0.012	0.61	0.90	1.5	0.0004	0.0004	PRI2-005
1,2,3,4,7,8-HxCDF	ug/kg	37	36	97	32	0.0042	3.7	5.9	1.6	0.072	0.072	PRI2-005
1,2,3,6,7,8-HxCDF	ug/kg	37	36	97	18	0.0025	2.0	3.2	1.6	0.042	0.042	PRI2-005
1,2,3,7,8,9-HxCDF	ug/kg	37	36	97	3.4	0.0056	0.32	0.58	1.8	0.00053	0.00053	PRI2-005
2,3,4,6,7,8-HxCDF	ug/kg	37	35	95	4.2	0.012	0.55	0.83	1.6	0.00049	0.0077	PRI2-005
1,2,3,4,6,7,8-HpCDF	ug/kg	37	37	100	120	0.021	15	23	1.5			PRI2-005
1,2,3,4,7,8,9-HpCDF	ug/kg	37	36	97	43	0.0062	5.9	8.2	1.4	0.27	0.27	PRI2-005
OCDF	ug/kg	37	37	100	980	0.11	140	180	1.4			PRI2-005
Calculated TEQ (ND=0), Mammalian	ug/kg	37	37	100	9.8	0.0011	1.2	1.8	1.5			PRI2-005
Calculated TEQ (ND=1/2 DL), Mammalian	ug/kg	37	37	100	9.9	0.0016	1.2	1.8	1.6			PRI2-005
Calculated TEQ (ND=0), Avian	ug/kg	37	37	100	990	0.044	91	190	2.1			PRI2-014
Calculated TEQ (ND=1/2 DL), Avian	ug/kg	37	37	100	990	0.045	91	190	2.1			PRI2-014
PCB-81	ug/kg	37	19	51	2.3	0.00061	0.25	0.41	2.3	0.00016	0.51	PRI2-014
PCB-77	ug/kg	37	32	86	4.8	0.0008	0.63	0.92	1.7	0.007	0.084	PRI2-014
PCB-105	ug/kg	37	35	95	39	0.0028	3.5	6.8	2.0	0.049	0.20	PRI2-006
PCB-114	ug/kg	37	33	89	4.9	0.002	0.59	1.0	1.9	0.00024	0.30	PRI2-014
PCB-118	ug/kg	37	36	97	61	0.0035	5.5	11	2.0	0.44	0.44	PRI2-006
PCB-123	ug/kg	37	31	84	3	0.00022	0.36	0.62	1.8	0.014	1	PRI2-014
PCB-126	ug/kg	37	20	54	3.2	0.004	0.49	0.63	1.9	0.00028	1	PRI2-014
PCB-156 & 157	ug/kg	37	36	97	15	0.0014	2.0	3.5	1.8	0.49	0.49	PRI2-014
PCB-167	ug/kg	37	37	100	14	0.00086	1.4	2.8	1.9			PRI2-014
PCB-169	ug/kg	37	12	32	2.3	0.00016	0.36	0.43	2.1	0.0019	1.2	PRI2-014
PCB-189	ug/kg	37	34	92	19	0.0012	1.8	3.6	2.2	0.0087	0.22	PRI2-014
Monochlorobiphenyls, Total	ug/kg	37	30	81	2.9	0.002	0.39	0.70	2.2	0.0019	0.11	PRI2-006 PRI2-014
Dichlorobiphenyls, Total	ug/kg	37	32	86	45	0.0043	5.0	10	2.4	0.053	0.49	PRI2-002
Trichlorobiphenyls, Total	ug/kg	37	37	100	150	0.0082	12	29	2.4			PRI2-002
Tetrachlorobiphenyls, Total	ug/kg	37	37	100	150	0.012	21	36	1.7			PRI2-002
Pentachlorobiphenyls, Total	ug/kg	37	37	100	300	0.02	39	66	1.7			PRI2-006
Hexachlorobiphenyls, Total	ug/kg	37	37	100	280	0.02	34	60	1.8			PRI2-014
Heptachlorobiphenyls, Total	ug/kg	37	37	100	410	0.025	39	80	2.0			PRI2-014
Octachlorobiphenyls, Total	ug/kg	37	37	100	560	0.051	57	110	1.9			PRI2-014
Nonachlorobiphenyls, Total	ug/kg	37	37	100	1200	0.14	120	240	1.9			PRI2-014
Decachlorobiphenyl (PCB-209)	ug/kg	37	37	100	8900	0.89	880	1,700	1.9			PRI2-005
Total PCBs	ug/kg	37	37	100	11000	1.2	1,200	2,200	1.8			PRI2-005
Total Aluminum	ug/kg	37	37	100	16,000,000	160,000	3,300,000	2,900,000	0.88			PRI2-009
Total Antimony	ug/kg	37	32	86	1,500	230	670	310	0.50	210	330	PRI2-014
Total Arsenic	ug/kg	37	37	100	23,000	1,100	6,900	3,900	0.56			PRI2-009
Total Barium	ug/kg	37	37	100	650,000	5,800	190,000	110,000	0.58			PRI2-002
Total Beryllium	ug/kg	37	34	92	830	37	190	140	0.79	21	25	PRI2-009
Total Cadmium	ug/kg	37	20	54	590	78	240	110	0.63	60	130	PRI2-009
Total Calcium	ug/kg	37	37	100	370,000,000	6,100,000	160,000,000	91,000,000	0.57			PRI2-001
Total Chromium	ug/kg	37	37	100	72,000	530	20,000	18,000	0.88			PRI2-006
Total Cobalt	ug/kg	37	36	97	8,100	150	2,100	1,600	0.81	150	150	PRI2-002
Total Copper	ug/kg	37	37	100	330,000	310	54,000	77,000	1.4			PRI2-009
Total Iron	ug/kg	37	37	100	39,000,000	750,000	14,000,000	10,000,000	0.75			PRI2-006
Total Lead	ug/kg	37	37	100	29,000	910	10,000	7,600	0.75			PRI2-002 PRI2-006
Total Magnesium	ug/kg	37	37	100	110,000,000	2,100,000	32,000,000	28,000,000	0.86			PRI2-006
Total Manganese	ug/kg	37	37	100	370,000	4,900	140,000	78,000	0.58			PRI2-002
Total Mercury	ug/kg	37	14	38	640	13	71	100	2.8	9	35	PRI2-006
Total Molybdenum	ug/kg	37	37	100	20,000	410	5,800	5,100	0.88			PRI2-006
Total Nickel	ug/kg	37	37	100	62,000	260	17,000	17,000	1.0			PRI2-006
Total Potassium	ug/kg	37	36	97	140,000,000	690,000	17,000,000	33,000,000	2.0	130000	130,000	PRI2-014
Total Selenium	ug/kg	37	6	16	300	160	230	42	0.20	120	260	PRI2-009
Total Silver	ug/kg	37	7	19	860	75	210	130	1.5	36	82	PRI2-006
Total Sodium	ug/kg	37	37	100	69,000,000	63,000	15,000,000	21,000,000	1.4			PRI2-006
Total Thallium	ug/kg	37	0	0				22	0.20	60	140	
Total Vanadium	ug/kg	37	36	97	43,000	1,000	18,000	11,000	0.63	740	740	PRI2-009
Total Zinc	ug/kg	37	36	97	190,000	2,500	46,000	38,000	0.87	1500	1,500	PRI2-006
1,1'-Biphenyl	ug/kg	37	0	0				820	1.1	170	2,500	
1,2,4,5-Tetrachlorobenzene	ug/kg	37	2	5	960	33	500	180	1.3	26	360	PRI2-014
2,3,4,6-Tetrachlorophenol	ug/kg	37	0	0				400	1.0	83	1,200	
2,4,5-Trichlorophenol	ug/kg	37	0	0				410	1.1	84	1,200	
2,4,6-Trichlorophenol	ug/kg	37	0	0				420	1.1	85	1,300	
2,4,6-Trichlorophenol (SIM Screen)	ug/kg	37	0	0				22	1.1	4.5	66	
2,2-Oxybis(1-chloropropane)	ug/kg	37	0	0				390	1.1	80	1,200	
2,4-Dichlorophenol	ug/kg	37	0	0				430	1.0	90	1,300	
2,4-Dimethylphenol	ug/kg	37	0	0				820	1.1	170	2,500	
2,4-Dinitrophenol	ug/kg	37	0	0				1,100	1.1	220	3,200	
2,4-Dinitrotoluene	ug/kg	37	0	0				430	1.0	90	1,300	
2,6-Dinitrotoluene	ug/kg	37	0	0				490	1.1	100	1,500	
2-Chloronaphthalene	ug/kg	37	0	0				400	1.0	82	1,200	
2-Chlorophenol	ug/kg	37	0	0				430	1.0	89	1,300	
2-Methylphenol	ug/kg	37	0	0				290	1.1	59	870	
2-Nitroaniline	ug/kg	37	0	0				420	1.1	85	1,300	
2-Nitrophenol	ug/kg	37	0	0				400	1.0	83	1,200	

Table 6-2
Prevalence Table for Solids Sample Analysis – PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
3,3'-Dichlorobenzidine	ug/kg	37	0	0				460	1.1	95	1,400	
3-Nitroaniline	ug/kg	37	0	0				820	1.1	170	2,500	
4,6-Dinitro-2-methylphenol	ug/kg	37	0	0				400	1.0	82	1,200	
4-Bromophenyl-phenylether	ug/kg	37	0	0				420	1.1	86	1,300	
4-Chloro-3-methylphenol	ug/kg	37	0	0				460	1.1	93	1,400	
4-Chloroaniline	ug/kg	37	0	0				290	1.1	59	870	
4-Chlorophenyl-phenylether	ug/kg	37	0	0				460	1.1	94	1,400	
3 & 4 Methylphenol	ug/kg	37	0	0				1,600	1.1	330	4,900	
4-Nitroaniline	ug/kg	37	0	0				430	1.0	89	1,300	
4-Nitrophenol	ug/kg	37	0	0				1,400	1.1	280	4,200	
Acetophenone	ug/kg	37	8	22	570	48	300	150	0.81	25	370	PRI2-009
Benzaldehyde	ug/kg	37	5	14	2,700	200	1,000	860	0.97	170	2,500	PRI2-006
Benzylbutylphthalate	ug/kg	37	2	5	310	210	260	460	1.0	96	1,400	PRI2-013
Bis(2-chloroethoxy)methane	ug/kg	37	0	0				430	1.0	89	1,300	
bis(2-Chloroethyl) ether	ug/kg	37	0	0				400	1.0	82	1,200	
Bis(2-ethylhexyl)phthalate	ug/kg	37	17	46	1,100	130	460	440	0.74	99	1,500	PRI2-014
Carbazole	ug/kg	37	0	0				460	1.1	96	1,400	
Dibenzofuran	ug/kg	37	2	5	160	110	140	420	1.0	87	1,300	PRI2-006
Diethyl phthalate	ug/kg	37	4	11	4,100	150	1,800	770	1.3	91	1,300	PRI2-006
Dimethylphthalate	ug/kg	37	0	0				430	1.1	88	1,300	
Di-n-butylphthalate	ug/kg	37	2	5	550	110	330	470	1.0	98	1,400	PRI2-009
Di-n-octylphthalate	ug/kg	37	0	0				470	1.1	98	1,400	
Hexachlorobenzene	ug/kg	37	34	92	98,000	140	9,700	19,000	2.1	94	110	PRI2-014
Hexachlorobenzene (SIM Screen)	ug/kg	15	15	100	6,900	4.2	1,900	2,400	1.3			PRI2-008
Hexachlorobutadiene	ug/kg	37	0	0				400	1.0	83	1,200	
Hexachlorobutadiene (SIM Screen)	ug/kg	37	4	11	440	4.5	140	72	2.4	3.7	43	PRI2-014
Hexachlorocyclopentadiene	ug/kg	37	0	0				310	1.1	63	930	
Hexachloroethane	ug/kg	37	1	3	100	100	100	400	1.0	82	1,200	PRI2-009
Isophorone	ug/kg	37	3	8	480	160	270	460	1.0	94	1,400	PRI2-006
Nitrobenzene	ug/kg	37	0	0				370	1.1	77	1,100	
N-Nitrosodimethylamine	ug/kg	37	0	0				470	1.1	97	1,400	
n-Nitrosodimethylamine (SIM Screen)	ug/kg	37	0	0				470	1.1	97	1,400	
N-Nitroso-di-n-propylamine	ug/kg	37	0	0				420	1.1	85	1,300	
N-Nitrosodiphenylamine	ug/kg	37	0	0				420	1.1	87	1,300	
Pentachlorophenol	ug/kg	37	1	3	270	270	270	250	1.0	52	760	PRI2-006
Pentachlorophenol (SIM Screen)	ug/kg	37	7	19	460	33	110	130	1.1	25	390	PRI2-005
Phenol	ug/kg	37	1	3	120	120	120	410	1.0	84	1,200	PRI2-006
2-Methylnaphthalene	ug/kg	37	35	95	160	0.62	23	33	1.5	0.53	1	PRI2-006
Acenaphthene	ug/kg	37	11	30	61	1.2	13	12	2.8	0.49	1.3	PRI2-006
Acenaphthylene	ug/kg	37	4	11	22	2.7	12	4.6	2.6	0.34	2	PRI2-006
Anthracene	ug/kg	37	20	54	84	0.52	9.9	17	3.1	0.41	2.4	PRI2-006
Benzo(a)anthracene	ug/kg	37	25	68	150	0.39	16	31	2.9	0.31	1.9	PRI2-006
Benzo(a)pyrene	ug/kg	37	23	62	89	0.46	11	19	2.7	0.41	2.5	PRI2-006
Benzo(b)fluoranthene	ug/kg	37	24	65	140	0.64	18	31	2.6	0.52	3.1	PRI2-006
Benzo(g,h,i)perylene	ug/kg	37	15	41	38	1.2	8.6	8.2	1.9	1	6.1	PRI2-006
Benzo(k)fluoranthene	ug/kg	37	16	43	100	1.1	18	21	2.6	0.79	4.7	PRI2-006
Chrysene	ug/kg	37	31	84	180	0.57	19	37	2.3	0.36	2.1	PRI2-006
Dibenzo(a,h)anthracene	ug/kg	37	10	27	13	1.5	5.4	3.0	1.1	1.2	7.4	PRI2-009
Fluoranthene	ug/kg	37	32	86	670	0.44	48	140	3.3	0.32	0.4	PRI2-006
Fluorene	ug/kg	37	23	62	44	0.63	6.4	8.6	2.0	0.51	2.7	PRI2-006
Indeno(1,2,3-cd)pyrene	ug/kg	37	16	43	53	0.59	9.2	11	2.6	0.5	2.9	PRI2-006
Naphthalene	ug/kg	37	34	92	150	0.39	14	26	2.1	0.36	0.4	PRI2-006
Phenanthrene	ug/kg	37	29	78	930	0.61	85	190	2.8	1.3	4.7	PRI2-006
Pyrene	ug/kg	37	35	95	470	0.55	34	94	2.9	0.43	0.47	PRI2-006
Low Molecular Weight PAH (ND=0)	ug/kg	37	36	97	1,300	0.62	120	270	2.3	1.4	1.4	PRI2-006
Low Molecular Weight PAH (ND=1/2DL)	ug/kg	37	36	97	1,300	2.3	120	270	2.3	2.3	2.3	PRI2-006
High Molecular Weight PAH (ND=0)	ug/kg	37	35	95	1,900	0.55	140	390	2.9	1.5	1.6	PRI2-006
High Molecular Weight PAH (ND=1/2DL)	ug/kg	37	35	95	1,900	3.4	140	390	2.8	3.5	3.7	PRI2-006
1,4-Dioxane	ug/kg	23	0	0				13	0.24	38	100	
1,1-Dichloroethane	ug/kg	23	2	9	2.7	0.97	1.8	0.50	0.93	0.28	0.76	PRI2-009
1,1-Dichloroethene	ug/kg	23	1	4	1.7	1.7	1.7	0.29	0.69	0.25	0.68	PRI2-009
1,2-Dibromo-3-chloropropane	ug/kg	23	0	0				0.29	0.24	0.86	2.3	
1,2-Dibromoethane	ug/kg	23	0	0				0.091	0.24	0.26	0.71	
1,2-Dichlorobenzene	ug/kg	23	0	0				0.22	0.24	0.62	1.7	
1,2-Dichloroethane	ug/kg	23	0	0				0.25	0.24	0.71	1.9	
cis-1,2-Dichloroethene	ug/kg	23	1	4	2.7	2.7	2.7	0.42	0.32	0.87	2.3	PRI2-014
trans-1,2-Dichloroethene	ug/kg	23	0	0				0.13	0.24	0.37	0.99	
1,2-Dichloropropane	ug/kg	23	0	0				0.21	0.25	0.58	1.6	
1,3-Dichlorobenzene	ug/kg	23	0	0				0.10	0.24	0.29	0.78	
cis-1,3-Dichloropropene	ug/kg	23	0	0				0.22	0.24	0.62	1.7	
trans-1,3-Dichloropropene	ug/kg	23	0	0				0.26	0.24	0.73	2	
1,4-Dichlorobenzene	ug/kg	23	0	0				0.26	0.24	0.76	2	
1,1,1-Trichloroethane	ug/kg	23	4	17	2.7	1.5	2.2	0.69	0.86	0.35	0.94	PRI2-006
1,1,2-Trichloroethane	ug/kg	23	0	0				0.16	0.25	0.43	1.2	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113	ug/kg	23	0	0				0.29	0.25	0.81	2.2	
1,2,3-Trichlorobenzene	ug/kg	23	4	17	6.2	1.1	3.3	1.3	0.88	0.73	2	PRI2-014
1,2,4-Trichlorobenzene	ug/kg	23	5	22	19	1.3	7.4	4.3	1.8	0.73	2	PRI2-014
1,1,2,2-Tetrachloroethane	ug/kg	23	0	0				0.23	0.24	0.66	1.8	
2-Butanone	ug/kg	23	19	83	190	4.9	29	40	1.6	1.6	2.3	PRI2-006
2-Hexanone	ug/kg	23	14	61	45	1.2	9.9	10	1.6	0.86	1.2	PRI2-006
4-Methyl-2-pentanone	ug/kg	23	14	61	53	1.6	12	13	1.6	1.1	1.5	PRI2-006
Acetone	ug/kg	23	19	83	410	26	120	110	1.1	2	9.8	PRI2-006
Benzene	ug/kg	23	6	26	6.8	0.43	2.7	1.5	1.6	0.25	0.43	PRI2-006
Bromochloromethane	ug/kg	23	0	0				0.32	0.24	0.91	2.5	
Bromodichloromethane	ug/kg	23	0	0				0.18	0.24	0.52	1.4	
Bromoform	ug/kg	23	1	4	0.84	0.84	0.84	0.14	0.25	0.39	1	PRI2-014

Table 6-2
Prevalence Table for Solids Sample Analysis – PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
Bromomethane	ug/kg	23	0	0				0.29	0.24	0.84	2.2	
Carbon disulfide	ug/kg	23	1	4	20	20	20	4.6	1.8	0.57	12	PRI2-006
Carbon tetrachloride	ug/kg	23	0	0				0.18	0.24	0.52	1.4	
Chlorobenzene	ug/kg	23	0	0				0.098	0.24	0.28	0.76	
Cyclohexane	ug/kg	23	0	0				0.88	0.24	2.6	6.9	
Dibromochloromethane	ug/kg	23	1	4	0.36	0.36	0.36	0.071	0.24	0.2	0.55	PRI2-014
Chloroethane	ug/kg	23	1	4	0.92	0.92	0.92	0.17	0.26	0.44	1.2	PRI2-009
Chloroform	ug/kg	23	13	57	3.2	0.35	1.4	0.81	0.84	0.3	0.68	PRI2-009
Chloromethane	ug/kg	23	11	48	21	0.6	5.0	5.1	1.8	0.57	0.82	PRI2-006
Dichlorodifluoromethane (Freon-12)	ug/kg	23	0	0				0.29	0.23	0.87	2.3	
Ethyl benzene	ug/kg	23	11	48	2.3	0.54	1.4	0.58	0.63	0.39	0.56	PRI2-006
Isopropylbenzene	ug/kg	23	5	22	5.2	0.87	2.7	1.1	0.94	0.51	1.4	PRI2-009
Methyl tertbutyl ether (MTBE)	ug/kg	23	0	0				0.21	0.25	0.58	1.6	
Dichloromethane (Methylene chloride)	ug/kg	23	5	22	5.6	1	2.6	1.0	0.68	0.82	2.2	PRI2-006
Styrene	ug/kg	23	5	22	2.3	0.98	1.8	0.62	0.83	0.3	0.81	PRI2-006 PRI2-009
Tetrachloroethene	ug/kg	23	9	39	5.5	1.5	2.5	1.1	0.75	0.59	1.6	PRI2-014
Toluene	ug/kg	23	12	52	12	1.1	4.4	3.1	1.1	0.7	1	PRI2-006
Trichloroethene	ug/kg	23	4	17	2.5	0.92	1.7	0.48	0.50	0.58	1.6	PRI2-014
Trichlorofluoromethane (Freon-11)	ug/kg	23	0	0				0.11	0.24	0.33	0.89	
Vinyl chloride	ug/kg	23	1	4	1.3	1.3	1.3	0.20	0.38	0.35	0.94	PRI2-006
o-Xylene	ug/kg	23	17	74	4.8	0.53	2.4	1.4	0.73	0.38	0.54	PRI2-006
m,p Xylenes	ug/kg	23	15	65	7.7	1.2	3.8	2.1	0.72	0.92	1.3	PRI2-006
Perchlorate	ug/kg	37	1	3	65	65	65	76	1.1	21	250	PRI2-005
Total Organic Carbon	g/kg	37	33	89	120	2.1	31	33	1.2	1.7	1.7	PRI2-009
pH	pH units	37	37	100	10	7.34	8.6	0.82	0.096			PRI2-009
Cyanide, Total	ug/kg	37	2	5	470	270	370	45	0.18	210	300	PRI2-008

Notes:
µg/kg = micrograms per kilogram
Empty cells = No results
g/kg = Grams per kilograms
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pH = pH units
SIM = Selected ion monitoring
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence

Table 6-3
Prevalence Table for Solids Sample Analysis – PRI-8 Northwest Ponded Waste Lagoon Overflow
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit
2,3,7,8-TCDD	ug/kg	21	0	0				0.000031	0.62	0.000026	0.00016
1,2,3,7,8-PeCDD	ug/kg	21	3	14	0.00015	0.00012	0.00013	0.000066	0.57	0.000047	0.00026
1,2,3,4,7,8-HxCDD	ug/kg	21	1	5	0.00011	0.00011	0.00011	0.000028	0.34	0.000038	0.00015
1,2,3,6,7,8-HxCDD	ug/kg	21	5	24	0.001	0.00017	0.00040	0.00021	1.4	0.00003	0.00017
1,2,3,7,8,9-HxCDD	ug/kg	21	2	10	0.00047	0.00034	0.00041	0.00020	1.2	0.000041	0.00093
1,2,3,4,6,7,8-HpCDD	ug/kg	21	13	62	0.0071	0.0003	0.0018	0.0015	1.1	0.00039	0.0012
OCDD	ug/kg	21	16	76	0.024	0.0022	0.0068	0.0052	0.91	0.0011	0.0033
2,3,7,8-TCDF	ug/kg	21	16	76	0.019	0.00025	0.0042	0.0050	1.5	0.00026	0.00045
1,2,3,7,8-PeCDF	ug/kg	21	13	62	0.02	0.00045	0.0044	0.0046	1.5	0.00013	0.0025
2,3,4,7,8-PeCDF	ug/kg	21	11	52	0.0087	0.00052	0.0026	0.0021	1.4	0.00014	0.00038
1,2,3,4,7,8-HxCDF	ug/kg	21	13	62	0.059	0.00053	0.014	0.014	1.5	0.0011	0.0053
1,2,3,6,7,8-HxCDF	ug/kg	21	19	90	0.039	0.00044	0.0071	0.0095	1.5	0.00073	0.001
1,2,3,7,8,9-HxCDF	ug/kg	21	9	43	0.0049	0.000096	0.0014	0.0011	1.6	0.000061	0.00035
2,3,4,6,7,8-HxCDF	ug/kg	21	19	90	0.012	0.00027	0.0025	0.0030	1.3	0.00042	0.00078
1,2,3,4,6,7,8-HpCDF	ug/kg	21	14	67	0.37	0.0042	0.088	0.093	1.5	0.0093	0.014
1,2,3,4,7,8,9-HpCDF	ug/kg	21	16	76	0.1	0.0013	0.016	0.023	1.7	0.00053	0.0046
OCDF	ug/kg	21	21	100	4.3	0.041	0.65	0.98	1.5		
Calculated TEQ (ND=0), Mammalian	ug/kg	21	21	100	0.023	0.000078	0.0036	0.0056	1.6		
Calculated TEQ (ND=1/2 DL), Mammalian	ug/kg	21	21	100	0.023	0.00033	0.0038	0.0055	1.5		
Calculated TEQ (ND=0), Avian	ug/kg	21	21	100	1.5	0.00019	0.16	0.34	2.1		
Calculated TEQ (ND=1/2 DL), Avian	ug/kg	21	21	100	1.5	0.014	0.17	0.33	2.0		
PCB-81	ug/kg	21	0	0				0.00048	0.95	0.0001	0.0021
PCB-77	ug/kg	21	11	52	0.0025	0.00082	0.0015	0.00058	0.47	0.00041	0.0023
PCB-105	ug/kg	21	14	67	0.0027	0.0008	0.0017	0.00066	0.43	0.00058	0.0025
PCB-114	ug/kg	21	2	10	0.0011	0.00049	0.00080	0.00047	1.1	0.000099	0.0021
PCB-118	ug/kg	21	17	81	0.0054	0.0014	0.0034	0.0012	0.39	0.0015	0.0047
PCB-123	ug/kg	21	3	14	0.00024	0.00011	0.00015	0.00046	1.0	0.00013	0.0021
PCB-126	ug/kg	21	3	14	0.0011	0.00036	0.00070	0.00056	0.96	0.0001	0.0026
PCB-156 & 157	ug/kg	21	16	76	0.0035	0.00039	0.0013	0.00080	0.71	0.0004	0.0012
PCB-167	ug/kg	21	11	52	0.0037	0.00031	0.0011	0.00081	1.0	0.00019	0.001
PCB-169	ug/kg	21	5	24	0.0013	0.00016	0.00058	0.00030	0.82	0.00005	0.00073
PCB-189	ug/kg	21	9	43	0.0056	0.00016	0.0015	0.0013	1.2	0.00013	0.0031
Monochlorobiphenyls, Total	ug/kg	21	21	100	0.038	0.0016	0.0079	0.0085	1.1		
Dichlorobiphenyls, Total	ug/kg	21	21	100	0.24	0.0043	0.060	0.079	1.3		
Trichlorobiphenyls, Total	ug/kg	21	20	95	0.23	0.0024	0.047	0.076	1.7	0.0015	0.0015
Tetrachlorobiphenyls, Total	ug/kg	21	21	100	0.092	0.0032	0.019	0.021	1.1		
Pentachlorobiphenyls, Total	ug/kg	21	21	100	0.083	0.0076	0.027	0.017	0.65		
Hexachlorobiphenyls, Total	ug/kg	21	21	100	0.11	0.0067	0.029	0.023	0.79		
Heptachlorobiphenyls, Total	ug/kg	21	21	100	0.18	0.0069	0.045	0.043	0.96		
Octachlorobiphenyls, Total	ug/kg	21	21	100	0.47	0.011	0.11	0.13	1.2		
Nonachlorobiphenyls, Total	ug/kg	21	21	100	1.5	0.032	0.37	0.45	1.2		
Decachlorobiphenyl (PCB-209)	ug/kg	21	21	100	34	0.32	5.4	7.9	1.4		
Total PCBs	ug/kg	21	21	100	37	0.41	6.2	8.7	1.4		
Total Aluminum	ug/kg	21	21	100	20000000	2600000	12,000,000	5,000,000	0.42		
Total Antimony	ug/kg	21	18	86	660	190	380	120	0.32	210	390
Total Arsenic	ug/kg	21	21	100	13000	3700	7,100	2,600	0.37		
Total Barium	ug/kg	21	21	100	400000	210000	310,000	55,000	0.18		
Total Beryllium	ug/kg	21	21	100	830	150	530	200	0.37		
Total Cadmium	ug/kg	21	20	95	440	160	290	93	0.34	100	100
Total Calcium	ug/kg	21	21	100	270000000	47000000	130,000,000	62,000,000	0.49		
Total Chromium	ug/kg	21	21	100	30000	5700	15,000	6,400	0.44		
Total Cobalt	ug/kg	21	21	100	7400	1800	4,400	1,600	0.37		
Total Copper	ug/kg	21	21	100	19000	4700	12,000	4,200	0.35		
Total Iron	ug/kg	21	21	100	20000000	4500000	12,000,000	4,500,000	0.40		
Total Lead	ug/kg	21	21	100	16000	6000	11,000	2,400	0.22		
Total Magnesium	ug/kg	21	21	100	31000000	14000000	24,000,000	5,500,000	0.23		
Total Manganese	ug/kg	21	21	100	410000	120000	290,000	80,000	0.28		
Total Mercury	ug/kg	21	10	48	16	9.5	13	2.2	0.19	9.6	13
Total Molybdenum	ug/kg	21	19	90	14000	230	1,400	2,900	2.3	200	410
Total Nickel	ug/kg	21	21	100	20000	4100	11,000	4,200	0.37		
Total Potassium	ug/kg	21	21	100	8300000	920000	5,100,000	2,300,000	0.44		
Total Selenium	ug/kg	21	14	67	330	180	250	35	0.14	210	260
Total Silver	ug/kg	21	1	5	44	44	44	13	0.21	41	82
Total Sodium	ug/kg	21	21	100	9300000	830000	2,800,000	2,100,000	0.75		
Total Thallium	ug/kg	21	8	38	170	82	140	28	0.24	69	140
Total Vanadium	ug/kg	21	21	100	38000	11000	23,000	6,800	0.30		
Total Zinc	ug/kg	21	21	100	83000	17000	44,000	15,000	0.34		
1,1'-Biphenyl	ug/kg	21	0	0				18	0.087	170	240
1,2,4,5-Tetrachlorobenzene	ug/kg	21	0	0				2.9	0.091	27	39
2,3,4,6-Tetrachlorophenol	ug/kg	21	0	0				9.1	0.090	86	120
2,4,5-Trichlorophenol	ug/kg	21	0	0				8.9	0.087	87	120
2,4,6-Trichlorophenol	ug/kg	21	0	0				8.6	0.084	88	120
2,4,6-Trichlorophenol (SIM Screen)	ug/kg	21	0	0				0.48	0.089	4.6	6.5
2,2-Oxybis(1-chloropropane)	ug/kg	21	0	0				9.4	0.096	83	120
2,4-Dichlorophenol	ug/kg	21	0	0				9.9	0.089	93	130
2,4-Dimethylphenol	ug/kg	21	0	0				18	0.088	180	250
2,4-Dinitrophenol	ug/kg	21	1	5	300	300	300	25	0.094	220	320
2,4-Dinitrotoluene	ug/kg	21	0	0				9.9	0.089	93	130
2,6-Dinitrotoluene	ug/kg	21	0	0				11	0.089	100	150
2-Chloronaphthalene	ug/kg	21	0	0				9.5	0.095	85	120
2-Chlorophenol	ug/kg	21	0	0				11	0.099	92	130
2-Methylphenol	ug/kg	21	0	0				6.4	0.090	61	86
2-Nitroaniline	ug/kg	21	0	0				8.6	0.084	88	120
2-Nitrophenol	ug/kg	21	0	0				9.1	0.090	86	120
3,3'-Dichlorobenzidine	ug/kg	21	0	0				11	0.093	99	140
3-Nitroaniline	ug/kg	21	0	0				18	0.088	180	250
4,6-Dinitro-2-methylphenol	ug/kg	21	1	5	320	320	320	49	0.44	85	120
4-Bromophenyl-phenylether	ug/kg	21	0	0				10	0.095	89	130
4-Chloro-3-methylphenol	ug/kg	21	0	0				11	0.093	97	140
4-Chloroaniline	ug/kg	21	0	0				6.4	0.090	61	86
4-Chlorophenyl-phenylether	ug/kg	21	0	0				11	0.094	98	140
3 & 4 Methylphenol	ug/kg	21	0	0				36	0.089	350	490
4-Nitroaniline	ug/kg	21	0	0				11	0.099	92	130

Table 6-3
Prevalence Table for Solids Sample Analysis – PRI-8 Northwest Ponded Waste Lagoon Overflow
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit
4-Nitrophenol	ug/kg	21	0	0				32	0.093	290	420
Acetophenone	ug/kg	21	0	0				2.7	0.087	26	37
Benzaldehyde	ug/kg	21	0	0				18	0.087	170	240
Benzylbutylphthalate	ug/kg	21	0	0				11	0.097	100	140
Bis(2-chloroethoxy)methane	ug/kg	21	0	0				11	0.099	92	130
bis(2-Chloroethyl) ether	ug/kg	21	0	0				9.5	0.095	85	120
Bis(2-ethylhexyl)phthalate	ug/kg	21	3	14	170	140	160	19	0.15	100	150
Carbazole	ug/kg	21	0	0				11	0.097	100	140
Dibenzofuran	ug/kg	21	0	0				11	0.10	90	130
Diethyl phthalate	ug/kg	21	0	0				9.7	0.087	95	130
Dimethylphthalate	ug/kg	21	0	0				11	0.10	91	130
Di-n-butylphthalate	ug/kg	21	0	0				11	0.093	100	140
Di-n-octylphthalate	ug/kg	21	0	0				11	0.093	100	140
Hexachlorobenzene	ug/kg	21	0	0				9.9	0.089	93	130
Hexachlorobenzene (SIM Screen)	ug/kg	21	10	48	150	2.5	33	33	1.9	2.5	2.9
Hexachlorobutadiene	ug/kg	21	0	0				9.1	0.090	86	120
Hexachlorobutadiene (SIM Screen)	ug/kg	21	0	0				0.41	0.089	3.9	5.5
Hexachlorocyclopentadiene	ug/kg	21	0	0				6.8	0.089	65	92
Hexachloroethane	ug/kg	21	0	0				9.5	0.095	85	120
Isophorone	ug/kg	21	0	0				11	0.094	98	140
Nitrobenzene	ug/kg	21	0	0				7.8	0.083	80	110
N-Nitrosodimethylamine	ug/kg	21	0	0				12	0.097	100	140
n-Nitrosodimethylamine (SIM Screen)	ug/kg	21	0	0				12	0.097	100	140
N-Nitroso-di-n-propylamine	ug/kg	21	0	0				8.6	0.084	88	120
N-Nitrosodiphenylamine	ug/kg	21	0	0				11	0.10	90	130
Pentachlorophenol	ug/kg	21	1	5	250	250	250	41	0.57	54	76
Pentachlorophenol (SIM Screen)	ug/kg	21	2	10	71	63	67	12	0.35	25	36
Phenol	ug/kg	21	0	0				8.9	0.087	87	120
2-Methylnaphthalene	ug/kg	21	0	0				0.054	0.10	0.44	0.61
Acenaphthene	ug/kg	21	0	0				0.059	0.10	0.48	0.67
Acenaphthylene	ug/kg	21	0	0				0.042	0.10	0.34	0.47
Anthracene	ug/kg	21	0	0				0.049	0.10	0.41	0.56
Benzo(a)anthracene	ug/kg	21	1	5	0.35	0.35	0.35	0.037	0.10	0.31	0.43
Benzo(a)pyrene	ug/kg	21	0	0				0.050	0.10	0.41	0.57
Benzo(b)fluoranthene	ug/kg	21	0	0				0.064	0.10	0.52	0.72
Benzo(g,h,i)perylene	ug/kg	21	0	0				0.12	0.10	1	1.4
Benzo(k)fluoranthene	ug/kg	21	0	0				0.098	0.11	0.78	1.1
Chrysene	ug/kg	21	8	38	0.91	0.4	0.59	0.13	0.27	0.36	0.49
Dibenzo(a,h)anthracene	ug/kg	21	0	0				0.16	0.11	1.2	1.7
Fluoranthene	ug/kg	21	5	24	0.59	0.37	0.45	0.066	0.17	0.3	0.42
Fluorene	ug/kg	21	0	0				0.062	0.10	0.5	0.7
Indeno(1,2,3-cd)pyrene	ug/kg	21	0	0				0.059	0.10	0.49	0.68
Naphthalene	ug/kg	21	0	0				0.038	0.10	0.32	0.44
Phenanthrene	ug/kg	21	17	81	1.1	0.38	0.62	0.18	0.30	0.41	0.49
Pyrene	ug/kg	21	2	10	0.51	0.43	0.47	0.045	0.10	0.36	0.5
Low Molecular Weight PAH (ND=0)	ug/kg	21	17	81	1.1	0.38	0.62	0.16	0.27	0.54	0.69
Low Molecular Weight PAH (ND=1/2DL)	ug/kg	21	17	81	2.4	1.7	2.1	0.27	0.13	1.6	1.9
High Molecular Weight PAH (ND=0)	ug/kg	21	8	38	2.2	0.4	1.0	0.49	0.36	1.2	1.7
High Molecular Weight PAH (ND=1/2DL)	ug/kg	21	8	38	4.6	3.3	3.9	0.45	0.12	2.9	4
1,4-Dioxane	ug/kg	7	0	0				8.2	0.14	46	68
1,1-Dichloroethane	ug/kg	7	0	0				0.060	0.14	0.34	0.5
1,1-Dichloroethene	ug/kg	7	0	0				0.052	0.14	0.31	0.45
1,2-Dibromo-3-chloropropane	ug/kg	7	0	0				0.20	0.15	1	1.5
1,2-Dibromoethane	ug/kg	7	0	0				0.057	0.15	0.32	0.47
1,2-Dichlorobenzene	ug/kg	7	0	0				0.13	0.14	0.75	1.1
1,2-Dichloroethane	ug/kg	7	0	0				0.16	0.15	0.86	1.3
cis-1,2-Dichloroethene	ug/kg	7	0	0				0.18	0.14	1	1.5
trans-1,2-Dichloroethene	ug/kg	7	0	0				0.077	0.14	0.45	0.66
1,2-Dichloropropane	ug/kg	7	0	0				0.12	0.13	0.71	1
1,3-Dichlorobenzene	ug/kg	7	0	0				0.063	0.14	0.35	0.52
cis-1,3-Dichloropropene	ug/kg	7	0	0				0.13	0.14	0.75	1.1
trans-1,3-Dichloropropene	ug/kg	7	0	0				0.15	0.14	0.88	1.3
1,4-Dichlorobenzene	ug/kg	7	0	0				0.19	0.16	0.92	1.4
1,1,1-Trichloroethane	ug/kg	7	0	0				0.077	0.15	0.42	0.63
1,1,2-Trichloroethane	ug/kg	7	0	0				0.091	0.14	0.52	0.76
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	ug/kg	7	0	0				0.16	0.13	0.98	1.4
1,2,3-Trichlorobenzene	ug/kg	7	0	0				0.15	0.14	0.88	1.3
1,2,4-Trichlorobenzene	ug/kg	7	0	0				0.15	0.14	0.88	1.3
1,1,2,2-Tetrachloroethane	ug/kg	7	0	0				0.14	0.14	0.8	1.2
2-Butanone	ug/kg	7	5	71	15	5.8	8.3	4.4	0.67	1.8	2.3
2-Hexanone	ug/kg	7	0	0				0.15	0.14	0.87	1.3
4-Methyl-2-pentanone	ug/kg	7	0	0				0.19	0.14	1.1	1.6
Acetone	ug/kg	7	4	57	83	17	58	31	0.78	8.6	22
Benzene	ug/kg	7	3	43	0.99	0.59	0.75	0.25	0.47	0.31	0.43
Bromochloromethane	ug/kg	7	1	14	7.3	7.3	7.3	2.3	1.0	1.1	1.6
Bromodichloromethane	ug/kg	7	6	86	220	5.3	51	79	1.8	0.62	0.62
Bromoform	ug/kg	7	6	86	570	2.4	140	210	1.7	0.47	0.47
Bromomethane	ug/kg	7	0	0				0.18	0.14	1	1.5
Carbon disulfide	ug/kg	7	3	43	20	0.71	7.2	7.3	2.1	0.64	0.85
Carbon tetrachloride	ug/kg	7	1	14	0.98	0.98	0.98	0.13	0.17	0.62	0.92
Chlorobenzene	ug/kg	7	0	0				0.060	0.14	0.34	0.5
Cyclohexane	ug/kg	7	0	0				0.57	0.15	3.1	4.6
Dibromochloromethane	ug/kg	7	6	86	390	5.9	91	140	1.8	0.25	0.25
Chloroethane	ug/kg	7	0	0				0.094	0.14	0.53	0.78
Chloroform	ug/kg	7	7	100	110	3.9	32	37	1.2		
Chloromethane	ug/kg	7	0	0				0.10	0.14	0.59	0.87
Dichlorodifluoromethane (Freon-12)	ug/kg	7	0	0				0.18	0.14	1	1.5
Ethyl benzene	ug/kg	7	0	0				0.073	0.15	0.4	0.59
Isopropylbenzene	ug/kg	7	0	0				0.11	0.14	0.61	0.9
Methyl tertbutyl ether (MTBE)	ug/kg	7	0	0				0.12	0.13	0.71	1
Dichloromethane (Methylene chloride)	ug/kg	7	2	29	2.6	1.1	1.9	0.55	0.39	0.99	1.5
Styrene	ug/kg	7	0	0				0.065	0.14	0.37	0.54
Tetrachloroethene	ug/kg	7	0	0				0.13	0.15	0.72	1.1
Toluene	ug/kg	7	0	0				0.13	0.15	0.72	1.1
Trichloroethene	ug/kg	7	0	0				0.12	0.13	0.71	1

Table 6-3
Prevalence Table for Solids Sample Analysis – PRI-8 Northwest Ponded Waste Lagoon Overflow
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit
Trichlorofluoromethane (Freon-11)	ug/kg	7	0	0				0.073	0.15	0.4	0.59
Vinyl chloride	ug/kg	7	0	0				0.077	0.15	0.42	0.63
o-Xylene	ug/kg	7	0	0				0.068	0.14	0.39	0.57
m,p Xylenes	ug/kg	7	0	0				0.15	0.13	0.96	1.4
Perchlorate	ug/kg	21	2	10	90	55	73	16	0.54	21	29
Total Organic Carbon	g/kg	21	15	71	11	4	7.3	3.0	0.50	1.7	3.5
pH	pH units	21	21	100	8.87	6.84	7.7	0.69	0.090		
Cyanide, Total	mg/kg	21	0	0				0.024	0.094	0.21	0.31

Notes:
µg/kg = micrograms per kilogram
Empty cells = No results
g/kg = Grams per kilograms
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pH = pH units
SIM = Selected ion monitoring
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence

Table 6-4
Prevalence Table for Solids Sample Analysis – PRI-9 Smut Area
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	CAS #	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
2,3,7,8-TCDD	1746-01-6	ug/kg	14	2	14	0.0034	0.0011	0.0023	0.00090	1.9	0.00003	0.00088	PRI9-009
1,2,3,7,8-PeCDD	40321-76-4	ug/kg	14	9	64	0.01	0.00024	0.0030	0.0031	1.6	0.000035	0.000069	PRI9-009
1,2,3,4,7,8-HxCDD	39227-28-6	ug/kg	14	6	43	0.0074	0.00036	0.0034	0.0025	1.6	0.000026	0.00096	PRI9-009
1,2,3,6,7,8-HxCDD	57653-85-7	ug/kg	14	10	71	0.048	0.0003	0.011	0.015	1.8	0.000025	0.00016	PRI9-009
1,2,3,7,8,9-HxCDD	19408-74-3	ug/kg	14	10	71	0.05	0.00025	0.012	0.016	1.8	0.000033	0.000052	PRI9-009
1,2,3,4,6,7,8-HpCDD	35822-46-9	ug/kg	14	12	86	0.23	0.00054	0.049	0.073	1.7	0.000095	0.0003	PRI9-009
OCDD	3268-87-9	ug/kg	14	12	86	0.28	0.0011	0.082	0.10	1.4	0.00034	0.0008	PRI9-010
2,3,7,8-TCDF	51207-31-9	ug/kg	14	13	93	0.042	0.00017	0.0071	0.011	1.7	0.00058	0.00058	PRI9-010
1,2,3,7,8-PeCDF	57117-41-6	ug/kg	14	11	79	0.072	0.00064	0.019	0.023	1.5	0.000031	0.00014	PRI9-010
2,3,4,7,8-PeCDF	57117-31-4	ug/kg	14	13	93	0.033	0.00009	0.0092	0.012	1.4	0.000033	0.000033	PRI9-010
1,2,3,4,7,8-HxCDF	70648-26-9	ug/kg	14	12	86	0.14	0.0006	0.046	0.055	1.4	0.00029	0.00063	PRI9-008 PRI9-010
1,2,3,6,7,8-HxCDF	57117-44-9	ug/kg	14	9	64	0.097	0.00078	0.032	0.031	1.5	0.00011	0.0046	PRI9-008
1,2,3,7,8,9-HxCDF	72918-21-9	ug/kg	14	8	57	0.0073	0.00018	0.0034	0.0029	1.4	0.000029	0.00032	PRI9-008
2,3,4,6,7,8-HxCDF	60851-34-5	ug/kg	14	11	79	0.094	0.00025	0.015	0.025	2.1	0.000035	0.000081	PRI9-008
1,2,3,4,6,7,8-HpCDF	67562-39-4	ug/kg	14	12	86	2.3	0.0014	0.29	0.60	2.4	0.0007	0.038	PRI9-008
1,2,3,4,7,8,9-HpCDF	55673-89-7	ug/kg	14	12	86	0.27	0.00018	0.051	0.077	1.7	0.00032	0.0055	PRI9-008
OCDF	39001-02-0	ug/kg	14	14	100	19	0.0053	2.4	5.0	2.1			PRI9-008
Calculated TEQ (ND=0), Mammalian	CALC_DX_0	ug/kg	14	14	100	0.092	0.000026	0.020	0.030	1.5			PRI9-008
Calculated TEQ (ND=1/2 DL), Mammalian	CALC_DX_2	ug/kg	14	14	100	0.092	0.00014	0.020	0.030	1.5			PRI9-008
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	ug/kg	14	14	100	3.3	0.00023	0.43	0.87	2.0			PRI9-013
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	ug/kg	14	14	100	3.3	0.014	0.44	0.86	2.0			PRI9-013
PCB-81	70362-50-4	ug/kg	14	4	29	0.0081	0.00022	0.0054	0.0040	1.4	0.0004	0.013	PRI9-008
PCB-77	32598-13-3	ug/kg	14	8	57	0.095	0.0028	0.029	0.027	1.5	0.00041	0.0065	PRI9-014
PCB-105	32598-14-4	ug/kg	14	10	71	2.4	0.0066	0.31	0.63	2.8	0.00034	0.00075	PRI9-014
PCB-114	74472-37-0	ug/kg	14	8	57	0.13	0.0013	0.024	0.034	2.5	0.00032	0.00077	PRI9-014
PCB-118	31508-00-6	ug/kg	14	11	79	4.6	0.0024	0.53	1.2	2.9	0.00081	0.0017	PRI9-014
PCB-123	65510-44-3	ug/kg	14	7	50	0.078	0.00061	0.018	0.020	2.3	0.00031	0.0009	PRI9-014
PCB-126	57465-28-8	ug/kg	14	5	36	0.017	0.0011	0.0070	0.0090	1.7	0.00033	0.032	PRI9-008
PCB-156 & 157	PCB156_157	ug/kg	14	10	71	0.61	0.0025	0.087	0.16	2.6	0.00028	0.00051	PRI9-014
PCB-167	52663-72-6	ug/kg	14	8	57	0.16	0.0015	0.035	0.042	2.1	0.00022	0.0026	PRI9-014
PCB-169	32774-16-6	ug/kg	14	2	14	0.0045	0.0023	0.0034	0.0019	1.2	0.000098	0.006	PRI9-009
PCB-189	39635-31-9	ug/kg	14	4	29	0.03	0.0017	0.015	0.011	1.5	0.00039	0.033	PRI9-010
Monochlorobiphenyls, Total	27323-18-8	ug/kg	14	14	100	0.3	0.0065	0.069	0.081	1.2			PRI9-013
Dichlorobiphenyls, Total	25512-42-9	ug/kg	14	12	86	0.38	0.025	0.14	0.13	1.1	0.0076	0.021	PRI9-013
Trichlorobiphenyls, Total	25323-68-6	ug/kg	14	13	93	0.78	0.0016	0.20	0.26	1.4	0.0015	0.0015	PRI9-014
Tetrachlorobiphenyls, Total	26914-33-0	ug/kg	14	14	100	11	0.0012	1.0	2.9	2.8			PRI9-014
Pentachlorobiphenyls, Total	25429-29-2	ug/kg	14	14	100	27	0.0016	2.4	7.1	3.0			PRI9-014
Hexachlorobiphenyls, Total	26601-64-9	ug/kg	14	14	100	10	0.00089	1.1	2.6	2.5			PRI9-014
Heptachlorobiphenyls, Total	28655-71-2	ug/kg	14	14	100	1.3	0.00041	0.34	0.50	1.5			PRI9-010
Octachlorobiphenyls, Total	55722-26-4	ug/kg	14	14	100	2.2	0.0019	0.46	0.71	1.6			PRI9-008
Nonachlorobiphenyls, Total	53742-07-7	ug/kg	14	14	100	6	0.011	1.1	1.7	1.5			PRI9-008
Decachlorobiphenyl (PCB-209)	2051-24-3	ug/kg	14	14	100	63	0.29	16	20	1.3			PRI9-008
Total PCBs	1336-36-3	ug/kg	14	14	100	79	0.36	22	29	1.3			PRI9-008
Total Aluminum	7429-90-5	ug/kg	14	14	100	15,000,000	960,000	5,100,000	4,300,000	0.85			PRI9-012
Total Antimony	7440-36-0	ug/kg	14	4	29	2,100	160	720	500	1.3	130	340	PRI9-014
Total Arsenic	7440-38-2	ug/kg	14	12	86	10,000	340	2,600	2,700	1.2	470	510	PRI9-014
Total Barium	7440-39-3	ug/kg	14	14	100	840,000	25,000	180,000	220,000	1.2			PRI9-008
Total Beryllium	7440-41-7	ug/kg	14	14	100	200,000	59	24,000	55,000	2.3			PRI9-003
Total Cadmium	7440-43-9	ug/kg	14	5	36	480	230	350	130	0.66	66	170	PRI9-012
Total Calcium	7440-70-2	ug/kg	14	14	100	87,000,000	37,000,000	61,000,000	19,000,000	0.30			PRI9-012
Total Chromium	7440-47-3	ug/kg	14	14	100	59,000	4,100	17,000	14,000	0.84			PRI9-013
Total Cobalt	7440-48-4	ug/kg	14	14	100	24,000	460	6,600	7,100	1.1			PRI9-013
Total Copper	7440-50-8	ug/kg	14	14	100	140,000	1,900	28,000	37,000	1.3			PRI9-014
Total Iron	7439-89-6	ug/kg	14	14	100	68,000,000	2,300,000	31,000,000	24,000,000	0.78			PRI9-009
Total Lead	7439-92-1	ug/kg	14	14	100	69,000	1,300	20,000	24,000	1.2			PRI9-014
Total Magnesium	7439-95-4	ug/kg	14	14	100	180,000,000	31,000,000	110,000,000	57,000,000	0.51			PRI9-003 PRI9-013
Total Manganese	7439-96-5	ug/kg	14	14	100	7,300,000	52,000	1,000,000	1,900,000	1.9			PRI9-003
Total Mercury	7439-97-6	ug/kg	14	6	43	160	13	70	42	1.1	10	15	PRI9-010
Total Molybdenum	7439-98-7	ug/kg	14	12	86	15,000	860	4,200	4,400	1.2	110	490	PRI9-014
Total Nickel	7440-02-0	ug/kg	14	14	100	190,000	2,500	78,000	67,000	0.87			PRI9-001
Total Potassium	7440-09-7	ug/kg	14	14	100	23,000,000	4,400,000	14,000,000	5,200,000	0.38			PRI9-001
Total Selenium	7782-49-2	ug/kg	14	1	7	450	450	450	91	0.37	130	340	PRI9-012
Total Silver	7440-22-4	ug/kg	14	3	21	120	99	110	25	0.32	40	100	PRI9-014
Total Sodium	7440-23-5	ug/kg	14	14	100	130,000,000	2,100,000	32,000,000	33,000,000	1.0			PRI9-011
Total Thallium	7440-28-0	ug/kg	14	1	7	180	180	180	40	0.33	66	170	PRI9-012
Total Vanadium	7440-62-2	ug/kg	14	14	100	45,000	3,400	25,000	14,000	0.55			PRI9-009
Total Zinc	7440-66-6	ug/kg	14	14	100	180,000	3,500	48,000	56,000	1.2			PRI9-014
1,1'-Biphenyl	92-52-4	ug/kg	14	0	0				27	0.11	200	280	
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/kg	14	0	0				4.0	0.11	32	44	
2,3,4,6-Tetrachlorophenol	58-90-2	ug/kg	14	0	0				13	0.11	99	140	
2,4,5-Trichlorophenol	95-95-4	ug/kg	14	0	0				13	0.11	100	140	
2,4,6-Trichlorophenol	88-06-2	ug/kg	14	0	0				15	0.12	100	140	
2,4,6-Trichlorophenol (SIM Screen)	88-06-2	ug/kg	14	2	14	8.7	7.1	7.9	0.94	0.14	5.3	7.5	PRI9-014
2,2-Oxybis(1-chloropropane)	108-60-1	ug/kg	14	0	0				13	0.11	96	130	
2,4-Dichlorophenol	120-83-2	ug/kg	14	0	0				13	0.10	110	150	
2,4-Dimethylphenol	105-67-9	ug/kg	14	0	0				28	0.11	200	290	
2,4-Dinitrophenol	51-28-5	ug/kg	14	2	14	340	330	340	35	0.11	260	370	PRI9-011
2,4-Dinitrotoluene	121-14-2	ug/kg	14	0	0				13	0.10	110	150	
2,6-Dinitrotoluene	606-20-2	ug/kg	14	0	0				17	0.12	120	170	
2-Chloronaphthalene	91-58-7	ug/kg	14	0	0				13	0.11	98	140	
2-Chlorophenol	95-57-8	ug/kg	14	0	0				13	0.10	110	150	
2-Methylphenol	95-48-7	ug/kg	14	0	0				9.3	0.11	70	99	
2-Nitroaniline	88-74-4	ug/kg	14	0	0				15	0.12	100	140	
2-Nitrophenol	88-75-5	ug/kg	14	0	0				13	0.11	99	140	
3,3'-Dichlorobenzidine	91-94-1	ug/kg	14	0	0				15	0.11	110	160	
3-Nitroaniline	99-09-2	ug/kg	14	0	0				28	0.11	200	290	
4,6-Dinitro-2-methylphenol	534-52-1	ug/kg	14	0	0				13	0.11	98	140	
4-Bromophenyl-phenylether	101-55-3	ug/kg	14	0	0				16	0.13	100	150	
4-Chloro-3-methylphenol	59-50-7	ug/kg	14	0	0				17	0.13	110	160	
4-Chloroaniline	106-47-8	ug/kg	14	0	0				9.3	0.11	70	99	
4-Chlorophenyl-phenylether	7005-72-3	ug/kg	14	0	0				15	0.11	110	160	
3 & 4 Methylphenol	15831-10-4	ug/kg	14	0	0				53	0.11	400	560	
4-Nitroaniline	100-01-6	ug/kg	14	0	0				13	0.10	110	150	
4-Nitrophenol	100-02-7	ug/kg	14	0	0				45	0.11	340	480	

Table 6-4
Prevalence Table for Solids Sample Analysis – PRI-9 Smut Area
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	CAS #	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
Acetophenone	98-86-2	ug/kg	14	2	14	55	38	47	6.2	0.17	30	40	PRI9-009
Benzaldehyde	100-52-7	ug/kg	14	0	0				27	0.11	200	280	
Benzylbutylphthalate	85-68-7	ug/kg	14	0	0				13	0.095	120	160	
Bis(2-chloroethoxy)methane	111-91-1	ug/kg	14	0	0				13	0.10	110	150	
bis(2-Chloroethyl) ether	111-44-4	ug/kg	14	0	0				13	0.11	98	140	
Bis(2-ethylhexyl)phthalate	117-81-7	ug/kg	14	0	0				17	0.12	120	170	
Carbazole	86-74-8	ug/kg	14	0	0				13	0.095	120	160	
Dibenzofuran	132-64-9	ug/kg	14	0	0				15	0.12	100	150	
Diethyl phthalate	84-66-2	ug/kg	14	0	0				14	0.10	110	150	
Dimethylphthalate	131-11-3	ug/kg	14	0	0				13	0.10	110	150	
Di-n-butylphthalate	84-74-2	ug/kg	14	0	0				16	0.11	120	170	
Di-n-octylphthalate	117-84-0	ug/kg	14	1	7	140	140	140	15	0.11	120	170	PRI9-010
Hexachlorobenzene	118-74-1	ug/kg	14	1	7	320	320	320	53	0.38	110	150	PRI9-013
Hexachlorobenzene (SIM Screen)	118-74-1	ug/kg	14	9	64	240	9.4	53	63	1.8	2.7	3.5	PRI9-013
Hexachlorobutadiene	87-68-3	ug/kg	14	0	0				13	0.11	99	140	
Hexachlorobutadiene (SIM Screen)	87-68-3	ug/kg	14	0	0				0.58	0.11	4.5	6.3	
Hexachlorocyclopentadiene	77-47-4	ug/kg	14	0	0				10	0.12	75	110	
Hexachloroethane	67-72-1	ug/kg	14	0	0				13	0.11	98	140	
Isophorone	78-59-1	ug/kg	14	0	0				15	0.11	110	160	
Nitrobenzene	98-95-3	ug/kg	14	0	0				12	0.11	92	130	
N-Nitrosodimethylamine	62-75-9	ug/kg	14	0	0				14	0.097	120	160	
n-Nitrosodimethylamine (SIM Screen)	62-75-9	ug/kg	14	0	0				14	0.097	120	160	
N-Nitroso-di-n-propylamine	621-64-7	ug/kg	14	0	0				15	0.12	100	140	
N-Nitrosodiphenylamine	86-30-6	ug/kg	14	0	0				15	0.12	100	150	
Pentachlorophenol	87-86-5	ug/kg	14	1	7	280	280	280	56	0.62	62	87	PRI9-011
Pentachlorophenol (SIM Screen)	87-86-5	ug/kg	14	2	14	520	130	330	130	1.7	29	41	PRI9-011
Phenol	108-95-2	ug/kg	14	0	0				13	0.11	100	140	
2-Methylnaphthalene	91-57-6	ug/kg	14	9	64	6	0.82	2.3	1.6	0.93	0.48	0.66	PRI9-013
Acenaphthene	83-32-9	ug/kg	14	0	0				0.080	0.12	0.52	0.78	
Acenaphthylene	208-96-8	ug/kg	14	0	0				0.056	0.12	0.37	0.55	
Anthracene	120-12-7	ug/kg	14	0	0				0.067	0.12	0.44	0.66	
Benzo(a)anthracene	56-55-3	ug/kg	14	0	0				0.051	0.12	0.34	0.5	
Benzo(a)pyrene	50-32-8	ug/kg	14	0	0				0.065	0.12	0.45	0.66	
Benzo(b)fluoranthene	205-99-2	ug/kg	14	0	0				0.086	0.12	0.56	0.84	
Benzo(g,h,i)perylene	191-24-2	ug/kg	14	0	0				0.18	0.13	1.1	1.7	
Benzo(k)fluoranthene	207-08-9	ug/kg	14	0	0				0.14	0.13	0.85	1.3	
Chrysene	218-01-9	ug/kg	14	2	14	0.74	0.57	0.66	0.090	0.18	0.39	0.58	PRI9-008
Dibenzo(a,h)anthracene	53-70-3	ug/kg	14	0	0				0.21	0.13	1.3	2	
Fluoranthene	206-44-0	ug/kg	14	2	14	0.66	0.56	0.61	0.088	0.20	0.33	0.46	PRI9-008
Fluorene	86-73-7	ug/kg	14	0	0				0.082	0.12	0.55	0.81	
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	14	0	0				0.082	0.12	0.53	0.8	
Naphthalene	91-20-3	ug/kg	14	12	86	3.3	0.43	1.5	0.91	0.67	0.34	0.4	PRI9-013
Phenanthrene	85-01-8	ug/kg	14	7	50	4.8	0.55	2.0	1.3	0.92	0.45	2.6	PRI9-008
Pyrene	129-00-0	ug/kg	14	2	14	0.88	0.67	0.78	0.12	0.24	0.39	0.54	PRI9-008
Low Molecular Weight PAH (ND=0)	LPAH-0	ug/kg	14	13	93	9.3	0.73	4.1	3.0	0.79	0.55	0.55	PRI9-013
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	ug/kg	14	13	93	11	2.3	5.6	3.1	0.57	1.6	1.6	PRI9-013
High Molecular Weight PAH (ND=0)	HPAH-0	ug/kg	14	3	21	2.3	0.57	1.4	0.41	0.26	1.3	1.9	PRI9-008
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	ug/kg	14	3	21	5.8	4	5.1	0.75	0.18	3.1	4.4	PRI9-008
Perchlorate	14797-73-0	ug/kg	14	0	0				63	0.54	24	270	
Total Organic Carbon	TOC	g/kg	14	7	50	50	5.2	20	16	1.5	1.7	2.3	PRI9-001
pH	PH25	pH units	14	14	100	9.9	8.86	9.3	0.29	0.031			PRI9-013
Cyanide, Total	74-90-8	ug/kg	14	4	29	1,000	260	660	230	0.56	250	340	PRI9-003

Notes:

µg/kg = micrograms per kilogram
Empty cells = No results
g/kg = Grams per kilograms
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pH = pH units
SIM = Selected ion monitoring
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence

Table 6-5
Prevalence Table for Solids Sample Analysis – PRI-10 Barium Sulfate Area
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	CAS #	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
2,3,7,8-TCDD	1746-01-6	ug/kg	19	0	0				0.000082	0.86	0.000018	0.00039	
1,2,3,7,8-PeCDD	40321-76-4	ug/kg	19	0	0				0.00017	0.87	0.000036	0.00075	
1,2,3,4,7,8-HxCDD	39227-28-6	ug/kg	19	0	0				0.00023	1.0	0.00005	0.001	
1,2,3,6,7,8-HxCDD	57653-85-7	ug/kg	19	3	16	0.0029	0.00021	0.0013	0.00066	1.8	0.000035	0.001	PRI10-008
1,2,3,7,8,9-HxCDD	19408-74-3	ug/kg	19	2	11	0.003	0.00017	0.0016	0.00068	1.9	0.000036	0.00089	PRI10-008
1,2,3,4,6,7,8-HpCDD	35822-46-9	ug/kg	19	13	68	0.018	0.0003	0.0027	0.0041	2.1	0.000081	0.00052	PRI10-008
OCDD	3268-87-9	ug/kg	19	13	68	0.067	0.00028	0.0091	0.015	2.1	0.0006	0.006	PRI10-008
2,3,7,8-TCDF	51207-31-9	ug/kg	19	9	47	0.003	0.00023	0.00090	0.00068	1.1	0.000085	0.0012	PRI10-008
1,2,3,7,8-PeCDF	57117-41-6	ug/kg	19	10	53	0.0067	0.00022	0.0015	0.0015	1.5	0.00015	0.0014	PRI10-008
2,3,4,7,8-PeCDF	57117-31-4	ug/kg	19	6	32	0.0036	0.00016	0.0012	0.00086	1.3	0.000086	0.0014	PRI10-008
1,2,3,4,7,8-HxCDF	70648-26-9	ug/kg	19	10	53	0.013	0.00056	0.0034	0.0031	1.4	0.000055	0.0019	PRI10-008
1,2,3,6,7,8-HxCDF	57117-44-9	ug/kg	19	10	53	0.0077	0.00015	0.0021	0.0020	1.3	0.000049	0.0026	PRI10-008
1,2,3,7,8,9-HxCDF	72918-21-9	ug/kg	19	0	0				0.00044	1.5	0.000041	0.0018	
2,3,4,6,7,8-HxCDF	60851-34-5	ug/kg	19	8	42	0.0031	0.00032	0.0010	0.00076	1.2	0.00004	0.0017	PRI10-008
1,2,3,4,6,7,8-HpCDF	67562-39-4	ug/kg	19	13	68	0.078	0.00018	0.016	0.019	1.6	0.0002	0.01	PRI10-008
1,2,3,4,7,8,9-HpCDF	55673-89-7	ug/kg	19	10	53	0.021	0.00012	0.0046	0.0051	1.8	0.000083	0.0033	PRI10-008
OCDF	39001-02-0	ug/kg	19	18	95	2	0.001	0.23	0.46	2.1	0.016	0.016	PRI10-008
Calculated TEQ (ND=0), Mammalian	CALC_DX_0	ug/kg	19	19	100	0.0064	0.000001	0.00078	0.0015	2.0			PRI10-008
Calculated TEQ (ND=1/2 DL), Mammalian	CALC_DX_2	ug/kg	19	19	100	0.0072	0.00018	0.0011	0.0016	1.5			PRI10-008
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	ug/kg	19	19	100	0.11	0.00000035	0.015	0.033	2.3			PRI10-008
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	ug/kg	19	19	100	0.11	0.013	0.026	0.028	1.1			PRI10-008
PCB-81	70362-50-4	ug/kg	19	0	0				0.00061	1.1	0.00011	0.0029	
PCB-77	32598-13-3	ug/kg	19	9	47	0.025	0.00054	0.0048	0.0057	2.1	0.00033	0.0026	PRI10-008
PCB-105	32598-14-4	ug/kg	19	11	58	0.32	0.00077	0.042	0.075	3.0	0.00021	0.0062	PRI10-008
PCB-114	74472-37-0	ug/kg	19	4	21	0.018	0.00055	0.0062	0.0042	2.7	0.000088	0.0009	PRI10-008
PCB-118	31508-00-6	ug/kg	19	14	74	0.52	0.00055	0.054	0.12	3.0	0.00027	0.0037	PRI10-008
PCB-123	65510-44-3	ug/kg	19	2	11	0.012	0.0042	0.0081	0.0028	2.4	0.000091	0.00089	PRI10-008
PCB-126	57465-28-8	ug/kg	19	2	11	0.00047	0.00028	0.00038	0.0020	1.9	0.00012	0.0088	PRI10-010
PCB-156 & 157	PCB156_157	ug/kg	19	11	58	0.083	0.00033	0.011	0.019	2.9	0.0002	0.00064	PRI10-008
PCB-167	52663-72-6	ug/kg	19	10	53	0.027	0.00029	0.0041	0.0062	2.8	0.00014	0.00035	PRI10-008
PCB-169	32774-16-6	ug/kg	19	1	5	0.0004	0.0004	0.00040	0.00052	1.2	0.00005	0.0024	PRI10-010
PCB-189	39635-31-9	ug/kg	19	4	21	0.0077	0.0016	0.0037	0.0018	1.6	0.00013	0.0008	PRI10-008
Monochlorobiphenyls, Total	27323-18-8	ug/kg	19	19	100	0.012	0.0023	0.0052	0.0028	0.54			PRI10-008
Dichlorobiphenyls, Total	25512-42-9	ug/kg	19	14	74	0.037	0.007	0.016	0.0085	0.63	0.0053	0.0077	PRI10-008
Trichlorobiphenyls, Total	25323-68-6	ug/kg	19	18	95	0.18	0.0017	0.022	0.042	2.0	0.00099	0.00099	PRI10-008
Tetrachlorobiphenyls, Total	26914-33-0	ug/kg	19	19	100	1.1	0.0016	0.086	0.25	3.0			PRI10-008
Pentachlorobiphenyls, Total	25429-29-2	ug/kg	19	19	100	2.7	0.0013	0.21	0.63	3.0			PRI10-008
Hexachlorobiphenyls, Total	26601-64-9	ug/kg	19	18	95	1.4	0.00067	0.12	0.32	2.8	0.00049	0.00049	PRI10-008
Heptachlorobiphenyls, Total	28655-71-2	ug/kg	19	18	95	0.43	0.00028	0.048	0.098	2.2	0.00051	0.00051	PRI10-008
Octachlorobiphenyls, Total	55722-26-4	ug/kg	19	15	79	0.41	0.0033	0.062	0.095	1.9	0.00025	0.00039	PRI10-008
Nonachlorobiphenyls, Total	53742-07-7	ug/kg	19	18	95	1.1	0.00074	0.14	0.25	2.0	0.00031	0.00031	PRI10-008
Decachlorobiphenyl (PCB-209)	2051-24-3	ug/kg	19	19	100	34	0.01	2.9	7.9	2.7			PRI10-008
Total PCBs	1336-36-3	ug/kg	19	19	100	42	0.019	3.6	9.8	2.7			PRI10-008
Total Aluminum	7429-90-5	ug/kg	19	19	100	17000000	460000	9,300,000	4,200,000	0.45			PRI10-011
Total Antimony	7440-36-0	ug/kg	19	5	26	560	440	490	120	0.34	180	450	PRI10-002
Total Arsenic	7440-38-2	ug/kg	19	19	100	13000	2000	7,100	2,800	0.39			PRI10-002
Total Barium	7440-39-3	ug/kg	19	19	100	4000000	120000	540,000	860,000	1.6			PRI10-008
Total Beryllium	7440-41-7	ug/kg	19	19	100	7400	26	940	1,600	1.7			PRI10-008
Total Cadmium	7440-43-9	ug/kg	19	18	95	340	90	230	73	0.32	91	91	PRI10-010
Total Calcium	7440-70-2	ug/kg	19	19	100	320000000	86000000	150,000,000	63,000,000	0.42			PRI10-008
Total Chromium	7440-47-3	ug/kg	19	19	100	18000	940	11,000	5,000	0.44			PRI10-007
Total Cobalt	7440-48-4	ug/kg	19	19	100	6600	980	3,900	1,600	0.42			PRI10-002
Total Copper	7440-50-8	ug/kg	19	19	100	22000	890	11,000	5,400	0.48			PRI10-008
Total Iron	7439-89-6	ug/kg	19	19	100	17000000	940000	10,000,000	4,500,000	0.45			PRI10-007
Total Lead	7439-92-1	ug/kg	19	19	100	18000	1900	9,300	3,900	0.42			PRI10-008
Total Magnesium	7439-95-4	ug/kg	19	19	100	120000000	16000000	35,000,000	25,000,000	0.69			PRI10-008
Total Manganese	7439-96-5	ug/kg	19	19	100	1200000	170000	340,000	230,000	0.67			PRI10-008
Total Mercury	7439-97-6	ug/kg	19	10	53	22	11	18	4.5	0.32	9.1	12	PRI10-006 PRI10-008
Total Molybdenum	7439-98-7	ug/kg	19	9	47	970	280	630	270	0.62	35	450	PRI10-003
Total Nickel	7440-02-0	ug/kg	19	19	100	16000	2300	11,000	4,000	0.38			PRI10-002 PRI10-007
Total Potassium	7440-09-7	ug/kg	19	19	100	16000000	460000	6,700,000	3,800,000	0.57			PRI10-007
Total Selenium	7782-49-2	ug/kg	19	14	74	380	240	310	67	0.24	160	240	PRI10-003
Total Silver	7440-22-4	ug/kg	19	5	26	88	50	68	9.4	0.14	52	76	PRI10-009
Total Sodium	7440-23-5	ug/kg	19	19	100	14000000	2700000	8,200,000	2,800,000	0.34			PRI10-002
Total Thallium	7440-28-0	ug/kg	19	0	0				23	0.20	81	170	
Total Vanadium	7440-62-2	ug/kg	19	19	100	36000	7700	22,000	6,400	0.30			PRI10-002
Total Zinc	7440-66-6	ug/kg	19	19	100	84000	2600	40,000	22,000	0.55			PRI10-008
1,1'-Biphenyl	92-52-4	ug/kg	19	0	0				14	0.069	190	240	
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/kg	19	0	0				2.3	0.071	30	38	
2,3,4,6-Tetrachlorophenol	58-90-2	ug/kg	19	0	0				7.7	0.075	93	120	
2,4,5-Trichlorophenol	95-95-4	ug/kg	19	0	0				7.5	0.073	95	120	
2,4,6-Trichlorophenol	88-06-2	ug/kg	19	0	0				7.4	0.071	96	120	
2,4,6-Trichlorophenol (SIM Screen)	88-06-2	ug/kg	19	0	0				0.40	0.073	5	6.5	
2,2-Oxybis(1-chloropropane)	108-60-1	ug/kg	19	0	0				6.9	0.071	90	120	
2,4-Dichlorophenol	120-83-2	ug/kg	19	0	0				8.1	0.073	100	130	
2,4-Dimethylphenol	105-67-9	ug/kg	19	0	0				16	0.076	190	250	
2,4-Dinitrophenol	51-28-5	ug/kg	19	0	0				18	0.066	240	310	
2,4-Dinitrotoluene	121-14-2	ug/kg	19	0	0				8.1	0.073	100	130	
2,6-Dinitrotoluene	606-20-2	ug/kg	19	0	0				9.5	0.077	110	150	
2-Chloronaphthalene	91-58-7	ug/kg	19	0	0				7.8	0.077	92	120	

Table 6-5
Prevalence Table for Solids Sample Analysis – PRI-10 Barium Sulfate Area
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	CAS #	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
2-Chlorophenol	95-57-8	ug/kg	19	0	0				8.5	0.077	100	130	
2-Methylphenol	95-48-7	ug/kg	19	0	0				5.1	0.071	66	85	
2-Nitroaniline	88-74-4	ug/kg	19	0	0				7.4	0.071	96	120	
2-Nitrophenol	88-75-5	ug/kg	19	0	0				7.7	0.075	93	120	
3,3'-Dichlorobenzidine	91-94-1	ug/kg	19	0	0				9.5	0.081	110	140	
3-Nitroaniline	99-09-2	ug/kg	19	0	0				16	0.076	190	250	
4,6-Dinitro-2-methylphenol	534-52-1	ug/kg	19	0	0				7.8	0.077	92	120	
4-Bromophenyl-phenylether	101-55-3	ug/kg	19	0	0				7.3	0.070	97	120	
4-Chloro-3-methylphenol	59-50-7	ug/kg	19	0	0				9.0	0.079	100	140	
4-Chloroaniline	106-47-8	ug/kg	19	0	0				5.1	0.071	66	85	
4-Chlorophenyl-phenylether	7005-72-3	ug/kg	19	0	0				9.6	0.082	110	140	
3 & 4 Methylphenol	15831-10-4	ug/kg	19	0	0				30	0.072	380	490	
4-Nitroaniline	100-01-6	ug/kg	19	0	0				8.5	0.077	100	130	
4-Nitrophenol	100-02-7	ug/kg	19	0	0				25	0.072	320	410	
Acetophenone	98-86-2	ug/kg	19	1	5	38	38	38	3.8	0.12	28	40	PRI10-010
Benzaldehyde	100-52-7	ug/kg	19	0	0				14	0.069	190	240	
Benzylbutylphthalate	85-68-7	ug/kg	19	0	0				9.6	0.081	110	140	
Bis(2-chloroethoxy)methane	111-91-1	ug/kg	19	0	0				8.5	0.077	100	130	
bis(2-Chloroethyl) ether	111-44-4	ug/kg	19	0	0				7.8	0.077	92	120	
Bis(2-ethylhexyl)phthalate	117-81-7	ug/kg	19	4	21	180	150	170	21	0.16	110	140	PRI10-008
Carbazole	86-74-8	ug/kg	19	0	0				9.6	0.081	110	140	
Dibenzofuran	132-64-9	ug/kg	19	0	0				8.4	0.078	98	130	
Diethyl phthalate	84-66-2	ug/kg	19	0	0				7.9	0.070	100	130	
Dimethylphthalate	131-11-3	ug/kg	19	0	0				9.6	0.089	99	130	
Di-n-butylphthalate	84-74-2	ug/kg	19	0	0				8.1	0.067	110	140	
Di-n-octylphthalate	117-84-0	ug/kg	19	0	0				8.1	0.067	110	140	
Hexachlorobenzene	118-74-1	ug/kg	19	0	0				8.1	0.073	100	130	
Hexachlorobenzene (SIM Screen)	118-74-1	ug/kg	19	3	16	9.6	7.2	8.2	2.1	0.59	2.5	3.2	PRI10-008
Hexachlorobutadiene	87-68-3	ug/kg	19	0	0				7.7	0.075	93	120	
Hexachlorobutadiene (SIM Screen)	87-68-3	ug/kg	19	0	0				0.34	0.073	4.2	5.4	
Hexachlorocyclopentadiene	77-47-4	ug/kg	19	0	0				5.5	0.071	71	91	
Hexachloroethane	67-72-1	ug/kg	19	0	0				7.8	0.077	92	120	
Isophorone	78-59-1	ug/kg	19	0	0				9.6	0.082	110	140	
Nitrobenzene	98-95-3	ug/kg	19	0	0				6.4	0.068	87	110	
N-Nitrosodimethylamine	62-75-9	ug/kg	19	0	0				9.1	0.076	110	140	
n-Nitrosodimethylamine (SIM Screen)	62-75-9	ug/kg	19	0	0				9.1	0.076	110	140	
N-Nitroso-di-n-propylamine	621-64-7	ug/kg	19	0	0				7.4	0.071	96	120	
N-Nitrosodiphenylamine	86-30-6	ug/kg	19	0	0				8.4	0.078	98	130	
Pentachlorophenol	87-86-5	ug/kg	19	0	0				4.5	0.072	58	75	
Pentachlorophenol (SIM Screen)	87-86-5	ug/kg	19	1	5	47	47	47	4.5	0.14	27	35	PRI10-011
Phenol	108-95-2	ug/kg	19	0	0				7.5	0.073	95	120	
2-Methylnaphthalene	91-57-6	ug/kg	19	1	5	0.92	0.92	0.92	0.10	0.19	0.45	0.66	PRI10-008
Acenaphthene	83-32-9	ug/kg	19	0	0				0.070	0.12	0.49	0.75	
Acenaphthylene	208-96-8	ug/kg	19	0	0				0.050	0.12	0.35	0.53	
Anthracene	120-12-7	ug/kg	19	0	0				0.059	0.12	0.42	0.63	
Benzo(a)anthracene	56-55-3	ug/kg	19	0	0				0.043	0.11	0.32	0.48	
Benzo(a)pyrene	50-32-8	ug/kg	19	0	0				0.059	0.12	0.42	0.64	
Benzo(b)fluoranthene	205-99-2	ug/kg	19	0	0				0.076	0.12	0.53	0.81	
Benzo(g,h,i)perylene	191-24-2	ug/kg	19	0	0				0.15	0.12	1.1	1.6	
Benzo(k)fluoranthene	207-08-9	ug/kg	19	0	0				0.12	0.13	0.8	1.2	
Chrysene	218-01-9	ug/kg	19	0	0				0.051	0.12	0.37	0.55	
Dibenzo(a,h)anthracene	53-70-3	ug/kg	19	0	0				0.18	0.12	1.3	1.9	
Fluoranthene	206-44-0	ug/kg	19	3	16	0.77	0.35	0.50	0.10	0.26	0.31	0.47	PRI10-004
Fluorene	86-73-7	ug/kg	19	0	0				0.072	0.12	0.52	0.78	
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	19	0	0				0.070	0.12	0.5	0.76	
Naphthalene	91-20-3	ug/kg	19	1	5	0.49	0.49	0.49	0.085	0.20	0.32	0.63	PRI10-012
Phenanthrene	85-01-8	ug/kg	19	13	68	1.3	0.41	0.67	0.31	0.47	0.37	1.4	PRI10-013
Pyrene	129-00-0	ug/kg	19	1	5	0.92	0.92	0.92	0.12	0.26	0.37	0.56	PRI10-004
Low Molecular Weight PAH (ND=0)	LPAH-0	ug/kg	19	14	74	1.3	0.41	0.73	0.26	0.38	0.52	0.75	PRI10-013
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	ug/kg	19	14	74	3.2	1.8	2.3	0.46	0.22	1.5	2.2	PRI10-008
High Molecular Weight PAH (ND=0)	HPAH-0	ug/kg	19	3	16	1.7	0.35	0.81	0.41	0.29	1.3	1.9	PRI10-004
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	ug/kg	19	3	16	4.9	3.5	4.0	0.52	0.15	3	4.5	PRI10-004
1,4-Dioxane	123-91-1	ug/kg	5	0	0				12	0.19	47	74	
1,1-Dichloroethane	75-34-3	ug/kg	5	0	0				0.088	0.19	0.35	0.55	
1,1-Dichloroethene	75-35-4	ug/kg	5	0	0				0.080	0.19	0.31	0.49	
1,2-Dibromo-3-chloropropane	96-12-8	ug/kg	5	0	0				0.27	0.19	1.1	1.7	
1,2-Dibromoethane	106-93-4	ug/kg	5	0	0				0.082	0.19	0.32	0.51	
1,2-Dichlorobenzene	95-50-1	ug/kg	5	0	0				0.19	0.19	0.77	1.2	
1,2-Dichloroethane	107-06-2	ug/kg	5	0	0				0.23	0.20	0.88	1.4	
cis-1,2-Dichloroethene	156-59-2	ug/kg	5	0	0				0.26	0.18	1.1	1.7	
trans-1,2-Dichloroethene	156-60-5	ug/kg	5	0	0				0.12	0.19	0.46	0.72	
1,2-Dichloropropane	78-87-5	ug/kg	5	0	0				0.18	0.19	0.72	1.1	
1,3-Dichlorobenzene	541-73-1	ug/kg	5	0	0				0.092	0.19	0.36	0.57	
cis-1,3-Dichloropropene	10061-01-5	ug/kg	5	0	0				0.19	0.19	0.77	1.2	
trans-1,3-Dichloropropene	10061-02-6	ug/kg	5	0	0				0.22	0.19	0.9	1.4	
1,4-Dichlorobenzene	106-46-7	ug/kg	5	0	0				0.25	0.20	0.94	1.5	
1,1,1-Trichloroethane	71-55-6	ug/kg	5	0	0				0.11	0.19	0.43	0.68	
1,1,2-Trichloroethane	79-00-5	ug/kg	5	0	0				0.13	0.19	0.53	0.84	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	76-13-1	ug/kg	5	0	0				0.26	0.20	1	1.6	
1,2,3-Trichlorobenzene	87-61-6	ug/kg	5	0	0				0.22	0.19	0.9	1.4	
1,2,4-Trichlorobenzene	120-82-1	ug/kg	5	0	0				0.22	0.19	0.9	1.4	
1,1,2,2-Tetrachloroethane	79-34-5	ug/kg	5	0	0				0.21	0.20	0.82	1.3	

Table 6-5
Prevalence Table for Solids Sample Analysis – PRI-10 Barium Sulfate Area
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	CAS #	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
2-Butanone	78-93-3	ug/kg	5	3	60	17	8	13	6.6	0.78	1.7	2.5	PRI10-008
2-Hexanone	591-78-6	ug/kg	5	0	0				0.23	0.20	0.89	1.4	
4-Methyl-2-pentanone	108-10-1	ug/kg	5	0	0				0.27	0.19	1.1	1.7	
Acetone	67-64-1	ug/kg	5	2	40	86	65	76	38	1.0	1.7	22	PRI10-008
Benzene	71-43-2	ug/kg	5	0	0				0.080	0.19	0.31	0.49	
Bromochloromethane	74-97-5	ug/kg	5	2	40	4.7	1.9	3.3	1.4	0.66	1.1	1.6	PRI10-008
Bromodichloromethane	75-27-4	ug/kg	5	2	40	2.3	1.2	1.8	0.64	0.53	0.64	1	PRI10-008
Bromoform	75-25-2	ug/kg	5	1	20	1.4	1.4	1.4	0.35	0.43	0.48	0.76	PRI10-008
Bromomethane	74-83-9	ug/kg	5	0	0				0.27	0.20	1	1.6	
Carbon disulfide	75-15-0	ug/kg	5	0	0				2.6	1.4	0.59	6.6	
Carbon tetrachloride	56-23-5	ug/kg	5	0	0				0.16	0.19	0.64	1	
Chlorobenzene	108-90-7	ug/kg	5	0	0				0.088	0.19	0.35	0.55	
Cyclohexane	110-82-7	ug/kg	5	0	0				0.79	0.19	3.2	5	
Dibromochloromethane	124-48-1	ug/kg	5	2	40	1.9	1.3	1.6	0.73	0.86	0.25	0.4	PRI10-008
Chloroethane	75-00-3	ug/kg	5	0	0				0.14	0.20	0.54	0.86	
Chloroform	67-66-3	ug/kg	5	4	80	16	1.5	7.3	6.8	1.2	0.31	0.31	PRI10-008
Chloromethane	74-87-3	ug/kg	5	0	0				0.15	0.19	0.6	0.95	
Dichlorodifluoromethane (Freon-12)	75-71-8	ug/kg	5	0	0				0.26	0.18	1.1	1.7	
Ethyl benzene	100-41-4	ug/kg	5	0	0				0.11	0.20	0.41	0.65	
Isopropylbenzene	98-82-8	ug/kg	5	0	0				0.16	0.20	0.62	0.99	
Methyl tertbutyl ether (MTBE)	1634-04-4	ug/kg	5	0	0				0.18	0.19	0.72	1.1	
Dichloromethane (Methylene chloride)	75-09-2	ug/kg	5	1	20	3.2	3.2	3.2	0.85	0.49	1	1.6	PRI10-008
Styrene	100-42-5	ug/kg	5	0	0				0.096	0.20	0.37	0.59	
Tetrachloroethene	127-18-4	ug/kg	5	0	0				0.20	0.21	0.73	1.2	
Toluene	108-88-3	ug/kg	5	0	0				0.20	0.21	0.73	1.2	
Trichloroethene	79-01-6	ug/kg	5	0	0				0.18	0.19	0.72	1.1	
Trichlorofluoromethane (Freon-11)	75-69-4	ug/kg	5	0	0				0.11	0.20	0.41	0.65	
Vinyl chloride	75-01-4	ug/kg	5	0	0				0.11	0.19	0.43	0.68	
o-Xylene	95-47-6	ug/kg	5	0	0				0.10	0.19	0.4	0.63	
m,p Xylenes	179601-23-1	ug/kg	5	0	0				0.23	0.18	0.97	1.5	
Perchlorate	14797-73-0	ug/kg	19	0	0				1.8	0.074	22	29	
Total Organic Carbon	TOC	g/kg	19	8	42	8.9	4.2	6.1	2.3	0.60	1.7	3.9	PRI10-008
pH	PH25	pH units	19	19	100	9.66	6.98	8.4	0.62	0.074			PRI10-008
Cyanide, Total	74-90-8	ug/kg	19	1	5	0.27	0.27	0.27	0.017	0.066	0.23	0.3	PRI10-008

Notes:
µg/kg = micrograms per kilogram
Empty cells = No results
g/kg = Grams per kilograms
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pH = pH units
SIM = Selected ion monitoring
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence

Table 6-6
Prevalence Table for Solids Sample Analysis – PRI-11 ATI Titanium Plant and US Magnesium Parking Lots
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
2,3,7,8-TCDD	ug/kg	14	0	0				0.00010	0.65	0.000032	0.0004	
1,2,3,7,8-PeCDD	ug/kg	14	2	14	0.00034	0.00021	0.00028	0.00015	0.53	0.000053	0.00059	PRI11-001
1,2,3,4,7,8-HxCDD	ug/kg	14	2	14	0.000094	0.000078	0.000086	0.00019	0.73	0.000033	0.00058	PRI11-001
1,2,3,6,7,8-HxCDD	ug/kg	14	4	29	0.0017	0.00017	0.00080	0.00045	1.0	0.000026	0.00096	PRI11-003
1,2,3,7,8,9-HxCDD	ug/kg	14	3	21	0.0013	0.00012	0.00058	0.00032	0.87	0.000041	0.00065	PRI11-003
1,2,3,4,6,7,8-HpCDD	ug/kg	14	13	93	0.02	0.0013	0.0064	0.0055	0.91	0.00043	0.00043	PRI11-003
OCDD	ug/kg	14	12	86	0.13	0.0056	0.045	0.038	0.99	0.002	0.0049	PRI11-003
2,3,7,8-TCDF	ug/kg	14	13	93	0.0039	0.00024	0.0014	0.0011	0.78	0.0018	0.0018	PRI11-004
1,2,3,7,8-PeCDF	ug/kg	14	6	43	0.0045	0.00047	0.0017	0.0015	0.91	0.0002	0.0041	PRI11-004
2,3,4,7,8-PeCDF	ug/kg	14	8	57	0.0035	0.00032	0.0017	0.0011	0.97	0.000095	0.00079	PRI11-003
1,2,3,4,7,8-HxCDF	ug/kg	14	13	93	0.015	0.001	0.0056	0.0048	0.92	0.00046	0.00046	PRI11-003
1,2,3,6,7,8-HxCDF	ug/kg	14	14	100	0.01	0.00032	0.0036	0.0032	0.89			PRI11-003
1,2,3,7,8,9-HxCDF	ug/kg	14	0	0				0.00035	0.90	0.000032	0.00096	
2,3,4,6,7,8-HxCDF	ug/kg	14	11	79	0.0055	0.00048	0.0024	0.0017	0.88	0.00017	0.00059	PRI11-003
1,2,3,4,6,7,8-HpCDF	ug/kg	14	13	93	0.15	0.0033	0.049	0.046	1.00	0.01	0.01	PRI11-003
1,2,3,4,7,8,9-HpCDF	ug/kg	14	11	79	0.022	0.00055	0.0080	0.0073	1.1	0.00074	0.0058	PRI11-012
OCDF	ug/kg	14	14	100	3	0.044	0.75	0.96	1.3			PRI11-005
Calculated TEQ (ND=0), Mammalian	ug/kg	14	14	100	0.017	0.00011	0.0031	0.0044	1.4			PRI11-003
Calculated TEQ (ND=1/2 DL), Mammalian	ug/kg	14	14	100	0.018	0.00024	0.0035	0.0046	1.3			PRI11-003
Calculated TEQ (ND=0), Avian	ug/kg	14	14	100	0.72	0.0011	0.12	0.23	1.9			PRI11-003
Calculated TEQ (ND=1/2 DL), Avian	ug/kg	14	14	100	0.72	0.014	0.13	0.23	1.8			PRI11-003
PCB-81	ug/kg	14	0	0				0.0021	1.8	0.00031	0.0085	
PCB-77	ug/kg	14	9	64	0.29	0.0038	0.046	0.076	2.5	0.00061	0.0021	PRI11-003
PCB-105	ug/kg	14	10	71	2.2	0.001	0.23	0.59	3.6	0.00038	0.0012	PRI11-003
PCB-114	ug/kg	14	2	14	0.064	0.0005	0.032	0.017	3.3	0.00032	0.002	PRI11-003
PCB-118	ug/kg	14	12	86	3.1	0.0017	0.27	0.82	3.5	0.0011	0.0023	PRI11-003
PCB-123	ug/kg	14	1	7	0.0014	0.0014	0.0014	0.018	3.3	0.0003	0.067	PRI11-005
PCB-126	ug/kg	14	3	21	0.098	0.00061	0.034	0.026	3.2	0.00047	0.0028	PRI11-003
PCB-156 & 157	ug/kg	14	6	43	0.69	0.0012	0.12	0.18	3.5	0.00036	0.0021	PRI11-003
PCB-167	ug/kg	14	6	43	0.26	0.0008	0.046	0.069	3.5	0.00024	0.00079	PRI11-003
PCB-169	ug/kg	14	3	21	0.00057	0.00038	0.00048	0.0023	1.9	0.0002	0.0091	PRI11-012
PCB-189	ug/kg	14	3	21	0.047	0.00073	0.016	0.012	3.0	0.00027	0.0016	PRI11-003
Monochlorobiphenyls, Total	ug/kg	14	10	71	0.0085	0.00065	0.0029	0.0023	1.1	0.00032	0.00068	PRI11-003
Dichlorobiphenyls, Total	ug/kg	14	6	43	0.14	0.018	0.042	0.033	1.2	0.0053	0.028	PRI11-003
Trichlorobiphenyls, Total	ug/kg	14	14	100	0.54	0.0016	0.049	0.14	2.9			PRI11-003
Tetrachlorobiphenyls, Total	ug/kg	14	14	100	3.3	0.00071	0.28	0.87	3.1			PRI11-003
Pentachlorobiphenyls, Total	ug/kg	14	14	100	20	0.0052	1.5	5.3	3.5			PRI11-003
Hexachlorobiphenyls, Total	ug/kg	14	14	100	20	0.004	1.5	5.3	3.5			PRI11-003
Heptachlorobiphenyls, Total	ug/kg	14	14	100	10	0.0011	0.79	2.7	3.4	0.46	0.46	PRI11-003
Octachlorobiphenyls, Total	ug/kg	14	14	100	3.1	0.0041	0.30	0.81	2.7			PRI11-003
Nonachlorobiphenyls, Total	ug/kg	14	14	100	1.7	0.022	0.39	0.53	1.3			PRI11-003
Decachlorobiphenyl (PCB-209)	ug/kg	14	14	100	27	0.17	4.3	7.5	1.7			PRI11-005
Total PCBs	ug/kg	14	14	100	73	0.21	9.1	20	2.2			PRI11-003
Total Aluminum	ug/kg	14	14	100	16,000,000	4,000,000	8,300,000	3,800,000	0.46			PRI11-014
Total Antimony	ug/kg	14	3	21	600	320	500	130	0.45	210	360	PRI11-014
Total Arsenic	ug/kg	14	14	100	23,000	4,000	6,900	5,000	0.72			PRI11-014
Total Barium	ug/kg	14	14	100	360,000	78,000	160,000	86,000	0.54			PRI11-014
Total Beryllium	ug/kg	14	14	100	850	240	400	180	0.45			PRI11-014
Total Cadmium	ug/kg	14	13	93	460	120	260	130	0.54	110	110	PRI11-006
Total Calcium	ug/kg	14	14	100	110,000,000	42,000,000	86,000,000	19,000,000	0.22			PRI11-012
Total Chromium	ug/kg	14	14	100	21,000	5,900	12,000	5,100	0.43			PRI11-014
Total Cobalt	ug/kg	14	14	100	8,900	1,400	3,600	2,100	0.59			PRI11-014
Total Copper	ug/kg	14	14	100	220,000	5,100	27,000	56,000	2.1			PRI11-007
Total Iron	ug/kg	14	14	100	18,000,000	5,400,000	9,800,000	4,100,000	0.42			PRI11-007
Total Lead	ug/kg	14	14	100	19,000	4,800	12,000	4,600	0.38			PRI11-006 PRI11-007
Total Magnesium	ug/kg	14	14	100	30,000,000	9,800,000	20,000,000	6,600,000	0.32			PRI11-007
Total Manganese	ug/kg	14	14	100	530,000	130,000	240,000	130,000	0.53			PRI11-014
Total Mercury	ug/kg	14	6	43	92	12	31	21	1.0	9	20	PRI11-006
Total Molybdenum	ug/kg	14	12	86	29,000	47	3,100	7,600	2.9	250	370	PRI11-007
Total Nickel	ug/kg	14	14	100	22,000	4,000	8,800	5,100	0.57			PRI11-014
Total Potassium	ug/kg	14	14	100	5,900,000	1,500,000	3,000,000	1,300,000	0.45			PRI11-011
Total Selenium	ug/kg	14	6	43	430	270	330	68	0.25	210	240	PRI11-006
Total Silver	ug/kg	14	1	7	210	210	210	39	0.51	61	72	PRI11-006
Total Sodium	ug/kg	14	14	100	2,900,000	400,000	970,000	680,000	0.69			PRI11-011
Total Thallium	ug/kg	14	3	21	200	120	170	33	0.27	100	120	PRI11-006 PRI11-014
Total Vanadium	ug/kg	14	14	100	34,000	9,900	18,000	6,800	0.38			PRI11-014
Total Zinc	ug/kg	14	14	100	390,000	19,000	67,000	95,000	1.4			PRI11-003
1,1'-Biphenyl	ug/kg	14	0	0				8.0	0.044	170	190	
1,2,4,5-Tetrachlorobenzene	ug/kg	14	0	0				1.2	0.041	27	31	
2,3,4,6-Tetrachlorophenol	ug/kg	14	0	0				3.3	0.037	86	96	
2,4,5-Trichlorophenol	ug/kg	14	0	0				3.6	0.039	87	98	
2,4,6-Trichlorophenol	ug/kg	14	0	0				3.6	0.038	88	99	
2,4,6-Trichlorophenol (SIM Screen)	ug/kg	14	0	0				0.18	0.037	4.6	5.2	
2,2-Oxybis(1-chloropropane)	ug/kg	14	0	0				3.2	0.036	83	93	
2,4-Dichlorophenol	ug/kg	14	0	0				2.6	0.026	93	100	
2,4-Dimethylphenol	ug/kg	14	0	0				6.3	0.034	180	200	
2,4-Dinitrophenol	ug/kg	14	1	7	280	280	280	15	0.061	220	250	PRI11-008
2,4-Dinitrotoluene	ug/kg	14	0	0				2.6	0.026	93	100	
2,6-Dinitrotoluene	ug/kg	14	0	0				6.2	0.056	100	120	
2-Chloronaphthalene	ug/kg	14	0	0				3.2	0.036	85	95	
2-Chlorophenol	ug/kg	14	0	0				2.9	0.030	92	100	
2-Methylphenol	ug/kg	14	0	0				2.4	0.037	61	68	
2-Nitroaniline	ug/kg	14	0	0				3.6	0.038	88	99	
2-Nitrophenol	ug/kg	14	0	0				3.3	0.037	86	96	
3,3'-Dichlorobenzidine	ug/kg	14	0	0				5.3	0.051	99	110	
3-Nitroaniline	ug/kg	14	0	0				6.3	0.034	180	200	
4,6-Dinitro-2-methylphenol	ug/kg	14	0	0				3.2	0.036	85	95	

Table 6-6
Prevalence Table for Solids Sample Analysis – PRI-11 ATI Titanium Plant and US Magnesium Parking Lots
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
4-Bromophenyl-phenylether	ug/kg	14	0	0				3.5	0.037	89	100	
4-Chloro-3-methylphenol	ug/kg	14	0	0				4.9	0.048	96	110	
4-Chloroaniline	ug/kg	14	0	0				2.4	0.037	61	68	
4-Chlorophenyl-phenylether	ug/kg	14	0	0				5.3	0.051	98	110	
3 & 4 Methylphenol	ug/kg	14	0	0				13	0.036	350	390	
4-Nitroaniline	ug/kg	14	0	0				2.9	0.030	92	100	
4-Nitrophenol	ug/kg	14	0	0				13	0.041	290	330	
Acetophenone	ug/kg	14	0	0				3.0	0.10	26	38	
Benzaldehyde	ug/kg	14	0	0				8.0	0.044	170	190	
Benzylbutylphthalate	ug/kg	14	2	14	1100	110	610	270	1.5	100	110	PRI11-004
Bis(2-chloroethoxy)methane	ug/kg	14	0	0				2.9	0.030	92	100	
bis(2-Chloroethyl) ether	ug/kg	14	0	0				3.2	0.036	85	95	
Bis(2-ethylhexyl)phthalate	ug/kg	14	9	64	180	120	140	20	0.16	110	110	PRI11-006
Carbazole	ug/kg	14	0	0				5.1	0.049	100	110	
Dibenzofuran	ug/kg	14	0	0				3.4	0.036	90	100	
Diethyl phthalate	ug/kg	14	0	0				3.8	0.038	94	110	
Dimethylphthalate	ug/kg	14	0	0				3.2	0.033	91	100	
Di-n-butylphthalate	ug/kg	14	0	0				4.7	0.044	100	110	
Di-n-octylphthalate	ug/kg	14	0	0				4.7	0.044	100	110	
Hexachlorobenzene	ug/kg	14	0	0				2.6	0.026	93	100	
Hexachlorobenzene (SIM Screen)	ug/kg	14	8	57	67	2.8	20	21	1.7	2.4	2.6	PRI11-003
Hexachlorobutadiene	ug/kg	14	0	0				3.3	0.037	86	96	
Hexachlorobutadiene (SIM Screen)	ug/kg	14	0	0				0.14	0.034	3.9	4.3	
Hexachlorocyclopentadiene	ug/kg	14	0	0				2.6	0.037	65	73	
Hexachloroethane	ug/kg	14	0	0				3.2	0.036	85	95	
Isophorone	ug/kg	14	0	0				5.3	0.051	98	110	
Nitrobenzene	ug/kg	14	0	0				3.1	0.036	80	89	
N-Nitrosodimethylamine	ug/kg	14	0	0				4.7	0.044	100	110	
n-Nitrosodimethylamine (SIM Screen)	ug/kg	14	0	0				4.7	0.044	100	110	
N-Nitroso-di-n-propylamine	ug/kg	14	0	0				3.6	0.038	88	99	
N-Nitrosodiphenylamine	ug/kg	14	0	0				3.4	0.036	90	100	
Pentachlorophenol	ug/kg	14	0	0				2.0	0.036	53	60	
Pentachlorophenol (SIM Screen)	ug/kg	14	2	14	45	37	41	5.6	0.20	25	28	PRI11-008
Phenol	ug/kg	14	0	0				3.6	0.039	87	98	
2-Methylnaphthalene	ug/kg	14	2	14	0.63	0.61	0.62	0.057	0.11	0.43	0.51	PRI11-006
Acenaphthene	ug/kg	14	0	0				0.031	0.059	0.47	0.56	
Acenaphthylene	ug/kg	14	0	0				0.021	0.056	0.33	0.39	
Anthracene	ug/kg	14	3	21	1.2	0.63	0.94	0.24	0.45	0.4	0.47	PRI11-004
Benzo(a)anthracene	ug/kg	14	7	50	14	0.38	2.7	3.6	2.3	0.31	0.36	PRI11-006
Benzo(a)pyrene	ug/kg	14	4	29	21	0.87	6.2	5.5	2.6	0.41	0.48	PRI11-006
Benzo(b)fluoranthene	ug/kg	14	8	57	24	0.57	4.3	6.2	2.3	0.52	0.6	PRI11-006
Benzo(g,h,i)perylene	ug/kg	14	2	14	11	2.3	6.7	2.6	1.4	1	1.2	PRI11-006
Benzo(k)fluoranthene	ug/kg	14	3	21	18	0.94	6.9	4.6	2.1	0.78	0.91	PRI11-006
Chrysene	ug/kg	14	11	79	20	0.53	3.3	5.1	1.9	0.36	0.41	PRI11-006
Dibenzo(a,h)anthracene	ug/kg	14	1	7	3.6	3.6	3.6	0.61	0.41	1.2	1.4	PRI11-006
Fluoranthene	ug/kg	14	10	71	8.4	0.97	2.5	2.1	1.1	0.3	0.35	PRI11-006
Fluorene	ug/kg	14	0	0				0.031	0.057	0.49	0.59	
Indeno(1,2,3-cd)pyrene	ug/kg	14	5	36	13	0.55	3.2	3.3	2.2	0.49	0.57	PRI11-006
Naphthalene	ug/kg	14	3	21	0.61	0.48	0.53	0.083	0.21	0.32	0.37	PRI11-006
Phenanthrene	ug/kg	14	8	57	2.1	0.37	0.98	0.58	0.55	0.42	1.6	PRI11-007
Pyrene	ug/kg	14	10	71	9.3	0.88	2.5	2.3	1.2	0.36	0.42	PRI11-006
Low Molecular Weight PAH (ND=0)	ug/kg	14	10	71	3.1	0.37	1.3	0.83	0.67	0.59	1.3	PRI11-006
Low Molecular Weight PAH (ND=1/2DL)	ug/kg	14	10	71	4.1	1.6	2.7	0.79	0.32	1.7	2.1	PRI11-006
High Molecular Weight PAH (ND=0)	ug/kg	14	11	79	140	0.53	20	36	2.3	1.2	1.4	PRI11-006
High Molecular Weight PAH (ND=1/2DL)	ug/kg	14	11	79	140	3.5	22	36	2.0	2.9	3.4	PRI11-006
Perchlorate	ug/kg	14	0	0				0.68	0.031	21	23	
Total Organic Carbon	g/kg	14	10	71	12	1.9	5.4	3.5	0.79	1.7	1.7	PRI11-003
pH	pH units	14	14	100	9.52	7.99	8.5	0.48	0.056			PRI11-010
Cyanide, Total	ug/kg	14	1	7	440	440	440	57	0.23	220	240	PRI11-001

Notes:

µg/kg = micrograms per kilogram
Empty cells = No results
g/kg = Grams per kilograms
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin

HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin

PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pH = pH units
SIM = Selected ion monitoring
TCDD = Tetrachlorodibenzodioxin
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence

Table 6-7
Prevalence Table for Solids Sample Analysis – PRI-12 US Magnesium Ancillary Worker Exposure Area
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
2,3,7,8-TCDD	ug/kg	14	1	7	0.00059	0.00059	0.00059	0.00031	1.4	0.000026	0.0012	PRI12-009
1,2,3,7,8-PeCDD	ug/kg	14	7	50	0.0046	0.00023	0.0011	0.0012	1.5	0.000046	0.0012	PRI12-004
1,2,3,4,7,8-HxCDD	ug/kg	14	8	57	0.0057	0.00019	0.0014	0.0015	1.7	0.000051	0.00073	PRI12-004
1,2,3,6,7,8-HxCDD	ug/kg	14	11	79	0.019	0.00031	0.0041	0.0052	1.6	0.00012	0.00078	PRI12-004
1,2,3,7,8,9-HxCDD	ug/kg	14	11	79	0.017	0.00014	0.0046	0.0054	1.4	0.00026	0.0017	PRI12-004
1,2,3,4,6,7,8-HpCDD	ug/kg	14	12	86	0.13	0.0024	0.025	0.034	1.6	0.00079	0.0023	PRI12-004
OCDD	ug/kg	14	14	100	0.59	0.0034	0.099	0.15	1.5			PRI12-004
2,3,7,8-TCDF	ug/kg	14	14	100	0.038	0.00052	0.0068	0.011	1.6			PRI12-004
1,2,3,7,8-PeCDF	ug/kg	14	13	93	0.096	0.00065	0.020	0.029	1.6	0.0026	0.0026	PRI12-004
2,3,4,7,8-PeCDF	ug/kg	14	14	100	0.065	0.00032	0.012	0.019	1.6			PRI12-004
1,2,3,4,7,8-HxCDF	ug/kg	14	14	100	0.31	0.0023	0.061	0.096	1.6			PRI12-004
1,2,3,6,7,8-HxCDF	ug/kg	14	14	100	0.27	0.0015	0.049	0.079	1.6			PRI12-004
1,2,3,7,8,9-HxCDF	ug/kg	14	8	57	0.026	0.00069	0.0048	0.0078	1.7	0.000059	0.019	PRI12-009
2,3,4,6,7,8-HxCDF	ug/kg	14	12	86	0.14	0.00063	0.023	0.037	1.8	0.0025	0.0033	PRI12-004
1,2,3,4,6,7,8-HpCDF	ug/kg	14	14	100	2.8	0.013	0.46	0.75	1.6			PRI12-004
1,2,3,4,7,8,9-HpCDF	ug/kg	14	12	86	0.48	0.0027	0.11	0.16	1.6	0.028	0.049	PRI12-004
OCDF	ug/kg	14	14	100	28	0.087	4.3	7.4	1.7			PRI12-004
Calculated TEQ (ND=0), Mammalian	ug/kg	14	14	100	0.15	0.00081	0.027	0.042	1.6			PRI12-004
Calculated TEQ (ND=1/2 DL), Mammalian	ug/kg	14	14	100	0.15	0.00088	0.027	0.042	1.6			PRI12-004
Calculated TEQ (ND=0), Avian	ug/kg	14	14	100	0.71	0.0094	0.25	0.24	0.97			PRI12-004
Calculated TEQ (ND=1/2 DL), Avian	ug/kg	14	14	100	0.72	0.023	0.26	0.24	0.95			PRI12-004
PCB-81	ug/kg	14	2	14	0.0041	0.003	0.0036	0.0014	1.1	0.00029	0.0039	PRI12-009
PCB-77	ug/kg	14	13	93	0.15	0.0011	0.026	0.044	1.8	0.007	0.007	PRI12-005
PCB-105	ug/kg	14	13	93	0.38	0.0018	0.068	0.12	1.9	0.0052	0.0052	PRI12-004
PCB-114	ug/kg	14	5	36	0.0083	0.00088	0.0030	0.0037	1.4	0.00021	0.012	PRI12-009
PCB-118	ug/kg	14	13	93	0.42	0.0042	0.085	0.14	1.8	0.0031	0.0031	PRI12-005
PCB-123	ug/kg	14	6	43	0.009	0.00048	0.0031	0.0052	1.7	0.00021	0.019	PRI12-005
PCB-126	ug/kg	14	11	79	0.038	0.00054	0.0068	0.013	1.6	0.00025	0.035	PRI12-005
PCB-156 & 157	ug/kg	14	13	93	0.24	0.0015	0.041	0.070	1.8	0.00061	0.00061	PRI12-004
PCB-167	ug/kg	14	13	93	0.12	0.00089	0.020	0.033	1.8	0.00031	0.00031	PRI12-004
PCB-169	ug/kg	14	6	43	0.016	0.00081	0.0041	0.0042	1.8	0.00018	0.0052	PRI12-004
PCB-189	ug/kg	14	9	64	0.076	0.0015	0.018	0.021	1.8	0.00027	0.0025	PRI12-004
Monochlorobiphenyls, Total	ug/kg	14	14	100	0.026	0.0014	0.0062	0.0064	1.0			PRI12-004
Dichlorobiphenyls, Total	ug/kg	14	14	100	0.12	0.012	0.032	0.027	0.85			PRI12-004
Trichlorobiphenyls, Total	ug/kg	14	14	100	0.18	0.0051	0.034	0.045	1.3			PRI12-004
Tetrachlorobiphenyls, Total	ug/kg	14	14	100	0.5	0.0067	0.11	0.16	1.4			PRI12-004
Pentachlorobiphenyls, Total	ug/kg	14	14	100	2.8	0.022	0.49	0.86	1.8			PRI12-004
Hexachlorobiphenyls, Total	ug/kg	14	14	100	7.2	0.021	0.90	1.9	2.2			PRI12-004
Heptachlorobiphenyls, Total	ug/kg	14	14	100	6.4	0.021	0.76	1.7	2.2			PRI12-004
Octachlorobiphenyls, Total	ug/kg	14	14	100	5.4	0.033	0.93	1.4	1.5			PRI12-004
Nonachlorobiphenyls, Total	ug/kg	14	14	100	14	0.083	2.5	3.7	1.5			PRI12-004
Decachlorobiphenyl (PCB-209)	ug/kg	14	14	100	100	0.52	18	27	1.5			PRI12-004
Total PCBs	ug/kg	14	14	100	140	0.75	24	37	1.5			PRI12-004
Total Aluminum	ug/kg	14	14	100	13,000,000	840,000	6,500,000	3,300,000	0.50			PRI12-008
Total Antimony	ug/kg	14	2	14	8,700	840	4,800	2,200	2.4	210	340	PRI12-003
Total Arsenic	ug/kg	14	14	100	5,900	2,700	4,700	920	0.19			PRI12-013
Total Barium	ug/kg	14	14	100	300,000	31,000	170,000	86,000	0.52			PRI12-003
Total Beryllium	ug/kg	14	14	100	580	34	330	160	0.48			PRI12-008
Total Cadmium	ug/kg	14	11	79	470	110	250	110	0.49	110	150	PRI12-008
Total Calcium	ug/kg	14	14	100	310,000,000	34,000,000	120,000,000	69,000,000	0.56			PRI12-006
Total Chromium	ug/kg	14	14	100	13,000	1,100	7,500	3,300	0.44			PRI12-008
Total Cobalt	ug/kg	14	14	100	4,100	310	2,200	1,100	0.49			PRI12-008
Total Copper	ug/kg	14	14	100	16,000	940	9,300	4,500	0.49			PRI12-003
Total Iron	ug/kg	14	14	100	14,000,000	1,000,000	7,400,000	3,600,000	0.49			PRI12-008
Total Lead	ug/kg	14	14	100	14,000	1,300	8,300	3,700	0.45			PRI12-008
Total Magnesium	ug/kg	14	14	100	110,000,000	4,900,000	24,000,000	26,000,000	1.1			PRI12-010
Total Manganese	ug/kg	14	14	100	420,000	21,000	190,000	120,000	0.61			PRI12-008
Total Mercury	ug/kg	14	11	79	110	11	34	29	1.0	9.1	12	PRI12-006
Total Molybdenum	ug/kg	14	8	57	1,400	500	910	400	0.60	180	550	PRI12-004
Total Nickel	ug/kg	14	14	100	10,000	870	6,100	2,700	0.44			PRI12-003
Total Potassium	ug/kg	14	14	100	72,000,000	990,000	11,000,000	21,000,000	1.8			PRI12-011
Total Selenium	ug/kg	14	2	14	290	260	280	28	0.12	210	290	PRI12-006
Total Silver	ug/kg	14	0	0				6.6	0.097	63	87	
Total Sodium	ug/kg	14	14	100	32,000,000	700,000	4,900,000	8,600,000	1.8			PRI12-010
Total Thallium	ug/kg	14	0	0				13	0.11	100	150	
Total Vanadium	ug/kg	14	14	100	22,000	2,100	13,000	5,200	0.41			PRI12-008
Total Zinc	ug/kg	14	14	100	75,000	4,600	37,000	21,000	0.58			PRI12-003
1,1'-Biphenyl	ug/kg	14	0	0				19	0.098	170	240	
1,2,4,5-Tetrachlorobenzene	ug/kg	14	0	0				2.9	0.096	27	38	
2,3,4,6-Tetrachlorophenol	ug/kg	14	0	0				9.4	0.100	86	120	
2,4,5-Trichlorophenol	ug/kg	14	0	0				9.0	0.095	87	120	
2,4,6-Trichlorophenol	ug/kg	14	0	0				8.6	0.090	88	120	
2,4,6-Trichlorophenol (SIM Screen)	ug/kg	14	0	0				0.50	0.099	4.6	6.5	
2,2-Oxybis(1-chloropropane)	ug/kg	14	0	0				9.4	0.10	83	120	
2,4-Dichlorophenol	ug/kg	14	0	0				10	0.100	94	130	
2,4-Dimethylphenol	ug/kg	14	0	0				19	0.10	180	250	
2,4-Dinitrophenol	ug/kg	14	2	14	260	250	260	24	0.095	230	320	PRI12-001
2,4-Dinitrotoluene	ug/kg	14	0	0				10	0.100	94	130	
2,6-Dinitrotoluene	ug/kg	14	0	0				12	0.11	100	150	
2-Chloronaphthalene	ug/kg	14	0	0				9.7	0.10	85	120	
2-Chlorophenol	ug/kg	14	0	0				9.4	0.094	93	130	
2-Methylphenol	ug/kg	14	0	0				6.7	0.10	61	86	
2-Nitroaniline	ug/kg	14	0	0				8.6	0.090	88	120	
2-Nitrophenol	ug/kg	14	0	0				9.4	0.100	86	120	
3,3'-Dichlorobenzidine	ug/kg	14	0	0				11	0.11	99	140	
3-Nitroaniline	ug/kg	14	0	0				19	0.10	180	250	
4,6-Dinitro-2-methylphenol	ug/kg	14	0	0				9.7	0.10	85	120	
4-Bromophenyl-phenylether	ug/kg	14	0	0				10	0.11	90	130	
4-Chloro-3-methylphenol	ug/kg	14	0	0				12	0.11	97	140	

Table 6-7
Prevalence Table for Solids Sample Analysis – PRI-12 US Magnesium Ancillary Worker Exposure Area
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
4-Chloroaniline	ug/kg	14	0	0				6.7	0.10	61	86	
4-Chlorophenyl-phenylether	ug/kg	14	0	0				12	0.11	98	140	
3 & 4 Methylphenol	ug/kg	14	0	0				37	0.099	350	490	
4-Nitroaniline	ug/kg	14	0	0				9.4	0.094	93	130	
4-Nitrophenol	ug/kg	14	0	0				32	0.099	290	410	
Acetophenone	ug/kg	14	0	0				2.9	0.098	27	37	
Benzaldehyde	ug/kg	14	0	0				19	0.098	170	240	
Benzylbutylphthalate	ug/kg	14	0	0				11	0.098	100	140	
Bis(2-chloroethoxy)methane	ug/kg	14	0	0				9.4	0.094	93	130	
bis(2-Chloroethyl) ether	ug/kg	14	0	0				9.7	0.10	85	120	
Bis(2-ethylhexyl)phthalate	ug/kg	14	0	0				11	0.094	100	140	
Carbazole	ug/kg	14	0	0				11	0.098	100	140	
Dibenzofuran	ug/kg	14	0	0				10	0.10	91	130	
Diethyl phthalate	ug/kg	14	0	0				9.9	0.096	95	130	
Dimethylphthalate	ug/kg	14	0	0				9.7	0.098	92	130	
Di-n-butylphthalate	ug/kg	14	0	0				11	0.099	100	140	
Di-n-octylphthalate	ug/kg	14	0	0				11	0.099	100	140	
Hexachlorobenzene	ug/kg	14	0	0				10	0.100	94	130	
Hexachlorobenzene (SIM Screen)	ug/kg	14	12	86	59	7.2	25	19	0.88	2.6	3.2	PRI12-003
Hexachlorobutadiene	ug/kg	14	0	0				9.4	0.100	86	120	
Hexachlorobutadiene (SIM Screen)	ug/kg	14	0	0				0.42	0.098	3.9	5.5	
Hexachlorocyclopentadiene	ug/kg	14	0	0				7.1	0.100	65	92	
Hexachloroethane	ug/kg	14	0	0				9.7	0.10	85	120	
Isophorone	ug/kg	14	0	0				12	0.11	98	140	
Nitrobenzene	ug/kg	14	0	0				8.1	0.093	80	110	
N-Nitrosodimethylamine	ug/kg	14	0	0				11	0.10	100	140	
n-Nitrosodimethylamine (SIM Screen)	ug/kg	14	0	0				11	0.10	100	140	
N-Nitroso-di-n-propylamine	ug/kg	14	0	0				8.6	0.090	88	120	
N-Nitrosodiphenylamine	ug/kg	14	0	0				10	0.10	91	130	
Pentachlorophenol	ug/kg	14	0	0				5.6	0.096	54	75	
Pentachlorophenol (SIM Screen)	ug/kg	14	2	14	67	34	51	11	0.35	26	35	PRI12-001
Phenol	ug/kg	14	0	0				9.0	0.095	87	120	
2-Methylnaphthalene	ug/kg	14	6	43	3.7	0.66	1.5	0.86	0.95	0.44	0.59	PRI12-003
Acenaphthene	ug/kg	14	0	0				0.057	0.11	0.47	0.66	
Acenaphthylene	ug/kg	14	0	0				0.040	0.11	0.33	0.46	
Anthracene	ug/kg	14	2	14	1.8	0.52	1.2	0.36	0.67	0.39	0.55	PRI12-011
Benzo(a)anthracene	ug/kg	14	9	64	3.5	0.43	1.6	1.1	0.96	0.32	0.41	PRI12-003
Benzo(a)pyrene	ug/kg	14	8	57	3.5	0.57	1.7	1.0	0.91	0.43	0.54	PRI12-003
Benzo(b)fluoranthene	ug/kg	14	7	50	4.9	0.57	2.2	1.4	1.0	0.54	0.69	PRI12-003
Benzo(g,h,i)perylene	ug/kg	14	5	36	4.8	1.1	2.7	1.1	0.67	1	1.4	PRI12-003
Benzo(k)fluoranthene	ug/kg	14	4	29	1.6	1.1	1.3	0.27	0.27	0.76	1	PRI12-003
Chrysene	ug/kg	14	12	86	11	0.38	3.9	3.7	1.1	0.37	0.47	PRI12-002 PRI12-003
Dibenzo(a,h)anthracene	ug/kg	14	1	7	1.6	1.6	1.6	0.16	0.12	1.2	1.7	PRI12-002
Fluoranthene	ug/kg	14	10	71	3.9	0.35	1.4	1.1	0.99	0.31	0.4	PRI12-003
Fluorene	ug/kg	14	0	0				0.058	0.11	0.49	0.68	
Indeno(1,2,3-cd)pyrene	ug/kg	14	4	29	1.8	1.1	1.4	0.42	0.55	0.48	0.65	PRI12-003
Naphthalene	ug/kg	14	8	57	1.4	0.42	0.92	0.40	0.59	0.33	0.44	PRI12-003 PRI12-004
Phenanthrene	ug/kg	14	14	100	6.3	0.5	2.2	1.9	0.89			PRI12-006
Pyrene	ug/kg	14	11	79	7.1	0.5	2.2	2.0	1.1	0.37	0.41	PRI12-003
Low Molecular Weight PAH (ND=0)	ug/kg	14	14	100	11	0.5	3.5	3.2	0.93			PRI12-003
Low Molecular Weight PAH (ND=1/2DL)	ug/kg	14	14	100	12	1.8	4.7	3.1	0.68			PRI12-003
High Molecular Weight PAH (ND=0)	ug/kg	14	13	93	42	0.59	12	14	1.2	1.3	1.3	PRI12-003
High Molecular Weight PAH (ND=1/2DL)	ug/kg	14	13	93	43	3.6	14	13	0.99	3	3	PRI12-003
Perchlorate	ug/kg	14	0	0				78	1.5	21	280	
Total Organic Carbon	g/kg	14	10	71	12	5.1	7.8	3.1	0.49	1.7	2.9	PRI12-004
pH	pH units	14	14	100	12.4	7.57	8.7	1.2	0.13			PRI12-006
Cyanide, Total	ug/kg	14	0	0				66	0.26	220	470	

Notes:

µg/kg = micrograms per kilogram	PAH = Polycyclic aromatic hydrocarbon
Empty cells = No results	PCB = Polychlorinated biphenyl
g/kg = Grams per kilograms	PeCDD = Pentachlorodibenzo-p-dioxin
HpCDD = Heptachlorodibenzo-p-dioxin	PeCDF = Pentachlorodienzofuran
HpCDF = Heptachlorodibenzofuran	pH = pH units
HxCDD = Hexachlorodibenzo-p-dioxin	SIM = Selected ion monitoring
HxCDF = Hexachlorodienzofuran	TCDD = Tetrachlorodibenzodioxin
OCDD = Octachlorodibenzo-p-dioxin	TCDF = Tetrachlorodienzofuran
OCDF = Octachlorodienzofuran	TEQ = Toxicity equivalence

Table 6-8
Prevalence Table for Solids Sample Analysis – PRI-13 Buffer Area North and East
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
2,3,7,8-TCDD	ug/kg	14	0	0				0.000020	0.52	0.000019	0.000093	
1,2,3,7,8-PeCDD	ug/kg	14	3	21	0.00018	0.0001	0.00014	0.000061	0.67	0.000027	0.00024	PRI13-008
1,2,3,4,7,8-HxCDD	ug/kg	14	2	14	0.000088	0.000085	0.000087	0.000060	0.74	0.000016	0.00023	PRI13-001
1,2,3,6,7,8-HxCDD	ug/kg	14	5	36	0.00083	0.00016	0.00041	0.00023	1.3	0.000014	0.000084	PRI13-004
1,2,3,7,8,9-HxCDD	ug/kg	14	6	43	0.00092	0.000041	0.00038	0.00025	1.1	0.00002	0.00021	PRI13-004
1,2,3,4,6,7,8-HpCDD	ug/kg	14	12	86	0.0045	0.00022	0.0012	0.0012	1.1	0.00049	0.00052	PRI13-004
OCDD	ug/kg	14	9	64	0.012	0.00059	0.0036	0.0035	1.2	0.0011	0.0048	PRI13-004
2,3,7,8-TCDF	ug/kg	14	13	93	0.0061	0.00035	0.0020	0.0016	0.86	0.00083	0.00083	PRI13-004
1,2,3,7,8-PeCDF	ug/kg	14	13	93	0.016	0.00031	0.0035	0.0042	1.2	0.0024	0.0024	PRI13-004
2,3,4,7,8-PeCDF	ug/kg	14	13	93	0.0078	0.0002	0.0018	0.0021	1.2	0.00037	0.00037	PRI13-004
1,2,3,4,7,8-HxCDF	ug/kg	14	13	93	0.047	0.00097	0.010	0.013	1.3	0.0014	0.0014	PRI13-004
1,2,3,6,7,8-HxCDF	ug/kg	14	11	79	0.032	0.00055	0.0073	0.0084	1.4	0.00094	0.0031	PRI13-004
1,2,3,7,8,9-HxCDF	ug/kg	14	8	57	0.0043	0.000088	0.0011	0.0011	1.4	0.000078	0.0017	PRI13-004
2,3,4,6,7,8-HxCDF	ug/kg	14	9	64	0.011	0.00032	0.0030	0.0028	1.2	0.00023	0.0022	PRI13-004
1,2,3,4,6,7,8-HpCDF	ug/kg	14	13	93	0.23	0.0027	0.043	0.062	1.5	0.019	0.019	PRI13-004
1,2,3,4,7,8,9-HpCDF	ug/kg	14	12	86	0.071	0.0011	0.014	0.019	1.5	0.00098	0.006	PRI13-004
OCDF	ug/kg	14	14	100	1.4	0.0093	0.23	0.38	1.7			PRI13-004
Calculated TEQ (ND=0), Mammalian	ug/kg	14	14	100	0.017	0.00011	0.0033	0.0045	1.4			PRI13-004
Calculated TEQ (ND=1/2 DL), Mammalian	ug/kg	14	14	100	0.017	0.00041	0.0034	0.0045	1.3			PRI13-004
Calculated TEQ (ND=0), Avian	ug/kg	14	14	100	0.33	0.00087	0.034	0.086	2.6			PRI13-008
Calculated TEQ (ND=1/2 DL), Avian	ug/kg	14	14	100	0.33	0.013	0.046	0.082	1.8			PRI13-008
PCB-81	ug/kg	14	0	0				0.00026	0.37	0.00041	0.0014	
PCB-77	ug/kg	14	7	50	0.0095	0.0011	0.0051	0.0026	0.70	0.00088	0.0053	PRI13-008
PCB-105	ug/kg	14	11	79	0.013	0.0018	0.0045	0.0034	0.87	0.0012	0.0017	PRI13-004
PCB-114	ug/kg	14	2	14	0.0022	0.00083	0.0015	0.00050	0.72	0.00035	0.0011	PRI13-004
PCB-118	ug/kg	14	12	86	0.026	0.0026	0.0088	0.0067	0.83	0.0031	0.0054	PRI13-004
PCB-123	ug/kg	14	1	7	0.0016	0.0016	0.0016	0.00034	0.58	0.00033	0.00088	PRI13-004
PCB-126	ug/kg	14	2	14	0.0022	0.00058	0.0014	0.00072	0.74	0.00042	0.0026	PRI13-008
PCB-156 & 157	ug/kg	14	9	64	0.0096	0.00088	0.0028	0.0024	1.1	0.00035	0.0024	PRI13-004
PCB-167	ug/kg	14	5	36	0.0052	0.00064	0.0023	0.0014	1.1	0.00025	0.002	PRI13-004
PCB-169	ug/kg	14	2	14	0.00073	0.00063	0.00068	0.00057	0.88	0.0003	0.0025	PRI13-014
PCB-189	ug/kg	14	5	36	0.0073	0.00073	0.0028	0.0018	1.3	0.00033	0.0012	PRI13-004
Monochlorobiphenyls, Total	ug/kg	14	14	100	0.025	0.003	0.0091	0.0059	0.64			PRI13-004
Dichlorobiphenyls, Total	ug/kg	14	11	79	0.02	0.0065	0.013	0.0047	0.36	0.01	0.021	PRI13-008
Trichlorobiphenyls, Total	ug/kg	14	12	86	0.033	0.0068	0.014	0.0097	0.78	0.0011	0.0023	PRI13-008
Tetrachlorobiphenyls, Total	ug/kg	14	14	100	0.076	0.012	0.032	0.022	0.69			PRI13-008
Pentachlorobiphenyls, Total	ug/kg	14	14	100	0.18	0.017	0.063	0.048	0.76			PRI13-004
Hexachlorobiphenyls, Total	ug/kg	14	14	100	0.18	0.017	0.058	0.049	0.85			PRI13-004
Heptachlorobiphenyls, Total	ug/kg	14	14	100	0.25	0.015	0.070	0.067	0.96			PRI13-004
Octachlorobiphenyls, Total	ug/kg	14	14	100	0.43	0.011	0.10	0.12	1.1			PRI13-004
Nonachlorobiphenyls, Total	ug/kg	14	14	100	1	0.021	0.21	0.27	1.2			PRI13-004
Decachlorobiphenyl (PCB-209)	ug/kg	14	14	100	11	0.14	1.8	2.9	1.6			PRI13-004
Total PCBs	ug/kg	14	14	100	13	0.26	2.4	3.4	1.4			PRI13-004
Total Aluminum	ug/kg	14	14	100	15,000,000	1,200,000	6,500,000	5,000,000	0.77			PRI13-003
Total Antimony	ug/kg	14	13	93	1,100	230	440	260	0.57	570	570	PRI13-003
Total Arsenic	ug/kg	14	14	100	20,000	6,500	9,800	4,600	0.47			PRI13-001 PRI13-003
Total Barium	ug/kg	14	14	100	460,000	190,000	270,000	72,000	0.27			PRI13-012
Total Beryllium	ug/kg	14	14	100	660	57	310	230	0.77			PRI13-010
Total Cadmium	ug/kg	14	6	43	180	91	140	48	0.35	110	280	PRI13-005 PRI13-010
Total Calcium	ug/kg	14	14	100	880,000,000	120,000,000	260,000,000	190,000,000	0.74			PRI13-012
Total Chromium	ug/kg	14	14	100	18,000	1,800	7,800	5,700	0.73			PRI13-003
Total Cobalt	ug/kg	14	14	100	5,400	590	2,700	1,900	0.71			PRI13-003
Total Copper	ug/kg	14	14	100	14,000	2,200	7,200	3,800	0.53			PRI13-010
Total Iron	ug/kg	14	14	100	15,000,000	1,500,000	6,600,000	5,000,000	0.76			PRI13-003
Total Lead	ug/kg	14	14	100	18,000	6,300	11,000	3,700	0.35			PRI13-012
Total Magnesium	ug/kg	14	14	100	46,000,000	9,900,000	27,000,000	9,100,000	0.34			PRI13-014
Total Manganese	ug/kg	14	14	100	320,000	37,000	170,000	110,000	0.67			PRI13-003 PRI13-010
Total Mercury	ug/kg	14	6	43	21	11	15	4.9	0.38	8	25	PRI13-005
Total Molybdenum	ug/kg	14	7	50	860	450	680	290	0.66	93	360	PRI13-008 PRI13-010
Total Nickel	ug/kg	14	14	100	15,000	1,500	7,100	5,100	0.72			PRI13-003 PRI13-010
Total Potassium	ug/kg	14	14	100	6,700,000	760,000	3,200,000	2,200,000	0.68			PRI13-003
Total Selenium	ug/kg	14	7	50	460	250	320	110	0.36	180	570	PRI13-004
Total Silver	ug/kg	14	0	0				29	0.39	53	170	
Total Sodium	ug/kg	14	14	100	29,000,000	6,500,000	15,000,000	6,700,000	0.45			PRI13-005
Total Thallium	ug/kg	14	0	0				47	0.38	89	280	
Total Vanadium	ug/kg	14	14	100	35,000	5,100	15,000	9,500	0.62			PRI13-003
Total Zinc	ug/kg	14	14	100	80,000	17,000	38,000	19,000	0.50			PRI13-001
1,1'-Biphenyl	ug/kg	14	0	0				74	0.33	180	470	
1,2,4,5-Tetrachlorobenzene	ug/kg	14	0	0				12	0.33	28	74	
2,3,4,6-Tetrachlorophenol	ug/kg	14	0	0				36	0.32	87	230	
2,4,5-Trichlorophenol	ug/kg	14	0	0				38	0.34	88	240	
2,4,6-Trichlorophenol	ug/kg	14	0	0				38	0.33	90	240	
2,4,6-Trichlorophenol (SIM Screen)	ug/kg	14	0	0				1.8	0.31	4.7	12	
2,2-Oxybis(1-chloropropane)	ug/kg	14	0	0				34	0.32	84	220	

Table 6-8
Prevalence Table for Solids Sample Analysis – PRI-13 Buffer Area North and East
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
2,4-Dichlorophenol	ug/kg	14	0	0				39	0.32	95	250	
2,4-Dimethylphenol	ug/kg	14	0	0				73	0.32	180	470	
2,4-Dinitrophenol	ug/kg	14	0	0				96	0.33	230	610	
2,4-Dinitrotoluene	ug/kg	14	0	0				39	0.32	95	250	
2,6-Dinitrotoluene	ug/kg	14	0	0				43	0.32	110	280	
2-Chloronaphthalene	ug/kg	14	0	0				36	0.33	86	230	
2-Chlorophenol	ug/kg	14	0	0				39	0.33	94	250	
2-Methylphenol	ug/kg	14	0	0				25	0.31	62	160	
2-Nitroaniline	ug/kg	14	0	0				38	0.33	90	240	
2-Nitrophenol	ug/kg	14	0	0				36	0.32	87	230	
3,3'-Dichlorobenzidine	ug/kg	14	0	0				43	0.34	100	270	
3-Nitroaniline	ug/kg	14	0	0				73	0.32	180	470	
4,6-Dinitro-2-methylphenol	ug/kg	14	0	0				36	0.33	86	230	
4-Bromophenyl-phenylether	ug/kg	14	0	0				38	0.33	91	240	
4-Chloro-3-methylphenol	ug/kg	14	0	0				41	0.33	98	260	
4-Chloroaniline	ug/kg	14	0	0				25	0.31	62	160	
4-Chlorophenyl-phenylether	ug/kg	14	0	0				41	0.32	99	260	
3 & 4 Methylphenol	ug/kg	14	0	0				150	0.33	350	940	
4-Nitroaniline	ug/kg	14	0	0				39	0.33	94	250	
4-Nitrophenol	ug/kg	14	0	0				120	0.32	300	790	
Acetophenone	ug/kg	14	0	0				11	0.32	27	71	
Benzaldehyde	ug/kg	14	0	0				74	0.33	180	470	
Benzylbutylphthalate	ug/kg	14	0	0				42	0.32	100	270	
Bis(2-chloroethoxy)methane	ug/kg	14	0	0				39	0.33	94	250	
bis(2-Chloroethyl) ether	ug/kg	14	0	0				36	0.33	86	230	
Bis(2-ethylhexyl)phthalate	ug/kg	14	0	0				44	0.33	100	280	
Carbazole	ug/kg	14	0	0				42	0.32	100	270	
Dibenzofuran	ug/kg	14	0	0				37	0.32	92	240	
Diethyl phthalate	ug/kg	14	0	0				41	0.34	96	260	
Dimethylphthalate	ug/kg	14	0	0				39	0.33	93	250	
Di-n-butylphthalate	ug/kg	14	0	0				45	0.34	100	280	
Di-n-octylphthalate	ug/kg	14	0	0				45	0.34	100	280	
Hexachlorobenzene	ug/kg	14	0	0				39	0.32	95	250	
Hexachlorobenzene (SIM Screen)	ug/kg	14	3	21	32	3.1	13	7.8	1.5	2.4	6.2	PRI13-008
Hexachlorobutadiene	ug/kg	14	0	0				36	0.32	87	230	
Hexachlorobutadiene (SIM Screen)	ug/kg	14	0	0				1.5	0.30	3.9	10	
Hexachlorocyclopentadiene	ug/kg	14	0	0				29	0.34	66	180	
Hexachloroethane	ug/kg	14	0	0				36	0.33	86	230	
Isophorone	ug/kg	14	0	0				41	0.32	99	260	
Nitrobenzene	ug/kg	14	0	0				35	0.34	81	220	
N-Nitrosodimethylamine	ug/kg	14	0	0				42	0.32	100	270	
n-Nitrosodimethylamine (SIM Screen)	ug/kg	14	0	0				42	0.32	100	270	
N-Nitroso-di-n-propylamine	ug/kg	14	0	0				38	0.33	90	240	
N-Nitrosodiphenylamine	ug/kg	14	0	0				37	0.32	92	240	
Pentachlorophenol	ug/kg	14	0	0				21	0.31	54	140	
Pentachlorophenol (SIM Screen)	ug/kg	14	0	0				11	0.32	26	68	
Phenol	ug/kg	14	0	0				38	0.34	88	240	
2-Methylnaphthalene	ug/kg	14	0	0				0.19	0.33	0.43	1.2	
Acenaphthene	ug/kg	14	0	0				0.21	0.33	0.47	1.3	
Acenaphthylene	ug/kg	14	0	0				0.15	0.34	0.33	0.93	
Anthracene	ug/kg	14	1	7	0.63	0.63	0.63	0.18	0.32	0.4	1.1	PRI13-008
Benzo(a)anthracene	ug/kg	14	0	0				0.14	0.34	0.3	0.85	
Benzo(a)pyrene	ug/kg	14	0	0				0.17	0.33	0.4	1.1	
Benzo(b)fluoranthene	ug/kg	14	0	0				0.22	0.33	0.51	1.4	
Benzo(g,h,i)perylene	ug/kg	14	0	0				0.45	0.34	1	2.8	
Benzo(k)fluoranthene	ug/kg	14	0	0				0.33	0.33	0.76	2.1	
Chrysene	ug/kg	14	4	29	1	0.4	0.68	0.21	0.39	0.35	0.97	PRI13-008
Dibenzo(a,h)anthracene	ug/kg	14	0	0				0.54	0.34	1.2	3.4	
Fluoranthene	ug/kg	14	4	29	1.8	0.35	1.0	0.46	0.79	0.29	0.82	PRI13-008
Fluorene	ug/kg	14	0	0				0.23	0.35	0.49	1.4	
Indeno(1,2,3-cd)pyrene	ug/kg	14	1	7	0.53	0.53	0.53	0.20	0.32	0.48	1.3	PRI13-008
Naphthalene	ug/kg	14	2	14	0.53	0.45	0.49	0.14	0.32	0.31	0.86	PRI13-010
Phenanthrene	ug/kg	14	12	86	2.1	0.41	0.85	0.43	0.52	0.43	0.98	PRI13-008
Pyrene	ug/kg	14	3	21	1.4	0.58	0.94	0.30	0.52	0.35	0.98	PRI13-008
Low Molecular Weight PAH (ND=0)	ug/kg	14	12	86	3.2	0.41	0.98	0.73	0.74	0.6	1.4	PRI13-008
Low Molecular Weight PAH (ND=1/2DL)	ug/kg	14	12	86	4.1	1.6	2.4	0.78	0.32	1.7	3.9	PRI13-008
High Molecular Weight PAH (ND=0)	ug/kg	14	4	29	4.7	0.75	2.5	1.0	0.54	1.2	3.4	PRI13-008
High Molecular Weight PAH (ND=1/2DL)	ug/kg	14	4	29	7	3.4	5.2	1.5	0.35	2.8	7.9	PRI13-008
Perchlorate	ug/kg	14	0	0				15	0.45	20	57	
Total Organic Carbon	g/kg	14	11	79	6.4	3.5	4.6	0.95	0.22	3.1	3.5	PRI13-014
pH	pH units	14	14	100	9.09	7.75	8.3	0.33	0.040			PRI13-012
Cyanide, Total	ug/kg	14	0	0				98	0.36	210	600	

Notes:
µg/kg = micrograms per kilogram
Empty cells = No results
g/kg = Grams per kilograms
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pH = pH units
SIM = Selected ion monitoring
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence

Table 6-9
Prevalence Table for Solids Sample Analysis – PRI-14 Buffer Area South
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	CAS #	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
2,3,7,8-TCDD	1746-01-6	ug/kg	18	2	11	0.00088	0.00042	0.00065	0.00021	1.2	0.000018	0.00034	PRI14-006
1,2,3,7,8-PeCDD	40321-76-4	ug/kg	18	5	28	0.0022	0.0003	0.00086	0.0010	1.5	0.00003	0.0041	PRI14-007
1,2,3,4,7,8-HxCDD	39227-28-6	ug/kg	18	3	17	0.011	0.0001	0.0038	0.0026	2.9	0.000039	0.0017	PRI14-006
1,2,3,6,7,8-HxCDD	57653-85-7	ug/kg	18	8	44	0.02	0.00019	0.0044	0.0048	2.3	0.000028	0.0003	PRI14-006
1,2,3,7,8,9-HxCDD	19408-74-3	ug/kg	18	10	56	0.028	0.00028	0.0050	0.0066	2.4	0.000029	0.00019	PRI14-006
1,2,3,4,6,7,8-HpCDD	35822-46-9	ug/kg	18	17	94	0.15	0.00044	0.014	0.035	2.6	0.00022	0.00022	PRI14-006
OCDD	3268-87-9	ug/kg	18	7	39	0.023	0.0011	0.011	0.10	2.8	0.00094	0.44	PRI14-001
2,3,7,8-TCDF	51207-31-9	ug/kg	18	15	83	0.18	0.00055	0.022	0.045	2.4	0.00067	0.0011	PRI14-006
1,2,3,7,8-PeCDF	57117-41-6	ug/kg	18	16	89	0.6	0.00063	0.060	0.14	2.7	0.00084	0.0016	PRI14-006
2,3,4,7,8-PeCDF	57117-31-4	ug/kg	18	17	94	0.47	0.00043	0.042	0.11	2.8	0.00035	0.00035	PRI14-006
1,2,3,4,7,8-HxCDF	70648-26-9	ug/kg	18	18	100	2.6	0.002	0.21	0.62	2.9			PRI14-006
1,2,3,6,7,8-HxCDF	57117-44-9	ug/kg	18	18	100	1.5	0.0012	0.13	0.36	2.8			PRI14-006
1,2,3,7,8,9-HxCDF	72918-21-9	ug/kg	18	13	72	0.16	0.00014	0.020	0.039	2.7	0.00033	0.00071	PRI14-006
2,3,4,6,7,8-HxCDF	60851-34-5	ug/kg	18	15	83	0.63	0.0012	0.066	0.15	2.8	0.00031	0.00068	PRI14-006
1,2,3,4,6,7,8-HpCDF	67562-39-4	ug/kg	18	18	100	12	0.0081	1.1	2.9	2.7			PRI14-006
1,2,3,4,7,8,9-HpCDF	55673-89-7	ug/kg	18	16	89	3.3	0.0025	0.33	0.80	2.7	0.0046	0.0098	PRI14-006
OCDF	39001-02-0	ug/kg	18	18	100	100	0.04	7.8	24	3.0			PRI14-006
Calculated TEQ (ND=0), Mammalian	CALC_DX_0	ug/kg	18	18	100	0.91	0.00056	0.078	0.22	2.8			PRI14-006
Calculated TEQ (ND=1/2 DL), Mammalian	CALC_DX_2	ug/kg	18	18	100	0.91	0.00071	0.078	0.22	2.8			PRI14-006
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	ug/kg	18	18	100	98	0.0012	6.1	23	3.8			PRI14-006
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	ug/kg	18	18	100	98	0.014	6.1	23	3.8			PRI14-006
PCB-81	70362-50-4	ug/kg	18	7	39	0.29	0.0009	0.055	0.068	3.1	0.00028	0.0012	PRI14-006
PCB-77	32598-13-3	ug/kg	18	13	72	0.75	0.00096	0.083	0.18	3.0	0.0008	0.0011	PRI14-006
PCB-105	32598-14-4	ug/kg	18	12	67	0.55	0.0016	0.068	0.13	2.8	0.00049	0.0019	PRI14-006
PCB-114	74472-37-0	ug/kg	18	6	33	0.56	0.0015	0.12	0.13	3.4	0.00028	0.0019	PRI14-006
PCB-118	31508-00-6	ug/kg	18	14	78	1.5	0.0013	0.16	0.36	2.9	0.0018	0.0044	PRI14-006
PCB-123	65510-44-3	ug/kg	18	8	44	0.52	0.00062	0.077	0.12	3.5	0.00028	0.016	PRI14-006
PCB-126	57465-28-8	ug/kg	18	10	56	0.46	0.0011	0.061	0.11	3.2	0.00031	0.0011	PRI14-006
PCB-156 & 157	PCB156_157	ug/kg	18	13	72	2	0.0018	0.21	0.48	3.2	0.0005	0.0028	PRI14-006
PCB-167	52663-72-6	ug/kg	18	14	78	2.1	0.0018	0.19	0.50	3.3	0.00039	0.0016	PRI14-006
PCB-169	32774-16-6	ug/kg	18	7	39	0.3	0.00057	0.059	0.073	3.0	0.00027	0.017	PRI14-006
PCB-189	39635-31-9	ug/kg	18	14	78	2.9	0.0012	0.27	0.69	3.3	0.00048	0.0071	PRI14-006
Monochlorobiphenyls, Total	27323-18-8	ug/kg	18	18	100	0.69	0.0033	0.062	0.16	2.6			PRI14-006
Dichlorobiphenyls, Total	25512-42-9	ug/kg	18	15	83	7.8	0.0059	0.72	1.9	3.1	0.0078	0.011	PRI14-006
Trichlorobiphenyls, Total	25323-68-6	ug/kg	18	16	89	16	0.0038	1.3	3.8	3.3	0.0017	0.0022	PRI14-006
Tetrachlorobiphenyls, Total	26914-33-0	ug/kg	18	18	100	20	0.0026	1.5	4.8	3.2			PRI14-006
Pentachlorobiphenyls, Total	25429-29-2	ug/kg	18	18	100	28	0.0056	2.2	6.8	3.0			PRI14-006
Hexachlorobiphenyls, Total	26601-64-9	ug/kg	18	18	100	51	0.0075	3.8	12	3.2			PRI14-006
Heptachlorobiphenyls, Total	28655-71-2	ug/kg	18	18	100	69	0.013	5.3	17	3.1			PRI14-006
Octachlorobiphenyls, Total	55722-26-4	ug/kg	18	18	100	100	0.026	7.9	24	3.1			PRI14-006
Nonachlorobiphenyls, Total	53742-07-7	ug/kg	18	18	100	180	0.061	15	43	3.0			PRI14-006
Decachlorobiphenyl (PCB-209)	2051-24-3	ug/kg	18	18	100	750	0.44	65	180	2.8			PRI14-006
Total PCBs	1336-36-3	ug/kg	18	18	100	760	0.56	77	190	2.5			PRI14-006
Total Aluminum	7429-90-5	ug/kg	18	18	100	17,000,000	630,000	5,800,000	4,400,000	0.75			PRI14-002
Total Antimony	7440-36-0	ug/kg	18	16	89	1,300	270	560	260	0.52	130	210	PRI14-005
Total Arsenic	7440-38-2	ug/kg	18	18	100	19,000	1,600	10,000	4,400	0.42			PRI14-005
Total Barium	7440-39-3	ug/kg	18	18	100	490,000	17,000	220,000	100,000	0.47			PRI14-005
Total Beryllium	7440-41-7	ug/kg	18	18	100	710	35	260	190	0.73			PRI14-002
Total Cadmium	7440-43-9	ug/kg	18	11	61	370	86	150	68	0.53	67	120	PRI14-005
Total Calcium	7440-70-2	ug/kg	18	18	100	280,000,000	52,000,000	150,000,000	65,000,000	0.43			PRI14-005 PRI14-009
Total Chromium	7440-47-3	ug/kg	18	18	100	18,000	990	7,500	5,000	0.66			PRI14-002
Total Cobalt	7440-48-4	ug/kg	18	18	100	6,300	300	2,600	1,600	0.62			PRI14-002
Total Copper	7440-50-8	ug/kg	18	18	100	14,000	1,300	5,800	3,900	0.66			PRI14-002
Total Iron	7439-89-6	ug/kg	18	18	100	14,000,000	910,000	6,500,000	4,300,000	0.66			PRI14-002
Total Lead	7439-92-1	ug/kg	18	18	100	14,000	1,400	7,300	3,300	0.45			PRI14-002
Total Magnesium	7439-95-4	ug/kg	18	18	100	56,000,000	8,100,000	27,000,000	12,000,000	0.46			PRI14-004
Total Manganese	7439-96-5	ug/kg	18	18	100	470,000	28,000	220,000	140,000	0.61			PRI14-006
Total Mercury	7439-97-6	ug/kg	18	6	33	54	12	23	11	0.70	8.7	16	PRI14-005
Total Molybdenum	7439-98-7	ug/kg	18	14	78	22,000	110	3,200	5,300	2.1	42	320	PRI14-005
Total Nickel	7440-02-0	ug/kg	18	18	100	16,000	790	6,400	4,200	0.65			PRI14-002
Total Potassium	7440-09-7	ug/kg	18	18	100	9,100,000	650,000	3,800,000	2,700,000	0.71			PRI14-007
Total Selenium	7782-49-2	ug/kg	18	8	44	720	220	380	160	0.55	130	250	PRI14-005
Total Silver	7440-22-4	ug/kg	18	3	17	94	43	65	14	0.23	40	74	PRI14-005
Total Sodium	7440-23-5	ug/kg	18	18	100	220,000,000	3,300,000	28,000,000	50,000,000	1.8			PRI14-013
Total Thallium	7440-28-0	ug/kg	18	2	11	180	140	160	33	0.29	67	180	PRI14-004
Total Vanadium	7440-62-2	ug/kg	18	18	100	40,000	1,600	16,000	8,800	0.56			PRI14-002
Total Zinc	7440-66-6	ug/kg	18	18	100	52,000	3,200	22,000	13,000	0.60			PRI14-002
1,1'-Biphenyl	92-52-4	ug/kg	18	0	0				280	0.96	170	1,400	
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/kg	18	0	0				44	0.96	26	220	
2,3,4,6-Tetrachlorophenol	58-90-2	ug/kg	18	0	0				140	0.98	83	700	
2,4,5-Trichlorophenol	95-95-4	ug/kg	18	0	0				140	0.97	84	710	
2,4,6-Trichlorophenol	88-06-2	ug/kg	18	0	0				140	0.97	85	720	
2,4,6-Trichlorophenol (SIM Screen)	88-06-2	ug/kg	18	0	0				1.2	0.20	4.5	8.8	
2,2-Oxybis(1-chloropropane)	108-60-1	ug/kg	18	0	0				140	0.98	80	680	
2,4-Dichlorophenol	120-83-2	ug/kg	18	0	0				150	0.98	90	760	
2,4-Dimethylphenol	105-67-9	ug/kg	18	0	0				280	0.96	170	1,400	
2,4-Dinitrophenol	51-28-5	ug/kg	18	0	0				360	0.96	220	1,800	
2,4-Dinitrotoluene	121-14-2	ug/kg	18	0	0				150	0.98	90	760	
2,6-Dinitrotoluene	606-20-2	ug/kg	18	0	0				170	0.98	100	850	
2-Chloronaphthalene	91-58-7	ug/kg	18	0	0				140	0.97	82	690	
2-Chlorophenol	95-57-8	ug/kg	18	0	0				150	0.98	89	750	
2-Methylphenol	95-48-7	ug/kg	18	0	0				100	0.98	59	500	
2-Nitroaniline	88-74-4	ug/kg	18	0	0				140	0.97	85	720	
2-Nitrophenol	88-75-5	ug/kg	18	0	0				140	0.98	83	700	
3,3'-Dichlorobenzidine	91-94-1	ug/kg	18	0	0				160	0.97	95	800	
3-Nitroaniline	99-09-2	ug/kg	18	0	0				280	0.96	170	1,400	
4,6-Dinitro-2-methylphenol	534-52-1	ug/kg	18	0	0				140	0.97	82	690	
4-Bromophenyl-phenylether	101-55-3	ug/kg	18	0	0				150	0.97	86	730	
4-Chloro-3-methylphenol	59-50-7	ug/kg	18	0	0				160	0.97	93	790	
4-Chloroaniline	106-47-8	ug/kg	18	0	0				100	0.98	59	500	
4-Chlorophenyl-phenylether	7005-72-3	ug/kg	18	0	0				160	0.97	94	800	
3 & 4 Methylphenol	15831-10-4	ug/kg	18	0	0				560	0.97	330	2,800	
4-Nitroaniline	100-01-6	ug/kg	18	0	0				150	0.98	89	750	
4-Nitrophenol	100-02-7	ug/kg	18	0	0				480	0.97	280	2,400	
Acetophenone	98-86-2	ug/kg	18	8	44	450	42	110	100	1.3	25	210	PRI14-013

Table 6-9
Prevalence Table for Solids Sample Analysis – PRI-14 Buffer Area South
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	CAS #	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
Benzaldehyde	100-52-7	ug/kg	18	0	0				280	0.96	170	1,400	
Benzylbutylphthalate	85-68-7	ug/kg	18	0	0				160	0.97	96	810	
Bis(2-chloroethoxy)methane	111-91-1	ug/kg	18	0	0				150	0.98	89	750	
bis(2-Chloroethyl) ether	111-44-4	ug/kg	18	0	0				140	0.97	82	690	
Bis(2-ethylhexyl)phthalate	117-81-7	ug/kg	18	0	0				170	0.98	99	840	
Carbazole	86-74-8	ug/kg	18	0	0				160	0.97	96	810	
Dibenzofuran	132-64-9	ug/kg	18	0	0				150	0.98	87	740	
Diethyl phthalate	84-66-2	ug/kg	18	0	0				150	0.99	91	770	
Dimethylphthalate	131-11-3	ug/kg	18	0	0				150	0.97	88	740	
Di-n-butylphthalate	84-74-2	ug/kg	18	0	0				170	0.98	98	830	
Di-n-octylphthalate	117-84-0	ug/kg	18	0	0				170	0.98	98	830	
Hexachlorobenzene	118-74-1	ug/kg	18	2	11	9,700	580	5,100	2,300	3.3	90	180	PRI14-006
Hexachlorobenzene (SIM Screen)	118-74-1	ug/kg	17	10	59	580	8.8	100	140	2.3	2.5	4.4	PRI14-005
Hexachlorobutadiene	87-68-3	ug/kg	18	0	0				140	0.98	83	700	
Hexachlorobutadiene (SIM Screen)	87-68-3	ug/kg	18	0	0				1.0	0.20	3.7	7.4	
Hexachlorocyclopentadiene	77-47-4	ug/kg	18	0	0				110	0.98	63	530	
Hexachloroethane	67-72-1	ug/kg	18	0	0				140	0.97	82	690	
Isophorone	78-59-1	ug/kg	18	0	0				160	0.97	94	800	
Nitrobenzene	98-95-3	ug/kg	18	0	0				130	0.98	77	650	
N-Nitrosodimethylamine	62-75-9	ug/kg	18	0	0				160	0.97	97	820	
n-Nitrosodimethylamine (SIM Screen)	62-75-9	ug/kg	18	0	0				26	0.20	97	190	
N-Nitroso-di-n-propylamine	621-64-7	ug/kg	18	0	0				140	0.97	85	720	
N-Nitrosodiphenylamine	86-30-6	ug/kg	18	0	0				150	0.98	87	740	
Pentachlorophenol	87-86-5	ug/kg	18	0	0				88	0.98	52	440	
Pentachlorophenol (SIM Screen)	87-86-5	ug/kg	18	0	0				6.5	0.20	24	48	
Phenol	108-95-2	ug/kg	18	1	6	170	170	170	140	0.95	84	710	PRI14-013
2-Methylnaphthalene	91-57-6	ug/kg	18	6	33	20	0.77	6.2	4.7	1.9	0.42	1.5	PRI14-005
Acenaphthene	83-32-9	ug/kg	18	1	6	27	27	27	6.2	2.9	0.46	1.3	PRI14-005
Acenaphthylene	208-96-8	ug/kg	18	1	6	11	11	11	2.5	2.4	0.32	0.62	PRI14-005
Anthracene	120-12-7	ug/kg	18	3	17	1.5	0.56	0.91	0.25	0.41	0.39	0.77	PRI14-005
Benzo(a)anthracene	56-55-3	ug/kg	18	0	0				0.083	0.20	0.3	0.59	
Benzo(a)pyrene	50-32-8	ug/kg	18	0	0				0.11	0.20	0.39	0.78	
Benzo(b)fluoranthene	205-99-2	ug/kg	18	0	0				0.14	0.20	0.49	0.98	
Benzo(g,h,i)perylene	191-24-2	ug/kg	18	0	0				0.28	0.20	0.98	1.9	
Benzo(k)fluoranthene	207-08-9	ug/kg	18	0	0				0.21	0.20	0.74	1.5	
Chrysene	218-01-9	ug/kg	18	4	22	1	0.39	0.68	0.15	0.30	0.34	0.58	PRI14-005
Dibenzo(a,h)anthracene	53-70-3	ug/kg	18	0	0				0.34	0.21	1.2	2.3	
Fluoranthene	206-44-0	ug/kg	18	5	28	0.58	0.37	0.46	0.080	0.19	0.29	0.57	PRI14-003
Fluorene	86-73-7	ug/kg	18	1	6	1	1	1.0	0.15	0.22	0.48	0.96	PRI14-006
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	18	0	0				0.13	0.20	0.47	0.93	
Naphthalene	91-20-3	ug/kg	18	4	22	1.7	0.6	1.2	2.3	1.7	0.3	9	PRI14-005
Phenanthrene	85-01-8	ug/kg	18	10	56	14	0.45	2.4	3.2	1.9	0.34	1.6	PRI14-005
Pyrene	129-00-0	ug/kg	18	2	11	0.51	0.47	0.49	0.092	0.19	0.34	0.68	PRI14-005
Low Molecular Weight PAH (ND=0)	LPAH-0	ug/kg	18	11	61	72	0.45	9.8	17	2.4	0.48	9	PRI14-005
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	ug/kg	18	11	61	73	1.7	11	17	2.1	1.4	7.9	PRI14-005
High Molecular Weight PAH (ND=0)	HPAH-0	ug/kg	18	6	33	1.4	0.47	0.99	0.41	0.29	1.2	2	PRI14-001
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	ug/kg	18	6	33	6.1	3.5	4.6	0.88	0.22	2.8	4.7	PRI14-005
1,4-Dioxane	123-91-1	ug/kg	10	0	0				17	0.28	41	86	
1,1-Dichloroethane	75-34-3	ug/kg	10	0	0				0.13	0.28	0.31	0.64	
1,1-Dichloroethene	75-35-4	ug/kg	10	0	0				0.11	0.28	0.27	0.57	
1,2-Dibromo-3-chloropropane	96-12-8	ug/kg	10	0	0				0.38	0.27	0.93	1.9	
1,2-Dibromoethane	106-93-4	ug/kg	10	0	0				0.12	0.28	0.28	0.59	
1,2-Dichlorobenzene	95-50-1	ug/kg	10	0	0				0.28	0.27	0.68	1.4	
1,2-Dichloroethane	107-06-2	ug/kg	10	0	0				0.32	0.28	0.77	1.6	
cis-1,2-Dichloroethene	156-59-2	ug/kg	10	0	0				0.40	0.29	0.94	2	
trans-1,2-Dichloroethene	156-60-5	ug/kg	10	0	0				0.16	0.28	0.4	0.83	
1,2-Dichloropropane	78-87-5	ug/kg	10	0	0				0.25	0.27	0.63	1.3	
1,3-Dichlorobenzene	541-73-1	ug/kg	10	0	0				0.13	0.28	0.32	0.66	
cis-1,3-Dichloropropene	10061-01-5	ug/kg	10	0	0				0.28	0.27	0.68	1.4	
trans-1,3-Dichloropropene	10061-02-6	ug/kg	10	0	0				0.31	0.27	0.79	1.6	
1,4-Dichlorobenzene	106-46-7	ug/kg	10	0	0				0.34	0.28	0.82	1.7	
1,1,1-Trichloroethane	71-55-6	ug/kg	10	0	0				0.16	0.28	0.38	0.79	
1,1,2-Trichloroethane	79-00-5	ug/kg	10	0	0				0.19	0.28	0.46	0.97	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	76-13-1	ug/kg	10	0	0				0.37	0.28	0.88	1.8	
1,2,3-Trichlorobenzene	87-61-6	ug/kg	10	0	0				0.31	0.27	0.79	1.6	
1,2,4-Trichlorobenzene	120-82-1	ug/kg	10	0	0				0.31	0.27	0.79	1.6	
1,1,2,2-Tetrachloroethane	79-34-5	ug/kg	10	0	0				0.30	0.28	0.72	1.5	
2-Butanone	78-93-3	ug/kg	10	7	70	24	5.2	12	7.0	0.80	1.6	2.9	PRI14-003
2-Hexanone	591-78-6	ug/kg	10	1	10	1.1	1.1	1.1	0.30	0.26	0.78	1.6	PRI14-008
4-Methyl-2-pentanone	108-10-1	ug/kg	10	1	10	1.5	1.5	1.5	0.37	0.25	0.97	2	PRI14-013
Acetone	67-64-1	ug/kg	10	10	100	73	7.3	33	24	0.72			PRI14-003
Benzene	71-43-2	ug/kg	10	0	0				0.11	0.28	0.27	0.57	
Bromochloromethane	74-97-5	ug/kg	10	0	0				0.42	0.28	0.99	2.1	
Bromodichloromethane	75-27-4	ug/kg	10	0	0				0.24	0.29	0.56	1.2	
Bromoform	75-25-2	ug/kg	10	0	0				0.17	0.28	0.42	0.88	
Bromomethane	74-83-9	ug/kg	10	0	0				0.38	0.28	0.91	1.9	
Carbon disulfide	75-15-0	ug/kg	10	9	90	5	1.4	2.6	1.4	0.58	0.6	0.6	PRI14-005
Carbon tetrachloride	56-23-5	ug/kg	10	0	0				0.24	0.29	0.56	1.2	
Chlorobenzene	108-90-7	ug/kg	10	0	0				0.13	0.28	0.31	0.64	
Cyclohexane	110-82-7	ug/kg	10	0	0				1.1	0.27	2.8	5.8	
Dibromochloromethane	124-48-1	ug/kg	10	0	0				0.091	0.27	0.22	0.46	
Chloroethane	75-00-3	ug/kg	10	0	0				0.20	0.28	0.47	0.99	
Chloroform	67-66-3	ug/kg	10	2	20	1.1	0.7	0.90	0.25	0.50	0.27	0.57	PRI14-005
Chloromethane	74-87-3	ug/kg	10	0	0				0.21	0.27	0.53	1.1	
Dichlorodifluoromethane (Freon-12)	75-71-8	ug/kg	10	0	0				0.40	0.29	0.94	2	
Ethyl benzene	100-41-4	ug/kg	10	0	0				0.15	0.28	0.36	0.75	
Isopropylbenzene	98-82-8	ug/kg	10	0	0				0.23	0.28	0.55	1.1	
Methyl tertbutyl ether (MTBE)	1634-04-4	ug/kg	10	0	0				0.25	0.27	0.63	1.3	
Dichloromethane (Methylene chloride)	75-09-2	ug/kg	10	0	0				0.36	0.27	0.89	1.8	
Styrene	100-42-5	ug/kg	10	0	0				0.14	0.28	0.33	0.68	
Tetrachloroethene	127-18-4	ug/kg	10	0	0				0.26	0.27	0.64	1.3	
Toluene	108-88-3	ug/kg	10	0	0				0.26	0.27	0.64	1.3	
Trichloroethene	79-01-6	ug/kg	10	0	0				0.25	0.27	0.63	1.3	
Trichlorofluoromethane (Freon-11)	75-69-4	ug/kg	10	0	0				0.15	0.28	0.36	0.75	
Vinyl chloride	75-01-4	ug/kg	10	0	0				0.16	0.28	0.38	0.79	
o-Xylene	95-47-6	ug/kg	10	0	0				0.14	0.28	0.35	0.72	

Table 6-9
Prevalence Table for Solids Sample Analysis – PRI-14 Buffer Area South
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	CAS #	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
m,p Xylenes	179601-23-1	ug/kg	10	0	0				0.36	0.28	0.85	1.8	
Perchlorate	14797-73-0	ug/kg	18	0	0				58	1.1	20	260	
Total Organic Carbon	TOC	g/kg	18	11	61	7.6	2.6	4.7	1.8	0.47	1.7	2.7	PRI14-007
pH	PH25	pH units	18	18	100	8.83	7.04	7.9	0.48	0.061			PRI14-009
Cyanide, Total	74-90-8	ug/kg	18	1	6	790	790	790	130	0.42	220	400	PRI14-013

Notes:
µg/kg = micrograms per kilogram
Empty cells = No results
g/kg = Grams per kilograms
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pH = pH units
SIM = Selected ion monitoring
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence

Table 6-10
Prevalence Table for Solids Sample Analysis – PRI-15 Buffer Area West
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	CAS #	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
2,3,7,8-TCDD	1746-01-6	ug/kg	14	0	0				0.000071	0.69	0.00002	0.00023	
1,2,3,7,8-PeCDD	40321-76-4	ug/kg	14	1	7	0.00015	0.00015	0.00015	0.000078	0.54	0.000035	0.00025	PRI15-009
1,2,3,4,7,8-HxCDD	39227-28-6	ug/kg	14	5	36	0.00016	0.000063	0.000090	0.000041	0.35	0.000091	0.0002	PRI15-006
1,2,3,6,7,8-HxCDD	57653-85-7	ug/kg	14	6	43	0.00038	0.00012	0.00025	0.000094	0.52	0.000089	0.00018	PRI15-009
1,2,3,7,8,9-HxCDD	19408-74-3	ug/kg	14	6	43	0.00044	0.00012	0.00026	0.00012	0.63	0.000086	0.00023	PRI15-006
1,2,3,4,6,7,8-HpCDD	35822-46-9	ug/kg	14	13	93	0.0029	0.00074	0.0014	0.00075	0.55	0.00051	0.00051	PRI15-009
OCDD	3268-87-9	ug/kg	14	7	50	0.014	0.0042	0.0095	0.0037	0.52	0.0036	0.0058	PRI15-006 PRI15-009
2,3,7,8-TCDF	51207-31-9	ug/kg	14	7	50	0.0038	0.00023	0.00099	0.00094	1.5	0.00013	0.0004	PRI15-004
1,2,3,7,8-PeCDF	57117-41-6	ug/kg	14	7	50	0.0057	0.00014	0.0012	0.0014	1.9	0.00024	0.00045	PRI15-004
2,3,4,7,8-PeCDF	57117-31-4	ug/kg	14	8	57	0.0029	0.00013	0.00073	0.00071	1.3	0.00017	0.00047	PRI15-004
1,2,3,4,7,8-HxCDF	70648-26-9	ug/kg	14	13	93	0.01	0.0007	0.0024	0.0026	1.2	0.00078	0.00078	PRI15-004
1,2,3,6,7,8-HxCDF	57117-44-9	ug/kg	14	11	79	0.0092	0.00034	0.0018	0.0024	1.4	0.00054	0.0031	PRI15-004
1,2,3,7,8,9-HxCDF	72918-21-9	ug/kg	14	4	29	0.00094	0.000028	0.00029	0.00024	1.2	0.000021	0.00047	PRI15-004
2,3,4,6,7,8-HxCDF	60851-34-5	ug/kg	14	12	86	0.0036	0.00024	0.00091	0.00099	1.2	0.00026	0.00043	PRI15-004
1,2,3,4,6,7,8-HpCDF	67562-39-4	ug/kg	14	13	93	0.061	0.0041	0.017	0.020	1.2	0.0077	0.0077	PRI15-004
1,2,3,4,7,8,9-HpCDF	55673-89-7	ug/kg	14	11	79	0.014	0.00034	0.0027	0.0038	1.6	0.00052	0.0012	PRI15-004
OCDF	39001-02-0	ug/kg	14	14	100	0.73	0.024	0.18	0.22	1.3			PRI15-006
Calculated TEQ (ND=0), Mammalian	CALC_DX_0	ug/kg	14	14	100	0.0052	0.000094	0.00096	0.0014	1.5			PRI15-004
Calculated TEQ (ND=1/2 DL), Mammalian	CALC_DX_2	ug/kg	14	14	100	0.0055	0.00038	0.0012	0.0014	1.2			PRI15-004
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	ug/kg	14	14	100	0.36	0.00013	0.031	0.095	3.1			PRI15-004
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	ug/kg	14	14	100	0.36	0.012	0.041	0.092	2.3			PRI15-004
PCB-81	70362-50-4	ug/kg	14	0	0				0.00027	0.36	0.00039	0.0012	
PCB-77	32598-13-3	ug/kg	14	7	50	0.014	0.0011	0.0036	0.0034	1.3	0.00078	0.0027	PRI15-004
PCB-105	32598-14-4	ug/kg	14	13	93	0.048	0.0013	0.0060	0.012	2.1	0.0019	0.0019	PRI15-004
PCB-114	74472-37-0	ug/kg	14	0	0				0.00042	0.58	0.00031	0.002	
PCB-118	31508-00-6	ug/kg	14	13	93	0.095	0.0024	0.012	0.024	2.0	0.0038	0.0038	PRI15-004
PCB-123	65510-44-3	ug/kg	14	2	14	0.0027	0.001	0.0019	0.00059	0.73	0.00029	0.0011	PRI15-004
PCB-126	57465-28-8	ug/kg	14	1	7	0.0047	0.0047	0.0047	0.0011	1.3	0.00036	0.0011	PRI15-004
PCB-156 & 157	PCB156_157	ug/kg	14	8	57	0.028	0.00074	0.0048	0.0072	2.3	0.00042	0.0017	PRI15-004
PCB-167	52663-72-6	ug/kg	14	2	14	0.012	0.00053	0.0063	0.0031	2.2	0.00023	0.0011	PRI15-004
PCB-169	32774-16-6	ug/kg	14	0	0				0.00019	0.37	0.00028	0.00083	
PCB-189	39635-31-9	ug/kg	14	1	7	0.0068	0.0068	0.0068	0.0017	1.4	0.00037	0.0016	PRI15-004
Monochlorobiphenyls, Total	27323-18-8	ug/kg	14	14	100	0.021	0.00063	0.0058	0.0049	0.84			PRI15-004
Dichlorobiphenyls, Total	25512-42-9	ug/kg	14	11	79	0.1	0.005	0.023	0.024	1.2	0.0053	0.02	PRI15-004
Trichlorobiphenyls, Total	25323-68-6	ug/kg	14	14	100	0.02	0.002	0.0092	0.0053	0.57			PRI15-004
Tetrachlorobiphenyls, Total	26914-33-0	ug/kg	14	14	100	0.093	0.0059	0.019	0.022	1.1			PRI15-004
Pentachlorobiphenyls, Total	25429-29-2	ug/kg	14	14	100	0.59	0.013	0.069	0.15	2.2			PRI15-004
Hexachlorobiphenyls, Total	26601-64-9	ug/kg	14	14	100	0.74	0.017	0.087	0.19	2.2			PRI15-004
Heptachlorobiphenyls, Total	28655-71-2	ug/kg	14	14	100	0.57	0.015	0.079	0.14	1.8			PRI15-004
Octachlorobiphenyls, Total	55722-26-4	ug/kg	14	14	100	0.96	0.022	0.11	0.25	2.2			PRI15-004
Nonachlorobiphenyls, Total	53742-07-7	ug/kg	14	14	100	2.6	0.04	0.27	0.67	2.5			PRI15-004
Decachlorobiphenyl (PCB-209)	2051-24-3	ug/kg	14	14	100	18	0.18	1.8	4.7	2.6			PRI15-004
Total PCBs	1336-36-3	ug/kg	14	14	100	24	0.38	2.5	6.2	2.5			PRI15-004
Total Aluminum	7429-90-5	ug/kg	14	14	100	15,000,000	4,800,000	11,000,000	2,800,000	0.26			PRI15-009
Total Antimony	7440-36-0	ug/kg	14	12	86	420	230	310	55	0.18	210	230	PRI15-009
Total Arsenic	7440-38-2	ug/kg	14	14	100	6,800	3,000	4,800	960	0.20			PRI15-004
Total Barium	7440-39-3	ug/kg	14	14	100	420,000	74,000	260,000	92,000	0.36			PRI15-010
Total Beryllium	7440-41-7	ug/kg	14	14	100	610	210	460	100	0.23			PRI15-009
Total Cadmium	7440-43-9	ug/kg	14	14	100	510	180	390	93	0.24			PRI15-011
Total Calcium	7440-70-2	ug/kg	14	14	100	200,000,000	25,000,000	83,000,000	46,000,000	0.55			PRI15-002
Total Chromium	7440-47-3	ug/kg	14	14	100	17,000	5,500	12,000	3,100	0.26			PRI15-009
Total Cobalt	7440-48-4	ug/kg	14	14	100	5,400	1,800	3,700	1,000	0.27			PRI15-009
Total Copper	7440-50-8	ug/kg	14	14	100	21,000	7,400	15,000	4,000	0.27			PRI15-004
Total Iron	7439-89-6	ug/kg	14	14	100	13,000,000	4,600,000	9,300,000	2,300,000	0.25			PRI15-001
Total Lead	7439-92-1	ug/kg	14	14	100	22,000	8,900	17,000	3,800	0.22			PRI15-004
Total Magnesium	7439-95-4	ug/kg	14	14	100	32,000,000	6,800,000	17,000,000	6,000,000	0.35			PRI15-004
Total Manganese	7439-96-5	ug/kg	14	14	100	550,000	160,000	390,000	130,000	0.32			PRI15-009
Total Mercury	7439-97-6	ug/kg	14	12	86	41	9	18	9.5	0.56	8.5	8.9	PRI15-004
Total Molybdenum	7439-98-7	ug/kg	14	14	100	1,400	160	780	370	0.48			PRI15-009
Total Nickel	7440-02-0	ug/kg	14	14	100	14,000	4,400	9,200	2,700	0.29			PRI15-009
Total Potassium	7440-09-7	ug/kg	14	14	100	6,400,000	1,700,000	4,200,000	1,300,000	0.32			PRI15-009
Total Selenium	7782-49-2	ug/kg	14	10	71	360	250	290	49	0.18	210	230	PRI15-012
Total Silver	7440-22-4	ug/kg	14	5	36	85	65	78	7.4	0.11	64	70	PRI15-012
Total Sodium	7440-23-5	ug/kg	14	14	100	16,000,000	310,000	2,600,000	4,200,000	1.6			PRI15-004
Total Thallium	7440-28-0	ug/kg	14	3	21	130	110	120	7.3	0.064	100	120	PRI15-009
Total Vanadium	7440-62-2	ug/kg	14	14	100	23,000	9,700	19,000	4,100	0.22			PRI15-001 PRI15-011
Total Zinc	7440-66-6	ug/kg	14	14	100	63,000	22,000	43,000	11,000	0.26			PRI15-009
1,1'-Biphenyl	92-52-4	ug/kg	14	0	0				6.6	0.037	170	190	
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/kg	14	0	0				1.1	0.040	27	31	
2,3,4,6-Tetrachlorophenol	58-90-2	ug/kg	14	0	0				3.0	0.034	85	96	
2,4,5-Trichlorophenol	95-95-4	ug/kg	14	0	0				3.0	0.033	86	97	
2,4,6-Trichlorophenol	88-06-2	ug/kg	14	0	0				3.2	0.035	87	99	
2,4,6-Trichlorophenol (SIM Screen)	88-06-2	ug/kg	14	0	0				0.18	0.038	4.5	5.2	
2,2-Oxybis(1-chloropropane)	108-60-1	ug/kg	14	0	0				2.9	0.034	82	93	
2,4-Dichlorophenol	120-83-2	ug/kg	14	0	0				2.6	0.027	92	100	
2,4-Dimethylphenol	105-67-9	ug/kg	14	0	0				7.0	0.038	170	200	
2,4-Dinitrophenol	51-28-5	ug/kg	14	0	0				8.3	0.035	220	250	
2,4-Dinitrotoluene	121-14-2	ug/kg	14	0	0				2.6	0.027	92	100	
2,6-Dinitrotoluene	606-20-2	ug/kg	14	0	0				5.8	0.054	100	120	
2-Chloronaphthalene	91-58-7	ug/kg	14	0	0				2.9	0.034	84	95	
2-Chlorophenol	95-57-8	ug/kg	14	0	0				2.8	0.030	91	100	
2-Methylphenol	95-48-7	ug/kg	14	0	0				2.1	0.034	60	68	
2-Nitroaniline	88-74-4	ug/kg	14	0	0				3.2	0.035	87	99	
2-Nitrophenol	88-75-5	ug/kg	14	0	0				3.0	0.034	85	96	
3,3'-Dichlorobenzidine	91-94-1	ug/kg	14	0	0				4.6	0.045	97	110	
3-Nitroaniline	99-09-2	ug/kg	14	0	0				7.0	0.038	170	200	
4,6-Dinitro-2-methylphenol	534-52-1	ug/kg	14	0	0				2.9	0.034	84	95	
4-Bromophenyl-phenylether	101-55-3	ug/kg	14	0	0				3.2	0.035	88	100	
4-Chloro-3-methylphenol	59-50-7	ug/kg	14	0	0				3.4	0.035	95	110	
4-Chloroaniline	106-47-8	ug/kg	14	0	0				2.1	0.034	60	68	
4-Chlorophenyl-phenylether	7005-72-3	ug/kg	14	0	0				3.1	0.032	96	110	
3 & 4 Methylphenol	15831-10-4	ug/kg	14	0	0				12	0.034	340	390	
4-Nitroaniline	100-01-6	ug/kg	14	0	0				2.8	0.030	91	100	
4-Nitrophenol	100-02-7	ug/kg	14	0	0				11	0.035	290	330	

Table 6-10
Prevalence Table for Solids Sample Analysis – PRI-15 Buffer Area West
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	CAS #	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
Acetophenone	98-86-2	ug/kg	14	0	0				0.95	0.035	26	29	
Benzaldehyde	100-52-7	ug/kg	14	0	0				6.6	0.037	170	190	
Benzylbutylphthalate	85-68-7	ug/kg	14	0	0				4.4	0.043	98	110	
Bis(2-chloroethoxy)methane	111-91-1	ug/kg	14	0	0				2.8	0.030	91	100	
bis(2-Chloroethyl) ether	111-44-4	ug/kg	14	0	0				2.9	0.034	84	95	
Bis(2-ethylhexyl)phthalate	117-81-7	ug/kg	14	0	0				6.1	0.057	100	120	
Carbazole	86-74-8	ug/kg	14	0	0				4.4	0.043	98	110	
Dibenzofuran	132-64-9	ug/kg	14	0	0				2.9	0.032	89	100	
Diethyl phthalate	84-66-2	ug/kg	14	0	0				4.1	0.042	93	110	
Dimethylphthalate	131-11-3	ug/kg	14	0	0				2.9	0.030	90	100	
Di-n-butylphthalate	84-74-2	ug/kg	14	0	0				5.2	0.049	100	110	
Di-n-octylphthalate	117-84-0	ug/kg	14	0	0				5.2	0.049	100	110	
Hexachlorobenzene	118-74-1	ug/kg	14	0	0				2.6	0.027	92	100	
Hexachlorobenzene (SIM Screen)	118-74-1	ug/kg	14	3	21	35	3	14	8.7	1.8	2.3	2.5	PRI15-004
Hexachlorobutadiene	87-68-3	ug/kg	14	0	0				3.0	0.034	85	96	
Hexachlorobutadiene (SIM Screen)	87-68-3	ug/kg	14	0	0				0.13	0.032	3.8	4.3	
Hexachlorocyclopentadiene	77-47-4	ug/kg	14	0	0				2.4	0.035	64	73	
Hexachloroethane	67-72-1	ug/kg	14	0	0				2.9	0.034	84	95	
Isophorone	78-59-1	ug/kg	14	0	0				3.1	0.032	96	110	
Nitrobenzene	98-95-3	ug/kg	14	0	0				2.8	0.034	78	89	
N-Nitrosodimethylamine	62-75-9	ug/kg	14	0	0				5.0	0.049	99	110	
n-Nitrosodimethylamine (SIM Screen)	62-75-9	ug/kg	14	0	0				5.0	0.049	99	110	
N-Nitroso-di-n-propylamine	621-64-7	ug/kg	14	0	0				3.2	0.035	87	99	
N-Nitrosodiphenylamine	86-30-6	ug/kg	14	0	0				2.9	0.032	89	100	
Pentachlorophenol	87-86-5	ug/kg	14	0	0				1.8	0.032	53	60	
Pentachlorophenol (SIM Screen)	87-86-5	ug/kg	14	1	7	27	27	27	1.00	0.038	25	28	PRI15-003
Phenol	108-95-2	ug/kg	14	0	0				3.0	0.033	86	97	
2-Methylnaphthalene	91-57-6	ug/kg	14	1	7	0.91	0.91	0.91	0.20	0.30	0.43	1	PRI15-005
Acenaphthene	83-32-9	ug/kg	14	0	0				0.26	0.36	0.47	1.1	
Acenaphthylene	208-96-8	ug/kg	14	0	0				0.022	0.062	0.33	0.4	
Anthracene	120-12-7	ug/kg	14	1	7	0.47	0.47	0.47	0.030	0.070	0.39	0.48	PRI15-009
Benzo(a)anthracene	56-55-3	ug/kg	14	7	50	0.67	0.32	0.44	0.11	0.29	0.3	0.35	PRI15-009
Benzo(a)pyrene	50-32-8	ug/kg	14	2	14	0.62	0.51	0.57	0.058	0.13	0.4	0.46	PRI15-004
Benzo(b)fluoranthene	205-99-2	ug/kg	14	4	29	1	0.55	0.68	0.12	0.21	0.5	0.58	PRI15-004
Benzo(g,h,i)perylene	191-24-2	ug/kg	14	0	0				0.077	0.071	1	1.2	
Benzo(k)fluoranthene	207-08-9	ug/kg	14	1	7	1	1	1.0	0.065	0.078	0.76	0.88	PRI15-004
Chrysene	218-01-9	ug/kg	14	12	86	2	0.81	1.1	0.41	0.40	0.4	0.4	PRI15-004
Dibenzo(a,h)anthracene	53-70-3	ug/kg	14	0	0				0.088	0.067	1.2	1.4	
Fluoranthene	206-44-0	ug/kg	14	11	79	1.5	0.48	0.81	0.37	0.53	0.29	0.34	PRI15-004
Fluorene	86-73-7	ug/kg	14	1	7	0.73	0.73	0.73	0.062	0.11	0.49	0.59	PRI15-009
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	14	1	7	0.76	0.76	0.76	0.070	0.13	0.48	0.55	PRI15-004
Naphthalene	91-20-3	ug/kg	14	6	43	7	0.69	4.5	2.6	0.78	0.36	5.1	PRI15-006
Phenanthrene	85-01-8	ug/kg	14	2	14	1.7	0.62	1.2	0.48	0.46	0.35	2.1	PRI15-007
Pyrene	129-00-0	ug/kg	14	11	79	1.3	0.38	0.63	0.29	0.50	0.35	0.41	PRI15-004
Low Molecular Weight PAH (ND=0)	LPAH-0	ug/kg	14	7	50	7	0.62	4.5	2.5	0.68	0.56	5.1	PRI15-006
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	ug/kg	14	7	50	9.2	2	6.3	2.9	0.62	1.7	4.5	PRI15-006
High Molecular Weight PAH (ND=0)	HPAH-0	ug/kg	14	12	86	8.8	0.82	3.2	2.1	0.70	1.4	1.4	PRI15-004
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	ug/kg	14	12	86	10	3.5	5.4	1.8	0.35	3.2	3.3	PRI15-004
Perchlorate	14797-73-0	ug/kg	3	0	0				1.0	0.048	20	22	
Total Organic Carbon	TOC	g/kg	14	13	93	18	5	10	3.9	0.42	1.7	1.7	PRI15-007
pH	PH25	pH units	14	14	100	9.1	7.39	8.4	0.40	0.048			PRI15-010
Cyanide, Total	74-90-8	ug/kg	14	2	14	230	210	220	8.5	0.038	210	240	PRI15-007

Notes:

µg/kg = micrograms per kilogram
Empty cells = No results
g/kg = Grams per kilograms
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran

PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pH = pH units
SIM = Selected ion monitoring
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence

Table 6-11
Prevalence Table for Solids Sample Analysis – PRI-16 Lakeside Mountains Buffer Area
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
2,3,7,8-TCDD	ug/kg	14	0	0				0.000030	1.1	0.000016	0.00013	
1,2,3,7,8-PeCDD	ug/kg	14	1	7	0.000053	0.000053	0.000053	0.000044	0.90	0.000027	0.0002	PRI16-008
1,2,3,4,7,8-HxCDD	ug/kg	14	5	36	0.00012	0.000054	0.000085	0.000045	0.77	0.000011	0.00016	PRI16-008
1,2,3,6,7,8-HxCDD	ug/kg	14	6	43	0.00019	0.00009	0.00015	0.000063	0.57	0.0000097	0.00016	PRI16-007 PRI16-009
1,2,3,7,8,9-HxCDD	ug/kg	14	6	43	0.00016	0.000062	0.00011	0.000048	0.39	0.000044	0.0002	PRI16-008
1,2,3,4,6,7,8-HpCDD	ug/kg	14	11	79	0.0021	0.00055	0.0013	0.00059	0.50	0.00037	0.00071	PRI16-007
OCDD	ug/kg	14	11	79	0.014	0.0022	0.0073	0.0035	0.56	0.0021	0.0034	PRI16-009
2,3,7,8-TCDF	ug/kg	14	9	64	0.00046	0.00012	0.00026	0.00012	0.51	0.000056	0.00033	PRI16-007
1,2,3,7,8-PeCDF	ug/kg	14	9	64	0.0004	0.0001	0.00020	0.00012	0.61	0.000016	0.00035	PRI16-007
2,3,4,7,8-PeCDF	ug/kg	14	9	64	0.00028	0.000039	0.00015	0.00010	0.71	0.000022	0.00036	PRI16-008
1,2,3,4,7,8-HxCDF	ug/kg	14	14	100	0.0016	0.00018	0.00077	0.00040	0.52			PRI16-008
1,2,3,6,7,8-HxCDF	ug/kg	14	11	79	0.0011	0.000097	0.00057	0.00031	0.60	0.00021	0.0005	PRI16-008
1,2,3,7,8,9-HxCDF	ug/kg	14	3	21	0.00009	0.000047	0.000064	0.000035	0.77	0.000012	0.00014	PRI16-003
2,3,4,6,7,8-HxCDF	ug/kg	14	13	93	0.00086	0.00011	0.00041	0.00024	0.61	0.0002	0.0002	PRI16-008
1,2,3,4,6,7,8-HpCDF	ug/kg	14	13	93	0.014	0.0024	0.0060	0.0039	0.69	0.0014	0.0014	PRI16-008
1,2,3,4,7,8,9-HpCDF	ug/kg	14	14	100	0.0013	0.00012	0.00052	0.00034	0.66			PRI16-008
OCDF	ug/kg	14	14	100	0.13	0.0069	0.041	0.038	0.92			PRI16-008
Calculated TEQ (ND=0), Mammalian	ug/kg	14	14	100	0.00075	0.000054	0.00032	0.00021	0.65			PRI16-008
Calculated TEQ (ND=1/2 DL), Mammalian	ug/kg	14	14	100	0.0008	0.0001	0.00041	0.00021	0.52			PRI16-008
Calculated TEQ (ND=0), Avian	ug/kg	14	14	100	0.0013	0.00008	0.00059	0.00033	0.56			PRI16-007
Calculated TEQ (ND=1/2 DL), Avian	ug/kg	14	14	100	0.014	0.011	0.013	0.00085	0.068			PRI16-012
PCB-81	ug/kg	14	1	7	0.00077	0.00077	0.00077	0.00020	0.57	0.00011	0.00064	PRI16-014
PCB-77	ug/kg	14	9	64	0.0035	0.00059	0.0022	0.0010	0.57	0.00038	0.0019	PRI16-007
PCB-105	ug/kg	14	11	79	0.01	0.0013	0.0043	0.0025	0.63	0.00087	0.0063	PRI16-009
PCB-114	ug/kg	14	1	7	0.00029	0.00029	0.00029	0.00018	0.46	0.00012	0.00074	PRI16-003
PCB-118	ug/kg	14	14	100	0.015	0.0019	0.0073	0.0038	0.52			PRI16-009
PCB-123	ug/kg	14	2	14	0.0011	0.00025	0.00068	0.00025	0.62	0.00012	0.00058	PRI16-014
PCB-126	ug/kg	14	1	7	0.00066	0.00066	0.00066	0.00025	0.54	0.00014	0.0011	PRI16-010
PCB-156 & 157	ug/kg	14	9	64	0.0039	0.00038	0.0021	0.0011	0.68	0.00047	0.0018	PRI16-009
PCB-167	ug/kg	14	9	64	0.0019	0.00012	0.0010	0.00054	0.61	0.0003	0.0011	PRI16-009
PCB-169	ug/kg	14	1	7	0.00085	0.00085	0.00085	0.00020	0.69	0.00011	0.00048	PRI16-014
PCB-189	ug/kg	14	6	43	0.00063	0.00016	0.00041	0.00024	0.51	0.00011	0.0011	PRI16-012
Monochlorobiphenyls, Total	ug/kg	14	14	100	0.044	0.0036	0.013	0.010	0.81			PRI16-009
Dichlorobiphenyls, Total	ug/kg	14	10	71	0.025	0.0031	0.014	0.0070	0.52	0.0081	0.015	PRI16-003
Trichlorobiphenyls, Total	ug/kg	14	14	100	0.025	0.0021	0.014	0.0059	0.42			PRI16-003
Tetrachlorobiphenyls, Total	ug/kg	14	14	100	0.04	0.006	0.025	0.011	0.44			PRI16-003
Pentachlorobiphenyls, Total	ug/kg	14	14	100	0.11	0.011	0.049	0.029	0.58			PRI16-009
Hexachlorobiphenyls, Total	ug/kg	14	14	100	0.17	0.01	0.062	0.041	0.67			PRI16-009
Heptachlorobiphenyls, Total	ug/kg	14	14	100	0.13	0.0088	0.051	0.032	0.62			PRI16-009
Octachlorobiphenyls, Total	ug/kg	14	14	100	0.091	0.007	0.038	0.024	0.63			PRI16-009
Nonachlorobiphenyls, Total	ug/kg	14	14	100	0.13	0.014	0.062	0.041	0.66			PRI16-009
Decachlorobiphenyl (PCB-209)	ug/kg	14	14	100	0.61	0.054	0.26	0.19	0.72			PRI16-008
Total PCBs	ug/kg	14	14	100	1.2	0.13	0.58	0.34	0.58			PRI16-009
Total Aluminum	ug/kg	14	14	100	16,000,000	5,100,000	11,000,000	3,100,000	0.28			PRI16-007
Total Antimony	ug/kg	14	12	86	380	210	310	55	0.19	210	210	PRI16-007
Total Arsenic	ug/kg	14	14	100	7,200	2,500	5,200	1,500	0.29			PRI16-012
Total Barium	ug/kg	14	14	100	210,000	69,000	150,000	41,000	0.28			PRI16-007
Total Beryllium	ug/kg	14	14	100	740	230	520	150	0.30			PRI16-007
Total Cadmium	ug/kg	14	14	100	510	120	360	120	0.34			PRI16-009
Total Calcium	ug/kg	14	14	100	170,000,000	39,000,000	75,000,000	35,000,000	0.47			PRI16-013
Total Chromium	ug/kg	14	14	100	18,000	5,000	11,000	3,200	0.29			PRI16-007
Total Cobalt	ug/kg	14	14	100	5,500	1,700	3,800	1,000	0.27			PRI16-007
Total Copper	ug/kg	14	14	100	20,000	4,700	14,000	5,000	0.36			PRI16-007 PRI16-009
Total Iron	ug/kg	14	14	100	17,000,000	6,000,000	11,000,000	3,100,000	0.29			PRI16-007
Total Lead	ug/kg	14	14	100	28,000	8,900	18,000	5,400	0.29			PRI16-009
Total Magnesium	ug/kg	14	14	100	45,000,000	8,000,000	22,000,000	10,000,000	0.47			PRI16-010
Total Manganese	ug/kg	14	14	100	500,000	110,000	340,000	120,000	0.34			PRI16-007
Total Mercury	ug/kg	14	13	93	43	10	26	10	0.40	8.4	8.4	PRI16-009
Total Molybdenum	ug/kg	14	14	100	1,100	120	560	240	0.42			PRI16-007
Total Nickel	ug/kg	14	14	100	12,000	3,500	8,600	2,500	0.29			PRI16-007
Total Potassium	ug/kg	14	14	100	4,900,000	1,500,000	3,200,000	1,100,000	0.33			PRI16-007
Total Selenium	ug/kg	14	9	64	340	220	260	42	0.17	200	230	PRI16-012
Total Silver	ug/kg	14	5	36	75	63	72	6.0	0.089	61	78	PRI16-003 PRI16-008
Total Sodium	ug/kg	14	14	100	510,000	210,000	330,000	87,000	0.26			PRI16-008
Total Thallium	ug/kg	14	4	29	150	100	120	15	0.13	100	130	PRI16-007
Total Vanadium	ug/kg	14	14	100	26,000	11,000	19,000	4,000	0.21			PRI16-007
Total Zinc	ug/kg	14	14	100	62,000	26,000	45,000	11,000	0.25			PRI16-007
1,1'-Biphenyl	ug/kg	14	0	0				9.2	0.051	170	200	
1,2,4,5-Tetrachlorobenzene	ug/kg	14	0	0				1.5	0.055	26	32	
2,3,4,6-Tetrachlorophenol	ug/kg	14	0	0				4.4	0.049	83	100	
2,4,5-Trichlorophenol	ug/kg	14	0	0				4.3	0.048	84	100	
2,4,6-Trichlorophenol	ug/kg	14	0	0				4.1	0.045	85	100	
2,4,6-Trichlorophenol (SIM Screen)	ug/kg	14	0	0				0.27	0.056	4.4	5.5	
2,2-Oxybis(1-chloropropane)	ug/kg	14	0	0				4.6	0.054	80	98	
2,4-Dichlorophenol	ug/kg	14	0	0				5.0	0.051	90	110	
2,4-Dimethylphenol	ug/kg	14	0	0				10	0.057	170	210	
2,4-Dinitrophenol	ug/kg	14	0	0				13	0.056	220	270	
2,4-Dinitrotoluene	ug/kg	14	0	0				5.0	0.051	90	110	
2,6-Dinitrotoluene	ug/kg	14	0	0				6.1	0.057	100	120	
2-Chloronaphthalene	ug/kg	14	0	0				4.6	0.053	82	100	
2-Chlorophenol	ug/kg	14	0	0				5.3	0.055	89	110	
2-Methylphenol	ug/kg	14	0	0				3.5	0.056	58	72	
2-Nitroaniline	ug/kg	14	0	0				4.1	0.045	85	100	
2-Nitrophenol	ug/kg	14	0	0				4.4	0.049	83	100	
3,3'-Dichlorobenzidine	ug/kg	14	0	0				6.7	0.066	95	120	
3-Nitroaniline	ug/kg	14	0	0				10	0.057	170	210	

Table 6-11
Prevalence Table for Solids Sample Analysis – PRI-16 Lakeside Mountains Buffer Area
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
4,6-Dinitro-2-methylphenol	ug/kg	14	0	0				4.6	0.053	82	100	
4-Bromophenyl-phenylether	ug/kg	14	0	0				6.0	0.065	86	110	
4-Chloro-3-methylphenol	ug/kg	14	0	0				3.9	0.040	93	110	
4-Chloroaniline	ug/kg	14	0	0				3.5	0.056	58	72	
4-Chlorophenyl-phenylether	ug/kg	14	0	0				7.0	0.069	94	120	
3 & 4 Methylphenol	ug/kg	14	0	0				20	0.057	330	410	
4-Nitroaniline	ug/kg	14	0	0				5.3	0.055	89	110	
4-Nitrophenol	ug/kg	14	0	0				17	0.057	280	350	
Acetophenone	ug/kg	14	0	0				1.4	0.052	25	31	
Benzaldehyde	ug/kg	14	0	0				9.2	0.051	170	200	
Benzylbutylphthalate	ug/kg	14	0	0				6.5	0.064	96	120	
Bis(2-chloroethoxy)methane	ug/kg	14	0	0				5.3	0.055	89	110	
bis(2-Chloroethyl) ether	ug/kg	14	0	0				4.6	0.053	82	100	
Bis(2-ethylhexyl)phthalate	ug/kg	14	0	0				6.5	0.062	99	120	
Carbazole	ug/kg	14	0	0				6.5	0.064	96	120	
Dibenzofuran	ug/kg	14	0	0				5.7	0.061	87	110	
Diethyl phthalate	ug/kg	14	0	0				4.6	0.047	91	110	
Dimethylphthalate	ug/kg	14	0	0				5.5	0.058	88	110	
Di-n-butylphthalate	ug/kg	14	0	0				6.6	0.064	98	120	
Di-n-octylphthalate	ug/kg	14	0	0				6.6	0.064	98	120	
Hexachlorobenzene	ug/kg	14	0	0				5.0	0.051	90	110	
Hexachlorobenzene (SIM Screen)	ug/kg	14	0	0				0.13	0.056	2.2	2.7	
Hexachlorobutadiene	ug/kg	14	0	0				4.4	0.049	83	100	
Hexachlorobutadiene (SIM Screen)	ug/kg	14	0	0				0.22	0.055	3.7	4.6	
Hexachlorocyclopentadiene	ug/kg	14	0	0				3.7	0.055	62	77	
Hexachloroethane	ug/kg	14	0	0				4.6	0.053	82	100	
Isophorone	ug/kg	14	0	0				7.0	0.069	94	120	
Nitrobenzene	ug/kg	14	0	0				4.4	0.054	76	94	
N-Nitrosodimethylamine	ug/kg	14	0	0				6.8	0.065	97	120	
n-Nitrosodimethylamine (SIM Screen)	ug/kg	14	0	0				6.8	0.065	97	120	
N-Nitroso-di-n-propylamine	ug/kg	14	0	0				4.1	0.045	85	100	
N-Nitrosodiphenylamine	ug/kg	14	0	0				5.7	0.061	87	110	
Pentachlorophenol	ug/kg	14	0	0				3.0	0.054	51	63	
Pentachlorophenol (SIM Screen)	ug/kg	14	0	0				1.4	0.054	24	30	
Phenol	ug/kg	14	0	0				4.3	0.048	84	100	
2-Methylnaphthalene	ug/kg	14	2	14	1.4	0.55	0.98	0.26	0.47	0.41	0.79	PRI16-003
Acenaphthene	ug/kg	14	0	0				0.13	0.25	0.45	0.99	
Acenaphthylene	ug/kg	14	0	0				0.021	0.060	0.32	0.39	
Anthracene	ug/kg	14	0	0				0.024	0.058	0.38	0.46	
Benzo(a)anthracene	ug/kg	14	2	14	0.62	0.33	0.48	0.081	0.24	0.29	0.35	PRI16-009
Benzo(a)pyrene	ug/kg	14	1	7	0.72	0.72	0.72	0.083	0.19	0.38	0.47	PRI16-009
Benzo(b)fluoranthene	ug/kg	14	1	7	1.4	1.4	1.4	0.23	0.39	0.48	0.59	PRI16-009
Benzo(g,h,i)perylene	ug/kg	14	0	0				0.077	0.072	0.96	1.2	
Benzo(k)fluoranthene	ug/kg	14	1	7	0.85	0.85	0.85	0.049	0.060	0.73	0.89	PRI16-009
Chrysene	ug/kg	14	10	71	1.9	0.41	0.97	0.44	0.55	0.33	0.4	PRI16-009
Dibenzo(a,h)anthracene	ug/kg	14	0	0				0.073	0.057	1.2	1.4	
Fluoranthene	ug/kg	14	9	64	2	0.34	1.0	0.52	0.69	0.28	0.34	PRI16-009
Fluorene	ug/kg	14	0	0				0.029	0.056	0.47	0.57	
Indeno(1,2,3-cd)pyrene	ug/kg	14	1	7	1	1	1.0	0.13	0.25	0.46	0.56	PRI16-009
Naphthalene	ug/kg	14	11	79	5.8	0.61	1.9	1.6	1.1	0.29	0.33	PRI16-011
Phenanthrene	ug/kg	14	11	79	3	0.46	1.3	0.72	0.61	0.34	1.2	PRI16-003
Pyrene	ug/kg	14	8	57	1.9	0.44	0.97	0.45	0.63	0.34	0.41	PRI16-009
Low Molecular Weight PAH (ND=0)	ug/kg	14	12	86	8.8	0.83	3.1	2.3	0.85	0.47	0.52	PRI16-003
Low Molecular Weight PAH (ND=1/2DL)	ug/kg	14	12	86	9.7	2.1	4.3	2.4	0.62	1.3	1.5	PRI16-003
High Molecular Weight PAH (ND=0)	ug/kg	14	10	71	10	0.75	3.1	2.3	0.90	1.2	1.4	PRI16-009
High Molecular Weight PAH (ND=1/2DL)	ug/kg	14	10	71	12	3.3	5.6	2.4	0.49	2.7	3.3	PRI16-009
Perchlorate	ug/kg	13	0	0				1.0	0.048	20	24	
Total Organic Carbon	g/kg	14	14	100	54	4.7	17	13	0.77			PRI16-009
pH	pH units	14	14	100	8.28	7.02	7.9	0.35	0.044			PRI16-011
Cyanide, Total	ug/kg	14	4	29	460	280	350	73	0.29	210	230	PRI16-009

Notes:

µg/kg = micrograms per kilogram
Empty cells = No results
g/kg = Grams per kilograms
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pH = pH units
SIM = Selected ion monitoring
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence

Table 6-12
Prevalence Table for Solids Sample Analysis – PRI-17 Site-Wide Groundwater
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	CAS #	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
2,3,7,8-TCDD	1746-01-6	µg/L	30	0	0				0.00000051	0.80	0.00000026	0.0000023	
1,2,3,7,8-PeCDD	40321-76-4	µg/L	30	0	0				0.0000010	0.94	0.00000035	0.0000045	
1,2,3,4,7,8-HxCDD	39227-28-6	µg/L	30	0	0				0.0000011	1.6	0.00000023	0.000006	
1,2,3,6,7,8-HxCDD	57653-85-7	µg/L	30	0	0				0.00000078	1.5	0.00000016	0.0000044	
1,2,3,7,8,9-HxCDD	19408-74-3	µg/L	30	1	3	0.00000069	0.00000069	0.00000069	0.00000074	1.4	0.00000017	0.0000042	MW-14
1,2,3,4,6,7,8-HpCDD	35822-46-9	µg/L	30	4	13	0.0000019	0.00000045	0.0000012	0.00000048	0.74	0.00000026	0.0000019	MW-18
OCDD	3268-87-9	µg/L	30	2	7	0.000015	0.0000053	0.000010	0.0000028	1.3	0.00000034	0.0000062	PZ-12
2,3,7,8-TCDF	51207-31-9	µg/L	30	2	7	0.0000091	0.0000011	0.0000051	0.0000017	1.7	0.00000019	0.0000027	MW-8A
1,2,3,7,8-PeCDF	57117-41-6	µg/L	30	0	0				0.0000013	1.2	0.00000021	0.0000044	
2,3,4,7,8-PeCDF	57117-31-4	µg/L	30	0	0				0.0000014	1.2	0.00000021	0.0000048	
1,2,3,4,7,8-HxCDF	70648-26-9	µg/L	30	3	10	0.0000028	0.0000012	0.0000018	0.00000088	1.1	0.00000019	0.0000044	MW-6
1,2,3,6,7,8-HxCDF	57117-44-9	µg/L	30	3	10	0.0000017	0.00000067	0.0000010	0.00000064	1.2	0.00000014	0.0000033	MW-6
1,2,3,7,8,9-HxCDF	72918-21-9	µg/L	30	3	10	0.0000014	0.00000078	0.0000011	0.00000078	1.3	0.00000018	0.0000043	MW-18
2,3,4,6,7,8-HxCDF	60851-34-5	µg/L	30	1	3	0.00000094	0.00000094	0.00000094	0.00000068	1.4	0.00000016	0.0000038	MW-18
1,2,3,4,6,7,8-HpCDF	67562-39-4	µg/L	30	7	23	0.0000066	0.0000011	0.0000023	0.0000018	0.83	0.00000017	0.0000053	MW-6
1,2,3,4,7,8,9-HpCDF	55673-89-7	µg/L	30	3	10	0.0000022	0.0000017	0.0000020	0.00000057	0.84	0.00000019	0.0000013	MW-5A
OCDF	39001-02-0	µg/L	30	9	30	0.000099	0.00000067	0.000028	0.000024	1.6	0.00000052	0.000066	MW-7
Calculated TEQ (ND=0), Mammalian	CALC_DX_0	µg/L	30	19	63	0.00000092	2.7E-11	0.00000015	0.00000023	1.8	1.3E-10	0.0000006	MW-8A
Calculated TEQ (ND=1/2 DL), Mammalian	CALC_DX_2	µg/L	30	19	63	0.0000056	0.00000064	0.0000015	0.0000013	0.81	0.00000057	0.0000041	MW-8A
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	µg/L	30	19	63	0.02	9.1E-12	0.0011	0.0036	4.0	0.00056	0.00071	MW-8A
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	µg/L	30	19	63	0.02	0.00031	0.0014	0.0036	3.7	0.00028	0.00036	MW-8A
PCB-81	70362-50-4	ug/L	30	0	0				0.000008	1.8E+00	0.00000092	0.000042	
PCB-77	32598-13-3	ug/L	30	0	0				0.000008	1.9E+00	0.0000009	0.000043	
PCB-105	32598-14-4	ug/L	30	1	3	0.0000038	0.0000038	0.0000038	0.000007	1.7E+00	0.0000011	0.000037	PZ-26
PCB-114	74472-37-0	ug/L	30	0	0				0.000006	1.9E+00	0.00000066	0.000032	
PCB-118	31508-00-6	ug/L	30	13	43	0.000013	0.0000025	0.0000062	0.000006	1.1E+00	0.000002	0.000033	MW-6
PCB-123	65510-44-3	ug/L	30	0	0				0.000006	1.9E+00	0.00000064	0.000032	
PCB-126	57465-28-8	ug/L	30	0	0				0.000007	1.8E+00	0.00000075	0.000039	
PCB-156 & 157	PCB156_157	ug/L	30	2	7	0.0000022	0.0000013	0.0000018	0.000001	5.8E-01	0.00000039	0.0000041	MW-14
PCB-167	52663-72-6	ug/L	30	5	17	0.0000021	0.00000066	0.0000013	0.000001	6.2E-01	0.00000024	0.0000028	MW-6
PCB-169	32774-16-6	ug/L	30	1	3	0.0000019	0.0000019	0.0000019	0.000002	7.8E-01	0.0000003	0.0000053	MW-14
PCB-189	39635-31-9	ug/L	30	0	0				0.000002	8.8E-01	0.00000036	0.0000071	
Monochlorobiphenyls, Total	27323-18-8	ug/L	30	22	73	0.17	0.0000056	0.015	0.033	3.0E+00	0.0000011	0.0000026	MW-8A
Dichlorobiphenyls, Total	25512-42-9	ug/L	30	18	60	0.13	0.000016	0.011	0.024	3.6E+00	0.00001	0.000046	MW-8A
Trichlorobiphenyls, Total	25323-68-6	ug/L	30	19	63	0.0054	0.0000064	0.00063	0.0011	2.8E+00	0.0000039	0.000073	MW-8A
Tetrachlorobiphenyls, Total	26914-33-0	ug/L	30	30	100	0.029	0.000014	0.0012	0.0053	4.4E+00			MW-8A
Pentachlorobiphenyls, Total	25429-29-2	ug/L	30	30	100	0.0013	0.0000032	0.0001	0.00025	2.4E+00			MW-8A
Hexachlorobiphenyls, Total	26601-64-9	ug/L	30	24	80	0.00011	0.0000028	0.00002	0.00002	1.1E+00	0.0000034	0.0000046	MW-8A
Heptachlorobiphenyls, Total	28655-71-2	ug/L	30	16	53	0.00029	0.0000013	0.00003	0.00005	2.8E+00	0.0000011	0.0000071	PZ-26
Octachlorobiphenyls, Total	55722-26-4	ug/L	30	11	37	0.000073	0.0000012	0.00003	0.00002	1.5E+00	0.00000028	0.000016	PZ-6
Nonachlorobiphenyls, Total	53742-07-7	ug/L	30	18	60	0.00048	0.00000079	0.00005	0.00009	2.7E+00	0.00000054	0.0000058	PZ-6
Decachlorobiphenyl (PCB-209)	2051-24-3	ug/L	30	22	73	0.0069	0.0000033	0.0009	0.0015	2.2E+00	0.000013	0.00015	MW-5A
Total PCBs	1336-36-3	ug/L	30	30	100	0.34	0.000046	0.020	0.063	3.1E+00			MW-8A
Total Aluminum	7429-90-5	µg/L	30	11	37	6300	51	2,200	1,900	2.2	50	250	MW-13A
Dissolved Aluminum	7429-90-5	µg/L	30	9	30	6100	54	2,600	1,800	2.3	50	250	MW-13A
Total Antimony	7440-36-0	µg/L	30	21	70	8.6	0.65	1.8	1.8	1.3	0.4	2	PZ-1
Dissolved Antimony	7440-36-0	µg/L	30	21	70	9	0.54	1.6	1.7	1.3	0.4	2	PZ-1
Total Arsenic	7440-38-2	µg/L	30	30	100	170	2.1	46	39	0.85			PZ-4
Dissolved Arsenic	7440-38-2	µg/L	30	30	100	170	2.1	44	39	0.87			PZ-4
Total Barium	7440-39-3	µg/L	30	30	100	3,000	18	370	630	1.7			MW-7
Dissolved Barium	7440-39-3	µg/L	30	30	100	3,400	17	380	700	1.8			MW-7
Total Beryllium	7440-41-7	µg/L	30	9	30	2.5	0.38	1.4	0.74	1.2	0.2	1	MW-13B MW-15B
Dissolved Beryllium	7440-41-7	µg/L	30	12	40	2.5	0.29	1.2	0.70	1.1	0.2	1	MW-13A MW-13B
Total Cadmium	7440-43-9	µg/L	30	6	20	17	1	5.3	3.1	1.5	1	5	PZ-4
Dissolved Cadmium	7440-43-9	µg/L	30	5	17	18	1.5	6.1	3.2	1.6	1	5	PZ-4
Total Calcium	7440-70-2	µg/L	30	30	100	50,000,000	490,000	6,900,000	9,000,000	1.3			MW-20B
Dissolved Calcium	7440-70-2	µg/L	30	30	100	48,000,000	470,000	6,800,000	8,800,000	1.3			MW-20B
Total Chromium	7440-47-3	µg/L	30	3	10	5.2	2.1	3.4	1.6	0.65	2	10	MW-13A
Dissolved Chromium	7440-47-3	µg/L	30	3	10	2.7	2.1	2.3	1.5	0.64	2	10	MW-15B
Chromium, Hexavalent	18540-29-9	µg/L	30	16	53	1.8	0.13	0.57	0.40	1.1	0.051	0.403	MW-18
Total Cobalt	7440-48-4	µg/L	30	19	63	140	1.4	42	37	1.3	1.2	6	MW-15A
Dissolved Cobalt	7440-48-4	µg/L	30	19	63	130	1.4	42	35	1.3	1.2	6	MW-15A
Total Copper	7440-50-8	µg/L	30	7	23	53	2.3	15	10	2.0	2	10	MW-13A
Dissolved Copper	7440-50-8	µg/L	30	11	37	47	2	11	11	1.9	2	10	MW-13A
Total Iron	7439-89-6	µg/L	30	25	83	680,000	490	93,000	140,000	1.8	50	50	MW-20A
Dissolved Iron	7439-89-6	µg/L	30	26	87	670,000	490	89,000	140,000	1.8	50	50	MW-20A
Total Lead	7439-92-1	µg/L	30	2	7	51	3.1	27	9.1	3.0	1.2	6	PZ-1
Dissolved Lead	7439-92-1	µg/L	30	2	7	51	3.1	27	9.1	3.0	1.2	6	PZ-1
Total Magnesium	7439-95-4	µg/L	30	30	100	51,000,000	1,500,000	8,300,000	9,900,000	1.2			PZ-1
Dissolved Magnesium	7439-95-4	µg/L	30	30	100	38,000,000	1,500,000	7,800,000	8,100,000	1.0			PZ-1
Total Manganese	7439-96-5	µg/L	30	30	100	16,000	66	6,100	5,000	0.82			MW-15A PZ-10
Dissolved Manganese	7439-96-5	µg/L	30	30	100	16,000	43	6,000	4,900	0.82			MW-15A PZ-10
Total Mercury	7439-97-6	µg/L	30	1	3	0.53	0.53	0.53	0.079	0.69	0.1	0.1	MW-17
Dissolved Mercury	7439-97-6	µg/L	30	0	0				0	0	0.1	0.1	
Total Molybdenum	7439-98-7	µg/L	30	26	87	200	1.4	36	46	1.5	1.2	6	MW-15A
Dissolved Molybdenum	7439-98-7	µg/L	30	22	73	190	2.8	39	44	1.5	1.2	7	MW-15A
Total Nickel	7440-02-0	µg/L	30	26	87	310	2	87	97	1.3	2	10	MW-13A MW-15A
Dissolved Nickel	7440-02-0	µg/L	30	24	80	300	2.2	92	94	1.3	2	10	MW-13A MW-15A
Total Potassium	7440-09-7	µg/L	30	30	100	7,900,000	100,000	1,500,000	2,000,000	1.3			PZ-1
Dissolved Potassium	7440-09-7	µg/L	30	30	100	7,400,000	100,000	1,500,000	1,800,000	1.3			PZ-22
Total Selenium	7782-49-2	µg/L	30	15	50	6.3	2.1	3.4	1.8	0.61	2	10	LF-03
Dissolved Selenium	7782-49-2	µg/L	30	14	47	6.4	2	3.4	1.8	0.60	2	10	PZ-8
Total Silver	7440-22-4	µg/L	30	2	7	1.6	0.61	1.1	0.47	0.66	0.6	3	PZ-4
Dissolved Silver	7440-22-4	µg/L	30	1	3	1.5	1.5	1.5	0.46	0.65	0.6	3	PZ-4

Table 6-12
Prevalence Table for Solids Sample Analysis – PRI-17 Site-Wide Groundwater
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	CAS #	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
Total Sodium	7440-23-5	µg/L	30	30	100	19,000,000	1,300,000	5,700,000	4,800,000	0.84			MW-19B
Dissolved Sodium	7440-23-5	µg/L	30	30	100	22,000,000	1,300,000	5,800,000	5,300,000	0.91			MW-19B
Total Thallium	7440-28-0	µg/L	30	3	10	5.1	1.6	2.9	1.0	0.78	1	5	PZ-4
Dissolved Thallium	7440-28-0	µg/L	30	3	10	5.3	1.3	2.8	1.1	0.80	1	5	PZ-4
Total Vanadium	7440-62-2	µg/L	30	8	27	18	6.5	11	5.2	0.64	6	30	MW-18
Dissolved Vanadium	7440-62-2	µg/L	30	7	23	19	6.7	12	5.4	0.66	6	30	MW-18
Total Zinc	7440-66-6	µg/L	30	19	63	630	9.9	130	160	1.8	8	8	MW-20B
Dissolved Zinc	7440-66-6	µg/L	30	16	53	690	9.1	150	160	1.9	8	8	MW-20B
1,1'-Biphenyl	92-52-4	µg/L	30	0	0				7.9	1.3	4	48	
1,2,4,5-Tetrachlorobenzene	95-94-3	µg/L	30	3	10	10	0.52	4.0	1.9	1.9	0.43	5.2	MW-5A
2,3,4,6-Tetrachlorophenol	58-90-2	µg/L	30	0	0				4.0	1.3	2	24	
2,4,5-Trichlorophenol	95-95-4	µg/L	30	0	0				3.1	1.3	1.6	19	
2,4,6-Trichlorophenol	88-06-2	µg/L	30	1	3	3.5	3.5	3.5	3.1	1.3	1.6	19	MW-8A
2,4,6-Trichlorophenol (SIM Screen)	88-06-2	µg/L	30	6	20	2.7	0.2	0.78	0.47	1.6	0.15	0.19	MW-8A
2,2-Oxybis(1-chloropropane)	108-60-1	µg/L	30	0	0				2.0	1.3	1	12	
2,4-Dichlorophenol	120-83-2	µg/L	30	0	0				4.1	1.3	2.1	25	
2,4-Dimethylphenol	105-67-9	µg/L	30	0	0				3.5	1.3	1.7	21	
2,4-Dinitrophenol	51-28-5	µg/L	30	0	0				31	1.3	16	190	
2,4-Dinitrotoluene	121-14-2	µg/L	30	0	0				3.1	1.3	1.6	19	
2,6-Dinitrotoluene	606-20-2	µg/L	30	0	0				3.1	1.3	1.6	19	
2-Chloronaphthalene	91-58-7	µg/L	30	0	0				2.0	1.3	1	12	
2-Chlorophenol	95-57-8	µg/L	30	0	0				2.5	1.3	1.3	15	
2-Methylphenol	95-48-7	µg/L	30	0	0				1.5	1.3	0.74	8.9	
2-Nitroaniline	88-74-4	µg/L	30	0	0				3.1	1.3	1.6	19	
2-Nitrophenol	88-75-5	µg/L	30	0	0				3.0	1.3	1.5	18	
3,3'-Dichlorobenzidine	91-94-1	µg/L	30	0	0				1.5	1.3	0.76	9.2	
3-Nitroaniline	99-09-2	µg/L	30	0	0				2.1	1.3	1.1	13	
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	30	1	3	6.8	6.8	6.8	3.5	1.3	1.7	21	MW-8A
4-Bromophenyl-phenylether	101-55-3	µg/L	30	0	0				1.6	1.3	0.87	10	
4-Chloro-3-methylphenol	59-50-7	µg/L	30	0	0				3.1	1.3	1.6	19	
4-Chloroaniline	106-47-8	µg/L	30	0	0				3.1	1.3	1.6	19	
4-Chlorophenyl-phenylether	7005-72-3	µg/L	30	0	0				1.6	1.3	0.87	10	
3 & 4 Methylphenol	15831-10-4	µg/L	30	7	23	7.8	1.2	3.2	2.2	1.2	0.91	11	PZ-12
4-Nitroaniline	100-01-6	µg/L	30	0	0				2.3	1.3	1.2	14	
4-Nitrophenol	100-02-7	µg/L	30	0	0				9.6	1.3	4.9	58	
Acetophenone	98-86-2	µg/L	30	12	40	2.5	0.75	1.4	1.3	1.0	0.62	7.4	MW-8A
Benzaldehyde	100-52-7	µg/L	30	0	0				13	1.3	6.6	80	
Benzylbutylphthalate	85-68-7	µg/L	30	0	0				2.1	1.3	1.1	13	
Bis(2-chloroethoxy)methane	111-91-1	µg/L	30	0	0				1.6	1.3	0.8	9.5	
bis(2-Chloroethyl) ether	111-44-4	µg/L	30	0	0				2.3	1.3	1.2	14	
Bis(2-ethylhexyl)phthalate	117-81-7	µg/L	30	17	57	5.6	1.9	2.6	1.7	0.79	0.85	9.5	MW-15A
Carbazole	86-74-8	µg/L	30	0	0				1.8	1.3	0.95	11	
Dibenzofuran	132-64-9	µg/L	30	0	0				1.6	1.3	0.87	10	
Diethyl phthalate	84-66-2	µg/L	30	0	0				1.5	1.3	0.74	8.9	
Dimethylphthalate	131-11-3	µg/L	30	0	0				1.4	1.3	0.7	8.4	
Di-n-butylphthalate	84-74-2	µg/L	30	0	0				1.6	1.3	0.87	10	
Di-n-octylphthalate	117-84-0	µg/L	30	0	0				2.3	1.3	1.2	14	
Hexachlorobenzene	118-74-1	µg/L	30	1	3	2	2	2.0	2.1	1.3	1.1	13	MW-8A
Hexachlorobenzene (SIM Screen)	118-74-1	µg/L	30	1	3	1.8	1.8	1.8	0.32	2.6	0.056	0.071	MW-8A
Hexachlorobutadiene	87-68-3	µg/L	30	0	0				2.0	1.3	1	12	
Hexachlorobutadiene (SIM Screen)	87-68-3	µg/L	30	1	3	0.19	0.19	0.19	0.022	0.28	0.064	0.081	MW-4A
Hexachlorocyclopentadiene	77-47-4	µg/L	30	0	0				7.9	1.3	4	48	
Hexachloroethane	67-72-1	µg/L	30	0	0				2.1	1.3	1.1	13	
Isophorone	78-59-1	µg/L	30	0	0				1.6	1.3	0.8	9.5	
Nitrobenzene	98-95-3	µg/L	30	0	0				2.5	1.3	1.3	15	
N-Nitrosodimethylamine	62-75-9	µg/L	30	0	0				1.5	1.3	0.76	9.2	
n-Nitrosodimethylamine (SIM Screen)	62-75-9	µg/L	30	0	0				0.0029	0.045	0.056	0.071	
N-Nitroso-di-n-propylamine	621-64-7	µg/L	30	0	0				2.1	1.3	1.1	13	
N-Nitrosodiphenylamine	86-30-6	µg/L	30	0	0				0.86	1.3	0.43	5.2	
Pentachlorophenol	87-86-5	µg/L	30	1	3	5.5	5.5	5.5	3.2	1.3	1.6	19	MW-8A
Pentachlorophenol (SIM Screen)	87-86-5	µg/L	30	0	0				0.083	0.045	1.6	2	
Phenol	108-95-2	µg/L	30	1	3	2.2	2.2	2.2	1.7	1.2	0.87	10	PZ-26
2-Methylnaphthalene	91-57-6	µg/L	30	22	73	5	0.012	1.0	1.3	1.7	0.0044	0.0054	MW-5A
Acenaphthene	83-32-9	µg/L	30	6	20	0.27	0.0093	0.084	0.051	1.9	0.0025	0.031	MW-20A
Acenaphthylene	208-96-8	µg/L	30	1	3	0.025	0.025	0.025	0.013	1.0	0.0024	0.03	MW-7
Anthracene	120-12-7	µg/L	30	4	13	0.029	0.0062	0.019	0.018	0.96	0.0035	0.044	MW-13A MW-7
Benzo(a)anthracene	56-55-3	µg/L	30	1	3	0.036	0.036	0.036	0.019	1.0	0.0037	0.045	MW-13B
Benzo(a)pyrene	50-32-8	µg/L	30	1	3	0.017	0.017	0.017	0.018	1.1	0.0035	0.043	MW-13B
Benzo(b)fluoranthene	205-99-2	µg/L	30	1	3	0.093	0.093	0.093	0.050	1.0	0.0098	0.12	MW-13B
Benzo(g,h,i)perylene	191-24-2	µg/L	30	2	7	0.058	0.006	0.032	0.023	1.0	0.0044	0.054	MW-13B
Benzo(k)fluoranthene	207-08-9	µg/L	30	1	3	0.083	0.083	0.083	0.033	1.0	0.0062	0.077	MW-13B
Chrysene	218-01-9	µg/L	30	1	3	0.071	0.071	0.071	0.019	1.1	0.0032	0.039	MW-13B
Dibenzo(a,h)anthracene	53-70-3	µg/L	30	1	3	0.071	0.071	0.071	0.058	1.0	0.012	0.14	MW-13B
Fluoranthene	206-44-0	µg/L	30	6	20	0.039	0.004	0.019	0.018	0.92	0.0034	0.042	MW-13A
Fluorene	86-73-7	µg/L	30	11	37	0.4	0.0069	0.097	0.079	1.8	0.0032	0.04	MW-6
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	30	1	3	0.062	0.062	0.062	0.058	1.1	0.011	0.14	MW-13B
Naphthalene	91-20-3	µg/L	30	22	73	20	0.007	2.9	4.7	2.2	0.0029	0.0072	MW-7
Phenanthrene	85-01-8	µg/L	30	6	20	0.16	0.0099	0.069	0.039	1.1	0.005	0.062	PZ-6
Pyrene	129-00-0	µg/L	30	3	10	0.012	0.0038	0.0074	0.017	1.1	0.0033	0.041	MW-13A
1,4-Dioxane	123-91-1	µg/L	30	0	0				0	0	25	25	
1,1-Dichloroethane	75-34-3	µg/L	30	25	83	13	0.15	2.1	2.6	1.5	0.1	0.1	MW-5A
1,1-Dichloroethene	75-35-4	µg/L	30	22	73	8.2	0.14	0.94	1.6	2.2	0.14	0.14	PZ-24
1,2-Dibromo-3-chloropropane	96-12-8	µg/L	30	0	0				0	0	0.32	0.32	
1,2-Dibromoethane	106-93-4	µg/L	30	0	0				0.0000000048	0.000000022	0.22	0.22	
1,2-Dichlorobenzene	95-50-1	µg/L	30	0	0				0	0	0.14	0.14	
1,2-Dichloroethane	107-06-2	µg/L	30	9	30	0.53	0.27	0.36	0.077	0.30	0.22	0.22	PZ-8
cis-1,2-Dichloroethene	156-59-2	µg/L	30	17	57	29	0.18	8.2	7.6	1.6	0.1	0.1	MW-8A
trans-1,2-Dichloroethene	156-60-5	µg/L	30	12	40	7.3	0.17	2.7	2.0	1.8	0.11	0.11	MW-20A
1,2-Dichloropropane	78-87-5	µg/L	30	12	40	0.61	0.19	0.37	0.14	0.59	0.15	0.15	PZ-8

Table 6-12
Prevalence Table for Solids Sample Analysis – PRI-17 Site-Wide Groundwater
Phase 1A Data Report for PRI Areas 2 and 8–17
US Magnesium RI/FS
Rowley, Utah

Analyte	CAS #	Units	Number of Samples	Number of Detections	Frequency of Detection (percent)	Maximum Detection	Minimum Detection	Average Result	Standard Deviation	Coefficient of Variation	Minimum Detection Limit	Maximum Detection Limit	Location with Maximum Detection
1,3-Dichlorobenzene	541-73-1	µg/L	30	2	7	0.28	0.12	0.20	0.031	0.27	0.11	0.11	MW-18
cis-1,3-Dichloropropene	10061-01-5	µg/L	30	0	0				0.0000000048	0.000000022	0.22	0.22	
trans-1,3-Dichloropropene	10061-02-6	µg/L	30	0	0				0	0	0.08	0.08	
1,4-Dichlorobenzene	106-46-7	µg/L	30	2	7	0.15	0.13	0.14	0.0037	0.028	0.13	0.13	MW-4A
1,1,1-Trichloroethane	71-55-6	µg/L	30	1	3	0.28	0.28	0.28	0.016	0.085	0.19	0.19	MW-15A
1,1,2-Trichloroethane	79-00-5	µg/L	30	0	0				0.0000000055	0.000000018	0.31	0.31	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	76-13-1	µg/L	30	0	0				0	0	0.25	0.25	
1,2,3-Trichlorobenzene	87-61-6	µg/L	30	0	0				0	0	0.14	0.14	
1,2,4-Trichlorobenzene	120-82-1	µg/L	30	6	20	4.4	0.28	1.2	0.80	2.5	0.1	0.1	MW-5A
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	30	0	0				0.14	0.92	0.09	0.63	
2-Butanone	78-93-3	µg/L	30	15	50	30	0.35	14	10	1.4	0.35	0.35	MW-14
2-Hexanone	591-78-6	µg/L	30	11	37	2	0.53	1.1	0.53	1.1	0.17	0.17	PZ-26 PZ-8
4-Methyl-2-pentanone	108-10-1	µg/L	30	22	73	39	0.26	7.7	9.9	1.7	0.18	0.18	MW-13A
Acetone	67-64-1	µg/L	30	20	67	150	2.3	55	51	1.4	2.1	2.1	MW-13B
Benzene	71-43-2	µg/L	30	17	57	1.1	0.13	0.42	0.23	0.80	0.13	0.13	MW-20A
Bromochloromethane	74-97-5	µg/L	30	9	30	18	0.83	6.5	4.4	2.1	0.14	0.14	PZ-8
Bromodichloromethane	75-27-4	µg/L	30	9	30	130	0.92	66	38	1.9	0.14	0.14	MW-13A
Bromoform	75-25-2	µg/L	30	13	43	300	0.25	79	70	2.1	0.1	0.1	MW-13A
Bromomethane	74-83-9	µg/L	30	6	20	1.9	0.49	1.0	0.37	0.86	0.29	0.29	MW-15A
Carbon disulfide	75-15-0	µg/L	30	15	50	88	0.27	20	22	2.1	0.16	1.9	PZ-12
Carbon tetrachloride	56-23-5	µg/L	30	7	23	4.2	0.28	1.8	0.93	1.7	0.15	0.15	MW-15A
Chlorobenzene	108-90-7	µg/L	30	0	0				0	0	0.12	0.12	
Cyclohexane	110-82-7	µg/L	30	5	17	2.4	0.13	1.0	0.49	1.8	0.12	0.12	LF-03
Dibromochloromethane	124-48-1	µg/L	30	9	30	240	0.95	100	62	2.0	0.13	0.13	MW-13A
Chloroethane	75-00-3	µg/L	30	11	37	6.1	0.37	2.6	1.7	1.4	0.34	0.34	MW-15A
Chloroform	67-66-3	µg/L	30	24	80	100	0.13	31	36	1.4	0.12	0.12	MW-13A PZ-8
Chloromethane	74-87-3	µg/L	30	11	37	20	0.85	7.3	5.1	1.8	0.25	0.25	MW-15A
Dichlorodifluoromethane (Freon-12)	75-71-8	µg/L	30	1	3	0.29	0.29	0.29	0.024	0.14	0.16	0.16	MW-20A
Ethyl benzene	100-41-4	µg/L	30	9	30	9.3	0.16	3.2	2.1	2.1	0.1	0.1	MW-8A
Isopropylbenzene	98-82-8	µg/L	30	8	27	2	0.15	1.0	0.48	1.3	0.12	0.12	MW-7
Methyl tertbutyl ether (MTBE)	1634-04-4	µg/L	30	0	0				0	0	0.19	0.19	
Dichloromethane (Methylene chloride)	75-09-2	µg/L	30	13	43	13	0.41	4.4	3.4	1.6	0.35	0.35	PZ-8
Styrene	100-42-5	µg/L	30	0	0				0	0	0.15	0.15	
Tetrachloroethene	127-18-4	µg/L	30	16	53	8.5	0.11	0.99	1.5	2.7	0.1	0.1	MW-20A
Toluene	108-88-3	µg/L	30	12	40	4.5	0.27	1.3	1.0	1.5	0.25	0.25	MW-7
Trichloroethene	79-01-6	µg/L	30	25	83	32	0.13	6.0	9.0	1.8	0.13	0.13	MW-8A
Trichlorofluoromethane (Freon-11)	75-69-4	µg/L	30	0	0				0	0	0.23	0.23	
Vinyl chloride	75-01-4	µg/L	30	9	30	13	0.27	3.4	3.2	2.7	0.22	0.22	MW-20A MW-6
o-Xylene	95-47-6	µg/L	30	14	47	18	0.13	2.6	3.4	2.7	0.1	0.1	MW-8A
m,p Xylenes	179601-23-1	µg/L	30	12	40	22	0.28	4.1	4.3	2.5	0.18	0.18	MW-8A
Total Dissolved Solids	TDS	µg/L	30	30	100	300,000,000	22,000,000	90,000,000	67,000,000	0.74			PZ-1
Bromide	24959-67-9	µg/L	30	14	47	400,000	22,000	120,000	93,000	1.5	8,800	18,000	PZ-1
Chloride	16887-00-6	µg/L	30	30	100	180,000,000	12,000,000	49,000,000	40,000,000	0.82			PZ-1
Dissolved Cyanide	74-90-8	ug/l	30	14	47	97	5	26	20	1.3	5	25	MW-7
Total Cyanide	74-90-8	ug/l	30	13	43	47	6	23	13	0.96	5	25	MW-15B
Chlorine, Field	7782-50-5	µg/L	30	30	100	140	0	31	41	1.3			MW-20B
Fluoride	16984-48-8	µg/L	30	29	97	20,000	770	9,400	5,900	0.65	1,200	1,200	MW-15B
Nitrate as N	14797-55-8	µg/L	30	10	33	2,200	290	1,200	580	0.89	110	1,100	PZ-16
Nitrite as N	14797-65-0	µg/L	30	0	0				170	0.66	80	800	
Sulfate	14808-79-8	µg/L	30	30	100	26,000,000	460,000	3,600,000	5,200,000	1.4			PZ-22
Perchlorate	14797-73-0	µg/L	30	11	37	1.1	0.11	0.56	0.32	1.1	0.082	0.82	MW-13A MW-15A
Monochloroacetic Acid	79-11-8	µg/L	30	9	30	360	13	200	110	1.8	4	4	MW-13A
Monobromoacetic acid	79-08-3	µg/L	30	7	23	20	7.7	12	2.7	0.32	7.5	7.5	MW-15A
Dichloroacetic Acid	79-43-6	µg/L	30	11	37	1,500	9.9	600	440	1.9	9.8	9.8	MW-13A
Dibromoacetic acid	631-64-1	µg/L	30	7	23	1,100	200	530	280	2.2	3.8	3.8	MW-13A
Trichloroacetic acid	76-03-9	µg/L	30	11	37	1,300	13	450	330	1.9	3.8	3.8	MW-13A
Total Organic Carbon	TOC	µg/L	30	30	100	190,000	3,500	44,000	32,000	0.72			PZ-1
Total Alkalinity	ALK	µg/L	30	30	100	1,100,000	64,000	570,000	290,000	0.51			MW-15A MW-7
Orthophosphate as P	PHOSPHATE AS P,	µg/L	30	0	0				840	0.67	390	3,900	
pH, Field	PH	pH units	30	30	100	8.21	5.3	6.5	0.81	0.13			MW-19B

Notes:

µg/L = micrograms per liter
Empty cells = No results
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pH = pH units
SIM = Selected ion monitoring
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence

Table 7-1
Summary of Data Qualified based on MS/MSD RPD
Reason Code: 6
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
Decachlorobiphenyl-209	E1668A	0	0	0	0	0	0	1	0	1	0	2
Pentachlorobiphenyl homologs	E1668A	0	0	0	0	0	1	0	0	1	0	2
Hexachlorobiphenyl homologs	E1668A	0	0	0	0	0	1	0	0	1	0	2
Tetrachlorobiphenyl homologs	E1668A	0	0	0	0	0	1	0	0	1	0	2
Heptachlorobiphenyl homologs	E1668A	0	0	0	0	0	1	0	0	1	0	2
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	E1668A	0	0	0	0	0	1	0	0	0	0	1
Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	E1668A	0	0	0	0	0	1	0	0	0	0	1
Octachlorobiphenyl homologs	E1668A	0	0	0	0	0	1	0	0	1	0	2
Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	E1668A	0	0	0	0	0	1	0	0	0	0	1
Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)	E1668A	0	0	0	0	0	1	0	0	0	0	1
Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	E1668A	0	0	0	0	0	1	0	0	0	0	1
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	E1668A	0	0	0	0	0	0	0	0	1	0	1
Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	E1668A	0	0	0	0	0	0	0	0	1	0	1
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	E1668A	0	0	0	0	0	0	0	0	1	0	1
Nonachlorobiphenyl homologs	E1668A	0	0	0	0	0	0	0	0	1	0	1
PCB-156 & 157	E1668A	0	0	0	0	0	0	0	0	1	0	1
Magnesium	SW6010B	0	0	0	0	0	10	5	10	0	0	25
Potassium	SW6010B	0	0	0	0	0	0	0	10	0	0	10
Sodium	SW6010B	0	0	0	0	0	0	0	10	0	0	10
Calcium	SW6010B	0	0	11	0	0	0	0	10	0	0	21
Iron	SW6010B	0	0	11	0	0	0	0	0	0	0	11
Barium	SW6020	0	0	0	0	0	0	0	10	0	0	10
Beryllium	SW6020	0	0	11	0	0	0	0	0	0	0	11
Antimony	SW6020	0	3	0	0	0	0	0	0	0	0	3
Manganese	SW6020	11	0	0	0	9	0	0	0	0	0	20
Dibromochloromethane	SW8260B	0	1	0	0	0	0	0	0	0	0	1
Chloroform	SW8260B	0	1	0	0	0	0	0	0	0	0	1
Bromoform	SW8260B	0	1	0	0	0	0	0	0	0	0	1
Bromodichloromethane	SW8260B	0	1	0	0	0	0	0	0	0	0	1
Acetone	SW8260B	0	1	0	0	0	0	0	0	0	0	1
2,4-Dimethylphenol	SW8270C	0	1	1	0	0	0	0	0	0	0	2
2,4-Dinitrophenol	SW8270C	0	0	1	0	0	0	0	0	0	0	1
Dinitro-o-cresol	SW8270C	0	0	1	0	0	0	0	0	0	0	1
Carbazole	SW8270C	0	0	1	0	0	0	0	0	0	0	1

Table 7-1
Summary of Data Qualified based on MS/MSD RPD
Reason Code: 6
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
Pentachlorophenol	SW8270C	0	0	1	0	0	0	0	0	0	0	1
2,4,5-Trichlorophenol	SW8270C	0	0	1	0	0	0	0	0	0	0	1
n-Nitrosodimethylamine	SW8270C	0	1	0	0	0	0	0	0	0	0	1
Dichloroethyl ether	SW8270C	0	1	0	0	0	0	0	0	0	0	1
Hexachloroethane	SW8270C	0	1	0	0	0	0	0	0	0	0	1
Hexachlorocyclopentadiene	SW8270C	0	1	0	0	1	0	0	0	0	0	2
n-Nitrosodiphenylamine	SW8270C	0	1	0	0	0	0	0	0	0	0	1
Anthracene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Pyrene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Fluoranthene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Chrysene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Benzo(a)anthracene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Phenanthrene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Fluorene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	SW8290	0	0	0	0	0	1	1	0	1	0	3
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	SW8290	0	0	1	0	0	1	1	0	0	0	3
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	SW8290	0	0	1	0	0	1	1	0	1	0	4
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	SW8290	0	0	0	0	0	0	1	0	1	0	2
2,3,7,8-Tetrachlorodibenzofuran	SW8290	0	0	1	0	0	1	1	0	0	0	3
2,3,4,7,8-Pentachlorodibenzofuran	SW8290	0	0	0	0	0	1	1	0	1	0	3
1,2,3,6,7,8-Hexachlorodibenzofuran	SW8290	0	0	0	0	0	1	1	0	1	0	3
2,3,4,6,7,8-Hexachlorodibenzofuran	SW8290	0	0	0	0	0	1	1	0	1	0	3
1,2,3,4,6,7,8-Heptachlorodibenzofuran	SW8290	0	0	0	0	0	0	1	0	1	0	2
1,2,3,4,7,8-Hexachlorodibenzofuran	SW8290	0	0	0	0	0	1	1	0	1	0	3
1,2,3,7,8,9-Hexachlorodibenzofuran	SW8290	0	0	0	0	0	0	1	0	1	0	2
1,2,3,4,7,8,9-Heptachlorodibenzofuran	SW8290	0	0	0	0	0	1	0	0	1	0	2
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	SW8290	0	0	0	0	0	0	0	0	1	0	1
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	SW8290	0	0	0	0	0	0	0	0	1	0	1
1,2,3,7,8-Pentachlorodibenzofuran	SW8290	0	0	0	0	0	0	0	0	1	0	1
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	SW8290	0	0	0	0	0	0	0	0	1	0	1
	SUM	11	14	49	0	10	29	17	50	25	0	205

Table 7-2
Summary of Data Qualified based on Field Duplicate RPD
Reason Code: 17
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
Decachlorobiphenyl-209	E1668A	0	0	1	0	0	0	1	0	0	0	2
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	E1668A	0	0	0	0	0	0	1	0	0	0	1
Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	E1668A	0	0	1	0	0	0	0	0	0	0	1
Pentachlorobiphenyl homologs	E1668A	0	0	1	0	0	0	0	0	0	0	1
Tetrachlorobiphenyl homologs	E1668A	0	0	1	0	0	0	0	0	0	0	1
Potassium	SW6010B	0	0	1	0	0	0	0	0	0	0	1
Molybdenum	SW6020	0	0	2	0	0	0	0	0	0	0	2
Zinc	SW6020	1	0	2	0	0	0	0	0	0	0	3
Lead	SW6020	1	0	0	0	0	0	0	0	0	0	1
Antimony	SW6020	1	0	0	0	0	0	0	0	0	0	1
Chromium	SW6020	0	1	0	0	0	0	0	0	0	0	1
Copper	SW6020	0	1	0	0	0	0	0	0	0	0	1
Acetophenone	SW8270C	0	1	0	0	0	0	0	0	0	0	1
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	SW8290	0	0	1	0	0	0	1	0	0	0	2
1,2,3,4,6,7,8-Heptachlorodibenzofuran	SW8290	0	0	0	0	0	0	1	0	0	0	1
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	SW8290	0	0	1	0	0	0	0	0	0	0	1
Total organic carbon	SW9060A	0	0	4	0	0	0	0	0	0	0	4
	SUM	3	3	15	0	0	0	4	0	0	0	25

Table 7-3
Summary of PRI17 Groundwater Data Qualifiers - Precision
Reason Code: 6, 17
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	Data Precision Reason Codes		SUM
		MS/MSD RPD	Field Duplicate RPD	
		6	17	
Decachlorobiphenyl-209	E1668A	0	1	1
Total dissolved solids	SM2540C	0	1	1
Magnesium	SW6010B	0	1	1
Potassium	SW6010B	0	1	1
Sodium	SW6010B	11	1	12
Manganese	SW6020	0	1	1
Chromium	SW6020	0	1	1
Copper	SW6020	0	1	1
Trichloroethene	SW8260B	0	1	1
Bromoform	SW8260B	1	0	1
Cyanide, Total	SW9012	8	1	9
Total organic carbon	SW9060	0	1	1
	SUM	20	11	31

Notes:
MS/MSD = Matrix spike/Matrix spike duplicate
RPD = Relative percent difference

Table 7-4
Summary of Data Qualified based on Holding Times
Reason Code: 1
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
Number of Samples Analyzed		37/37/23	21/21/7	14/14/0	19/19/5	14/14/0	14/14/0	14/14/0	18/18/10	14/3/0*	14/13/0*	179/165/45
Perchlorate	E314.0/6850	12	0	0	0	6	0	0	0	0	0	18
Mercury	SW7471A	0	0	0	0	0	0	4	0	0	0	4
1,2,4,5-Tetrachlorobenzene	SW8270C	0	0	0	0	0	10	6	1	0	0	17
2,2-Oxybis(1-chloropropane)	SW8270C	0	0	0	0	0	10	6	1	0	0	17
2,3,4,6-Tetrachlorophenol	SW8270C	0	0	0	0	0	10	6	1	0	0	17
2,4,5-Trichlorophenol	SW8270C	0	0	0	0	0	10	6	1	0	0	17
2,4,6-Trichlorophenol	SW8270C	0	0	0	0	0	10	6	1	0	0	17
2,4-Dichlorophenol	SW8270C	0	0	0	0	0	10	6	1	0	0	17
2,4-Dimethylphenol	SW8270C	0	0	0	0	0	10	6	1	0	0	17
2,4-Dinitrophenol	SW8270C	0	0	0	0	0	10	6	1	0	0	17
2,4-Dinitrotoluene	SW8270C	0	0	0	0	0	10	6	1	0	0	17
2,6-Dinitrotoluene	SW8270C	0	0	0	0	0	10	6	1	0	0	17
2-Chloronaphthalene	SW8270C	0	0	0	0	0	10	6	1	0	0	17
2-Chlorophenol	SW8270C	0	0	0	0	0	10	6	1	0	0	17
2-Nitroaniline	SW8270C	0	0	0	0	0	10	6	1	0	0	17
2-Nitrophenol	SW8270C	0	0	0	0	0	10	6	1	0	0	17
3 & 4 Methylphenol	SW8270C	0	0	0	0	0	10	6	1	0	0	17
3,3'-Dichlorobenzidine	SW8270C	0	0	0	0	0	10	6	1	0	0	17
3-Nitroaniline	SW8270C	0	0	0	0	0	10	6	1	0	0	17
4-Bromophenyl phenyl ether	SW8270C	0	0	0	0	0	10	6	1	0	0	17
4-Chloro-3-methylphenol	SW8270C	0	0	0	0	0	10	6	1	0	0	17
4-Chlorophenyl phenyl ether	SW8270C	0	0	0	0	0	10	6	1	0	0	17
4-Nitrophenol	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Acetophenone	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Benzaldehyde	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Benzyl butyl phthalate	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Biphenyl	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Bis(2-chloroethoxy)methane	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Bis(2-ethylhexyl)phthalate	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Carbazole	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Dibenzofuran	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Dibutyl Phthalate	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Dichloroethyl ether	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Diethyl Phthalate	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Dimethylphthalate	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Dinitro-o-cresol	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Di-n-octyl phthalate	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Hexachlorobenzene	SW8270C	0	0	0	0	0	10	6	1	0	0	17

Table 7-4
Summary of Data Qualified based on Holding Times
Reason Code: 1
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
Hexachlorobutadiene	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Hexachlorocyclopentadiene	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Hexachloroethane	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Isophorone	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Nitrobenzene	SW8270C	0	0	0	0	0	10	6	1	0	0	17
n-Nitrosodimethylamine	SW8270C	0	0	0	0	0	10	6	1	0	0	17
n-Nitrosodi-n-propylamine	SW8270C	0	0	0	0	0	10	6	1	0	0	17
n-Nitrosodiphenylamine	SW8270C	0	0	0	0	0	10	6	1	0	0	17
o-Cresol	SW8270C	0	0	0	0	0	10	6	1	0	0	17
p-Chloroaniline	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Pentachlorophenol	SW8270C	0	0	0	0	0	10	6	1	0	0	17
Phenol	SW8270C	0	0	0	0	0	10	6	1	0	0	17
p-Nitroaniline	SW8270C	0	0	0	0	0	10	6	1	0	0	17
2-Methylnaphthalene	SW8270C_SIM	0	1	0	0	0	0	0	0	0	0	1
Acenaphthene	SW8270C_SIM	0	1	0	0	0	0	0	0	0	0	1
Acenaphthylene	SW8270C_SIM	0	1	0	0	0	0	0	0	0	0	1
Anthracene	SW8270C_SIM	0	1	0	0	0	0	0	0	0	0	1
Benzo(a)anthracene	SW8270C_SIM	0	1	0	0	0	0	0	0	0	0	1
Benzo(a)pyrene	SW8270C_SIM	0	1	1	0	0	0	0	0	0	0	2
Benzo(b)fluoranthene	SW8270C_SIM	0	1	1	0	0	0	0	0	0	0	2
Benzo(g,h,i)perylene	SW8270C_SIM	0	1	1	0	0	0	0	0	0	0	2
Benzo(k)fluoranthene	SW8270C_SIM	0	1	1	0	0	0	0	0	0	0	2
Chrysene	SW8270C_SIM	0	1	0	0	0	0	0	0	0	0	1
Dibenzo(a,h)anthracene	SW8270C_SIM	0	1	1	0	0	0	0	0	0	0	2
Fluoranthene	SW8270C_SIM	0	1	0	0	0	0	0	0	0	0	1
Fluorene	SW8270C_SIM	0	1	0	0	0	0	0	0	0	0	1
Indeno(1,2,3-cd)pyrene	SW8270C_SIM	0	1	1	0	0	0	0	0	0	0	2
Naphthalene	SW8270C_SIM	0	1	0	0	0	0	0	0	0	0	1
Phenanthrene	SW8270C_SIM	0	1	0	0	0	0	0	0	0	0	1
Pyrene	SW8270C_SIM	0	1	0	0	0	0	0	0	0	0	1
	SUM	12	17	6	0	6	490	298	49	0	0	878

Notes:
* Perchorate was not analyzed in 12 samples due to COC error.
Volatile organic compounds (VOCs) were only analyzed in subsurface samples and in saturated surface samples.
X/X/X = Number of samples analyzed in Preliminary Remedial Investigation/Perchlorate samples/VOC samples

PRI15-009-SS01-112313	PRI15-006-SS01-112313	PRI15-002-SS01-112413	PRI15-012-SS01-112413
PRI15-001-SS01-112313	PRI16-011-SS01-112313	PRI15-004-SS01-112413	PRI15-014-SS01-112413
PRI15-003-SS01-112313	PRI15-011-SS01-112313	PRI15-010-SS01-112413	PRI15-013-SS01-112413

Table 7-5
Summary of Data Qualified based on Laboratory (Method) Blank
Reason Code: 3
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
Number of Samples Analyzed		37	21	14	19	14	14	14	18	14	14	
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	E1668A	0	1	0	0	0	0	0	0	0	0	1
PCB-156 & 157	E1668A	0	0	1	0	0	0	0	0	0	0	1
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	E1668A	0	1	1	1	0	0	0	1	0	0	4
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	E1668A	0	3	2	4	0	0	2	1	0	0	12
Potassium	SW6010B	1	0	0	0	0	0	0	0	0	0	1
Antimony	SW6020	1	0	0	4	3	1	0	0	0	0	9
Molybdenum	SW6020	0	2	2	1	3	0	0	0	0	0	8
Thallium	SW6020	0	0	0	0	0	0	0	1	0	0	1
Mercury	SW7471A	13	0	0	0	4	0	0	0	0	0	17
Acetone	SW8260B	4	3	0	2	0	0	0	0	0	0	9
Acetophenone	SW8270C	4	0	1	4	1	2	2	0	0	0	14
Bis(2-ethylhexyl)phthalate	SW8270C	1	1	0	0	0	0	0	0	0	0	2
2-Methylnaphthalene	SW8270C_SIM	0	0	0	0	0	0	0	2	8	1	11
Acenaphthene	SW8270C_SIM	0	0	0	0	0	0	0	2	7	1	10
Naphthalene	SW8270C_SIM	0	0	0	5	0	3	0	6	7	0	21
Phenanthrene	SW8270C_SIM	8	1	4	4	5	0	0	6	11	1	40
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	SW8290	0	0	0	1	0	0	0	0	0	0	1
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	SW8290	0	4	2	2	0	0	0	7	4	2	21
1,2,3,4,6,7,8-Heptachlorodibenzofuran	SW8290	0	7	0	3	0	0	0	0	0	1	11
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	SW8290	0	1	1	0	0	0	0	0	0	3	5
1,2,3,4,7,8-Hexachlorodibenzofuran	SW8290	0	7	0	3	0	0	0	0	0	0	10
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	SW8290	1	0	0	0	1	0	0	0	0	0	2
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	SW8290	0	0	0	0	1	0	0	0	0	0	1
2,3,4,7,8-Pentachlorodibenzofuran	SW8290	0	7	0	3	0	0	0	0	0	0	10
2,3,7,8-Tetrachlorodibenzofuran	SW8290	0	5	0	2	0	0	0	0	0	0	7
Total organic carbon	SW9060A	0	0	0	0	0	0	1	0	0	0	1
	SUM	33	43	14	39	18	6	5	26	37	9	230

Table 7-6
Summary of Data Qualified based on Field (Equipment or Trip) Blanks
Reason Code: 13
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
Number of Samples Analyzed		37/23	21/7	14/0	19/5	14/0	14/0	14/0	18/10	14/0	14/0	
Potassium	SW6010B	1	0	0	0	0	0	0	0	0	0	1
Antimony	SW6020	0	1	0	11	0	13	0	0	0	0	25
Lead	SW6020	14	22	14	6	0	6	18	22	14	14	130
Molybdenum	SW6020	0	0	0	7	0	7	10	5	0	0	29
Thallium	SW6020	0	0	0	7	0	1	0	6	0	0	14
Zinc	SW6020	0	0	0	0	0	0	0	1	0	0	1
Acetone	SW8260B	0	2	0	0	0	0	0	0	0	0	2
Carbon disulfide	SW8260B	11	0	0	2	0	0	0	0	0	0	13
Cyanide, Total	SW9012	0	0	0	0	0	1	0	0	0	0	1
Total organic carbon	SW9060A	0	2	1	5	0	3	2	4	0	0	17
	SUM	26	27	15	38	0	31	30	38	14	14	233

Notes:
X/X = Number of samples analyzed in Preliminary Remedial Investigation/volatile organic compound samples

Table 7-7
Summary of Data Qualified based on Laboratory Control Sample Recovery
Reason Code: 5
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
Number of Samples Analyzed		37	21	14	19	14	14	14	18	14	14	
Mercury	SW7471A	2	2	0	3	0	0	0	0	0	0	7
2,2-Oxybis(1-chloropropane)	SW8270C	30	9	4	5	19	2	2	0	0	9	80
2,3,4,6-Tetrachlorophenol	SW8270C	5	6	0	0	0	0	0	0	0	0	11
2,4,5-Trichlorophenol	SW8270C	6	2	1	0	0	0	0	0	0	0	9
2,4-Dichlorophenol	SW8270C	5	2	0	0	0	0	0	0	0	0	7
2,4-Dimethylphenol	SW8270C	20	10	4	3	9	3	0	0	0	0	49
3,3'-Dichlorobenzidine	SW8270C	29	6	5	10	19	2	2	5	0	0	78
3-Nitroaniline	SW8270C	18	13	19	19	5	14	9	6	0	0	103
4-Chloro-3-methylphenol	SW8270C	5	2	0	0	0	0	0	0	0	0	7
4-Chlorophenyl phenyl ether	SW8270C	5	2	0	0	0	0	0	0	0	0	7
Acetophenone	SW8270C	5	2	0	0	0	0	0	0	2	4	13
Carbazole	SW8270C	15	2	0	5	5	0	0	0	0	0	27
Dibenzofuran	SW8270C	5	2	0	0	0	0	0	0	0	0	7
Hexachlorocyclopentadiene	SW8270C	15	6	0	5	5	0	0	0	0	0	31
Isophorone	SW8270C	5	2	0	0	0	0	0	0	0	0	7
n-Nitrosodimethylamine	SW8270C	5	2	0	0	0	0	0	0	0	0	7
o-Cresol	SW8270C	5	2	0	0	0	0	0	0	0	0	7
p-Chloroaniline	SW8270C	40	20	20	24	14	19	19	23	14	14	207
Pentachlorophenol	SW8270C	5	2	0	0	0	0	0	0	0	0	7
Phenol	SW8270C	5	2	0	0	0	0	0	0	0	0	7
p-Nitroaniline	SW8270C	0	3	0	2	0	0	0	3	0	0	8
2-Methylnaphthalene	SW8270C_SIM	0	0	11	0	0	0	0	0	0	0	11
Acenaphthene	SW8270C_SIM	0	0	11	0	0	0	0	0	0	0	11
Acenaphthylene	SW8270C_SIM	0	0	11	0	0	0	0	0	0	0	11
Anthracene	SW8270C_SIM	0	0	11	0	0	0	0	0	0	0	11
Benzo(a)anthracene	SW8270C_SIM	0	0	11	0	0	0	0	0	0	0	11
Benzo(a)pyrene	SW8270C_SIM	0	0	10	0	0	0	0	0	2	13	25
Benzo(b)fluoranthene	SW8270C_SIM	0	0	10	0	0	0	0	0	0	0	10
Benzo(g,h,i)perylene	SW8270C_SIM	0	0	10	0	0	0	0	0	0	0	10
Benzo(k)fluoranthene	SW8270C_SIM	0	0	10	0	0	0	0	0	0	0	10
Chrysene	SW8270C_SIM	0	0	11	0	0	0	0	0	0	0	11
Dibenzo(a,h)anthracene	SW8270C_SIM	0	0	10	0	0	0	0	0	0	0	10
Fluoranthene	SW8270C_SIM	0	0	11	0	0	0	0	0	0	0	11
Fluorene	SW8270C_SIM	0	0	11	0	0	0	0	0	0	0	11
Indeno(1,2,3-cd)pyrene	SW8270C_SIM	0	0	10	0	0	0	0	0	0	0	10
Naphthalene	SW8270C_SIM	0	0	11	0	0	0	0	0	0	0	11
Phenanthrene	SW8270C_SIM	0	0	11	0	0	0	0	0	0	0	11
Pyrene	SW8270C_SIM	0	0	11	0	0	0	0	0	0	0	11
	SUM	230	99	234	76	76	40	32	37	18	40	882

Table 7-8
Summary of Data Qualified based on Matrix Spike Recovery
Reason Code: 4
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
Number of Samples Analyzed		37/23	21/7	14/0	19/5	14/0	14/0	14/0	18/10	14/0	14/0	
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	SW8290	0	1	0	0	0	0	0	0	1	0	2
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	SW8290	0	0	0	0	0	1	0	0	1	0	2
1,2,3,4,6,7,8-Heptachlorodibenzofuran	SW8290	0	0	0	0	0	0	0	0	1	0	1
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	SW8290	0	0	0	0	0	0	0	0	1	0	1
1,2,3,4,7,8,9-Heptachlorodibenzofuran	SW8290	0	0	0	0	0	1	0	0	1	0	2
1,2,3,4,7,8-Hexachlorodibenzofuran	SW8290	0	0	0	0	0	1	1	0	1	0	3
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	SW8290	0	0	0	0	0	0	0	0	1	0	1
1,2,3,6,7,8-Hexachlorodibenzofuran	SW8290	0	0	0	0	0	1	1	0	1	0	3
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	SW8290	0	0	0	0	0	0	0	0	1	0	1
1,2,3,7,8,9-Hexachlorodibenzofuran	SW8290	1	0	0	0	0	0	0	0	1	0	2
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	SW8290	0	0	0	0	0	0	1	0	1	0	2
1,2,3,7,8-Pentachlorodibenzofuran	SW8290	1	0	0	0	0	0	0	0	1	0	2
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	SW8290	0	0	0	0	0	0	0	0	1	0	1
2,3,4,6,7,8-Hexachlorodibenzofuran	SW8290	1	0	0	0	0	1	1	0	1	0	4
2,3,4,7,8-Pentachlorodibenzofuran	SW8290	1	0	0	0	0	0	0	0	1	0	2
2,3,7,8-Tetrachlorodibenzofuran	SW8290	0	0	0	0	0	1	1	0	0	0	2
2-Methylnaphthalene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Anthracene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Benzo(a)anthracene	SW8270C_SIM	0	0	2	0	0	0	0	0	0	0	2
Benzo(a)pyrene	SW8270C_SIM	0	0	2	0	0	0	0	0	0	0	2
Benzo(b)fluoranthene	SW8270C_SIM	0	0	2	0	0	0	0	0	0	0	2
Benzo(g,h,i)perylene	SW8270C_SIM	0	0	2	0	0	0	0	0	0	0	2
Benzo(k)fluoranthene	SW8270C_SIM	0	0	2	0	0	0	0	0	0	0	2
Chrysene	SW8270C_SIM	0	0	2	0	0	0	0	0	0	0	2
Dibenzo(a,h)anthracene	SW8270C_SIM	0	0	2	0	0	0	0	0	0	0	2
Fluoranthene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Fluorene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Indeno(1,2,3-cd)pyrene	SW8270C_SIM	0	0	2	0	0	0	0	0	0	0	2
Phenanthrene	SW8270C_SIM	0	0	2	0	0	0	0	0	0	0	2
Pyrene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
2,2-Oxybis(1-chloropropane)	SW8270C	0	4	1	0	4	0	1	0	0	1	11
2,3,4,6-Tetrachlorophenol	SW8270C	0	4	1	0	1	0	0	0	0	0	6
2,4,5-Trichlorophenol	SW8270C	0	3	1	0	1	0	0	0	0	0	5
2,4,6-Trichlorophenol	SW8270C	0	0	1	0	0	0	0	0	0	0	1

Table 7-8
Summary of Data Qualified based on Matrix Spike Recovery
Reason Code: 4
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
2,4-Dichlorophenol	SW8270C	0	1	1	0	0	0	0	0	0	0	2
2,4-Dimethylphenol	SW8270C	1	3	1	0	3	0	0	0	0	0	8
2,4-Dinitrophenol	SW8270C	0	1	1	0	0	1	0	0	0	0	3
2,6-Dinitrotoluene	SW8270C	0	0	1	0	0	0	0	0	0	0	1
2-Chloronaphthalene	SW8270C	0	1	0	0	0	0	0	0	0	0	1
2-Chlorophenol	SW8270C	0	1	0	0	0	0	0	0	0	0	1
2-Nitrophenol	SW8270C	0	1	0	0	0	0	0	0	0	0	1
3 & 4 Methylphenol	SW8270C	0	0	1	0	0	0	0	0	0	0	1
3,3'-Dichlorobenzidine	SW8270C	0	4	1	1	4	0	1	0	1	1	13
3-Nitroaniline	SW8270C	1	5	2	1	4	1	1	0	1	0	16
4-Chloro-3-methylphenol	SW8270C	0	0	1	0	0	0	0	0	0	0	1
4-Chlorophenyl phenyl ether	SW8270C	0	1	1	0	0	0	0	0	0	0	2
Acetophenone	SW8270C	0	2	0	0	2	0	0	0	0	0	4
Bis(2-chloroethoxy)methane	SW8270C	0	1	0	0	0	0	0	0	0	0	1
Carbazole	SW8270C	0	2	1	0	0	0	0	0	0	0	3
Dibenzofuran	SW8270C	0	1	1	0	0	0	0	0	0	0	2
Dichloroethyl ether	SW8270C	0	1	0	0	0	0	0	0	0	0	1
Dinitro-o-cresol	SW8270C	0	1	1	0	0	1	0	0	0	0	3
Hexachlorobutadiene	SW8270C	0	1	0	0	0	0	0	0	0	0	1
Hexachlorocyclopentadiene	SW8270C	0	5	1	0	3	0	0	0	0	0	9
Hexachloroethane	SW8270C	0	1	0	0	0	0	0	0	0	0	1
n-Nitrosodimethylamine	SW8270C	0	5	1	0	2	1	0	0	0	0	9
n-Nitrosodiphenylamine	SW8270C	0	1	0	0	0	0	0	0	0	0	1
o-Cresol	SW8270C	0	1	1	0	0	0	0	0	0	0	2
p-Chloroaniline	SW8270C	1	5	2	0	4	2	1	0	2	1	18
Pentachlorophenol	SW8270C	0	1	1	0	3	1	0	0	0	1	7
Phenol	SW8270C	0	1	1	0	0	0	0	0	0	0	2
p-Nitroaniline	SW8270C	0	0	1	1	0	0	0	0	0	0	2
1,2-Dibromo-3-chloropropane	SW8260B	0	1	0	0	0	0	0	0	0	0	1
1,2-Dichloropropane	SW8260B	0	1	0	0	0	0	0	0	0	0	1
2-Butanone	SW8260B	0	1	0	0	0	0	0	0	0	0	1
2-Hexanone	SW8260B	0	2	0	0	0	0	0	0	0	0	2
4-Methyl-2-pentanone	SW8260B	0	1	0	0	0	0	0	0	0	0	1
Acetone	SW8260B	0	1	0	0	0	0	0	0	0	0	1
Bromodichloromethane	SW8260B	0	1	0	0	0	0	0	0	0	0	1

Table 7-8
Summary of Data Qualified based on Matrix Spike Recovery
Reason Code: 4
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
Bromoform	SW8260B	0	1	0	0	0	0	0	0	0	0	1
Chloroform	SW8260B	0	1	0	0	0	0	0	0	0	0	1
Cyclohexane	SW8260B	0	1	0	0	0	0	0	0	0	0	1
Dibromochloromethane	SW8260B	0	1	0	0	0	0	0	0	0	0	1
Mercury	SW7471A	0	0	11	0	0	10	17	0	0	0	38
Antimony	SW6020	31	26	8	24	19	19	19	23	14	14	197
Barium	SW6020	0	0	11	0	0	0	0	0	0	0	11
Beryllium	SW6020	5	2	11	0	0	0	0	0	0	0	18
Chromium	SW6020	1	1	0	0	5	0	0	0	0	0	7
Cobalt	SW6020	11	0	0	0	9	0	0	0	0	0	20
Copper	SW6020	5	2	0	0	1	0	0	0	0	0	8
Lead	SW6020	16	2	0	0	9	0	0	0	0	0	27
Molybdenum	SW6020	11	0	0	0	10	0	0	0	0	0	21
Nickel	SW6020	16	3	0	0	10	0	0	0	0	0	29
Selenium	SW6020	26	20	15	24	6	7	2	18	13	14	145
Vanadium	SW6020	5	2	11	0	1	0	0	0	0	0	19
Zinc	SW6020	17	18	4	15	14	19	19	15	0	0	121
Magnesium	SW6010B	11	0	0	7	0	14	5	0	2	4	43
Potassium	SW6010B	11	6	1	9	0	2	1	14	0	0	44
Sodium	SW6010B	11	6	1	9	0	2	1	4	0	0	34
Decachlorobiphenyl-209	E1668A	0	0	0	1	0	0	1	0	1	0	3
Nonachlorobiphenyl homologs	E1668A	0	0	0	0	0	1	0	0	0	0	1
	SUM	184	159	121	92	115	87	74	74	49	36	991

Notes:
X/X = Number of samples analyzed in Preliminary Remedial Investigation/volatile organic compound samples

Table 7-9
Summary of Data Qualified based on Surrogate Spike Recovery
Reason Code: 8
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
Number of Samples Analyzed		37	21	14	19	14	14	14	18	14	14	
1,2,4,5-Tetrachlorobenzene	SW8270C	12	0	0	0	0	0	0	1	0	0	13
2,2-Oxybis(1-chloropropane)	SW8270C	12	0	0	0	0	0	0	1	0	0	13
2,3,4,6-Tetrachlorophenol	SW8270C	18	1	4	6	0	0	3	2	0	0	34
2,4,5-Trichlorophenol	SW8270C	18	1	4	6	0	0	3	2	0	0	34
2,4,6-Trichlorophenol	SW8270C	18	1	4	6	0	0	3	2	0	0	34
2,4-Dichlorophenol	SW8270C	18	1	4	6	0	0	3	2	0	0	34
2,4-Dimethylphenol	SW8270C	18	1	4	6	0	0	3	2	0	0	34
2,4-Dinitrophenol	SW8270C	18	1	4	6	0	0	3	2	0	0	34
2,4-Dinitrotoluene	SW8270C	12	0	0	0	0	0	0	1	0	0	13
2,6-Dinitrotoluene	SW8270C	12	0	0	0	0	0	0	1	0	0	13
2-Chloronaphthalene	SW8270C	12	0	0	0	0	0	0	1	0	0	13
2-Chlorophenol	SW8270C	18	1	4	6	0	0	3	2	0	0	34
2-Nitroaniline	SW8270C	12	0	0	0	0	0	0	1	0	0	13
2-Nitrophenol	SW8270C	18	1	4	6	0	0	3	2	0	0	34
3 & 4 Methylphenol	SW8270C	18	1	4	6	0	0	3	2	0	0	34
3,3'-Dichlorobenzidine	SW8270C	12	0	0	0	0	0	0	1	0	0	13
3-Nitroaniline	SW8270C	12	0	0	0	0	0	0	1	0	0	13
4-Bromophenyl phenyl ether	SW8270C	12	0	0	0	0	0	0	1	0	0	13
4-Chloro-3-methylphenol	SW8270C	18	1	4	6	0	0	3	2	0	0	34
4-Chlorophenyl phenyl ether	SW8270C	12	0	0	0	0	0	0	1	0	0	13
4-Nitrophenol	SW8270C	18	1	4	6	0	0	3	2	0	0	34
Acetophenone	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Benzaldehyde	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Benzyl butyl phthalate	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Biphenyl	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Bis(2-chloroethoxy)methane	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Bis(2-ethylhexyl)phthalate	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Carbazole	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Dibenzofuran	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Dibutyl Phthalate	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Dichloroethyl ether	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Diethyl Phthalate	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Dimethylphthalate	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Dinitro-o-cresol	SW8270C	18	1	4	6	0	0	3	2	0	0	34
Di-n-octyl phthalate	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Hexachlorobenzene	SW8270C	11	0	0	0	0	0	0	1	0	0	12

Table 7-9
Summary of Data Qualified based on Surrogate Spike Recovery
Reason Code: 8
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
Hexachlorobutadiene	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Hexachlorocyclopentadiene	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Hexachloroethane	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Isophorone	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Nitrobenzene	SW8270C	12	0	0	0	0	0	0	1	0	0	13
n-Nitrosodimethylamine	SW8270C	12	0	0	0	0	0	0	1	0	0	13
n-Nitrosodi-n-propylamine	SW8270C	12	0	0	0	0	0	0	1	0	0	13
n-Nitrosodiphenylamine	SW8270C	12	0	0	0	0	0	0	1	0	0	13
o-Cresol	SW8270C	18	1	4	6	0	0	3	2	0	0	34
p-Chloroaniline	SW8270C	12	0	0	0	0	0	0	1	0	0	13
Pentachlorophenol	SW8270C	18	1	4	6	0	0	3	2	0	0	34
Phenol	SW8270C	18	1	4	6	0	0	3	2	0	0	34
p-Nitroaniline	SW8270C	12	0	0	0	0	0	0	1	0	0	13
2-Methylnaphthalene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Acenaphthene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Acenaphthylene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Anthracene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Benzo(a)anthracene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Benzo(a)pyrene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Benzo(b)fluoranthene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Benzo(g,h,i)perylene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Benzo(k)fluoranthene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Chrysene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Dibenzo(a,h)anthracene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Fluoranthene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Fluorene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Indeno(1,2,3-cd)pyrene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Naphthalene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Phenanthrene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
Pyrene	SW8270C_SIM	0	0	1	0	0	0	0	0	0	0	1
	SUM	677	15	77	90	0	0	45	64	0	0	968

Table 7-10
Summary of Data Qualified based on Estimated Maximum Potential Concentrations
Reason Code: 9
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
Number of Samples Analyzed		37	21	14	19	14	14	14	18	14	14	
Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	E1668A	3	10	7	6	5	5	1	2	1	3	43
Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)	E1668A	0	7	2	2	5	1	10	4	3	2	36
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	E1668A	4	3	2	1	1	1	4	4	1	0	21
PCB-156 & 157	E1668A	1	4	0	5	6	1	5	4	4	4	34
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	E1668A	2	5	2	4	3	1	4	4	1	3	29
Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	E1668A	2	2	0	2	2	3	1	3	0	1	16
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	E1668A	1	1	2	2	2	1	1	3	1	0	14
Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	E1668A	3	3	1	3	4	5	2	2	0	0	23
Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)	E1668A	3	4	2	2	5	1	6	1	0	3	27
Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	E1668A	2	4	2	5	2	1	5	1	6	3	31
Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)	E1668A	8	0	3	0	0	5	0	2	0	0	18
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	SW8290	2	3	2	4	2	0	5	5	3	1	27
1,2,3,4,6,7,8-Heptachlorodibenzofuran	SW8290	0	0	2	4	1	0	1	0	1	0	9
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	SW8290	1	8	1	5	2	2	3	1	1	0	24
1,2,3,4,7,8,9-Heptachlorodibenzofuran	SW8290	1	5	2	6	4	2	2	2	3	0	27
1,2,3,4,7,8-Hexachlorodibenzofuran	SW8290	1	1	2	3	2	0	1	0	1	0	11
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	SW8290	13	2	5	1	3	7	3	9	2	2	47
1,2,3,6,7,8-Hexachlorodibenzofuran	SW8290	1	2	5	8	0	0	3	0	3	3	25
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	SW8290	8	1	1	3	6	3	2	5	3	4	36
1,2,3,7,8,9-Hexachlorodibenzofuran	SW8290	1	4	2	7	3	2	7	6	1	3	36
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	SW8290	5	6	1	1	7	3	3	3	3	7	39
1,2,3,7,8-Pentachlorodibenzofuran	SW8290	0	7	2	3	12	1	3	2	1	2	33
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	SW8290	5	5	0	1	3	3	2	3	3	3	28
2,3,4,6,7,8-Hexachlorodibenzofuran	SW8290	1	2	2	5	4	2	6	3	1	1	27
2,3,4,7,8-Pentachlorodibenzofuran	SW8290	0	1	0	2	6	0	1	1	0	2	13
2,3,7,8-Tetrachlorodibenzofuran	SW8290	1	0	1	5	1	0	2	3	5	5	23
2,3,7,8-Tetrachlorodibenzo-p-dioxin	SW8290	12	4	7	0	2	5	3	5	1	0	39
	SUM	81	94	58	90	93	55	86	78	49	52	736

Table 7-11
Summary of Data Qualified based on Concentration Exceeds Calibration Range
Reason Code: 11
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
Number of Samples Analyzed		37	21	14	19	14	14	14	18	14	14	
Decachlorobiphenyl-209	E1668A	41	15	13	3	6	15	3	13	0	0	109
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	E1668A	2	0	0	0	1	0	0	0	0	0	3
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	E1668A	2	0	1	0	1	0	0	0	0	0	4
Hexachlorobenzene	SW8270C	1	0	0	0	0	0	0	0	0	0	1
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	SW8290	25	1	2	0	0	4	0	2	0	0	34
1,2,3,4,6,7,8-Heptachlorodibenzofuran	SW8290	6	0	0	0	0	1	0	1	0	0	8
1,2,3,4,7,8-Hexachlorodibenzofuran	SW8290	1	0	0	0	0	0	0	0	0	0	1
	SUM	78	16	16	3	8	20	3	16	0	0	160

Table 7-12
Summary of Data Qualified based on Calibration
Reason Code: 12
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
Number of Samples Analyzed		37/23	21/7	14/0	19/5	14/0	14/0	14/0	18/10	14/0	14/0	
Dichlorobiphenyl homologs	E1668A	0	0	0	0	0	0	0	0	6	4	10
Tetrachlorobiphenyl homologs	E1668A	0	0	0	0	0	0	0	0	0	4	4
1,2-Dichloroethane	SW8260B	0	0	0	0	0	0	0	4	0	0	4
1,4-Dioxane	SW8260B	23	7	0	5	0	0	0	3	0	0	38
2-Butanone	SW8260B	0	3	0	0	0	0	0	0	0	0	3
2-Hexanone	SW8260B	0	3	0	0	0	0	0	0	0	0	3
4-Methyl-2-pentanone	SW8260B	0	3	0	0	0	0	0	0	0	0	3
Acetone	SW8260B	12	3	0	4	0	0	0	0	0	0	19
Bromodichloromethane	SW8260B	0	2	0	0	0	0	0	0	0	0	2
Methyl bromide	SW8260B	0	0	0	0	0	0	0	4	0	0	4
Benzaldehyde	SW8270C	0	0	1	0	0	0	1	0	0	0	2
Anthracene	SW8270C_SIM	5	0	0	0	0	0	0	0	0	0	5
Benzo(g,h,i)perylene	SW8270C_SIM	0	0	1	0	0	0	0	8	0	0	9
Indeno(1,2,3-cd)pyrene	SW8270C_SIM	0	0	0	0	0	0	0	8	0	0	8
	SUM	40	21	2	9	0	0	1	27	6	8	114

Notes:
X/X = Number of samples analyzed in Preliminary Remedial Investigation/volatile organic compound samples

Table 7-13
Summary of Data Qualified based on Internal Standard
Reason Code: 14
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
Number of Samples Analyzed		37	21	14	19	14	14	14	18	14	14	
Decachlorobiphenyl-209	E1668A	1	0	0	1	1	0	0	1	0	0	4
Dichlorobiphenyl homologs	E1668A	0	0	0	0	1	0	0	0	0	0	1
Heptachlorobiphenyl homologs	E1668A	0	0	1	2	1	0	0	0	1	0	5
Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	E1668A	0	0	0	1	0	0	0	0	0	0	1
Hexachlorobiphenyl homologs	E1668A	0	0	0	1	1	1	0	0	0	0	3
Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)	E1668A	0	0	0	1	0	0	0	0	0	0	1
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	E1668A	0	0	0	1	0	0	0	0	0	0	1
Monochlorobiphenyl homologs	E1668A	0	0	0	1	1	0	1	0	0	0	3
Nonachlorobiphenyl homologs	E1668A	0	0	0	1	1	0	0	0	0	0	2
Octachlorobiphenyl homologs	E1668A	0	0	1	2	0	0	0	0	1	0	4
PCB-156 & 157	E1668A	0	0	0	1	0	0	0	0	0	0	1
Pentachlorobiphenyl homologs	E1668A	0	0	0	1	1	1	0	0	0	0	3
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	E1668A	0	0	0	1	1	0	0	0	0	0	2
Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	E1668A	0	0	0	1	1	1	0	0	0	0	3
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	E1668A	0	0	0	1	1	0	0	0	0	0	2
Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	E1668A	0	0	0	1	1	0	0	0	0	0	2
Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)	E1668A	0	0	0	1	1	0	0	0	0	0	2
Tetrachlorobiphenyl homologs	E1668A	0	0	0	1	1	1	0	0	0	0	3
Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	E1668A	0	0	0	1	1	1	0	0	0	0	3
Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)	E1668A	0	0	0	1	1	1	0	0	0	0	3
Trichlorobiphenyl homologs	E1668A	0	0	0	1	1	1	0	0	0	0	3
Benzo(a)pyrene	SW8270C_SIM	2	0	0	0	0	0	0	0	0	0	2
Benzo(b)fluoranthene	SW8270C_SIM	2	0	0	0	0	0	0	0	0	0	2
Benzo(g,h,i)perylene	SW8270C_SIM	2	0	0	0	0	0	0	0	0	0	2
Benzo(k)fluoranthene	SW8270C_SIM	2	0	0	0	0	0	0	0	0	0	2
Dibenzo(a,h)anthracene	SW8270C_SIM	2	0	0	0	0	0	0	0	0	0	2
Indeno(1,2,3-cd)pyrene	SW8270C_SIM	2	0	0	0	0	0	0	0	0	0	2
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	SW8290	1	2	0	2	0	1	1	0	0	0	7
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	SW8290	1	2	0	2	0	1	1	0	0	0	7
1,2,3,4,6,7,8-Heptachlorodibenzofuran	SW8290	1	0	0	2	0	1	0	0	0	0	4
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	SW8290	0	0	0	2	0	1	0	0	0	0	3
1,2,3,4,7,8,9-Heptachlorodibenzofuran	SW8290	1	0	0	2	0	1	0	0	0	0	4
1,2,3,4,7,8-Hexachlorodibenzofuran	SW8290	0	0	0	2	0	1	0	0	0	0	3
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	SW8290	0	0	0	1	0	1	0	0	0	0	2

Table 7-13
Summary of Data Qualified based on Internal Standard
Reason Code: 14
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	PRI2	PRI8	PRI9	PRI10	PRI11	PRI12	PRI13	PRI14	PRI15	PRI16	SUM
1,2,3,6,7,8-Hexachlorodibenzofuran	SW8290	0	0	0	2	0	1	0	0	0	0	3
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	SW8290	0	0	0	1	0	1	0	0	0	0	2
1,2,3,7,8,9-Hexachlorodibenzofuran	SW8290	0	0	0	2	0	1	0	0	0	0	3
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	SW8290	0	0	0	1	0	1	0	0	0	0	2
1,2,3,7,8-Pentachlorodibenzofuran	SW8290	0	0	0	2	0	1	0	0	0	0	3
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	SW8290	0	2	0	2	0	1	0	0	0	0	5
2,3,4,6,7,8-Hexachlorodibenzofuran	SW8290	0	0	0	2	0	1	0	0	0	0	3
2,3,4,7,8-Pentachlorodibenzofuran	SW8290	0	0	0	2	0	1	0	0	0	0	3
2,3,7,8-Tetrachlorodibenzofuran	SW8290	0	0	0	2	0	1	0	0	0	0	3
2,3,7,8-Tetrachlorodibenzo-p-dioxin	SW8290	0	0	0	2	0	1	0	0	0	0	3
	SUM	17	6	2	53	16	24	3	1	2	0	124

Table 7-14
Summary of PRI17 Groundwater Data Qualifiers - Accuracy
Reason Code: 1, 3, 4, 5, 8, 9, 12, 13, 14, 16
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	Data Accuracy Reason Codes										SUM
		Hold Time/ Sample Preservation	Laboratory (Method) Blanks	Matrix Spike	Laboratory Control Sample	Surrogate Spikes	Estimated Maximum Potential Conc.	Calibration	Equipment or Trip Blanks	Internal Standard	Diff. between columns did not meet criteria	
		1	3	4	5	8	9	12	13	14	16	
Decachlorobiphenyl-209	E1668A	0	4	1	0	0	6	0	4	0	0	15
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	E1668A	0	0	0	0	0	9	0	1	0	0	10
Trichlorobiphenyl homologs	E1668A	0	0	1	0	0	0	0	0	0	0	1
Dichlorobiphenyl homologs	E1668A	0	0	1	0	0	0	0	0	0	0	1
Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)	E1668A	0	1	0	0	0	2	0	0	0	0	3
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	E1668A	0	0	0	0	0	3	0	0	0	0	3
PCB-156 & 157	E1668A	0	2	0	0	0	8	0	0	0	0	10
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	E1668A	0	0	0	0	0	5	0	0	0	0	5
Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	E1668A	0	0	0	0	0	2	0	0	0	0	2
Bromide	E300	0	0	11	0	0	0	0	0	0	0	11
Nitrate as N	E300	0	0	5	9	0	0	0	0	0	0	14
Phosphate as P, Ortho	E300	0	0	8	0	0	0	0	0	0	0	8
Nitrite as N	E300	0	0	9	27	0	0	0	0	0	0	36
Monobromoacetic acid	E552.2	0	0	0	0	0	0	0	0	0	4	4
Chromium, VI	EPA 7199MOD	2	5	0	0	0	0	0	4	0	0	11
Chromium	SW6020	0	0	11	0	0	0	0	0	0	0	11
Molybdenum	SW6020	0	3	0	0	0	0	0	0	0	0	3
Aluminum	SW6020	0	1	0	0	0	0	0	0	0	0	1
Selenium	SW6020	0	0	42	0	0	0	0	0	0	0	42
Copper	SW6020	0	0	33	0	0	0	0	0	0	0	33
Vanadium	SW6020	0	0	11	0	0	0	0	0	0	0	11
Beryllium	SW6020	0	3	11	0	0	0	0	0	0	0	14
Nickel	SW6020	0	0	24	0	0	0	0	0	0	0	24
Silver	SW6020	0	0	11	0	0	0	0	0	0	0	11
Cobalt	SW6020	0	0	22	0	0	0	0	0	0	0	22
Zinc	SW6020	0	0	27	0	0	0	0	0	0	0	27
Cadmium	SW6020	0	0	22	0	0	0	0	0	0	0	22
Thallium	SW6020	0	0	22	0	0	0	0	0	0	0	22
Lead	SW6020	0	0	22	0	0	0	0	0	0	0	22
Iron	SW6020	0	0	23	0	0	0	0	0	0	0	23
Perchlorate	SW6850	0	0	0	0	0	0	0	0	9	0	9
1,4-Dioxane	SW8260B	0	0	0	0	0	0	30	0	0	0	30
4-Methyl-2-pentanone	SW8260B	0	0	0	0	0	0	5	0	0	0	5

Table 7-14
Summary of PRI17 Groundwater Data Qualifiers - Accuracy
Reason Code: 1, 3, 4, 5, 8, 9, 12, 13, 14, 16
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	Data Accuracy Reason Codes										SUM
		Hold Time/ Sample Preservation	Laboratory (Method) Blanks	Matrix Spike	Laboratory Control Sample	Surrogate Spikes	Estimated Maximum Potential Conc.	Calibration	Equipment or Trip Blanks	Internal Standard	Diff. between columns did not meet criteria	
		1	3	4	5	8	9	12	13	14	16	
Methyl chloride	SW8260B	0	0	1	0	0	0	11	0	0	0	12
2-Hexanone	SW8260B	0	0	0	0	0	0	5	0	0	0	5
1,2-Dibromo-3-chloropropane	SW8260B	0	0	0	0	0	0	5	0	0	0	5
Carbon disulfide	SW8260B	0	8	0	0	0	0	0	11	0	0	19
Chloroform	SW8260B	0	0	1	0	0	0	0	0	0	0	1
Bromoform	SW8260B	0	0	2	0	0	0	0	0	0	0	2
cis-1,3-Dichloropropene	SW8260B	0	0	2	0	0	0	0	0	0	0	2
trans-1,3-Dichloropropene	SW8260B	0	0	2	0	0	0	0	0	0	0	2
2,2-Oxybis(1-chloropropane)	SW8270C	0	0	0	0	0	0	1	0	0	0	1
Bis(2-ethylhexyl)phthalate	SW8270C	0	2	0	3	0	0	0	0	0	0	5
3 & 4 Methylphenol	SW8270C	0	0	2	0	5	0	0	0	0	0	7
Phenol	SW8270C	0	0	1	0	3	0	0	0	0	0	4
2,4,6-Trichlorophenol	SW8270C	0	0	1	0	4	0	0	0	0	0	5
Pentachlorophenol	SW8270C	0	0	0	0	4	0	0	0	0	0	4
Dinitro-o-cresol	SW8270C	0	0	0	0	4	0	1	0	0	0	5
3,3'-Dichlorobenzidine	SW8270C	0	0	2	0	0	0	0	0	0	0	2
3-Nitroaniline	SW8270C	0	0	2	0	0	0	0	0	0	0	2
p-Nitroaniline	SW8270C	0	0	1	0	0	0	0	0	0	0	1
Hexachloroethane	SW8270C	0	0	1	25	0	0	0	0	0	0	26
Hexachlorobutadiene	SW8270C	0	0	0	25	0	0	0	0	0	0	25
2,4-Dinitrotoluene	SW8270C	0	0	0	3	0	0	0	0	0	0	3
Hexachlorocyclopentadiene	SW8270C	0	0	0	6	0	0	0	0	0	0	6
2-Chloronaphthalene	SW8270C	0	0	0	6	0	0	0	0	0	0	6
4-Nitrophenol	SW8270C	0	0	0	0	3	0	0	0	0	0	3
2,4-Dimethylphenol	SW8270C	0	0	0	0	3	0	0	0	0	0	3
2,4-Dichlorophenol	SW8270C	0	0	0	0	3	0	0	0	0	0	3
2,4-Dinitrophenol	SW8270C	0	0	0	0	3	0	0	0	0	0	3
2,3,4,6-Tetrachlorophenol	SW8270C	0	0	0	0	3	0	0	0	0	0	3
4-Chloro-3-methylphenol	SW8270C	0	0	0	0	3	0	0	0	0	0	3
2-Nitrophenol	SW8270C	0	0	0	0	3	0	0	0	0	0	3
o-Cresol	SW8270C	0	0	0	0	3	0	0	0	0	0	3
2-Chlorophenol	SW8270C	0	0	0	0	3	0	0	0	0	0	3
2,4,5-Trichlorophenol	SW8270C	0	0	0	0	3	0	0	0	0	0	3

Table 7-14
Summary of PRI17 Groundwater Data Qualifiers - Accuracy
Reason Code: 1, 3, 4, 5, 8, 9, 12, 13, 14, 16
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Analytical Method	Data Accuracy Reason Codes										SUM
		Hold Time/ Sample Preservation	Laboratory (Method) Blanks	Matrix Spike	Laboratory Control Sample	Surrogate Spikes	Estimated Maximum Potential Conc.	Calibration	Equipment or Trip Blanks	Internal Standard	Diff. between columns did not meet criteria	
		1	3	4	5	8	9	12	13	14	16	
Naphthalene	SW8270C_SIM	0	0	0	0	0	0	0	3	0	0	3
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	SW8290	0	6	0	0	0	7	0	3	0	0	16
1,2,3,4,6,7,8-Heptachlorodibenzofuran	SW8290	0	7	0	0	0	13	0	0	0	0	20
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	SW8290	0	10	0	0	0	10	0	0	0	0	20
1,2,3,6,7,8-Hexachlorodibenzofuran	SW8290	0	0	0	0	0	3	0	0	0	0	3
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	SW8290	0	0	0	0	0	2	0	0	0	0	2
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	SW8290	0	0	0	0	0	4	0	0	0	0	4
1,2,3,4,7,8-Hexachlorodibenzofuran	SW8290	0	1	0	0	0	5	0	0	0	0	6
2,3,7,8-Tetrachlorodibenzofuran	SW8290	0	0	0	0	0	2	0	0	0	0	2
1,2,3,4,7,8,9-Heptachlorodibenzofuran	SW8290	0	2	0	0	0	2	0	0	0	0	4
2,3,4,6,7,8-Hexachlorodibenzofuran	SW8290	0	0	0	0	0	1	0	0	0	0	1
Cyanide, Total	SW9012	0	0	38	0	0	0	0	0	0	0	38
	SUM	2	55	373	104	50	84	58	26	9	4	765

Table 7-15
Completeness by PRI Area
US Magnesium RI/FS
Rowley, Utah

PRI Area	Media	Analyses	Planned Samples (SAP, including SAP Modifications)	Actual Samples	Planned Results [b]	Actual Results [b, c]	Completeness	Explanation for Difference between Planned and Actual Results
2	SS	PCB, DF, SVOC, PAH, metals, cyanide, perchlorate, TOC, pH	14	14	1876	1862	99%	Atrazine not reported for 14 samples
	SS Fines	PCB, DF, SVOC, PAH, metals	5	5	650	645	99%	Atrazine not reported for 5 samples.
	SB	VOC, PCB, DF, SVOC, PAH, metals, cyanide, perchlorate, TOC, pH	Uncertain [d]	23	4232	4209	99%	Atrazine not reported for 23 samples.
	All Media / Analyses				6758	6716	99%	
8	SS	PCB, DF, SVOC, PAH, metals, cyanide, perchlorate, TOC, pH	18	18	2412	2394	99%	Atrazine not reported for 18 samples.
	SS VOC	VOC	Uncertain [e]	4	200	200	100%	
	SS Fines	PCB, DF, SVOC, PAH, metals	5	5	650	645	99%	Atrazine not reported for 5 samples.
	SB	VOC, PCB, DF, SVOC, PAH, metals, cyanide, perchlorate, TOC, pH	3	3	552	549	99%	Atrazine not reported for 3 samples.
	All Media / Analyses				3814	3788	99%	
9	SS	PCB, DF, SVOC, PAH, metals, cyanide, perchlorate, TOC, pH	14	14	1876	1862	99%	Atrazine not reported for 14 samples.
	SS Fines	PCB, DF, SVOC, PAH, metals	5	5	650	632	97%	Atrazine not reported for 5 samples; 13 PAH results rejected from a single sample
	All Media / Analyses				2526	2494	99%	
10	SS	PCB, DF, SVOC, PAH, metals, cyanide, perchlorate, TOC, pH	14	14	1876	1862	99%	Atrazine not reported for 14 samples.
	SS Fines	PCB, DF, SVOC, PAH, metals	5	5	650	645	99%	Atrazine not reported for 5 samples.
	SB	VOC, PCB, DF, SVOC, PAH, metals, cyanide, perchlorate, TOC, pH	Uncertain [d]	5	920	915	99%	Atrazine not reported for 5 samples.
	All Media / Analyses				3446	3422	99%	

Table 7-15
Completeness by PRI Area
US Magnesium RI/FS
Rowley, Utah

PRI Area	Media	Analyses	Planned Samples (SAP, including SAP Modifications)	Actual Samples	Planned Results [b]	Actual Results [b, c]	Completeness	Explanation for Difference between Planned and Actual Results
11	SS	PCB, DF, SVOC, PAH, metals, cyanide, perchlorate, TOC, pH	14	14	1876	1862	99%	Atrazine not reported for 14 samples.
	SS Fines	PCB, DF, SVOC, PAH, metals	5	5	650	645	99%	Atrazine not reported for 5 samples.
	All Media / Analyses				2526	2507	99%	
12	SS	PCB, DF, SVOC, PAH, metals, cyanide, perchlorate, TOC, pH	14	14	1876	1862	99%	Atrazine not reported for 14 samples.
	SS Fines	PCB, DF, SVOC, PAH, metals	5	5	650	645	99%	Atrazine not reported for 5 samples.
	All Media / Analyses				2526	2507	99%	
13	SS	PCB, DF, SVOC, PAH, metals, cyanide, perchlorate, TOC, pH	14	14	1876	1862	99%	Atrazine not reported for 14 samples.
	SS Fines	PCB, DF, SVOC, PAH, metals	5	5	650	645	99%	Atrazine not reported for 5 samples.
	All Media / Analyses				2526	2507	99%	
14	SS	PCB, DF, SVOC, PAH, metals, cyanide, perchlorate, TOC, pH	15	15	2010	1995	99%	Atrazine not reported for 15 samples.
	SS VOC	VOC	Uncertain [e]	7	350	350	100%	
	SS Fines	PCB, DF, SVOC, PAH, metals	5	5	650	645	99%	Atrazine not reported for 5 samples.
	SB	VOC, PCB, DF, SVOC, PAH, metals, cyanide, perchlorate, TOC, pH	3	3	552	549	99%	Atrazine not reported for 3 samples.
	All Media / Analyses				3562	3539	99%	
15	SS	PCB, DF, SVOC, PAH, metals, cyanide, perchlorate, TOC, pH	14	14	1876	1851	99%	Atrazine not reported for 14 samples; perchlorate analysis missed for 11 samples
16	SS	PCB, DF, SVOC, PAH, metals, cyanide, perchlorate, TOC, pH	14	14	1876	1861	99%	Atrazine not reported for 14 samples; perchlorate analysis missed for 1 sample

Table 7-15
Completeness by PRI Area
US Magnesium RI/FS
Rowley, Utah

PRI Area	Media	Analyses	Planned Samples (SAP, including SAP Modifications)	Actual Samples	Planned Results [b]	Actual Results [b, c]	Completeness	Explanation for Difference between Planned and Actual Results
17	GW	VOC, PCB, DF, SVOC, PAH, metals (total and dissolved), cyanide (total and dissolved), perchlorate, TOC, HAA, anions, TDS, alkalinity, Cr(VI)	31	30	6944	6689	96%	No sample from MW-16 (224 results); atrazine not reported for 30 samples; phosphate result rejected in 1 sample
	SW [f]	VOC, PCB, DF, SVOC, PAH, metals (total and dissolved), cyanide (total and dissolved), perchlorate, TOC, HAA, anions, TDS, alkalinity, Cr(VI)	See Surface Water Addendum					
All Phase 1A PRI Areas 2 and 8 - 17					38380	37881	99%	

Notes:

a Primary (investigative) samples only; does not include quality control samples such as field duplicates, matrix spikes, trip blanks, or equipment blanks.
b Does not include confirmation analysis for SIM-SVOCs or perchlorate (solids) or calculated results for TEQ or Low MW / High MW PAHs.
c Does not include results qualified as rejected (R)
d Number of subsurface samples could not be specified in SAP because the number of samples were a function of boring depth and subsurface conditions.
e The number of surface samples for VOC analysis could not be specified in the SAP because VOC analysis was to be performed only at saturated locations.
f The completeness for surface water will be re-evaluated in the Surface Water Addendum that includes results from all Phase 1A samples, including locations within Inner PRI areas 1, 3, 5, and 6.

Cr(VI) = Hexavalent Chromium
DF = Dioxin/Furan
GW = Groundwater
HAA = Haloacetic acid
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PRI = Preliminary Remedial Investigation
SAP = Phase 1
SB = Subsurface solids
SS = Surface Solids
SVOC = Semi-volatile organic compound
SW = Surface water
TDS = Total dissolved solids
TOC = Total organic carbon
VOC = Volatile organic compound

Table 7-16
Summary of Rejected Results for Solids and Groundwater
US Magnesium RI/FS
Rowley, Utah

Sample ID	PRI	CAS	Chemical	Sample Type	Sample Matrix	Detect (Y/N)	Qualifier	DQM Qualifiers
MW-8A-01-021814	PRI17	PHOSPHATE AS P	Phosphate as P, Ortho	Normal	Water	N	R	4
PRI9-001-SS01-010614 FINES	PRI9	83-32-9	Acenaphthene	Soil Fines	Solid	N	R	8
PRI9-001-SS01-010614 FINES	PRI9	208-96-8	Acenaphthylene	Soil Fines	Solid	N	R	8
PRI9-001-SS01-010614 FINES	PRI9	120-12-7	Anthracene	Soil Fines	Solid	N	R	8
PRI9-001-SS01-010614 FINES	PRI9	56-55-3	Benzo(a)anthracene	Soil Fines	Solid	N	R	4,8
PRI9-001-SS01-010614 FINES	PRI9	50-32-8	Benzo(a)pyrene	Soil Fines	Solid	N	R	4,8
PRI9-001-SS01-010614 FINES	PRI9	205-99-2	Benzo(b)fluoranthene	Soil Fines	Solid	N	R	4,8
PRI9-001-SS01-010614 FINES	PRI9	191-24-2	Benzo(g,h,i)perylene	Soil Fines	Solid	N	R	4,8
PRI9-001-SS01-010614 FINES	PRI9	207-08-9	Benzo(k)fluoranthene	Soil Fines	Solid	N	R	4,8
PRI9-001-SS01-010614 FINES	PRI9	218-01-9	Chrysene	Soil Fines	Solid	N	R	4,8
PRI9-001-SS01-010614 FINES	PRI9	53-70-3	Dibenzo(a,h)anthracene	Soil Fines	Solid	N	R	4,8
PRI9-001-SS01-010614 FINES	PRI9	206-44-0	Fluoranthene	Soil Fines	Solid	N	R	8
PRI9-001-SS01-010614 FINES	PRI9	193-39-5	Indeno(1,2,3-cd)pyrene	Soil Fines	Solid	N	R	4,8
PRI9-001-SS01-010614 FINES	PRI9	129-00-0	Pyrene	Soil Fines	Solid	N	R	8

Notes:
4 = The matrix spike/matrix spike duplicate recovery was outside of control limits.
8 = The surrogate recovery was outside of control limits.
Phase 1A samples, including locations within Inner Preliminary Remedial Investigation areas 1, 3, 5, and 6.
Rejected data for surface water samples will be discussed in the Surface Water Addendum that includes results from all Phase 1A samples,

Appendix A
Phase 1A RI Reconnaissance Sieving Results Technical Memoranda

Memorandum

Environmental Resources Management

7272 E. Indian School Road
Suite 100
Scottsdale, Arizona 85251
480-998-2401
480-998-2106 (fax)

To: Ken Wangerud, USEPA

From: Kevin Lundmark, ERM

Cc: David Gibby, US Magnesium
David Abranovic, ERM

Date: 7 November 2013

Subject: Phase 1A RI Reconnaissance Sieving Results for PRI Areas 15 and 16

INTRODUCTION

This Technical Memorandum has been prepared by Environmental Resources Management (ERM) to detail field collection activities, laboratory analysis, and to propose recommendations for Phase 1A soil sample analysis in Preliminary Remedial Investigation (PRI) areas 15 and 16 at the US Magnesium NPL Site (Site). Phase 1A Reconnaissance sampling and sieving procedures are described in the *Phase 1A RI Sample Analysis Plan* (SAP) Worksheet 11 and SAP modification form 14-C-2-7.

PHASE 1A RECONNAISSANCE SAMPLE COLLECTION

Initial reconnaissance and cultural resources surveying at PRI areas 15 and 16 were completed between 30 September and 2 October 2013. Approval from the Bureau of Land Management for ground disturbance on public lands was received 23 October 2013 and reconnaissance sample collection was performed 25 and 28 October 2013. Field sampling forms are provided in Attachment 1.

As described in the SAP, reconnaissance sample locations were selected by dividing each PRI into quadrants of approximately even size and then selecting two Phase 1A sample locations in each quadrant at random for a total of eight Phase 1A locations per PRI area. Reconnaissance samples were collected at between 10 and 20 meters from the selected Phase 1A sample locations. Reconnaissance soil samples were collected as 5-point composites using a flat bottom scoop to sample from 0 to 2 inches below ground surface, consistent with the sampling depths specified for PRI areas 15 and 16 in SAP Worksheet 14. Reconnaissance samples were field-sieved using a 0.25 inch sieve and material greater than 0.25 inches was discarded. The material passing the 0.25 inch sieve, referred to as the “bulk sample,” was collected and combined in a plastic bucket. The bulk sample was transferred to a one gallon Ziploc® bag for storage and delivery to the laboratory.

Bulk samples were submitted to the GeoStrata geotechnical laboratory in Bluffdale, Utah for sieve analysis. The percent of the bulk sample that passed through a 0.25 mm (No. 60) sieve, or F_{fine}, was determined by the Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates, ASTM C-136, modified to use a drying temperature of 80°C for 24 hours and until constant mass was achieved.

RESULTS

The results of the sieve analysis are summarized in Table 1 and laboratory reports are provided as Attachment 2.

Table 1. Sieve Analysis Results for Reconnaissance Samples from PRI Areas 15 and 16

PRI Area	Phase 1A Sample Location	Reconnaissance Sample ID	Reconnaissance Sample Northing*	Reconnaissance Sample Easting*	F_{fine} Percent finer than 0.25 mm
PRI 15	PRI15-002	SCR-PRI15-002	4534544	352457	30.9
	PRI15-003	SCR-PRI15-003	4533259	351162	88.1
	PRI15-004	SCR-PRI15-004	4533497	353998	60.8
	PRI15-007	SCR-PRI15-007-M	4530622	350875	97.7
	PRI15-009	SCR-PRI15-009	4529249	353813	92.6
	PRI15-010	SCR-PRI15-010	4528090	353737	94.9
	PRI15-012	SCR-PRI15-012	4525513	353750	97.3
	PRI15-014	SCR-PRI15-014	4524173	354994	98.6
PRI 16	PRI16-001	SCR-PRI16-001	4534492	347292	85.5
	PRI16-002	SCR-PRI16-002	4533250	348576	87.1
	PRI16-004	SCR-PRI16-004-M	4530809	348571	83.6
	PRI16-006	SCR-PRI16-006-M	4529504	349851	96
	PRI16-008	SCR-PRI16-008	4528115	351166	90
	PRI16-010	SCR-PRI16-010	4526797	349841	73.1
	PRI16-011	SCR-PRI16-011	4526765	352289	96
	PRI16-013	SCR-PRI16-013	4525584	351631	81.5

* Coordinates based on Universal Transverse Mercator (UTM) Zone 12N

Per the SAP, if F_{fine} is greater than 75 percent for at least six of the samples, no further investigations regarding potential differences in concentration as a function of particle size are needed for that PRI area. Six of eight samples from PRI 15 have a F_{fine} greater than 75 percent and seven of eight reconnaissance samples from PRI 16 have a F_{fine} greater than 75 percent. Based on these Phase 1A Reconnaissance sampling results, Phase 1A RI samples collected from PRI areas 15 and 16 will not be sieved for evaluation of bulk versus fines fractions.

ATTACHMENTS

Attachment 1	Sieve Sample Collection Field Forms
Attachment 2	Sieve Sample Laboratory Report

Attachment 1
Sieve Sample Collection Field Forms

Surface Solids Sampling Form

1. Site Information

SITE ID: SCR-PRI15-002
DATE: 10/28/13
Begin Sampling Time: 9:20
End Sampling Time: 9:25
ERM Samplers: KB, TH
EPA Oversight: —
Weather: Cloudy, 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~ 10 M, E. of PRI15-002

3. Location

Lat: 12T 0352457
Long: 4534544
GPS Accuracy: ±10
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method: Shovel
Sample Depth Interval: 0 - 2 inches bgs
Number of Grab Aliquots: 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, brown, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1 gal bag bag En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)
Field Dup Sample ID ____________
EPA Split Samples Y / N (circle)
Analyses ____________

Signature [signature] Date 10/28/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI15-003

DATE 10/25/13

Begin Sampling Time 15:00

End Sampling Time 15:10

ERM Samplers FB, TH

EPA Oversight —

Weather Clear, 60s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 M S of PRI15-003

3. Location

Lat 12T 0351162

Long 4633259

GPS Accuracy ±10

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

silty sand, brown, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) -1 gal bag En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ______ Analyses ______

Signature ______ Date 10/25/13

Surface Solids Sampling Form

1. Site Information

SITE ID SCR-PRI15-004

DATE 10/28/13

Begin Sampling Time 9:45

End Sampling Time 9:50

ERM Samplers FB

EPA Oversight ——

Weather Windy, 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 M S of PRI15-004

3. Location

Lat 12T 0353998

Long 4533497

GPS Accuracy ± 10

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Clayey sand, light brown, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1 gal bag En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ________

EPA Split Samples Y / N (circle)

Analyses ________

Signature [signature] Date 10/28/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCP-PRI15-007-M

DATE 10/28/13

Begin Sampling Time 10:54

End Sampling Time 11:00

ERM Samplers FB, TH

EPA Oversight —

Weather Windy 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~ 10 M. NW of PRI15-007-M

3. Location

Lat 12T 0350875

Long 4530622

GPS Accuracy ±10

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, brown, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) - 1 gal bag En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ____________

EPA Split Samples Y / N (circle)

Analyses ____________

Signature ____________ Date 10/28/13

1. Site Information

SITE ID SCR-PRI15-009
DATE 10/28/13
Begin Sampling Time 12:11
End Sampling Time 12:16
ERM Samplers KB, TH
EPA Oversight —
Weather Windy 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~ 10 M W of PRI15-009

3. Location

Lat 12T 0353813
Long 4529249
GPS Accuracy
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel
Sample Depth Interval 0-2 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

clayey Sand, brown, dry

Bottles Filled

__ 4-oz Glass (unpres) __ 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
__ 4-oz Glass (1/3 headspace) __ 40-mL VOA (Methanol) 1 gal bag En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)
Field Dup Sample ID ______
EPA Split Samples Y / N (circle)
Analyses ______

Signature [signature] Date 10/28/13

1. Site Information

SITE ID SCR-PRJ15-010
DATE 10/28/13
Begin Sampling Time 12:36
End Sampling Time 12:40
ERM Samplers KB, TH
EPA Oversight —
Weather Windy 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~15 m E of PRJ15-010

3. Location

Lat 12T 0393737
Long 4528090
GPS Accuracy ±10
Location Field Modified? Y N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method shovel
Sample Depth Interval 0-2 inches bgs
Number of Grab Aliquots 5
Saturated? Y N (circle)
Waste Potentially Present? Y N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, brown, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1 gal bag En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y N (circle) EPA Split Samples Y N (circle)
Field Dup Sample ID ________ Analyses ________

Signature ________ Date 10/28/13

Surface Solids Sampling Form

1. Site Information

SITE ID SCP-PRJ15-012

DATE 10/28/13

Begin Sampling Time 12:56

End Sampling Time 13:02

ERM Samplers KB, TH

EPA Oversight —

Weather Windy, 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 m E of PRJ15-012

3. Location

Lat 12T 0353750

Long 4525513

GPS Accuracy ±10

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, brown, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) - 1 gal bag En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ________________ Analyses ________________

Signature ________________ Date 10/28/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID: SUR-PRI15-014

DATE: 10/28/13

Begin Sampling Time: 10:29

End Sampling Time: 10:30

ERM Samplers: FB, TH

EPA Oversight: ______

Weather: Windy, 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 M S. of PRI15-014

3. Location

Lat: 12T 0354994

Long: 4524173

GPS Accuracy: ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method: Shovel

Sample Depth Interval: 0-2 inches bgs

Number of Grab Aliquots: 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1-gal bag En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 10/28/13

Surface Solids Sampling Form

1. Site Information

SITE ID: SCR-PRI16-001
DATE: 10/25/13
Begin Sampling Time: 9:00
End Sampling Time: 9:11
ERM Samplers: RB, TH
EPA Oversight: —
Weather: Clear, 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

≈ 20 M south of PRI16-001

3. Location

Lat: 121 0347292
Long: 4534492
GPS Accuracy: ± 10'
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method: Shovel
Sample Depth Interval: 0-2 inches bgs
Number of Grab Aliquots: 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

silty, sand, brown, dry

Bottles Filled

__ 4-oz Glass (unpres) __ 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
__ 4-oz Glass (1/3 headspace) __ 40-mL VOA (Methanol) 1 gal bag En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)
Field Dup Sample ID ________
EPA Split Samples Y / N (circle)
Analyses ________

Signature ________ Date 10/25/13

1. Site Information

SITE ID: SCR-PRS16-002
DATE: 10/25/13
Begin Sampling Time: 9:350
End Sampling Time: 9:45
ERM Samplers: KB, TH
EPA Oversight: —
Weather: Clear, 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 m south of PRS16-002

3. Location

Lat: 12T 0346576
Long: 4533250
GPS Accuracy: ±10
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method: Shovel
Sample Depth Interval: 0-2 inches bgs
Number of Grab Aliquots: 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, brown, dry

Bottles Filled

__ 4-oz Glass (unpres) __ 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
__ 4-oz Glass (1/3 headspace) __ 40-mL VOA (Methanol) 1-gal bag En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)
Field Dup Sample ID ________ Analyses ________

Signature [signature] Date 10/25/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI16-004-M

DATE 10/25/13

Begin Sampling Time 1028

End Sampling Time 1039

ERM Samplers KB, TH

EPA Oversight —

Weather Clear, 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~15 M NE of PRI16-004-M

3. Location

Lat 12T 0348571

Long 4530809

GPS Accuracy ± 10

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, brown, dry

Bottles Filled

__ 4-oz Glass (unpres) __ 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

__ 4-oz Glass (1/3 headspace) __ 40-mL VOA (Methanol) - 1 gal bag En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ____________

EPA Split Samples Y / N (circle)

Analyses ____________

Signature ____________ Date 10/25/13

Surface Solids Sampling Form

1. Site Information

SITE ID SCR-PRI16-006-M

DATE 10/25/13

Begin Sampling Time 10:40

End Sampling Time 10:45

ERM Samplers KB, TH

EPA Oversight —

Weather Clear, 60s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 M West of PRI16-006 M

3. Location

Lat 12 T 0349851

Long 4529504

GPS Accuracy ± 10

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, brown, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1-gal bag En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ______ Analyses ______

Signature ______ Date ______

1. Site Information

SITE ID SCR-PRI16-008

DATE 10/25/13

Begin Sampling Time 11:15

End Sampling Time 11:20

ERM Samplers KB, TH

EPA Oversight

Weather Clear, 60s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 M SE of PRI16-008

3. Location

Lat 12 T 0351166

Long 4520115

GPS Accuracy ±16

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

silty sand, brown, dry

Bottles Filled

__ 4-oz Glass (unpres) __ 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

__ 4-oz Glass (1/3 headspace) __ 40-mL VOA (Methanol) -1 gal bag En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ________ Analyses ________

Signature [signature] Date 10/25/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-BRI16-010

DATE 10/25/13

Begin Sampling Time 13:35

End Sampling Time 13:43

ERM Samplers FB, TH

EPA Oversight

Weather Clear, 60s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 M E of BRI16-010

3. Location

Lat 12T 0349841

Long 4526791

GPS Accuracy ±10

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method shovel

Sample Depth Interval 0-12 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

silty sand, brown, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1-gal bag En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 10/25/13

Surface Solids Sampling Form

1. Site Information

SITE ID SCR-PPI16-011

DATE 10/25/13

Begin Sampling Time 11:44

End Sampling Time 11:50

ERM Samplers FB, TH

EPA Oversight —

Weather Clear, 60s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 M N of PPI16-011

3. Location

Lat 12T 0352289

Long 4526765

GPS Accuracy ±10

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y N (circle)

Waste Potentially Present? Y N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

silty sand, brown, dry

Bottles Filled

__ 4-oz Glass (unpres) __ 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

__ 4-oz Glass (1/3 headspace) __ 40-mL VOA (Methanol) - 1 gal bag En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ____________

EPA Split Samples Y / N (circle)

Analyses ____________

Signature [signature] Date 10/25/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI16-013

DATE 10/25/13

Begin Sampling Time 12:15

End Sampling Time 12:20

ERM Samplers KB, TH

EPA Oversight —

Weather Clear, 60s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 M S of PRI16-013

3. Location

Lat 12T 0351631

Long 4525584

GPS Accuracy ±11

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, brown, dry

Bottles Filled

__ 4-oz Glass (unpres) __ 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

__ 4-oz Glass (1/3 headspace) __ 40-mL VOA (Methanol) -1 gal - bag En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)

Analyses ________________

Signature [signature] Date 10/25/13

Attachment 2
Sieve Sample Laboratory Report

GeoStrata

Sieve Analysis Summary

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)

Data Summary

Sieve Size	SCR-PRI15-002	SCR-PRI15-003	SCR-PRI15-004	SCR-PRI15-007-M	SCR-PRI15-009	SCR-PRI15-010	SCR-PRI15-012	SCR-PRI15-014	SCR-PRI16-001
	Passing (%)								
3/4"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1/2"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
#4	98.9	100.0	97.9	100.0	100.0	100.0	100.0	100.0	98.7
#10	89.7	98.9	84.2	99.9	99.7	98.6	99.3	99.9	95.8
#40	51.7	91.8	66.7	99.0	95.2	96.4	98.1	99.2	88.3
#50	36.1	89.7	63.0	98.5	93.5	95.6	97.7	98.9	86.6
#60	30.9	88.1	60.8	97.9	92.6	94.9	97.3	98.6	85.5

Sieve Size	SCR-PRI16-002	SCR-PRI16-004	SCR-PRI16-006	SCR-PRI16-008	SCR-PRI16-010	SCR-PRI16-011	SCR-PRI16-013	SCR-PRI18-004
	Passing (%)							
3/4"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1/2"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
#4	98.9	97.9	99.9	99.0	96.7	100.0	98.9	98.5
#10	95.7	91.9	99.7	95.7	88.1	99.7	93.1	93.5
#40	89.5	85.5	97.4	91.5	77.0	98.4	85.1	89.3
#50	88.0	84.3	96.6	90.7	74.8	97.2	83.0	88.2
#60	87.1	83.6	96.0	90.0	73.1	96.0	81.5	87.6

Procedures

In general, the procedures found in ASTM C136 were followed, with the exeption of the following:

1. The samples were dried at 80°C for 24 hours and until constant mass was achieved.

REGISTERED PROFESSIONAL ENGINEER
11/05/13
HIRAM ALBA
175774
STATE OF UTAH

Prepared By: ______ Reviewed By: ______

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI15-002

Lab # 8396
Date Sampled: 10/28/2013
Time Sampled: 9:20 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	6.8	1.10	1.1	98.9		
#10	56.9	9.20	10.3	89.7		
#40	234.7	37.96	48.3	51.7		
#50	96.9	15.67	63.9	36.1		
#60	31.8	5.14	69.1	30.9		
Total - #60	191.2	30.92	100.0	0.0		
Total	618.3	100.00				

Pan #: CA2

Wet Weight: 817.0
Dry Weight: 800.3
Weight of Water: 16.7
Pan Weight: 181.7
Water Content: 2.7%
Weight of Dry Soil 618.6

Dry Weight After Wash: 669.4
Weight -#200 Washed: 130.9
Weight -#60 Pan: 60.3

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI15-003

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 3:00 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	4.7	1.09	1.1	98.9		
#40	30.6	7.10	8.2	91.8		
#50	8.9	2.07	10.3	89.7		
#60	7.0	1.62	11.9	88.1		
Total - #60	379.6	88.12	100.0	0.0		
Total	430.8	100.00				

Pan #: P08

Wet Weight: 839.8
Dry Weight: 805.8
Weight of Water: 34.0
Pan Weight: 374.5
Water Content: 7.9%
Weight of Dry Soil 431.3

Dry Weight After Wash: 531.2
Weight -#200 Washed: 274.6
Weight -#60 Pan: 105.0

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI15-004

Lab # 8396
Date Sampled: 10/28/2013
Time Sampled: 9:45 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	8.2	2.07	2.1	97.9		
#10	54.5	13.73	15.8	84.2		
#40	69.6	17.53	33.3	66.7		
#50	14.7	3.70	37.0	63.0		
#60	8.6	2.17	39.2	60.8		
Total - #60	241.4	60.80	100.0	0.0		
Total	397.0	100.00				

Pan #: CA1

Wet Weight: 616.3
Dry Weight: 577.7
Weight of Water: 38.6
Pan Weight: 180.6
Water Content: 9.7%
Weight of Dry Soil 397.1

Dry Weight After Wash: 374.7
Weight -#200 Washed: 203.0
Weight -#60 Pan: 38.4

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI15-007-M

Lab # 8396
Date Sampled: 10/28/2013
Time Sampled: 10:54 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	0.5	0.12	0.1	99.9		
#40	3.8	0.89	1.0	99.0		
#50	2.3	0.54	1.5	98.5		
#60	2.2	0.51	2.1	97.9		
Total - #60	419.9	97.95	100.0	0.0		
Total	428.7	100.00				

Pan #: CA4

Wet Weight: 631.0
Dry Weight: 611.0
Weight of Water: 20.0
Pan Weight: 182.3
Water Content: 4.7%
Weight of Dry Soil 428.7

Dry Weight After Wash: 391.0
Weight -#200 Washed: 220.0
Weight -#60 Pan: 199.9

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI15-009

Lab # 8396
Date Sampled: 10/28/2013
Time Sampled: 12:11 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	1.4	0.30	0.3	99.7		
#40	20.9	4.53	4.8	95.2		
#50	7.7	1.67	6.5	93.5		
#60	4.2	0.91	7.4	92.6		
Total - #60	427.1	92.59	100.0	0.0		
Total	461.3	100.00				

Pan #: 808

Wet Weight: 873.7
Dry Weight: 836.4
Weight of Water: 37.3
Pan Weight: 374.6
Water Content: 8.1%
Weight of Dry Soil 461.8

Dry Weight After Wash: 437.8
Weight -#200 Washed: 398.6
Weight -#60 Pan: 28.5

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI15-010

Lab # 8396
Date Sampled: 10/28/2013
Time Sampled: 12:36 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	5.9	1.39	1.4	98.6		
#40	9.3	2.19	3.6	96.4		
#50	3.4	0.80	4.4	95.6		
#60	2.9	0.68	5.1	94.9		
Total - #60	403.4	94.94	100.0	0.0		
Total	424.9	100.00				

Pan #: BOW

Wet Weight: 820.7
Dry Weight: 802.1
Weight of Water: 18.6
Pan Weight: 377.0
Water Content: 4.4%
Weight of Dry Soil 425.1

Dry Weight After Wash: 571.6
Weight -#200 Washed: 230.5
Weight -#60 Pan: 172.9

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI15-012

Lab # 8396
Date Sampled: 10/28/2013
Time Sampled: 12:56 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	2.9	0.71	0.7	99.3		
#40	5.0	1.22	1.9	98.1		
#50	1.6	0.39	2.3	97.7		
#60	1.7	0.42	2.7	97.3		
Total - #60	398.1	97.26	100.0	0.0		
Total	409.3	100.00				

Pan #: B4

Wet Weight: 809.1
Dry Weight: 783.6
Weight of Water: 25.5
Pan Weight: 374.0
Water Content: 6.2%
Weight of Dry Soil 409.6

Dry Weight After Wash: 451.4
Weight -#200 Washed: 332.2
Weight -#60 Pan: 65.9

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI15-014

Lab # 8396
Date Sampled: 10/28/2013
Time Sampled: 10:25 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	0.3	0.07	0.1	99.9		
#40	3.6	0.77	0.8	99.2		
#50	1.4	0.30	1.1	98.9		
#60	1.1	0.25	1.4	98.6		
Total - #60	458.4	98.61	100.0	0.0		
Total	464.8	100.00				

Pan #: CA5

Wet Weight: 683.2
Dry Weight: 648.6
Weight of Water: 34.6
Pan Weight: 183.1
Water Content: 7.4%
Weight of Dry Soil 465.5

Dry Weight After Wash: 226.9
Weight -#200 Washed: 421.7
Weight -#60 Pan: 36.7

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI16-001

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 9:00 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	5.0	1.26	1.3	98.7		
#10	11.7	2.94	4.2	95.8		
#40	29.6	7.45	11.7	88.3		
#50	7.0	1.76	13.4	86.6		
#60	4.3	1.08	14.5	85.5		
Total - #60	339.7	85.50	100.0	0.0		
Total	397.3	100.00				

Pan #: B7

Wet Weight: 798.1
Dry Weight: 771.6
Weight of Water: 26.5
Pan Weight: 374.1
Water Content: 6.7%
Weight of Dry Soil 397.5

Dry Weight After Wash: 598.7
Weight -#200 Washed: 172.9
Weight -#60 Pan: 166.8

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI16-002

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 9:38 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	5.0	1.15	1.1	98.9		
#10	13.7	3.15	4.3	95.7		
#40	26.9	6.18	10.5	89.5		
#50	6.8	1.56	12.0	88.0		
#60	3.8	0.87	12.9	87.1		
Total - #60	378.9	87.08	100.0	0.0		
Total	435.1	100.00				

Pan #: X2

Wet Weight: 837.2
Dry Weight: 812.1
Weight of Water: 25.1
Pan Weight: 377.0
Water Content: 5.8%
Weight of Dry Soil 435.1

Dry Weight After Wash: 503.1
Weight -#200 Washed: 309.0
Weight -#60 Pan: 69.9

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI16-004

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 10:28 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	10.4	2.10	2.1	97.9		
#10	29.6	5.97	8.1	91.9		
#40	32.0	6.45	14.5	85.5		
#50	5.8	1.17	15.7	84.3		
#60	3.5	0.71	16.4	83.6		
Total - #60	414.8	83.61	100.0	0.0		
Total	496.1	100.00				

Pan #: 2-2

Wet Weight: 999.4
Dry Weight: 959.3
Weight of Water: 40.1
Pan Weight: 462.9
Water Content: 8.1%
Weight of Dry Soil 496.4

Dry Weight After Wash: 597.4
Weight -#200 Washed: 361.9
Weight -#60 Pan: 52.9

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI16-006

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 10:40 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.5	0.09	0.1	99.9		
#10	1.3	0.24	0.3	99.7		
#40	12.1	2.23	2.6	97.4		
#50	4.4	0.81	3.4	96.6		
#60	3.5	0.65	4.0	96.0		
Total - #60	519.7	95.97	100.0	0.0		
Total	541.5	100.00				

Pan #: BW

Wet Weight: 937.7
Dry Weight: 922.9
Weight of Water: 14.8
Pan Weight: 381.0
Water Content: 2.7%
Weight of Dry Soil 541.9

Dry Weight After Wash: 797.6
Weight -#200 Washed: 125.3
Weight -#60 Pan: 394.4

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI16-008

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 11:15 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	6.3	0.98	1.0	99.0		
#10	21.4	3.33	4.3	95.7		
#40	26.7	4.15	8.5	91.5		
#50	5.6	0.87	9.3	90.7		
#60	4.1	0.64	10.0	90.0		
Total - #60	579.3	90.04	100.0	0.0		
Total	643.4	100.00				

Pan #: B1

Wet Weight: 1066.2
Dry Weight: 1017.1
Weight of Water: 49.1
Pan Weight: 374.1
Water Content: 7.6%
Weight of Dry Soil 643.0

Dry Weight After Wash: 655.0
Weight -#200 Washed: 362.1
Weight -#60 Pan: 217.2

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI16-010

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 1:55 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	14.6	3.35	3.3	96.7		
#10	37.3	8.55	11.9	88.1		
#40	48.4	11.09	23.0	77.0		
#50	9.7	2.22	25.2	74.8		
#60	7.2	1.65	26.9	73.1		
Total - #60	319.2	73.14	100.0	0.0		
Total	436.4	100.00				

Pan #: B4

Wet Weight: 828.7
Dry Weight: 810.7
Weight of Water: 18.0
Pan Weight: 374.1
Water Content: 4.1%
Weight of Dry Soil 436.6

Dry Weight After Wash: 597.2
Weight -#200 Washed: 213.5
Weight -#60 Pan: 105.7

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI16-011

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 11:44 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.1	0.02	0.0	100.0		
#10	1.2	0.24	0.3	99.7		
#40	6.7	1.37	1.6	98.4		
#50	5.8	1.18	2.8	97.2		
#60	5.9	1.20	4.0	96.0		
Total - #60	470.4	95.98	100.0	0.0		
Total	490.1	100.00				

Pan #: BW

Wet Weight: 899.1
Dry Weight: 871.2
Weight of Water: 27.9
Pan Weight: 381.0
Water Content: 5.7%
Weight of Dry Soil 490.2

Dry Weight After Wash: 531.5
Weight -#200 Washed: 339.7
Weight -#60 Pan: 130.7

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI16-013

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 12:15 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	4.4	1.15	1.1	98.9		
#10	22.1	5.77	6.9	93.1		
#40	30.6	7.99	14.9	85.1		
#50	8.1	2.12	17.0	83.0		
#60	5.6	1.46	18.5	81.5		
Total - #60	312.0	81.50	100.0	0.0		
Total	382.8	100.00				

Pan #: H1

Wet Weight: 596.8
Dry Weight: 566.5
Weight of Water: 30.3
Pan Weight: 183.6
Water Content: 7.9%
Weight of Dry Soil 382.9

Dry Weight After Wash: 306.7
Weight -#200 Washed: 259.8
Weight -#60 Pan: 52.2

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI18-004

Lab # 8396
Date Sampled: 10/28/2013
Time Sampled: 11:30 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	7.7	1.50	1.5	98.5		
#10	25.7	4.99	6.5	93.5		
#40	21.9	4.25	10.7	89.3		
#50	5.2	1.01	11.8	88.2		
#60	3.4	0.66	12.4	87.6		
Total - #60	450.8	87.59	100.0	0.0		
Total	514.7	100.00				

Pan #: Z-3

Wet Weight: 1017.9
Dry Weight: 979.5
Weight of Water: 38.4
Pan Weight: 464.5
Water Content: 7.5%
Weight of Dry Soil 515.0

Dry Weight After Wash: 593.8
Weight -#200 Washed: 385.7
Weight -#60 Pan: 65.1

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

Memorandum

Environmental Resources Management

7272 E. Indian School Road
Suite 100
Scottsdale, Arizona 85251
480-998-2401
480-998-2106 (fax)

To: Ken Wangerud, USEPA

From: Kevin Lundmark, ERM

Cc: David Gibby, US Magnesium
David Abranovic, ERM

Date: 22 November 2013

Subject: Phase 1A RI Reconnaissance Sieving Results for PRI Areas 2, 8 – 10, and 12 – 14

INTRODUCTION

This Technical Memorandum has been prepared by Environmental Resources Management (ERM) to detail field collection activities, laboratory analysis, and to propose recommendations for Phase 1A soil sample analysis in Preliminary Remedial Investigation (PRI) areas 2, 8 – 10, and 12 – 14 at the US Magnesium NPL Site (Site). Phase 1A Reconnaissance sampling and sieving procedures are described in the *Phase 1A RI Sample Analysis Plan* (SAP) Worksheet 11 and SAP modification form 14-C-2-7.

PHASE 1A RECONNAISSANCE SAMPLE COLLECTION

Reconnaissance (Recon) sample collection was performed 23 September to 28 October 2013. Field sampling forms are provided in Attachment 1.

As described in the SAP, Recon sample locations were selected by dividing each PRI into quadrants of approximately even size and then selecting two Phase 1A sample locations in each quadrant at random for a total of eight Phase 1A locations per PRI area. Recon samples were collected at between 10 and 20 meters from the selected Phase 1A sample locations. Recon soil samples were collected as 5-point composites using a hand auger to sample from 0 to 6 inches below ground surface. Recon samples were field-sieved using a 0.25 inch sieve and material greater than 0.25 inches was discarded. The material passing the 0.25 inch sieve, referred to as the "bulk sample," was collected and combined in a plastic bucket. The bulk sample was transferred to a one gallon Ziploc® bag for storage and delivery to the laboratory.

Bulk samples were submitted to the GeoStrata geotechnical laboratory in Bluffdale, Utah for sieve analysis. The percent of the bulk sample that passed through a 0.25 mm (No. 60) sieve, or F_{fine}, was determined by the Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates, ASTM C-136, modified to use a drying temperature of 80°C for 24 hours and until constant mass was achieved.

RESULTS

The results of the sieve analysis are summarized in Table 1 and laboratory reports are provided as Attachment 2.

Table 1. Sieve Analysis Results for Reconnaissance Samples from PRI Areas 2, 8 – 10, and 12 – 14

PRI Area	Phase 1A Sample Location	Recon Sample ID	Recon Sample Northing*	Recon Sample Easting*	F_{fine} Percent finer than 0.25 mm	Rank Lowest F_{fine} to Highest F_{fine}	Phase 1A Sample Analyzed for Fines
PRI2	PRI2-009	SCR-PRI2-009	4531373	354457	38.2	1	Yes
	PRI2-001	SCR-PRI2-001	4531233	354182	38.4	2	Yes
	PRI2-012	SCR-PRI2-012	4531307	354496	40.4	3	Yes
	PRI2-011	SCR-PRI2-011	4531318	354548	45.9	4	Yes
	PRI2-008	SCR-PRI2-008	4531348	354438	46.8	5	Yes
	PRI2-003	SCR-PRI2-003	4531308	354248	54.7	6	--
	PRI2-004	SCR-PRI2-004	4531244	354302	55.7	7	--
	PRI2-006	SCR-PRI2-006	4531307	354365	71.2	8	--
PRI8	PRI8-012	SCR-PRI8-012	4533013	353980	19.7	1	Yes
	PRI8-007	SCR-PRI8-007	4533154	353813	35.3	2	Yes
	PRI8-016	SCR-PRI8-016	4532822	353813	73.4	3	Yes
	PRI8-014	SCR-PRI8-014	4532839	353488	79.1	4	Yes
	PRI8-006	SCR-PRI8-006	4533172	353495	82.1	5	Yes
	PRI8-013	SCR-PRI8-013	4532821	353154	84.1	6	--
	PRI8-004	SCR-PRI8-004	4533154	353144	87.6	7	--
	PRI8-008	SCR-PRI8-008	4533016	352973	91.7	8	--
PRI9	PRI9-004	SCR-PRI9-004	4531601	353415	48.2	1	Yes
	PRI9-002	SCR-PRI9-002	4531923	353666	52.8	2	Yes
	PRI9-013	SCR-PRI9-013	4531355	353930	67.8	3	Yes
	PRI9-001	SCR-PRI9-001	4531868	353427	68.1	4	Yes
	PRI9-010	SCR-PRI9-010	4531091	353684	76.3	5	Yes
	PRI9-008	SCR-PRI9-008	4531354	353691	82.8	6	--
	PRI9-011	SCR-PRI9-011	4530961	353534	88.9	7	--
	PRI9-007	SCR-PRI9-007	4531372	353419	91.6	8	--
PRI10	PRI10-012	SCR-PRI10-012	4532665	353375	63.6	1	Yes
	PRI10-006	SCR-PRI10-006	4532610	353208	69.5	2	Yes
	PRI10-008	SCR-PRI10-008	4532673	353272	71.5	3	Yes
	PRI10-007	SCR-PRI10-007	4532547	353266	81.7	4	Yes
	PRI10-009	SCR-PRI10-009	4532412	353327	82.6	5	Yes
	PRI10-010	SCR-PRI10-010	4532573	353357	83.9	6	--
	PRI10-003	SCR-PRI10-003	4532549	353140	86	7	--
	PRI10-004	SCR-PRI10-004	4532488	353182	95.8	8	--

PRI Area	Phase 1A Sample Location	Recon Sample ID	Recon Sample Northing*	Recon Sample Easting*	F_{fine} Percent finer than 0.25 mm	Rank Lowest F_{fine} to Highest F_{fine}	Phase 1A Sample Analyzed for Fines
PRI12	PRI12-009	SCR-PRI12-009	4530613	354744	57.6	1	Yes
	PRI12-013	SCR-PRI12-013	4530812	354949	65.6	2	Yes
	PRI12-005	SCR-PRI12-005	4530419	354349	74.2	3	Yes
	PRI12-008	SCR-PRI12-008	4530503	354614	85.8	4	Yes
	PRI12-011	SCR-PRI12-011	4530628	354537	89.4	5	Yes
	PRI12-001	SCR-PRI12-001	4530334	354078	94.2	6	--
	PRI12-002	SCR-PRI12-002	4530455	354163	94.2	7	--
	PRI12-012	SCR-PRI12-012	4530724	355029	96.9	8	--
PRI13	PRI13-013	SCR-PRI13-013	4532063	356698	39.2	1	Yes
	PRI13-009	SCR-PRI13-009	4532927	356717	39.8	2	Yes
	PRI13-001	SCR-PRI13-001	4533325	354948	53.8	3	Yes
	PRI13-006	SCR-PRI13-006	4533539	356059	54.8	4	Yes
	PRI13-008	SCR-PRI13-008	4533337	356698	59.3	5	Yes
	PRI13-014	SCR-PRI13-014	4531696	356744	60.7	6	--
	PRI13-007	SCR-PRI13-007	4533348	356291	70.5	7	--
	PRI13-002	SCR-PRI13-002	4533499	355183	93.3	8	--
PRI14	PRI14-009	SCR-PRI14-009	4530717	356209	14.4	1	Yes
	PRI14-006	SCR-PRI14-006	4530659	355765	47.7	2	Yes
	PRI14-003	SCR-PRI14-003	4530567	355354	65.6	3	Yes
	PRI14-013	SCR-PRI14-013	4530913	357051	83.5	4	Yes
	PRI14-010	SCR-PRI14-010	4530569	356442	84.9	5	Yes
	PRI14-012	SCR-PRI14-012	4530667	356912	85.4	6	--
	PRI14-002	SCR-PRI14-002	4530293	355168	86	7	--
	PRI14-007	SCR-PRI14-007	4530467	356050	94	8	--

* Coordinates based on Universal Transverse Mercator (UTM) Zone 12N

Per the SAP, if F_{fine} is greater than 75 percent for at least six of the samples, no further investigations regarding potential differences in concentration as a function of particle size are needed for that PRI area. Five or fewer samples from PRI Areas 2, 8 – 10, and 12 – 14 have a F_{fine} greater than 75 percent; therefore, five Phase 1A RI samples collected from each of these PRI areas will be sieved for evaluation of bulk versus fines fractions. The Phase 1A RI samples to be sieved and analyzed for fines are identified in Table 1. As described in SAP Worksheet 11 pursuant to SAP modification form 14-C-2-7, Phase 1A RI samples for fines analysis were selected by ranking the Phase 1A Recon samples from a PRI in order from lowest to highest F_{fine} and then selecting the Phase 1A RI samples associated with the five Phase 1A Recon samples with the lowest F_{fine} in each PRI.

ATTACHMENTS

Attachment 1	Sieve Sample Collection Field Forms
Attachment 2	Sieve Sample Laboratory Report

Attachment 1
Sieve Sample Collection Field Forms

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCP-PRI2-001

DATE 10/3/13

Begin Sampling Time 11:02

End Sampling Time 11:10

ERM Samplers KB, TH

EPA Oversight —

Weather Windy 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

10 m SE of PRI2-001

3. Location

Lat 12T 0354182

Long 4531233

GPS Accuracy ±10

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

REDDISH BROWN, SILTY SAND, FINE TO MEDIUM GRAIN, DRY

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1-gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ________________ Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information	2. Description / Location Notes
SITE ID SCR-PRI2-003	Description (Setting, Distance from Site Features):
DATE 10/3/13	12 m NE of
Begin Sampling Time 9:22	PRI2-003
End Sampling Time 9:28	
ERM Samplers FB, TH	
EPA Oversight —	
Weather Windy 40s	
3. Location	
Lat 12T 0354248	
Long 4531308	
GPS Accuracy ± 10	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe): Landfill - Silty Sand, red

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty Sand, red, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) -1 gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ________________ Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI2-004

DATE 10/3/13

Begin Sampling Time 10:49

End Sampling Time 10:55

ERM Samplers KB, TH

EPA Oversight —

Weather Windy. 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

10 m N of PRI2-004

3. Location

Lat 12T 0354302

Long 4531244

GPS Accuracy ±10

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe): Landfill, silty sand, red

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand w/ gravel, red, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) - 1 gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)

Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI2-006
DATE 10/3/13
Begin Sampling Time 9:04
End Sampling Time 9:10
ERM Samplers KB, TH
EPA Oversight —
Weather Windy, clds

2. Description / Location Notes

Description (Setting, Distance from Site Features):

10 m N of PRI2-006

3. Location

Lat 12T 0354365
Long 4531307
GPS Accuracy ±10
Location Field Modified? Y N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y N (circle)
Waste Potentially Present? Y N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, red, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y N (circle) EPA Split Samples Y N (circle)
Field Dup Sample ID ________________ Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI2-006

DATE 10/3/13

Begin Sampling Time 9:41

End Sampling Time 9:47

ERM Samplers TH, KB

EPA Oversight —

Weather Windy, 40s

3. Location

Lat 12T 0354438

Long 4531348

GPS Accuracy ±10

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

2. Description / Location Notes

Description (Setting, Distance from Site Features):

12 m SE of PRI2-008

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe): Landfill - silty sand w/ gravel, grey to brown, dry

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

silty sand w/ gravel, gray to brown, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1-gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)

Analyses ______________________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SUR-PRI2-009
DATE 10/3/13
Begin Sampling Time 9:56
End Sampling Time 10:02
ERM Samplers KB, TH
EPA Oversight —
Weather Windy 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

15 m SE of PRI2-009

3. Location

Lat 12T 0354457
Long 4531373
GPS Accuracy ±10
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe): Landfill silty sand w/ gravel, red to grey dry

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand w/ gravel, red to grey, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1-gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)
Field Dup Sample ID ________________
EPA Split Samples Y / N (circle)
Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI2-011

DATE 10/3/13

Begin Sampling Time 10:13

End Sampling Time 10:20

ERM Samplers KB, TH

EPA Oversight —

Weather Windy, 40

2. Description / Location Notes

Description (Setting, Distance from Site Features):

12 m E of PRI2-011

3. Location

Lat 12T 0354548

Long 4531318

GPS Accuracy ±10

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe): Landfill, sand w/ gravel, grey, dry

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Sand with gravel, grey, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) -1 gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)

Analyses ________________________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCP-PRI2-012
DATE 10/3/13
Begin Sampling Time 10:31
End Sampling Time 10:36
ERM Samplers KB, TH
EPA Oversight —
Weather Clear, windy, 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

10 m S. of PRI2-012

3. Location

Lat 12T 0354496
Long 4531307
GPS Accuracy ±10
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe): landfill, see description below

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

0-2" Sand & gravel. red, dry
2-6" ~~Sand~~ Gravel w/ sand, gray, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) -1- gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)
Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)
Analyses ________________________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI8-004

DATE 10/20/13

Begin Sampling Time 11:30

End Sampling Time 11:34

ERM Samplers FB, TH

EPA Oversight —

Weather Windy, 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 M S of PRI8-004

3. Location

Lat 12T 0353144

Long 4533154

GPS Accuracy ±10'

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Clayey Sand, brown, dry

Bottles Filled

___ 4-oz Glass (unpres)   ___ 8-oz Glass (unpres)   ___ En Core® (unpres)   En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace)   ___ 40-mL VOA (Methanol)   - 1 gal bag   En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)   EPA Split Samples Y / N (circle)

Field Dup Sample ID ____________   Analyses ____________

Signature ____________ Date 10/20/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI8-006
DATE 10/3/13
Begin Sampling Time 13:15
End Sampling Time 13:20
ERM Samplers KB, TJf
EPA Oversight —
Weather
Windy 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

15 m E of
-PRI8-006

3. Location

Lat 12T 0353495
Long 4533172
GPS Accuracy ± 16
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty Sand, brown moist

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) ~1 gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)
Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)
Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI8-007

DATE 10/3/13

Begin Sampling Time 14:54

End Sampling Time 14:59

ERM Samplers KR, TH

EPA Oversight —

Weather Windy 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

10 m S of PRI8-007

3. Location

Lat 127 0353813

Long 4533154

GPS Accuracy ±10

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty Sand, brown, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1-gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ________________ Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information	2. Description / Location Notes
SITE ID SLR-PRI8-008	Description (Setting, Distance from Site Features):
DATE 10/3/13	15 m N of
Begin Sampling Time 12:26	-PRI8-008
End Sampling Time 12:31	
ERM Samplers KB TH	
EPA Oversight —	
Weather Windy 50s	
3. Location	
Lat 12T 0352913	
Long 4533016	
GPS Accuracy ± 10	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

LIGHT GREY BROWN, SILT, DRY

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1 gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ________________ Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI8-012

DATE 10/3/13

Begin Sampling Time 15:16

End Sampling Time 15:20

ERM Samplers FB, TH

EPA Oversight —

Weather Windy 50s

3. Location

Lat 12T 0353980

Long 4533013

GPS Accuracy ±10

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

2. Description / Location Notes

Description (Setting, Distance from Site Features):

10 m NE of PRI8-012

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, brown, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ________________ Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI8-013
DATE 10/3/13
Begin Sampling Time 12:02
End Sampling Time 12:06
ERM Samplers KB, TH
EPA Oversight —
Weather Windy 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

10 m Soft

PRI8-013

3. Location

Lat 12T 0353154
Long 4532821
GPS Accuracy ±10
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

silty sand, brown, moist

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1 gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)
Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)
Analyses ________________________________

Surface Solids Sampling Form

ERM

1. Site Information	2. Description / Location Notes
SITE ID SCR-PRI8-014	Description (Setting, Distance from Site Features):
DATE 10/3/18	15 m E of PRI8-014
Begin Sampling Time 13:52	
End Sampling Time 14:00	
ERM Samplers TH, KB	
EPA Oversight —	
Weather Windy 50s	
3. Location	
Lat PLT 0353466	
Long 4532839	
GPS Accuracy ±10	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand w/ clay, brown, wet

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1- gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ______ Analyses ______

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI8-016
DATE 10/3/13
Begin Sampling Time 15:38
End Sampling Time 15:41
ERM Samplers TH, KB
EPA Oversight ——
Weather Windy. 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~15m S of PRI8-016

3. Location

Lat 0353813
Long 4532822
GPS Accuracy ±10
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

BROWN, SANDY SILT, FINE, DRY

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1 gal Bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)
Field Dup Sample ID ________ Analyses ________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI9-001
DATE 9/23/13
Begin Sampling Time 12:45
End Sampling Time 13:20
ERM Samplers K. Benson, G. Rigard
EPA Oversight —
Weather Clear, 60s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

12T 0353444
4531870
± 10 feet.

PRI9-001

3. Location

Lat 12T 0353427
Long 4531868
GPS Accuracy 10 feet
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger
Sample Depth Interval 0-6" inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness 5" ~~inches~~
Waste Depth ________ inches bgs
Waste Appearance (describe): Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, gray to dk. grey, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1-gal ziplock En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)
Field Dup Sample ID ______________

EPA Split Samples Y / N (circle)
Analyses ______________

Signature ______________ Date 9/23/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI9-002
DATE 9/23/13
Begin Sampling Time 13:40
End Sampling Time 14:10
ERM Samplers K. Bensen, G. Rigard
EPA Oversight —
Weather Clear, 70s

2. Description / Location Notes

Description (Setting, Distance from Site Features):
~10 m N of PRI9-002

3. Location

Lat 12T 0353666
Long 4531923
GPS Accuracy 10 feet
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger
Sample Depth Interval ~~6 feet~~ ~~inches bgs~~ 0-6"
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y N (circle)
Waste Thickness 6 ~~inches~~ feet
Waste Depth 6 ~~inches bgs~~ feet
Waste Appearance (describe):
Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, grey to dk. grey, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1-gal ziplock EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)
Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)
Analyses Sieve Analysis

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SUR-PRI9-004

DATE 9/23/13

Begin Sampling Time 15:20

End Sampling Time 15:40

ERM Samplers K.B., G.R.

EPA Oversight —

Weather Clear, 80s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 m NE of PRI9-004

3. Location

Lat 12T 0353415

Long 4531601

GPS Accuracy 10 feet

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

~~1-gal~~

Silty Sand, grey to black, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1-gal ziplock EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)

Analyses ________________

Surface Solids Sampling Form ERM

1. Site Information	**2. Description / Location Notes**
SITE ID SCP-PRI9-007	Description (Setting, Distance from Site Features):
DATE 9/13/13	~10 m N. of PRI9-007
Begin Sampling Time 14:50	
End Sampling Time 15:15	
ERM Samplers K. Benson, G. Rigord	
EPA Oversight —	
Weather Clear; 70s	
3. Location	
Lat 12T 0358419	
Long 4531372	
GPS Accuracy 10 feet.	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

~~Smut~~ brown, silty clay

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty, clay, grey to ~~black~~ brown, moist

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) ✓ 1-gal ziplock EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ____________ Analyses ____________

1. Site Information	2. Description / Location Notes
SITE ID SCP-PRI9-008	Description (Setting, Distance from Site Features):
DATE 9/24/13	~10 m NE of PRI9-008
Begin Sampling Time 8:50	
End Sampling Time 9:30	
ERM Samplers K. Bensen, T. Hancock	
EPA Oversight —	
Weather Clear, 60s	
3. Location	
Lat 12? 0353691	
Long 4531354	
GPS Accuracy 10 feet	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe): Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, grey to black, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) - 1-gal ziplock EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ________________ Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR PRI9-010

DATE 9/24/13

Begin Sampling Time 10:25

End Sampling Time 10:40

ERM Samplers K. Benson,

EPA Oversight —

Weather Cloudy 60s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 m NE of SCR-PRI9-010

3. Location

Lat 12T 0353684

Long 4531091

GPS Accuracy 10 feet

Location Field Modified? Y N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, gray to black, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) — 1-gal ziplock EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ________________

EPA Split Samples Y N (circle)

Analyses ________________________________

Surface Solids Sampling Form

1. Site Information

SITE ID SCR-PR19-011
DATE 9/24/13
Begin Sampling Time 9:45
End Sampling Time 10:00
ERM Samplers K. Benson, T. Horwoda
EPA Oversight –
Weather Clear, 60s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 m E of -PR19-011

3. Location

Lat 12T 0353534
Long 4530961
GPS Accuracy 10 feet
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):
Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, gray to black, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) ✓ 1-gal ziplock EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)
Field Dup Sample ID ________________
EPA Split Samples Y / N (circle)
Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information	2. Description / Location Notes
SITE ID SCR-PRI9-013 DATE 9/24/13 Begin Sampling Time 10:55 End Sampling Time 11:10 ERM Samplers K. Benson, T. Hamada EPA Oversight ________ Weather Clear, 60s	Description (Setting, Distance from Site Features): ~10 m N of PRI9-013
3. Location Lat 12T 0353936 Long 4531355 GPS Accuracy 10 feet Location Field Modified? Y N (circle) *If Yes, explain in Notes*	
4. Field Preservation / Field Measurements Sample Collection Method Hand Auger Sample Depth Interval 0-6 inches bgs Number of Grab Aliquots 5 Saturated? Y N (circle) Waste Potentially Present? Y N (circle) Waste Thickness 12+ inches Waste Depth ________ inches bgs Waste Appearance (describe): smut	Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, grey to black, dry

Bottles Filled

___ 4-oz Glass (unpres)	___ 8-oz Glass (unpres)	___ EnCore (unpres)	EnCore Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace)	___ 40-mL VOA (Methanol)	1 gal. zip lock	EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) — EPA Split Samples Y / N (circle)

Field Dup Sample ID ________ — Analyses ________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI10-003

DATE 9/24/13

Begin Sampling Time 13:15

End Sampling Time 13:30

ERM Samplers KB TH

EPA Oversight —

Weather Windy 70s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 m NE of PRI10-003

3. Location

Lat 12T 0353840

Long 4532549

GPS Accuracy 10 feet

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand, brown, moist

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) ~ 1-gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)

Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCP-PRI10-004
DATE 9/24/13
Begin Sampling Time 12:55
End Sampling Time 1340
ERM Samplers K.B. T.H.
EPA Oversight —
Weather Windy 70s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 m N of PRI10-004

3. Location

Lat 12T 0353182
Long 4532488
GPS Accuracy 10 feet
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty Clay, brown

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) -1 gal ziplock EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)
Field Dup Sample ID ________ Analyses ________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI10-006

DATE 9/24/13

Begin Sampling Time 13:50

End Sampling Time 14:10

ERM Samplers KB TH

EPA Oversight

Weather Windy 70s

3. Location

Lat 4503632.06

Long 4532610

GPS Accuracy 10 feet

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 m NE of PRI10-006

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty Clay - light brown

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1-gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)

Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI10-007

DATE 9/25/13

Begin Sampling Time 9:10

End Sampling Time 9:20

ERM Samplers KB TH

EPA Oversight —

Weather Cloudy 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 m NE of PRI10-007

3. Location

Lat 12T 0353266

Long 4532547

GPS Accuracy 10'

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty Clay, brown, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) - 1 ziploc bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)

Analyses ________________________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI10-008
DATE 9/24/13
Begin Sampling Time 14:30
End Sampling Time 14:40
ERM Samplers KB TH
EPA Oversight —
Weather Windy, 70s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 m NE of PRI10-008

3. Location

Lat 121 0353272
Long 4532673
GPS Accuracy 10 feet
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty Clay, brown, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) ✓ 1-Gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)
Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)
Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI10-009

DATE 9/25/13

Begin Sampling Time 9:30

End Sampling Time 940

ERM Samplers KB TH

EPA Oversight —

Weather Cloudy, windy 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 E of PRI10-009

3. Location

Lat 12T 0353327

Long 4532612

GPS Accuracy 10'

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty clay, brown, dry

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1 - gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ______ Analyses ______

Surface Solids Sampling Form

ERM

1. Site Information	**2. Description / Location Notes**
SITE ID SCR-PRI10-016	Description (Setting, Distance from Site Features):
DATE 10/3/13	~10 m W of
Begin Sampling Time 11:34	modified PRI10-010
End Sampling Time 11:41	
ERM Samplers KB, TH	
EPA Oversight —	
Weather Windy, 50s	
3. Location	
Lat 12T 0353357	
Long 4532513	
GPS Accuracy ±10	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silt, brown, moist

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) - 1 gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ________________ Analyses ________________

Surface Solids Sampling Form

1. Site Information

SITE ID SCR-PRI10-012

DATE 9/24/13

Begin Sampling Time 14:45

End Sampling Time 14:55

ERM Samplers KB TH

EPA Oversight —

Weather Windy 70s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~15 m NE of

PRI10-012

3. Location

Lat T12 0353375

Long 4534265

GPS Accuracy 10 feet

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

N

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

N

Waste Potentially Present? Y / N (circle)

N

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty Clay, brown, moist

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1-gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

N

EPA Split Samples Y / N (circle)

N

Field Dup Sample ID ________________

Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information		**2. Description / Location Notes**
SITE ID	SCR-PR112-001	Description (Setting, Distance from Site Features):
DATE	26 Sept 2013	~12 m NE from PR112-001
Begin Sampling Time	1145	
End Sampling Time	1155	
ERM Samplers	Lundmark, Hamada	
EPA Oversight	No	
Weather	Light Rain, 50s	
3. Location		
Lat	0354078	
Long	4530334	
GPS Accuracy	10 ft	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*		

4. Field Preservation / Field Measurements

Sample Collection Method Auger

Sample Depth Interval 0 – 6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, lt gray, dry

Bottles Filled — 1 x 1-gal Bag

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ________________ Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI12-002

DATE 9/26/13

Begin Sampling Time 1130

End Sampling Time 1134

ERM Samplers HAMADA, LUNDMARK

EPA Oversight NO

Weather 60's; OVERCAST, SPRINKLING RAIN

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~15 m SW FROM PRI12-002

3. Location

Lat 354172

Long 4530588

GPS Accuracy 10 ft

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HAND AUGER

Sample Depth Interval 0 - 6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, Sandy, LIGHT BROWN, DRY TO SLIGHTLY MOIST, ROOTS

Bottles Filled – 1 × 1 GAL. BAG

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ________________ Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information	2. Description / Location Notes
SITE ID: SCR-PR112-005	Description (Setting, Distance from Site Features):
DATE: 26-Sept 2013	~15 m SW of PR112-005
Begin Sampling Time: 1225	
End Sampling Time: 1230	
ERM Samplers: Lundmark, Hernandez	
EPA Oversight: NO	
Weather: Cloudy, 50's, Breezy	

3. Location

Lat: 0354349

Long: 4530419

GPS Accuracy: ± 10 ft

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method: Auger

Sample Depth Interval: 0 - 6 inches bgs

Number of Grab Aliquots: 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey w/ sand, lt gray, dry

Bottles Filled: 1 ✗ 1-gal bag

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)

Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PR112-008
DATE 26-Sept-2013
Begin Sampling Time 1240
End Sampling Time 1245
ERM Samplers Lundmark/Hamada
EPA Oversight No
Weather Lt Rain, 50s, Breezy

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~20 m W of PR112-008

3. Location

Lat 354614
Long 4530503
GPS Accuracy ± 10 ft
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Auger
Sample Depth Interval 0 - 6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey w/trace sand, lt. brown, dry

Bottles Filled 1 x 1-gal Bag

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)
Field Dup Sample ID ________________
EPA Split Samples Y / N (circle)
Analyses ________________

Surface Solids Sampling Form ERM

1. Site Information

SITE ID SCR-PR112-009

DATE 26-Sept 2013

Begin Sampling Time 1345

End Sampling Time 1355

ERM Samplers Lindmark

EPA Oversight No

Weather Cloudy, 50's

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 m E of PR112-009

3. Location

Lat 0354744

Long 4530613

GPS Accuracy ± 10 ft

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Auger

Sample Depth Interval 0 – 6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness <1 inches

Waste Depth 5 – 6 inches bgs at 1 of 5 auger locations

Waste Appearance (describe):

Red salt, similar to salt piles in vicinity

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, silty w/clay, brown, slightly moist

Bottles Filled 1 x 1-gal Bag

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ________ Analyses ________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PR12-011

DATE 26-Sept-2013

Begin Sampling Time ______

End Sampling Time ______

ERM Samplers Lundquist/Haunda

EPA Oversight N

Weather Cloudy, 50's

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~15m E of PR12-011 in SALT PILE

3. Location

Lat 0354537

Long 4530628

GPS Accuracy ± 10 ft.

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Auger

Sample Depth Interval 0 - 6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness 6 inches

Waste Depth 0 - 6 inches bgs

Waste Appearance (describe): Red salt

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

FINE SAND, silty w/some coarse sand/gravel, reddish brown, slightly moist

Bottles Filled

1 x 1 gal bag

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

EPA Split Samples Y / N (circle)

Field Dup Sample ID ______

Analyses ______

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PR112-012
DATE 26-Sept 2013
Begin Sampling Time 1315
End Sampling Time 1320
ERM Samplers Lundwerk
EPA Oversight no
Weather cloudy, 50's

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~20 m S of PR112-012

3. Location

Lat 6355029
Long 4530724
GPS Accuracy ± 10 ft
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Auger
Sample Depth Interval 0 - 6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, lt. brown, dry

Bottles Filled 1 x 1-gal bag

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)
Field Dup Sample ID ______

EPA Split Samples Y / N (circle)
Analyses ______

Surface Solids Sampling Form ERM

1. Site Information

SITE ID SCR-PR112-013
DATE 26-Sept-2013
Begin Sampling Time 1305
End Sampling Time 1310
ERM Samplers Lundmark
EPA Oversight No
Weather Cloudy, 60's

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~20 m S of PR112-013

3. Location

Lat 10354949
Long 4530812
GPS Accuracy ± 10 ft
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Auger
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey w/tr. sand, lt. gray, dry

Bottles Filled 1x 1-gal bags

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)
Field Dup Sample ID ________ Analyses ________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCP-PRI13-001
DATE 10/4/13
Begin Sampling Time 9:56
End Sampling Time 10:08
ERM Samplers KB, TH
EPA Oversight —
Weather Windy 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~15 m NE of -PRI13-001

3. Location

Lat 127 0354948
Long 4533325
GPS Accuracy ±10
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab/Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty clay with some gravel, brown, moist

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1-gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ______ Analyses ______

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI13-002
DATE 10/1/13
Begin Sampling Time 10:21
End Sampling Time 10:30
ERM Samplers KB, TH
EPA Oversight —
Weather Windy 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~15 m SE of PRI13-002

3. Location

Lat 12T 0355183
Long 4533499
GPS Accuracy ±10
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

GREY BROWN, SILTY CLAY, TRACE FINE SAND, MOIST

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) - gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)
Field Dup Sample ID ________________
EPA Split Samples Y / N (circle)
Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCP- SMPRI13-006
DATE 10/4/13
Begin Sampling Time 1106
End Sampling Time 1146
ERM Samplers KB TH
EPA Oversight —
Weather

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~15 m E of PRI13-006

3. Location

Lat 12T 0356059
Long 4533539
GPS Accuracy ±10
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Clayey Sand, brown, moist

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) - 1 gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)
Field Dup Sample ID ________________ Analyses ________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR- PRI13-007

DATE 10-4-13

Begin Sampling Time 12T 0356291

End Sampling Time 4533348

ERM Samplers KR, TH

EPA Oversight

Weather Windy 40s

3. Location

Lat 11:22

Long 11:33

GPS Accuracy ± 10

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~15 m SE of PRI13-007

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Sand & Clay, gray to brown, moist

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) - 1 gal. bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ______________

EPA Split Samples Y / N (circle)

Analyses ______________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI13-008
DATE 10-4-13
Begin Sampling Time 13:08
End Sampling Time 13:15
ERM Samplers KB, TH
EPA Oversight —
Weather Windy, 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~15 m S. of PRI13-008

3. Location

Lat 12T 0356698
Long 4533337
GPS Accuracy ± 10
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty Sand, brown, moist

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1 gal. bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)
Field Dup Sample ID ______ Analyses ______

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI13-009

DATE 10-4-13

Begin Sampling Time 12T 0356717

End Sampling Time 4532927

ERM Samplers KB TH

EPA Oversight —

Weather Windy 50s

3. Location

Lat 13:27

Long 13:34

GPS Accuracy ±10

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~15 m Soft

SCR-PRI13-009

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Sand w/ Clay, moist

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1-gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Surface Solids Sampling Form ERM

1. Site Information		**2. Description / Location Notes**
SITE ID	SCR-PRI13-013	Description (Setting, Distance from Site Features):
DATE	6/4/13	20 m S of PRI13-013
Begin Sampling Time	1300	
End Sampling Time	1332	
ERM Samplers	KWC / BGS	
EPA Oversight	PWT - A. Baird	
Weather	Cloudy, 50s	
3. Location		
Lat	4532063.36 N	
Long	356697.54 E	
GPS Accuracy	PDOP 1.53 ± 21 in	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*		

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0 - 6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, trace clay and silt, lt. grayish brown, moist (oolitic sand)

Bottles Filled 1 x 1 gal bag

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ______________ Analyses ______________

Signature [signature] Date 6/4/13

Surface Solids Sampling Form

ERM

1. Site Information		2. Description / Location Notes
SITE ID	SCR-PRI13-014	Description (Setting, Distance from Site Features):
DATE	10/4/13	~20 m S of PRI13-014
Begin Sampling Time	1345	
End Sampling Time	1405	
ERM Samplers	KWL/BGS	
EPA Oversight	RWT- A. Baird	
Weather	Cloudy, 50s	

3. Location

Lat N 4531696.36

Long E 356744.32

GPS Accuracy PDOP 1.56 I19 m

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0 - 6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, silty w/trace fine sand, gray, damp

Bottles Filled 1x 1-gal Bag

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ________________ Analyses ________________

Signature [signature] Date 10/4/13

Surface Solids Sampling Form

ERM

1. Site Information		**2. Description / Location Notes**
SITE ID	SCR-PR14-002	Description (Setting, Distance from Site Features): ~20 m SE of PR14-002
DATE	10/4/2013	
Begin Sampling Time	1010	
End Sampling Time	1035	
ERM Samplers	Lundmark, Smith	
EPA Oversight	PWT-A. Baird	
Weather	Mostly Cloudy, 40's Breezy	
3. Location		
Lat	4530295	
Long	355168 ± 23 in	
GPS Accuracy	PDOP 1.84	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*		

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y N (circle)

Waste Potentially Present? Y N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Did not sieve in field thru 1/4 sieve - too sticky

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey w/ trace oolitic sand, gray, moist

Bottles Filled 1x 1 gal Bag

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y N (circle) EPA Split Samples Y N (circle)

Field Dup Sample ID ____________ Analyses ____________

Signature ____________ Date 10/4/13

Surface Solids Sampling Form

1. Site Information

SITE ID: SCR-PR114-003 KWL
DATE: 10/4/13
Begin Sampling Time: 1115
End Sampling Time: 1135
ERM Samplers: KWL, BGS
EPA Oversight: PWT-A. Baird
Weather: cloudy, 40's Breezy

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~12 ENE PR114-003

3. Location

Lat: 4530566.64
Long: 355354.11
GPS Accuracy: PDOP 2.13 I 21 in
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method: HA
Sample Depth Interval: 0-6 inches bgs
Number of Grab Aliquots: 5
Saturated? Y / N (circle) Y
Waste Potentially Present? Y / N (circle) N
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Poor recovery @ 1 grab, repeated @ alt location to obtain 5 full grabs

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, dk gray, wet, anoxic odor, some salt crust. Lake Mud

Bottles Filled: 1 x 1 gal Bag

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) N
Field Dup Sample ID ________________

EPA Split Samples Y / N (circle) N
Analyses ________________

Signature [signature] Date 10/4/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI14-006

DATE 9/27/13

Begin Sampling Time 13:36

End Sampling Time 13:40

ERM Samplers KB TH

EPA Oversight —

Weather Windy 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 m E of PRI14-006

3. Location

Lat 127.0355765

Long 4530059

GPS Accuracy 10'

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y N (circle)

Waste Potentially Present? Y N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silt, sand w/ clay black to gray

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) - 1gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)

Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)

Analyses ________________________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRS14-007
DATE 9/27/13
Begin Sampling Time 12:40
End Sampling Time 13:05
ERM Samplers KB TH
EPA Oversight —
Weather Windy 60s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 m W of PRS14-007

3. Location

Lat N 0356050
Long 4530467
GPS Accuracy ± 10
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silt, Clay, gray to black

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1-gal bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)
Field Dup Sample ID ________ Analyses ________

Surface Solids Sampling Form

ERM

1. Site Information	***2. Description / Location Notes***
SITE ID SCR-PRI14-009	Description (Setting, Distance from Site Features):
DATE 9/27/13	~10 m N of PRI14-009
Begin Sampling Time 11:20	
End Sampling Time 11:35	
ERM Samplers FB, TH	
EPA Oversight —	
Weather Windy 40	
3. Location	
Lat 12T 0356209	
Long 4630717	
GPS Accuracy 10'	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand with pebbles, brown

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) 1-gal. bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ________________ Analyses ________________________________

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID SCR-PRI14-10
DATE 9/27/13
Begin Sampling Time 10:55
End Sampling Time 11:10
ERM Samplers KB TH
EPA Oversight —
Weather Windy 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~10 m W of PRI14-010

3. Location

Lat 12T 0356442
Long 4530569
GPS Accuracy 10'
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ____ inches
Waste Depth ____ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Sand & Clay, gray

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) -1 gal. bag EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle)
Field Dup Sample ID ____________
EPA Split Samples Y / N (circle)
Analyses ____________

Surface Solids Sampling Form

ERM

1. Site Information		2. Description / Location Notes
SITE ID	SCR-PR114-012	Description (Setting, Distance from Site Features):
DATE	26 Sept 2013	~13 m NE of PR114-012
Begin Sampling Time	1500	
End Sampling Time	1510	
ERM Samplers	Cundmark/Hamada	
EPA Oversight	NO	
Weather	Light Rain, Breezy, 40s	
3. Location		
Lat	0356912	
Long	4530667	
GPS Accuracy	±10 ft	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*		

4. Field Preservation / Field Measurements

Sample Collection Method Auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey w/sand, v. moist, lt. brown

Bottles Filled 1 x 1-gal bag

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ______ Analyses ______

Surface Solids Sampling Form

ERM

1. Site Information	2. Description / Location Notes
SITE ID: SCP-PR14-013	Description (Setting, Distance from Site Features):
DATE: 26 Sept 2013	~15 m SE of PR14-013
Begin Sampling Time: 1440	
End Sampling Time: 1445	
ERM Samplers: Lundmark/Hamada	
EPA Oversight: No	
Weather: Cloudy, 50s, Breezy	
3. Location	
Lat: 0357051	
Long: 4570913	
GPS Accuracy: ± 10 ft	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method: Auger

Sample Depth Interval: 0 – 6 inches bgs

Number of Grab Aliquots: 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Water flowed into 1 of 5 borings

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey with sand, dark grey, wet, anoxic odor (Lake Mud)

Bottles Filled: 1 x 1-gal bag

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 40-mL VOA (Methanol) EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Sample ID ________________ Analyses ________________

Attachment 2
Sieve Sample Laboratory Report

GeoStrata

Sieve Analysis Summary

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)

Data Summary

Sieve Size	SCR-PRI12-001	SCR-PRI12-002	SCR-PRI12-005	SCR-PRI12-008	SCR-PRI12-009	SCR-PRI12-012	SCR-PRI14-007	SCR-PRI14-009	SCR-PRI14-010
	Passing (%)								
3/4"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1/2"	100.0	100.0	100.0	99.3	100.0	100.0	100.0	100.0	99.5
#4	100.0	100.0	99.7	95.2	96.5	100.0	100.0	97.8	99.3
#10	99.6	99.5	96.4	88.8	84.5	99.7	99.9	89.1	98.5
#40	97.2	95.6	76.6	87.5	63.5	98.0	96.1	32.3	92.9
#50	96.3	95.1	74.9	86.7	59.3	97.6	94.9	16.1	88.2
#60	94.2	94.2	74.2	85.8	57.6	96.9	94.0	14.4	84.9

Procedures

In general, the procedures found in ASTM C136 were followed, with the exception of the following:

1. The samples were dried at 80°C for 24 hours and until constant mass was achieved.

REGISTERED PROFESSIONAL ENGINEER
10/3/13
HIRAM
ALBA
175774
STATE OF UTAH

Prepared By: _______________ Reviewed By: _______________

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI12-001

Lab # 8312
Date Sampled: 9/26/2013
Time Sampled: 11:50 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	1.5	0.35	0.4	99.6		
#40	10.6	2.48	2.8	97.2		
#50	3.6	0.84	3.7	96.3		
#60	9.2	2.16	5.8	94.2		
Total - #60	401.7	94.16	100.0	0.0		
Total	426.6	100.00				

Pan #: B7

Wet Weight: 817.1
Dry Weight: 800.3
Weight of Water: 16.8
Pan Weight: 374.1
Water Content: 3.9%
Weight of Dry Soil 426.2

Dry Weight After Wash: 699.1
Weight -#200 Washed: 101.2
Weight -#60 Pan: 300.5

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI12-002

Lab # 8312
Date Sampled: 9/26/2013
Time Sampled: 11:25 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	2.1	0.53	0.5	99.5		
#40	15.3	3.87	4.4	95.6		
#50	2.1	0.53	4.9	95.1		
#60	3.6	0.91	5.8	94.2		
Total - #60	372.7	94.16	100.0	0.0		
Total	395.8	100.00				

Pan #: X2

Wet Weight: 803.4
Dry Weight: 773.8
Weight of Water: 29.6
Pan Weight: 377.9
Water Content: 7.5%
Weight of Dry Soil 395.9

Dry Weight After Wash: 598.4
Weight -#200 Washed: 175.4
Weight -#60 Pan: 197.3

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI12-005

Lab # 8312
Date Sampled: 9/26/2013
Time Sampled: 12:25 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	1.1	0.26	0.3	99.7		
#10	14.0	3.36	3.6	96.4		
#40	82.4	19.80	23.4	76.6		
#50	6.8	1.63	25.1	74.9		
#60	2.9	0.70	25.8	74.2		
Total - #60	308.9	74.24	100.0	0.0		
Total	416.1	100.00				

Pan #: B9

Wet Weight: 812.8
Dry Weight: 791.0
Weight of Water: 21.8
Pan Weight: 374.4
Water Content: 5.2%
Weight of Dry Soil 416.6

Dry Weight After Wash: 625.9
Weight -#200 Washed: 165.1
Weight -#60 Pan: 143.8

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI12-008

Lab # 8312
Date Sampled: 9/26/2013
Time Sampled: 12:45 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	2.9	0.71	0.7	99.3		
#4	16.6	4.04	4.8	95.2		
#10	26.6	6.48	11.2	88.8		
#40	5.1	1.24	12.5	87.5		
#50	3.5	0.85	13.3	86.7		
#60	3.6	0.88	14.2	85.8		
Total - #60	352.2	85.80	100.0	0.0		
Total	410.5	100.00				

Pan #: 808

Wet Weight: 814.3
Dry Weight: 784.7
Weight of Water: 29.6
Pan Weight: 374.4
Water Content: 7.2%
Weight of Dry Soil 410.3

Dry Weight After Wash: 504.1
Weight -#200 Washed: 280.6
Weight -#60 Pan: 71.6

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI12-009

Lab # 8312
Date Sampled: 9/26/2013
Time Sampled: 1:35 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	13.8	3.54	3.5	96.5		
#10	46.6	11.97	15.5	84.5		
#40	81.9	21.03	36.5	63.5		
#50	16.0	4.11	40.7	59.3		
#60	6.9	1.77	42.4	57.6		
Total - #60	224.2	57.57	100.0	0.0		
Total	389.4	100.00				

Pan #: ZOO

Wet Weight: 807.5
Dry Weight: 765.9
Weight of Water: 41.6
Pan Weight: 376.2
Water Content: 10.7%
Weight of Dry Soil 389.7

Dry Weight After Wash: 617.7
Weight -#200 Washed: 148.2
Weight -#60 Pan: 76.0

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI12-012

Lab # 8312
Date Sampled: 9/26/2013
Time Sampled: 1:20 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.1	0.02	0.0	100.0		
#10	1.0	0.25	0.3	99.7		
#40	6.8	1.70	2.0	98.0		
#50	1.8	0.45	2.4	97.6		
#60	2.9	0.72	3.1	96.9		
Total - #60	388.5	96.86	100.0	0.0		
Total	401.1	100.00				

Pan #: X2

Wet Weight: 809.0
Dry Weight: 778.2
Weight of Water: 30.8
Pan Weight: 377.0
Water Content: 7.7%
Weight of Dry Soil 401.2

Dry Weight After Wash: 593.0
Weight -#200 Washed: 185.2
Weight -#60 Pan: 203.3

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI14-007

Lab # 8312
Date Sampled: 9/27/2013
Time Sampled: 12:40 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	0.3	0.09	0.1	99.9		
#40	12.2	3.82	3.9	96.1		
#50	3.9	1.22	5.1	94.9		
#60	2.8	0.88	6.0	94.0		
Total - #60	300.3	93.99	100.0	0.0		
Total	319.5	100.00				

Pan #: BOW

Wet Weight: 820.4
Dry Weight: 696.6
Weight of Water: 123.8
Pan Weight: 377.1
Water Content: 38.7%
Weight of Dry Soil 319.5

Dry Weight After Wash: 423.5
Weight -#200 Washed: 273.1
Weight -#60 Pan: 27.2

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI14-009

Lab # 8312
Date Sampled: 9/27/2013
Time Sampled: 11:20 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	10.6	2.19	2.2	97.8		
#10	42.2	8.71	10.9	89.1		
#40	275.1	56.79	67.7	32.3		
#50	78.4	16.19	83.9	16.1		
#60	8.4	1.73	85.6	14.4		
Total - #60	69.7	14.39	100.0	0.0		
Total	484.4	100.00				

Pan #: C30

Wet Weight: 812.2
Dry Weight: 790.1
Weight of Water: 22.1
Pan Weight: 305.3
Water Content: 4.6%
Weight of Dry Soil 484.8

Dry Weight After Wash: 762.1
Weight -#200 Washed: 28.0
Weight -#60 Pan: 41.7

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI14-010

Lab # 8312
Date Sampled: 9/27/2013
Time Sampled: 10:55 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	1.7	0.55	0.5	99.5		
#4	0.6	0.19	0.7	99.3		
#10	2.3	0.74	1.5	98.5		
#40	17.6	5.65	7.1	92.9		
#50	14.4	4.63	11.8	88.2		
#60	10.4	3.34	15.1	84.9		
Total - #60	264.3	84.90	100.0	0.0		
Total	311.3	100.00				

Pan #: B4

Wet Weight: 783.6
Dry Weight: 685.8
Weight of Water: 97.8
Pan Weight: 374.1
Water Content: 31.4%
Weight of Dry Soil 311.7

Dry Weight After Wash: 494.8
Weight -#200 Washed: 191.0
Weight -#60 Pan: 73.3

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis Summary

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)

Data Summary

Sieve Size	SCR-PRI15-002	SCR-PRI15-003	SCR-PRI15-004	SCR-PRI15-007-M	SCR-PRI15-009	SCR-PRI15-010	SCR-PRI15-012	SCR-PRI15-014	SCR-PRI16-001
	Passing (%)								
3/4"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1/2"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
#4	98.9	100.0	97.9	100.0	100.0	100.0	100.0	100.0	98.7
#10	89.7	98.9	84.2	99.9	99.7	98.6	99.3	99.9	95.8
#40	51.7	91.8	66.7	99.0	95.2	96.4	98.1	99.2	88.3
#50	36.1	89.7	63.0	98.5	93.5	95.6	97.7	98.9	86.6
#60	30.9	88.1	60.8	97.9	92.6	94.9	97.3	98.6	85.5

Sieve Size	SCR-PRI16-002	SCR-PRI16-004	SCR-PRI16-006	SCR-PRI16-008	SCR-PRI16-010	SCR-PRI16-011	SCR-PRI16-013	SCR-PRI18-004
	Passing (%)							
3/4"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1/2"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
#4	98.9	97.9	99.9	99.0	96.7	100.0	98.9	98.5
#10	95.7	91.9	99.7	95.7	88.1	99.7	93.1	93.5
#40	89.5	85.5	97.4	91.5	77.0	98.4	85.1	89.3
#50	88.0	84.3	96.6	90.7	74.8	97.2	83.0	88.2
#60	87.1	83.6	96.0	90.0	73.1	96.0	81.5	87.6

Procedures

In general, the procedures found in ASTM C136 were followed, with the exeption of the following:

1. The samples were dried at 80°C for 24 hours and until constant mass was achieved.

REGISTERED PROFESSIONAL ENGINEER
11/05/13
HIRAM ALBA
175774
STATE OF UTAH

Prepared By: ______

Reviewed By: ______

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI15-002

Lab # 8396
Date Sampled: 10/28/2013
Time Sampled: 9:20 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	6.8	1.10	1.1	98.9		
#10	56.9	9.20	10.3	89.7		
#40	234.7	37.96	48.3	51.7		
#50	96.9	15.67	63.9	36.1		
#60	31.8	5.14	69.1	30.9		
Total - #60	191.2	30.92	100.0	0.0		
Total	618.3	100.00				

Pan #: CA2

Wet Weight: 817.0
Dry Weight: 800.3
Weight of Water: 16.7
Pan Weight: 181.7
Water Content: 2.7%
Weight of Dry Soil 618.6

Dry Weight After Wash: 669.4
Weight -#200 Washed: 130.9
Weight -#60 Pan: 60.3

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI15-003

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 3:00 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	4.7	1.09	1.1	98.9		
#40	30.6	7.10	8.2	91.8		
#50	8.9	2.07	10.3	89.7		
#60	7.0	1.62	11.9	88.1		
Total - #60	379.6	88.12	100.0	0.0		
Total	430.8	100.00				

Pan #: P08

Wet Weight: 839.8
Dry Weight: 805.8
Weight of Water: 34.0
Pan Weight: 374.5
Water Content: 7.9%
Weight of Dry Soil 431.3

Dry Weight After Wash: 531.2
Weight -#200 Washed: 274.6
Weight -#60 Pan: 105.0

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI15-004

Lab # 8396
Date Sampled: 10/28/2013
Time Sampled: 9:45 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	8.2	2.07	2.1	97.9		
#10	54.5	13.73	15.8	84.2		
#40	69.6	17.53	33.3	66.7		
#50	14.7	3.70	37.0	63.0		
#60	8.6	2.17	39.2	60.8		
Total - #60	241.4	60.80	100.0	0.0		
Total	397.0	100.00				

Pan #: CA1

Wet Weight: 616.3
Dry Weight: 577.7
Weight of Water: 38.6
Pan Weight: 180.6
Water Content: 9.7%
Weight of Dry Soil 397.1

Dry Weight After Wash: 374.7
Weight -#200 Washed: 203.0
Weight -#60 Pan: 38.4

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI15-007-M

Lab # 8396
Date Sampled: 10/28/2013
Time Sampled: 10:54 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	0.5	0.12	0.1	99.9		
#40	3.8	0.89	1.0	99.0		
#50	2.3	0.54	1.5	98.5		
#60	2.2	0.51	2.1	97.9		
Total - #60	419.9	97.95	100.0	0.0		
Total	428.7	100.00				

Pan #: CA4

Wet Weight: 631.0
Dry Weight: 611.0
Weight of Water: 20.0
Pan Weight: 182.3
Water Content: 4.7%
Weight of Dry Soil 428.7

Dry Weight After Wash: 391.0
Weight -#200 Washed: 220.0
Weight -#60 Pan: 199.9

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI15-009

Lab # 8396
Date Sampled: 10/28/2013
Time Sampled: 12:11 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	1.4	0.30	0.3	99.7		
#40	20.9	4.53	4.8	95.2		
#50	7.7	1.67	6.5	93.5		
#60	4.2	0.91	7.4	92.6		
Total - #60	427.1	92.59	100.0	0.0		
Total	461.3	100.00				

Pan #: 808

Wet Weight: 873.7
Dry Weight: 836.4
Weight of Water: 37.3
Pan Weight: 374.6
Water Content: 8.1%
Weight of Dry Soil 461.8

Dry Weight After Wash: 437.8
Weight -#200 Washed: 398.6
Weight -#60 Pan: 28.5

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI15-010

Lab # 8396
Date Sampled: 10/28/2013
Time Sampled: 12:36 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	5.9	1.39	1.4	98.6		
#40	9.3	2.19	3.6	96.4		
#50	3.4	0.80	4.4	95.6		
#60	2.9	0.68	5.1	94.9		
Total - #60	403.4	94.94	100.0	0.0		
Total	424.9	100.00				

Pan #: BOW

Wet Weight: 820.7
Dry Weight: 802.1
Weight of Water: 18.6
Pan Weight: 377.0
Water Content: 4.4%
Weight of Dry Soil 425.1

Dry Weight After Wash: 571.6
Weight -#200 Washed: 230.5
Weight -#60 Pan: 172.9

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI15-012

Lab # 8396
Date Sampled: 10/28/2013
Time Sampled: 12:56 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	2.9	0.71	0.7	99.3		
#40	5.0	1.22	1.9	98.1		
#50	1.6	0.39	2.3	97.7		
#60	1.7	0.42	2.7	97.3		
Total - #60	398.1	97.26	100.0	0.0		
Total	409.3	100.00				

Pan #: B4

Wet Weight: 809.1
Dry Weight: 783.6
Weight of Water: 25.5
Pan Weight: 374.0
Water Content: 6.2%
Weight of Dry Soil 409.6

Dry Weight After Wash: 451.4
Weight -#200 Washed: 332.2
Weight -#60 Pan: 65.9

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI15-014

Lab # 8396
Date Sampled: 10/28/2013
Time Sampled: 10:25 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	0.3	0.07	0.1	99.9		
#40	3.6	0.77	0.8	99.2		
#50	1.4	0.30	1.1	98.9		
#60	1.1	0.25	1.4	98.6		
Total - #60	458.4	98.61	100.0	0.0		
Total	464.8	100.00				

Pan #: CA5

Wet Weight: 683.2
Dry Weight: 648.6
Weight of Water: 34.6
Pan Weight: 183.1
Water Content: 7.4%
Weight of Dry Soil 465.5

Dry Weight After Wash: 226.9
Weight -#200 Washed: 421.7
Weight -#60 Pan: 36.7

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI16-001

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 9:00 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	5.0	1.26	1.3	98.7		
#10	11.7	2.94	4.2	95.8		
#40	29.6	7.45	11.7	88.3		
#50	7.0	1.76	13.4	86.6		
#60	4.3	1.08	14.5	85.5		
Total - #60	339.7	85.50	100.0	0.0		
Total	397.3	100.00				

Pan #: B7

Wet Weight: 798.1
Dry Weight: 771.6
Weight of Water: 26.5
Pan Weight: 374.1
Water Content: 6.7%
Weight of Dry Soil 397.5

Dry Weight After Wash: 598.7
Weight -#200 Washed: 172.9
Weight -#60 Pan: 166.8

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI16-002

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 9:38 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	5.0	1.15	1.1	98.9		
#10	13.7	3.15	4.3	95.7		
#40	26.9	6.18	10.5	89.5		
#50	6.8	1.56	12.0	88.0		
#60	3.8	0.87	12.9	87.1		
Total - #60	378.9	87.08	100.0	0.0		
Total	435.1	100.00				

Pan #: X2

Wet Weight: 837.2
Dry Weight: 812.1
Weight of Water: 25.1
Pan Weight: 377.0
Water Content: 5.8%
Weight of Dry Soil 435.1

Dry Weight After Wash: 503.1
Weight -#200 Washed: 309.0
Weight -#60 Pan: 69.9

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI16-004

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 10:28 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	10.4	2.10	2.1	97.9		
#10	29.6	5.97	8.1	91.9		
#40	32.0	6.45	14.5	85.5		
#50	5.8	1.17	15.7	84.3		
#60	3.5	0.71	16.4	83.6		
Total - #60	414.8	83.61	100.0	0.0		
Total	496.1	100.00				

Pan #: 2-2

Wet Weight: 999.4
Dry Weight: 959.3
Weight of Water: 40.1
Pan Weight: 462.9
Water Content: 8.1%
Weight of Dry Soil 496.4

Dry Weight After Wash: 597.4
Weight -#200 Washed: 361.9
Weight -#60 Pan: 52.9

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI16-006

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 10:40 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.5	0.09	0.1	99.9		
#10	1.3	0.24	0.3	99.7		
#40	12.1	2.23	2.6	97.4		
#50	4.4	0.81	3.4	96.6		
#60	3.5	0.65	4.0	96.0		
Total - #60	519.7	95.97	100.0	0.0		
Total	541.5	100.00				

Pan #: BW

Wet Weight: 937.7
Dry Weight: 922.9
Weight of Water: 14.8
Pan Weight: 381.0
Water Content: 2.7%
Weight of Dry Soil 541.9

Dry Weight After Wash: 797.6
Weight -#200 Washed: 125.3
Weight -#60 Pan: 394.4

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI16-008

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 11:15 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	6.3	0.98	1.0	99.0		
#10	21.4	3.33	4.3	95.7		
#40	26.7	4.15	8.5	91.5		
#50	5.6	0.87	9.3	90.7		
#60	4.1	0.64	10.0	90.0		
Total - #60	579.3	90.04	100.0	0.0		
Total	643.4	100.00				

Pan #: B1

Wet Weight: 1066.2
Dry Weight: 1017.1
Weight of Water: 49.1
Pan Weight: 374.1
Water Content: 7.6%
Weight of Dry Soil 643.0

Dry Weight After Wash: 655.0
Weight -#200 Washed: 362.1
Weight -#60 Pan: 217.2

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI16-010

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 1:55 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	14.6	3.35	3.3	96.7		
#10	37.3	8.55	11.9	88.1		
#40	48.4	11.09	23.0	77.0		
#50	9.7	2.22	25.2	74.8		
#60	7.2	1.65	26.9	73.1		
Total - #60	319.2	73.14	100.0	0.0		
Total	436.4	100.00				

Pan #: B4

Wet Weight: 828.7
Dry Weight: 810.7
Weight of Water: 18.0
Pan Weight: 374.1
Water Content: 4.1%
Weight of Dry Soil 436.6

Dry Weight After Wash: 597.2
Weight -#200 Washed: 213.5
Weight -#60 Pan: 105.7

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI16-011

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 11:44 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.1	0.02	0.0	100.0		
#10	1.2	0.24	0.3	99.7		
#40	6.7	1.37	1.6	98.4		
#50	5.8	1.18	2.8	97.2		
#60	5.9	1.20	4.0	96.0		
Total - #60	470.4	95.98	100.0	0.0		
Total	490.1	100.00				

Pan #: BW

Wet Weight: 899.1
Dry Weight: 871.2
Weight of Water: 27.9
Pan Weight: 381.0
Water Content: 5.7%
Weight of Dry Soil 490.2

Dry Weight After Wash: 531.5
Weight -#200 Washed: 339.7
Weight -#60 Pan: 130.7

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI16-013

Lab # 8396
Date Sampled: 10/25/2013
Time Sampled: 12:15 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	4.4	1.15	1.1	98.9		
#10	22.1	5.77	6.9	93.1		
#40	30.6	7.99	14.9	85.1		
#50	8.1	2.12	17.0	83.0		
#60	5.6	1.46	18.5	81.5		
Total - #60	312.0	81.50	100.0	0.0		
Total	382.8	100.00				

Pan #: H1

Wet Weight: 596.8
Dry Weight: 566.5
Weight of Water: 30.3
Pan Weight: 183.6
Water Content: 7.9%
Weight of Dry Soil 382.9

Dry Weight After Wash: 306.7
Weight -#200 Washed: 259.8
Weight -#60 Pan: 52.2

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI18-004

Lab # 8396
Date Sampled: 10/28/2013
Time Sampled: 11:30 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	7.7	1.50	1.5	98.5		
#10	25.7	4.99	6.5	93.5		
#40	21.9	4.25	10.7	89.3		
#50	5.2	1.01	11.8	88.2		
#60	3.4	0.66	12.4	87.6		
Total - #60	450.8	87.59	100.0	0.0		
Total	514.7	100.00				

Pan #: Z-3

Wet Weight: 1017.9
Dry Weight: 979.5
Weight of Water: 38.4
Pan Weight: 464.5
Water Content: 7.5%
Weight of Dry Soil 515.0

Dry Weight After Wash: 593.8
Weight -#200 Washed: 385.7
Weight -#60 Pan: 65.1

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis Summary

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)

Data Summary

Sieve Size	SCR-PRI9-001	SCR-PRI9-002	SCR-PRI9-004	SCR-PRI9-007	SCR-PRI9-008	SCR-PRI9-010	SCR-PRI9-011	SCR-PRI9-013
	Passing (%)							
3/4"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1/2"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
#4	99.6	99.6	98.6	100.0	98.8	97.3	100.0	99.7
#10	91.7	91.7	83.3	98.6	96.8	95.3	97.1	93.6
#40	75.2	61.9	55.7	94.5	88.9	84.6	92.1	76.0
#50	70.7	56.0	50.9	93.3	85.4	79.7	90.3	70.9
#60	68.1	52.8	48.2	91.6	82.8	76.3	88.9	67.8

Sieve Size	SCR-PRI10-003	SCR-PRI10-004	SCR-PRI10-006	SCR-PRI10-007	SCR-PRI10-008	SCR-PRI10-009	SCR-PRI10-012
	Passing (%)						
3/4"	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1/2"	100.0	100.0	100.0	100.0	100.0	100.0	100.0
#4	99.7	99.5	99.6	100.0	99.9	100.0	99.8
#10	98.9	99.1	96.4	98.5	97.2	98.2	95.6
#40	93.0	97.3	80.5	87.5	82.7	89.3	76.1
#50	88.6	96.5	72.0	83.7	74.5	85.1	65.6
#60	86.0	95.8	69.5	81.7	71.5	82.6	63.6

Procedures

In general, the procedures found in ASTM C136 were followed, with the exeption of the following:

1. The samples were dried at 80°C for a minimum of 24 hours and/or until constant mass was achieved.

REGISTERED PROFESSIONAL ENGINEER
11/11/13
HIRAM ALBA
175774
STATE OF UTAH

Prepared By: [signature]   Reviewed By: [signature]

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI9-001

Lab # 8423
Date Sampled: 9/23/2013
Time Sampled: 12:45 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.9	0.39	0.4	99.6		
#10	17.9	7.86	8.3	91.7		
#40	37.6	16.50	24.8	75.2		
#50	10.3	4.52	29.3	70.7		
#60	6.1	2.68	31.9	68.1		
Total - #60	155.1	68.05	100.0	0.0		
Total	227.9	100.00				

Pan #: B8

Wet Weight: 670.1
Dry Weight: 601.8
Weight of Water: 68.3
Pan Weight: 373.1
Water Content: 29.9%
Weight of Dry Soil 228.7

Dry Weight After Wash: 476.6
Weight -#200 Washed: 125.2
Weight -#60 Pan: 29.9

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI9-002

Lab # 8423
Date Sampled: 9/23/2013
Time Sampled: 1:40 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	1.0	0.39	0.4	99.6		
#10	20.1	7.88	8.3	91.7		
#40	76.0	29.81	38.1	61.9		
#50	15.2	5.96	44.0	56.0		
#60	8.0	3.14	47.2	52.8		
Total - #60	134.7	52.82	100.0	0.0		
Total	255.0	100.00				

Pan #: B7

Wet Weight: 697.9
Dry Weight: 629.5
Weight of Water: 68.4
Pan Weight: 374.1
Water Content: 26.8%
Weight of Dry Soil 255.4

Dry Weight After Wash: 534.3
Weight -#200 Washed: 95.2
Weight -#60 Pan: 39.5

Tested By: Z. Thompson
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI9-004

Lab # 8423
Date Sampled: 9/23/2013
Time Sampled: 3:20 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	4.5	1.36	1.4	98.6		
#10	50.8	15.31	16.7	83.3		
#40	91.6	27.61	44.3	55.7		
#50	16.0	4.82	49.1	50.9		
#60	8.9	2.68	51.8	48.2		
Total - #60	160.0	48.22	100.0	0.0		
Total	331.8	100.00				

Pan #: H1

Wet Weight: 596.7
Dry Weight: 515.7
Weight of Water: 81.0
Pan Weight: 183.7
Water Content: 24.4%
Weight of Dry Soil 332.0

Dry Weight After Wash: 416.7
Weight -#200 Washed: 99.0
Weight -#60 Pan: 61.0

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI9-007

Lab # 8423
Date Sampled: 9/23/2013
Time Sampled: 2:50 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.1	0.02	0.0	100.0		
#10	5.6	1.35	1.4	98.6		
#40	17.0	4.10	5.5	94.5		
#50	4.9	1.18	6.7	93.3		
#60	7.2	1.74	8.4	91.6		
Total - #60	380.1	91.61	100.0	0.0		
Total	414.9	100.00				

Pan #: X2

Wet Weight: 823.2
Dry Weight: 791.4
Weight of Water: 31.8
Pan Weight: 377.0
Water Content: 7.7%
Weight of Dry Soil 414.4

Dry Weight After Wash: 621.1
Weight -#200 Washed: 170.3
Weight -#60 Pan: 209.8

Tested By: Z. Thompson
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI9-008

Lab # 8423
Date Sampled: 9/24/2013
Time Sampled: 8:50 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	3.4	1.17	1.2	98.8		
#10	5.8	2.00	3.2	96.8		
#40	22.9	7.90	11.1	88.9		
#50	10.2	3.52	14.6	85.4		
#60	7.6	2.62	17.2	82.8		
Total - #60	240.0	82.79	100.0	0.0		
Total	289.9	100.00				

Pan #: BW

Wet Weight: 740.0
Dry Weight: 670.5
Weight of Water: 69.5
Pan Weight: 381.0
Water Content: 24.0%
Weight of Dry Soil 289.5

Dry Weight After Wash: 502.7
Weight -#200 Washed: 167.8
Weight -#60 Pan: 72.2

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI9-010

Lab # 8423
Date Sampled: 9/24/2013
Time Sampled: 10:25 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	7.0	2.71	2.7	97.3		
#10	5.0	1.94	4.7	95.3		
#40	27.6	10.70	15.4	84.6		
#50	12.8	4.96	20.3	79.7		
#60	8.6	3.34	23.7	76.3		
Total - #60	196.9	76.34	100.0	0.0		
Total	257.9	100.00				

Pan #: C30

Wet Weight: 622.9
Dry Weight: 556.9
Weight of Water: 66.0
Pan Weight: 305.3
Water Content: 26.3%
Weight of Dry Soil 251.6

Dry Weight After Wash: 421.4
Weight -#200 Washed: 135.5
Weight -#60 Pan: 61.4

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI9-011

Lab # 8423
Date Sampled: 9/24/2013
Time Sampled: 9:45 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.1	0.03	0.0	100.0		
#10	9.4	2.84	2.9	97.1		
#40	16.6	5.01	7.9	92.1		
#50	6.0	1.81	9.7	90.3		
#60	4.6	1.39	11.1	88.9		
Total - #60	294.4	88.92	100.0	0.0		
Total	331.1	100.00				

Pan #: 808

Wet Weight: 788.6
Dry Weight: 706.2
Weight of Water: 82.4
Pan Weight: 374.6
Water Content: 24.8%
Weight of Dry Soil 331.6

Dry Weight After Wash: 472.2
Weight -#200 Washed: 234.0
Weight -#60 Pan: 60.4

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI9-013

Lab # 8423
Date Sampled: 9/24/2013
Time Sampled: 10:55 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	1.0	0.30	0.3	99.7		
#10	20.1	6.07	6.4	93.6		
#40	58.3	17.61	24.0	76.0		
#50	16.9	5.11	29.1	70.9		
#60	10.4	3.14	32.2	67.8		
Total - #60	224.3	67.76	100.0	0.0		
Total	331.0	100.00				

Pan #: X1

Wet Weight: 836.4
Dry Weight: 709.2
Weight of Water: 127.2
Pan Weight: 378.1
Water Content: 38.4%
Weight of Dry Soil 331.1

Dry Weight After Wash: 552.1
Weight -#200 Washed: 157.1
Weight -#60 Pan: 67.2

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI10-003

Lab # 8423
Date Sampled: 9/24/2013
Time Sampled: 1:15 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	1.8	0.33	0.3	99.7		
#10	4.2	0.78	1.1	98.9		
#40	32.1	5.93	7.0	93.0		
#50	23.5	4.34	11.4	88.6		
#60	14.2	2.63	14.0	86.0		
Total - #60	465.1	85.99	100.0	0.0		
Total	540.9	100.00				

Pan #: Z3

Wet Weight: 1091.1
Dry Weight: 1006.4
Weight of Water: 84.7
Pan Weight: 465.0
Water Content: 15.6%
Weight of Dry Soil 541.4

Dry Weight After Wash: 634.2
Weight -#200 Washed: 372.2
Weight -#60 Pan: 92.9

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI10-004

Lab # 8423
Date Sampled: 9/24/2013
Time Sampled: 12:55 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	2.8	0.49	0.5	99.5		
#10	2.1	0.37	0.9	99.1		
#40	10.7	1.87	2.7	97.3		
#50	4.7	0.82	3.5	96.5		
#60	3.5	0.61	4.2	95.8		
Total - #60	548.3	95.84	100.0	0.0		
Total	572.1	100.00				

Pan #: B1

Wet Weight: 1039.7
Dry Weight: 946.0
Weight of Water: 93.7
Pan Weight: 373.9
Water Content: 16.4%
Weight of Dry Soil 572.1

Dry Weight After Wash: 433.0
Weight -#200 Washed: 513.0
Weight -#60 Pan: 35.3

Tested By: Z. Thompson
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI10-006

Lab # 8423
Date Sampled: 9/24/2013
Time Sampled: 1:50 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	1.2	0.35	0.4	99.6		
#10	11.0	3.24	3.6	96.4		
#40	54.0	15.92	19.5	80.5		
#50	28.8	8.49	28.0	72.0		
#60	8.5	2.51	30.5	69.5		
Total - #60	235.7	69.48	100.0	0.0		
Total	339.2	100.00				

Pan #: MIA

Wet Weight: 771.1
Dry Weight: 717.4
Weight of Water: 53.7
Pan Weight: 377.3
Water Content: 15.8%
Weight of Dry Soil 340.1

Dry Weight After Wash: 538.1
Weight -#200 Washed: 179.3
Weight -#60 Pan: 56.4

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI10-007

Lab # 8423
Date Sampled: 9/25/2013
Time Sampled: 9:10 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	6.5	1.48	1.5	98.5		
#40	48.4	11.02	12.5	87.5		
#50	16.7	3.80	16.3	83.7		
#60	8.9	2.03	18.3	81.7		
Total - #60	358.9	81.68	100.0	0.0		
Total	439.4	100.00				

Pan #: CA4

Wet Weight: 685.7
Dry Weight: 622.2
Weight of Water: 63.5
Pan Weight: 182.3
Water Content: 14.4%
Weight of Dry Soil 439.9

Dry Weight After Wash: 324.0
Weight -#200 Washed: 298.2
Weight -#60 Pan: 60.7

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI10-008

Lab # 8423
Date Sampled: 9/24/2013
Time Sampled: 2:30 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.5	0.13	0.1	99.9		
#10	10.1	2.69	2.8	97.2		
#40	54.3	14.48	17.3	82.7		
#50	30.8	8.21	25.5	74.5		
#60	11.3	3.01	28.5	71.5		
Total - #60	268.0	71.47	100.0	0.0		
Total	375.0	100.00				

Pan #: BOW

Wet Weight: 872.5
Dry Weight: 752.9
Weight of Water: 119.6
Pan Weight: 377.0
Water Content: 31.8%
Weight of Dry Soil 375.9

Dry Weight After Wash: 564.8
Weight -#200 Washed: 188.1
Weight -#60 Pan: 79.9

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI10-009

Lab # 8423
Date Sampled: 9/25/2013
Time Sampled: 9:30 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.2	0.05	0.0	100.0		
#10	7.4	1.78	1.8	98.2		
#40	36.8	8.85	10.7	89.3		
#50	17.7	4.26	14.9	85.1		
#60	10.1	2.43	17.4	82.6		
Total - #60	343.8	82.64	100.0	0.0		
Total	416.0	100.00				

Pan #: Z2

Wet Weight: 962.0
Dry Weight: 878.4
Weight of Water: 83.6
Pan Weight: 462.9
Water Content: 20.1%
Weight of Dry Soil 415.5

Dry Weight After Wash: 598.5
Weight -#200 Washed: 279.9
Weight -#60 Pan: 63.9

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI10-012

Lab # 8423
Date Sampled: 9/24/2013
Time Sampled: 2:45 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.7	0.16	0.2	99.8		
#10	18.9	4.20	4.4	95.6		
#40	87.8	19.53	23.9	76.1		
#50	47.2	10.50	34.4	65.6		
#60	9.1	2.02	36.4	63.6		
Total - #60	286.0	63.60	100.0	0.0		
Total	449.7	100.00				

Pan #: CA5

Wet Weight: 705.3
Dry Weight: 635.4
Weight of Water: 69.9
Pan Weight: 183.2
Water Content: 15.5%
Weight of Dry Soil 452.2

Dry Weight After Wash: 407.4
Weight -#200 Washed: 228.0
Weight -#60 Pan: 58.0

Tested By: Z. Thompson
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis Summary

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)

Data Summary

Sieve Size	SCR-PRI2-001	SCR-PRI2-003	SCR-PRI2-004	SCR-PRI2-006	SCR-PRI2-008	SCR-PRI2-009	SCR-PRI2-011	SCR-PRI2-012	SCR-PRI8-006	SCR-PRI8-007	SCR-PRI8-008
	Passing (%)										
3/4"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1/2"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
#4	94.3	99.4	94.8	99.8	94.8	95.3	96.6	96.1	99.9	98.4	99.3
#10	73.9	95.2	81.3	98.7	79.5	71.3	75.9	73.8	99.1	90.1	97.8
#40	48.0	64.2	62.6	89.6	57.1	49.5	51.7	53.2	89.0	57.4	94.2
#50	40.8	56.4	58.1	79.1	49.8	42.7	48.4	46.2	84.4	38.8	92.8
#60	38.4	54.7	55.7	71.2	46.8	38.2	45.9	40.4	82.1	35.3	91.7

Sieve Size	SCR-PRI8-012	SCR-PRI8-013	SCR-PRI8-014	SCR-PRI8-016	SCR-PRI10-010	SCR-PRI12-011	SCR-PRI12-013	SCR-PRI13-001	SCR-PRI13-002	SCR-PRI13-006	SCR-PRI13-007
	Passing (%)										
3/4"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1/2"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
#4	98.7	99.8	100.0	99.8	99.7	99.8	99.5	99.5	99.4	100.0	100.0
#10	91.4	96.2	99.1	97.3	97.9	97.8	94.8	92.3	98.7	97.4	98.6
#40	47.2	87.4	87.6	81.1	88.2	91.4	71.7	74.5	96.1	78.9	81.3
#50	23.4	85.4	82.2	74.5	85.6	90.3	67.2	62.3	94.6	66.2	75.1
#60	19.7	84.1	79.1	73.4	83.9	89.4	65.6	53.8	93.3	54.8	70.5

Sieve Size	SCR-PRI13-008	SCR-PRI13-009	SCR-PRI13-013	SCR-PRI13-014	SCR-PRI14-002	SCR-PRI14-003	SCR-PRI14-006	SCR-PRI14-012	SCR-PRI14-013
	Passing (%)								
3/4"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1/2"	100.0	100.0	100.0	100.0	98.8	100.0	97.5	99.4	100.0
#4	99.2	99.3	99.3	99.7	98.0	99.3	86.1	97.9	98.5
#10	96.4	96.1	95.4	92.9	95.1	90.0	76.8	96.6	95.6
#40	79.0	74.5	67.6	70.0	89.9	72.4	56.7	92.0	89.5
#50	68.2	53.5	53.3	65.4	87.8	68.5	51.2	89.2	87.0
#60	59.3	39.8	39.2	60.7	86.0	65.6	47.7	85.4	83.5

Procedures

In general, the procedures found in ASTM C136 were followed, with the exeption of the following:

1. The samples were dried at 80°C for a minimum of 24 hours and/or until constant mass was achieved.

REGISTERED PROFESSIONAL ENGINEER
11/19/2015
HIRAM
ALBA
175774
STATE OF UTAH

Prepared By: [signature] **Reviewed By:** [signature]

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI2-001

Lab # 8433
Date Sampled: 10/3/2013
Time Sampled: 11:10 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	23.8	5.65	5.7	94.3		
#10	86.1	20.45	26.1	73.9		
#40	109.2	25.93	52.0	48.0		
#50	30.0	7.12	59.2	40.8		
#60	10.1	2.40	61.6	38.4		
Total - #60	161.9	38.44	100.0	0.0		
Total	421.1	100.00				

Pan #: Z3

Wet Weight: 916.3
Dry Weight: 885.8
Weight of Water: 30.5
Pan Weight: 464.5
Water Content: 7.2%
Weight of Dry Soil 421.3

Dry Weight After Wash: 788.5
Weight -#200 Washed: 97.3
Weight -#60 Pan: 64.6

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI2-003

Lab # 8433
Date Sampled: 10/3/2013
Time Sampled: 9:28 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	2.3	0.56	0.6	99.4		
#10	17.7	4.28	4.8	95.2		
#40	128.3	31.01	35.8	64.2		
#50	32.3	7.81	43.6	56.4		
#60	6.8	1.64	45.3	54.7		
Total - #60	226.4	54.71	100.0	0.0		
Total	413.8	100.00				

Pan #: 808

Wet Weight: 825.9
Dry Weight: 788.4
Weight of Water: 37.5
Pan Weight: 374.6
Water Content: 9.1%
Weight of Dry Soil 413.8

Dry Weight After Wash: 634.5
Weight -#200 Washed: 153.9
Weight -#60 Pan: 72.5

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI2-004

Lab # 8433
Date Sampled: 10/3/2013
Time Sampled: 10:55 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	21.2	5.24	5.2	94.8		
#10	54.2	13.41	18.7	81.3		
#40	75.9	18.78	37.4	62.6		
#50	18.1	4.48	41.9	58.1		
#60	9.5	2.35	44.3	55.7		
Total - #60	225.3	55.74	100.0	0.0		
Total	404.2	100.00				

Pan #: ZOO

Wet Weight: 814.9
Dry Weight: 780.8
Weight of Water: 34.1
Pan Weight: 376.3
Water Content: 8.4%
Weight of Dry Soil 404.5

Dry Weight After Wash: 669.9
Weight -#200 Washed: 110.9
Weight -#60 Pan: 114.4

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI2-006

Lab # 8433
Date Sampled: 10/3/2013
Time Sampled: 9:10 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.8	0.19	0.2	99.8		
#10	4.5	1.07	1.3	98.7		
#40	38.6	9.17	10.4	89.6		
#50	43.9	10.43	20.9	79.1		
#60	33.6	7.98	28.8	71.2		
Total - #60	299.4	71.15	100.0	0.0		
Total	420.8	100.00				

Pan #: X1

Wet Weight: 829.6
Dry Weight: 799.5
Weight of Water: 30.1
Pan Weight: 378.1
Water Content: 7.1%
Weight of Dry Soil 421.4

Dry Weight After Wash: 647.6
Weight -#200 Washed: 151.9
Weight -#60 Pan: 147.5

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI2-008

Lab # 8433
Date Sampled: 9/26/2013
Time Sampled: 12:45 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	17.9	5.23	5.2	94.8		
#10	52.1	15.23	20.5	79.5		
#40	76.9	22.48	42.9	57.1		
#50	24.7	7.22	50.2	49.8		
#60	10.4	3.04	53.2	46.8		
Total - #60	160.1	46.80	100.0	0.0		
Total	342.1	100.00				

Pan #: BW

Wet Weight: 748.3
Dry Weight: 723.9
Weight of Water: 24.4
Pan Weight: 381.2
Water Content: 7.1%
Weight of Dry Soil 342.7

Dry Weight After Wash: 636.2
Weight -#200 Washed: 87.7
Weight -#60 Pan: 72.4

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI2-009

Lab # 8433
Date Sampled: 10/3/2013
Time Sampled: 10:02 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	21.8	4.75	4.7	95.3		
#10	110.0	23.95	28.7	71.3		
#40	100.3	21.84	50.5	49.5		
#50	30.9	6.73	57.3	42.7		
#60	20.9	4.55	61.8	38.2		
Total - #60	175.4	38.19	100.0	0.0		
Total	459.3	100.00				

Pan #: X2

Wet Weight: 860.5
Dry Weight: 836.4
Weight of Water: 24.1
Pan Weight: 376.6
Water Content: 5.2%
Weight of Dry Soil 459.8

Dry Weight After Wash: 740.6
Weight -#200 Washed: 95.8
Weight -#60 Pan: 79.6

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI2-011

Lab # 8433
Date Sampled: 10/3/2013
Time Sampled: 10:20 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	12.8	3.40	3.4	96.6		
#10	77.9	20.70	24.1	75.9		
#40	91.2	24.24	48.3	51.7		
#50	12.3	3.27	51.6	48.4		
#60	9.4	2.50	54.1	45.9		
Total - #60	172.7	45.89	100.0	0.0		
Total	376.3	100.00				

Pan #: B8

Wet Weight: 768.1
Dry Weight: 750.3
Weight of Water: 17.8
Pan Weight: 373.6
Water Content: 4.7%
Weight of Dry Soil 376.7

Dry Weight After Wash: 650.4
Weight -#200 Washed: 99.9
Weight -#60 Pan: 72.8

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI2-012

Lab # 8433
Date Sampled: 10/3/2013
Time Sampled: 10:36 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	17.3	3.95	3.9	96.1		
#10	97.5	22.24	26.2	73.8		
#40	90.5	20.64	46.8	53.2		
#50	30.4	6.93	53.8	46.2		
#60	25.8	5.88	59.6	40.4		
Total - #60	176.9	40.36	100.0	0.0		
Total	438.4	100.00				

Pan #: Z3

Wet Weight: 925.6
Dry Weight: 903.7
Weight of Water: 21.9
Pan Weight: 464.5
Water Content: 5.0%
Weight of Dry Soil 439.2

Dry Weight After Wash: 810.8
Weight -#200 Washed: 92.9
Weight -#60 Pan: 84.0

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI8-006

Lab # 8433
Date Sampled: 10/3/2013
Time Sampled: 1:20 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.4	0.09	0.1	99.9		
#10	3.3	0.77	0.9	99.1		
#40	43.1	10.10	11.0	89.0		
#50	19.7	4.62	15.6	84.4		
#60	9.7	2.27	17.9	82.1		
Total - #60	350.6	82.15	100.0	0.0		
Total	426.8	100.00				

Pan #: JIL

Wet Weight: 807.2
Dry Weight: 730.1
Weight of Water: 77.1
Pan Weight: 302.7
Water Content: 18.0%
Weight of Dry Soil 427.4

Dry Weight After Wash: 457.2
Weight -#200 Washed: 272.9
Weight -#60 Pan: 77.7

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI8-007

Lab # 8433
Date Sampled: 10/3/2013
Time Sampled: 2:59 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	8.0	1.59	1.6	98.4		
#10	42.0	8.32	9.9	90.1		
#40	164.7	32.65	42.6	57.4		
#50	94.2	18.67	61.2	38.8		
#60	17.5	3.47	64.7	35.3		
Total - #60	178.1	35.30	100.0	0.0		
Total	504.5	100.00				

Pan #: X2

Wet Weight: 902.0
Dry Weight: 881.8
Weight of Water: 20.2
Pan Weight: 376.6
Water Content: 4.0%
Weight of Dry Soil 505.2

Dry Weight After Wash: 759.4
Weight -#200 Washed: 122.4
Weight -#60 Pan: 55.7

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI8-008

Lab # 8433
Date Sampled: 10/3/2013
Time Sampled: 12:31 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	2.7	0.67	0.7	99.3		
#10	6.3	1.57	2.2	97.8		
#40	14.2	3.54	5.8	94.2		
#50	5.8	1.45	7.2	92.8		
#60	4.2	1.05	8.3	91.7		
Total - #60	368.0	91.73	100.0	0.0		
Total	401.2	100.00				

Pan #: BW

Wet Weight: 813.8
Dry Weight: 782.8
Weight of Water: 31.0
Pan Weight: 381.0
Water Content: 7.7%
Weight of Dry Soil 401.8

Dry Weight After Wash: 471.2
Weight -#200 Washed: 311.6
Weight -#60 Pan: 56.4

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI8-012

Lab # 8433
Date Sampled: 10/3/2013
Time Sampled: 3:20 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	6.3	1.27	1.3	98.7		
#10	36.6	7.35	8.6	91.4		
#40	219.8	44.15	52.8	47.2		
#50	118.8	23.86	76.6	23.4		
#60	18.4	3.70	80.3	19.7		
Total - #60	98.0	19.68	100.0	0.0		
Total	497.9	100.00				

Pan #: C30

Wet Weight: 819.6
Dry Weight: 803.3
Weight of Water: 16.3
Pan Weight: 305.4
Water Content: 3.3%
Weight of Dry Soil 497.9

Dry Weight After Wash: 738.0
Weight -#200 Washed: 65.3
Weight -#60 Pan: 32.7

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI8-013

Lab # 8433
Date Sampled: 10/3/2013
Time Sampled: 12:06 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.8	0.20	0.2	99.8		
#10	14.7	3.65	3.8	96.2		
#40	35.4	8.79	12.6	87.4		
#50	8.1	2.01	14.6	85.4		
#60	5.2	1.29	15.9	84.1		
Total - #60	338.7	84.07	100.0	0.0		
Total	402.9	100.00				

Pan #: JIL

Wet Weight: 760.7
Dry Weight: 706.0
Weight of Water: 54.7
Pan Weight: 302.9
Water Content: 13.6%
Weight of Dry Soil 403.1

Dry Weight After Wash: 416.9
Weight -#200 Washed: 289.1
Weight -#60 Pan: 49.6

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI8-014

Lab # 8433
Date Sampled: 10/3/2013
Time Sampled: 2:00 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	3.0	0.94	0.9	99.1		
#40	36.6	11.44	12.4	87.6		
#50	17.3	5.41	17.8	82.2		
#60	9.9	3.09	20.9	79.1		
Total - #60	253.2	79.12	100.0	0.0		
Total	320.0	100.00				

Pan #: Z3

Wet Weight: 864.0
Dry Weight: 785.0
Weight of Water: 79.0
Pan Weight: 464.5
Water Content: 24.7%
Weight of Dry Soil 320.5

Dry Weight After Wash: 574.4
Weight -#200 Washed: 210.6
Weight -#60 Pan: 42.6

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI8-016

Lab # 8433
Date Sampled: 10/3/2013
Time Sampled: 3:38 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	1.0	0.23	0.2	99.8		
#10	11.1	2.50	2.7	97.3		
#40	71.6	16.15	18.9	81.1		
#50	29.3	6.61	25.5	74.5		
#60	4.8	1.08	26.6	73.4		
Total - #60	325.5	73.43	100.0	0.0		
Total	443.3	100.00				

Pan #: B8

Wet Weight: 867.0
Dry Weight: 817.2
Weight of Water: 49.8
Pan Weight: 374.0
Water Content: 11.2%
Weight of Dry Soil 443.2

Dry Weight After Wash: 619.3
Weight -#200 Washed: 197.9
Weight -#60 Pan: 127.6

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI10-010

Lab # 8433
Date Sampled: 10/3/2013
Time Sampled: 11:41 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.9	0.30	0.3	99.7		
#10	5.4	1.82	2.1	97.9		
#40	28.6	9.65	11.8	88.2		
#50	7.8	2.63	14.4	85.6		
#60	4.9	1.65	16.1	83.9		
Total - #60	248.9	83.94	100.0	0.0		
Total	296.5	100.00				

Pan #: MIA

Wet Weight: 729.3
Dry Weight: 673.5
Weight of Water: 55.8
Pan Weight: 377.3
Water Content: 18.9%
Weight of Dry Soil 296.2

Dry Weight After Wash: 461.2
Weight -#200 Washed: 212.3
Weight -#60 Pan: 36.6

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI12-011

Lab # 8449
Date Sampled: 9/26/2013
Time Sampled: 2:15 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.9	0.20	0.2	99.8		
#10	8.8	1.96	2.2	97.8		
#40	28.8	6.42	8.6	91.4		
#50	5.0	1.11	9.7	90.3		
#60	4.2	0.94	10.6	89.4		
Total - #60	401.2	89.37	100.0	0.0		
Total	448.9	100.00				

Pan #: HI

Wet Weight: 688.9
Dry Weight: 632.9
Weight of Water: 56.0
Pan Weight: 183.5
Water Content: 12.5%
Weight of Dry Soil 449.4

Dry Weight After Wash: 342.5
Weight -#200 Washed: 290.4
Weight -#60 Pan: 110.8

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI12-013

Lab # 8449
Date Sampled: 9/26/2013
Time Sampled: 2:35 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	2.9	0.54	0.5	99.5		
#10	25.2	4.70	5.2	94.8		
#40	123.8	23.07	28.3	71.7		
#50	24.0	4.47	32.8	67.2		
#60	8.6	1.60	34.4	65.6		
Total - #60	352.1	65.62	100.0	0.0		
Total	536.6	100.00				

Pan #: CA4

Wet Weight: 762.1
Dry Weight: 719.3
Weight of Water: 42.8
Pan Weight: 182.3
Water Content: 8.0%
Weight of Dry Soil 537.0

Dry Weight After Wash: 444.3
Weight -#200 Washed: 275.0
Weight -#60 Pan: 77.1

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI13-001

Lab # 8433
Date Sampled: 10/4/2013
Time Sampled: 10:08 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	2.0	0.49	0.5	99.5		
#10	29.6	7.25	7.7	92.3		
#40	72.5	17.77	25.5	74.5		
#50	49.7	12.18	37.7	62.3		
#60	34.7	8.50	46.2	53.8		
Total - #60	219.6	53.81	100.0	0.0		
Total	408.1	100.00				

Pan #: 808

Wet Weight: 851.0
Dry Weight: 782.9
Weight of Water: 68.1
Pan Weight: 374.5
Water Content: 16.7%
Weight of Dry Soil 408.4

Dry Weight After Wash: 681.5
Weight -#200 Washed: 101.4
Weight -#60 Pan: 118.2

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI13-002

Lab # 8433
Date Sampled: 10/4/2013
Time Sampled: 10:30 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	2.2	0.64	0.6	99.4		
#10	2.2	0.64	1.3	98.7		
#40	8.9	2.60	3.9	96.1		
#50	5.3	1.55	5.4	94.6		
#60	4.2	1.23	6.7	93.3		
Total - #60	319.8	93.35	100.0	0.0		
Total	342.6	100.00				

Pan #: X1

Wet Weight: 832.5
Dry Weight: 720.3
Weight of Water: 112.2
Pan Weight: 378.0
Water Content: 32.8%
Weight of Dry Soil 342.3

Dry Weight After Wash: 434.1
Weight -#200 Washed: 286.2
Weight -#60 Pan: 33.6

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI13-006

Lab # 8433
Date Sampled: 10/4/2013
Time Sampled: 11:16 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	11.2	2.58	2.6	97.4		
#40	80.5	18.52	21.1	78.9		
#50	55.1	12.68	33.8	66.2		
#60	49.8	11.46	45.2	54.8		
Total - #60	238.0	54.77	100.0	0.0		
Total	434.6	100.00				

Pan #: X2

Wet Weight: 868.1
Dry Weight: 811.8
Weight of Water: 56.3
Pan Weight: 376.7
Water Content: 12.9%
Weight of Dry Soil 435.1

Dry Weight After Wash: 742.1
Weight -#200 Washed: 69.7
Weight -#60 Pan: 168.3

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name:	Environmental Resources Management	Lab #	8433
Job Number:	807-004	Date Sampled:	10/4/2013
Project:	US Mag RI FS (#0132320)	Time Sampled:	11:33 AM
Sample Location:	SCR-PRI13-007		

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	4.9	1.41	1.4	98.6		
#40	60.4	17.33	18.7	81.3		
#50	21.3	6.11	24.9	75.1		
#60	16.1	4.62	29.5	70.5		
Total - #60	245.8	70.53	100.0	0.0		
Total	348.5	100.00				

Pan #: B7

Wet Weight:	822.1		
Dry Weight:	722.7	Dry Weight After Wash:	515.7
Weight of Water:	99.4	Weight -#200 Washed:	207.0
Pan Weight:	373.9	Weight -#60 Pan:	38.8
Water Content:	28.5%		
Weight of Dry Soil	348.8	Tested By:	C. Schwendiman
		Reviewed By:	S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI13-008

Lab # 8433
Date Sampled: 10/4/2013
Time Sampled: 1:15 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	3.7	0.83	0.8	99.2		
#10	12.5	2.80	3.6	96.4		
#40	77.4	17.35	21.0	79.0		
#50	48.2	10.80	31.8	68.2		
#60	39.8	8.92	40.7	59.3		
Total - #60	264.5	59.30	100.0	0.0		
Total	446.1	100.00				

Pan #: B7

Wet Weight: 884.4
Dry Weight: 820.9
Weight of Water: 63.5
Pan Weight: 374.0
Water Content: 14.2%
Weight of Dry Soil 446.9

Dry Weight After Wash: 644.5
Weight -#200 Washed: 176.4
Weight -#60 Pan: 88.1

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI13-009

Lab # 8433
Date Sampled: 10/4/2013
Time Sampled: 1:34 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	3.2	0.70	0.7	99.3		
#10	14.8	3.24	3.9	96.1		
#40	98.7	21.57	25.5	74.5		
#50	96.2	21.03	46.5	53.5		
#60	62.4	13.64	60.2	39.8		
Total - #60	182.2	39.82	100.0	0.0		
Total	457.5	100.00				

Pan #: B8

Wet Weight: 877.7
Dry Weight: 831.8
Weight of Water: 45.9
Pan Weight: 373.4
Water Content: 10.0%
Weight of Dry Soil 458.4

Dry Weight After Wash: 767.6
Weight -#200 Washed: 64.2
Weight -#60 Pan: 118.0

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI13-013

Lab # 8433
Date Sampled: 10/4/2013
Time Sampled: 1:32 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	3.4	0.71	0.7	99.3		
#10	18.5	3.88	4.6	95.4		
#40	132.3	27.76	32.4	67.6		
#50	68.2	14.31	46.7	53.3		
#60	67.2	14.10	60.8	39.2		
Total - #60	187.0	39.24	100.0	0.0		
Total	476.6	100.00				

Pan #: C30

Wet Weight: 837.4
Dry Weight: 782.7
Weight of Water: 54.7
Pan Weight: 305.3
Water Content: 11.5%
Weight of Dry Soil 477.4

Dry Weight After Wash: 716.9
Weight -#200 Washed: 65.8
Weight -#60 Pan: 121.2

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI13-014

Lab # 8433
Date Sampled: 10/4/2013
Time Sampled: 2:05 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	1.1	0.28	0.3	99.7		
#10	26.4	6.79	7.1	92.9		
#40	89.2	22.95	30.0	70.0		
#50	17.8	4.58	34.6	65.4		
#60	18.1	4.66	39.3	60.7		
Total - #60	236.1	60.74	100.0	0.0		
Total	388.7	100.00				

Pan #: X1

Wet Weight: 845.2
Dry Weight: 767.4
Weight of Water: 77.8
Pan Weight: 377.9
Water Content: 20.0%
Weight of Dry Soil 389.5

Dry Weight After Wash: 602.4
Weight -#200 Washed: 165.0
Weight -#60 Pan: 71.1

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI14-002

Lab # 8433
Date Sampled: 10/4/2013
Time Sampled: 10:35 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	4.4	1.19	1.2	98.8		
#4	3.1	0.84	2.0	98.0		
#10	10.7	2.91	4.9	95.1		
#40	19.1	5.19	10.1	89.9		
#50	7.5	2.04	12.2	87.8		
#60	6.9	1.87	14.0	86.0		
Total - #60	316.6	85.96	100.0	0.0		
Total	368.3	100.00				

Pan #: 808

Wet Weight: 825.2
Dry Weight: 743.0
Weight of Water: 82.2
Pan Weight: 374.5
Water Content: 22.3%
Weight of Dry Soil 368.5

Dry Weight After Wash: 462.5
Weight -#200 Washed: 280.5
Weight -#60 Pan: 36.1

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI14-003

Lab # 8433
Date Sampled: 10/4/2013
Time Sampled: 11:35 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	2.2	0.74	0.7	99.3		
#10	27.4	9.22	10.0	90.0		
#40	52.3	17.60	27.6	72.4		
#50	11.6	3.90	31.5	68.5		
#60	8.8	2.96	34.4	65.6		
Total - #60	194.8	65.57	100.0	0.0		
Total	297.1	100.00				

Pan #: MIA

Wet Weight: 861.1
Dry Weight: 674.5
Weight of Water: 186.6
Pan Weight: 377.3
Water Content: 62.8%
Weight of Dry Soil 297.2

Dry Weight After Wash: 523.8
Weight -#200 Washed: 150.7
Weight -#60 Pan: 44.1

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI14-006

Lab # 8433
Date Sampled: 9/27/2013
Time Sampled: 1:50 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	8.2	2.52	2.5	97.5		
#4	37.2	11.42	13.9	86.1		
#10	30.3	9.30	23.2	76.8		
#40	65.4	20.08	43.3	56.7		
#50	17.8	5.47	48.8	51.2		
#60	11.3	3.47	52.3	47.7		
Total - #60	155.4	47.73	100.0	0.0		
Total	325.6	100.00				

Pan #: BW

Wet Weight: 862.2
Dry Weight: 707.3
Weight of Water: 154.9
Pan Weight: 381.0
Water Content: 47.5%
Weight of Dry Soil 326.3

Dry Weight After Wash: 600.4
Weight -#200 Washed: 106.9
Weight -#60 Pan: 48.5

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI14-012

Lab # 8433
Date Sampled: 9/26/2013
Time Sampled: 3:10 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	2.3	0.59	0.6	99.4		
#4	5.9	1.51	2.1	97.9		
#10	4.9	1.25	3.4	96.6		
#40	18.2	4.66	8.0	92.0		
#50	10.7	2.74	10.8	89.2		
#60	15.2	3.89	14.6	85.4		
Total - #60	333.4	85.36	100.0	0.0		
Total	390.6	100.00				

Pan #: MIA

Wet Weight: 842.9
Dry Weight: 768.7
Weight of Water: 74.2
Pan Weight: 377.3
Water Content: 18.9%
Weight of Dry Soil 391.4

Dry Weight After Wash: 613.4
Weight -#200 Washed: 155.3
Weight -#60 Pan: 178.1

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI14-013

Lab # 8433
Date Sampled: 9/26/2013
Time Sampled: 2:45 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	6.3	1.50	1.5	98.5		
#10	12.1	2.89	4.4	95.6		
#40	25.7	6.13	10.5	89.5		
#50	10.5	2.50	13.0	87.0		
#60	14.4	3.44	16.5	83.5		
Total - #60	350.2	83.54	100.0	0.0		
Total	419.2	100.00				

Pan #: C30

Wet Weight: 805.8
Dry Weight: 724.8
Weight of Water: 81.0
Pan Weight: 305.4
Water Content: 19.3%
Weight of Dry Soil 419.4

Dry Weight After Wash: 652.3
Weight -#200 Washed: 72.5
Weight -#60 Pan: 277.7

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

Memorandum

Environmental Resources Management

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Suite 100
Scottsdale, Arizona 85251
480-998-2401
480-998-2106 (fax)

To: Ken Wangerud, USEPA

From: Kevin Lundmark, ERM

Cc: David Gibby, US Magnesium
David Abranovic, ERM

Date: 2 May 2014

Subject: Phase 1A RI Reconnaissance Sieving Results for PRI Area 11

INTRODUCTION

This Technical Memorandum has been prepared by Environmental Resources Management (ERM) to detail field collection activities, laboratory analysis, and to propose recommendations for Phase 1A soil sample analysis in Preliminary Remedial Investigation (PRI) area 11 at the US Magnesium NPL Site (Site). Phase 1A Reconnaissance sampling and sieving procedures are described in the *Phase 1A RI Sample Analysis Plan* (SAP) Worksheet 11 and SAP modification form 14-C-2-7.

PHASE 1A RECONNAISSANCE SAMPLE COLLECTION

Reconnaissance (Recon) sample collection was performed 31 March 2014. Field sampling forms are provided in Attachment 1.

As described in the SAP, Recon sample locations were selected by dividing the PRI into quadrants of approximately even size and then selecting two Phase 1A sample locations in each quadrant at random for a total of eight Phase 1A locations per PRI area. Recon samples were collected at between 10 and 20 meters from the selected Phase 1A sample locations. Recon soil samples were collected as 5-point composites using a flat bottom scoop to sample from 0 to 2 inches below ground surface. Recon samples were field-sieved using a 0.25 inch sieve and material greater than 0.25 inches was discarded. The material passing the 0.25 inch sieve, referred to as the "bulk sample," was collected and combined in a plastic bucket. The bulk sample was transferred to a one gallon Ziploc® bag for storage and delivery to the laboratory.

Bulk samples were submitted to the GeoStrata geotechnical laboratory in Bluffdale, Utah for sieve analysis. The percent of the bulk sample that passed through a 0.25 mm (No. 60) sieve, or F_{fine}, was determined by the Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates, ASTM C-136, modified to use a drying temperature of 80°C for 24 hours and until constant mass was achieved.

RESULTS

The results of the sieve analysis are summarized in Table 1 and laboratory reports are provided as Attachment 2.

Table 1. Sieve Analysis Results for Reconnaissance Samples from PRI Area 11

Phase 1A Sample Location	Recon Sample ID	Recon Sample Northing*	Recon Sample Easting*	F_{fine} Percent finer than 0.25 mm	Rank Lowest F_{fine} to Highest F_{fine}	Phase 1A Sample Analyzed for Fines
PRI11-004	SCR-PRI11-004	4530457	353687	58.0	1	Yes
PRI11-007	SCR-PRI11-007	4530446	353095	61.5	2	Yes
PRI11-005	SCR-PRI11-005	4530485	353834	73.6	3	Yes
PRI11-013	SCR-PRI11-013	4529898	353670	88.9	4	Yes
PRI11-010	SCR-PRI11-010	4530155	353088	92.2	5	Yes
PRI11-002	SCR-PRI11-002	4530620	353541	94.1	6	--
PRI11-011	SCR-PRI11-011	4530159	353397	98.5	7	--
PRI11-014	SCR-PRI11-014	4530043	353827	98.9	8	--

* Coordinates based on Universal Transverse Mercator (UTM) Zone 12N

Per the SAP, if F_{fine} is greater than 75 percent for at least six of the samples, no further investigations regarding potential differences in concentration as a function of particle size are needed for that PRI area. Five samples from PRI 11 have a F_{fine} greater than 75 percent; therefore, selected Phase 1A RI samples collected from PRI 11 will be sieved for evaluation of bulk versus fines fractions. The five Phase 1A RI samples to be sieved and analyzed for fines are identified in Table 1. As described in SAP Worksheet 11, pursuant to SAP modification form 14-C-2-7, Phase 1A RI samples for fines analysis were selected by ranking the Phase 1A Recon samples from PRI 11 in order from lowest to highest F_{fine} and then selecting the Phase 1A RI samples associated with the five Phase 1A Recon samples with the lowest F_{fine}.

ATTACHMENTS

Attachment 1	Sieve Sample Collection Field Forms
Attachment 2	Sieve Sample Laboratory Report

Attachment 1
Sieve Sample Collection Field Forms

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI 11-004
DATE 3/31/14
Begin Sampling Time 0945
End Sampling Time 0953
ERM Samplers THAMADA, GRIGARD
EPA Oversight NONE
Weather SUNNY, CALM, LOW 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

NORTH OF ATI PRODUCTION FACILITY MAIN BLDG.

~10 m EAST OF PRI 11-004

ATI ESCORT - JASON DEFOREST

3. Location

Lat 4530457.34 N
Long 353687.12 E
GPS Accuracy ± 18 ft. PDOP = 2.01
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method FLAT BOT. SCOOP
Sample Depth Interval 0 - 2 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

AREA VERY ROCKY, NO NEGITATION IN IMMEDIATE AREA. PREVIOUSLY DISTURBED / GRADED.

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, SILTY, BROWN, 1" PEBBLES

Sample ID/Time SCR-PRI11-004 @ 0953
Bottles Filled 1 ZIPLOK (GALLON)

__ 4-oz Glass (unpres) __ 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
__ 4-oz Glass (1/3 headspace) __ 16-oz Glass (unpres) __ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ________

EPA Split Samples Y / N (circle)
Analyses ________

Signature [signature] Date 3/31/14

Surface Solids Sampling Form

ERM

1. Site Information SITE ID: ~~PRI~~ TH PRI11-002 DATE: 3/31/14 Begin Sampling Time: 1018 End Sampling Time: 1024 ERM Samplers: T. HAMADA, G. RIGARD EPA Oversight: — Weather: SUNNY, CALM, MID 40s	***2. Description / Location Notes*** Description (Setting, Distance from Site Features): NORTH OF ATI FENCE SE OF GLAMA HIGHWAY SCR LOC ~12 m N OF SAMPLE LOC.
3. Location Lat: 4530620.64 N Long: 353541.71 E GPS Accuracy: ±19ft PDOP=2.16 Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	ATI ESCORT - JASON DEFOREST
4. Field Preservation / Field Measurements Sample Collection Method: FLAT BOT. SCOOP Sample Depth Interval: 0-2" inches bgs Number of Grab Aliquots: 5 Saturated? Y / N (circle) Waste Potentially Present? Y / N (circle) Waste Thickness ________ inches Waste Depth ________ inches bgs Waste Appearance (describe):	Sampling Notes (Sample Recovery, Refusal, Observations) ROCKY SOIL. SOME VEGITATION PRESENT. ON SLOPE OF LOW DEPRESSION

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, SILTY, BROWN, 0.5-1" PEBBLES

Sample ID/Time: SCR-PRI11-002 @ 1024

Bottles Filled: 1 GAL ZIPLOK

__ 4-oz Glass (unpres)	__ 8-oz Glass (unpres)	__ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
__ 4-oz Glass (1/3 headspace)	__ 16-oz Glass (unpres)	__ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____________

EPA Split Samples Y / N (circle)

Analyses ____________

Signature ____________ Date 3/31/14

Surface Solids Sampling Form

ERM

1. Site Information	2. Description / Location Notes
SITE ID PRI11-007	Description (Setting, Distance from Site Features):
DATE 3/31/14	12 m WEST OF SAMPLE LOC.
Begin Sampling Time 1048	
End Sampling Time 1056	
ERM Samplers HAMADA, RIGARD	~ 15 ft. NORTH OF RAIL SPUR
EPA Oversight —	ON SOUTH WEST SIDE OF ATI FACILITY
Weather CLEAR, WIND 2-5 mph MID 40s	
3. Location	
Lat 4530446.55 N	~~~ 12 m~~ 1H
Long 353095.59 E	
GPS Accuracy ± 10 ft PDOP = 1.93	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	ATI ESCORT - JASON DEFOREST

4. Field Preservation / Field Measurements

Sample Collection Method FLAT BOT. SCOOP

Sample Depth Interval 0 - 2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)
VERY ROCKY, AT BASE OF RAIL SPUR WHERE FILL MATERIAL IS USED TO RAISE TRACKS.

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, SILTY, LIGHT BROWN, 0.5-2" PEBBLES PRESENT

Sample ID/Time SOR-PRI11-007 @1056

Bottles Filled 1 GALLON ZIPLOK

__ 4-oz Glass (unpres) __ 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

__ 4-oz Glass (1/3 headspace) __ 16-oz Glass (unpres) __ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 3/31/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID: ~~PRI11-000~~ PRI11-010 (7H)
DATE: 3/31/14
Begin Sampling Time: 1114
End Sampling Time: 1124
ERM Samplers: HAMADA, RIGARD
EPA Oversight: —
Weather: CLEAR, WIND 2-5MPH MID 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):
SW OF ATI FACILITY, OUTSIDE FENCE

~10 m WEST OF SAMPLE LOC.

ATI ESCORT – JASON DEFOREST

3. Location

Lat: 4530155.27 N
Long: ~~350~~ 353088.75 E
GPS Accuracy: ±19 ft PDOP = 2.01
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method: FLAT BOT. SCOOP
Sample Depth Interval: 0-2 inches bgs
Number of Grab Aliquots: 5
Saturated? Y / N (circle) — N
Waste Potentially Present? Y / N (circle) — N
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations):
NEAR TOP OF SLOPE, A LOT OF DEAD VEGITATION ON SURFACE

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, SANDY, DARK BROWN, ROOTS PRESENT

Sample ID/Time: SCR-PRI11-010 @1124
Bottles Filled: 1 GALLON ZIPLOK

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle) — N
Field Dup Y / N (circle) — N
Field Dup Sample ID ________
EPA Split Samples Y / N (circle) — N
Analyses ________

Signature [signature] Date 3/31/14

Surface Solids Sampling Form

1. Site Information

SITE ID PRI11-011
DATE 3/31/14
Begin Sampling Time 1145
End Sampling Time 1150
ERM Samplers HAMADA, RIGARD
EPA Oversight —
Weather CLEAR, WIND 2-5 mph MID 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):
SOUTH OF RAIL SPUR ~100' ON SOUTH SIDE OF FACILITY, IN MIDDLE OF OLD ACCESS ROAD.

~12 m E OF SAMPLE LOC.

ATI ESCORT - JASON DEFOREST

3. Location

Lat 4530159.16 N
Long 353397.97 E
GPS Accuracy ± 20 FT PDOP = 1.92
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method FLAT BOTTOM SCOOP
Sample Depth Interval 0 - 2 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)
BARE SOIL, CRUSTY TOP

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, CLAYEY, LIGHT GRAY, FINE GRAINS, SLIGHT MOISTURE

Sample ID/Time SCR-PRI11-011 @1150
Bottles Filled 1 GALLON ZIPLOK

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ________

EPA Split Samples Y / N (circle)
Analyses ________

Signature [signature] Date 3/31/14

Surface Solids Sampling Form

1. Site Information		2. Description / Location Notes
SITE ID	PRI11-013	Description (Setting, Distance from Site Features): SE OF FACILITY ~ 50' NORTH FROM SOUTHERN FENCE LINE
DATE	3/31/14	~ 30' EAST OF SE CORNER OF SEPTIC SYSTEM FENCE
Begin Sampling Time	1246	
End Sampling Time	1251	
ERM Samplers	HAMADA, RIGARD	
EPA Oversight	—	
Weather	CLEAR, WIND 5-10 mph, MID 40s	

3. Location		
Lat	4529898.98 N	~ 10 m NORTH OF SAMPLE LOC.
Long	353670.89 E	
GPS Accuracy	± 22 ft PDOP = 1.51	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes* — N		ATI ESCORT - JASON DEFOREST

4. Field Preservation / Field Measurements

Sample Collection Method: FLAT BOT. SCOOP

Sample Depth Interval: 0-2 inches bgs

Number of Grab Aliquots: 5

Saturated? Y / N (circle) — N

Waste Potentially Present? Y / N (circle) — N

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~~DARK BROWN~~ TH

SOME ROUNDED PEBBLES

THIN CRUSTY LAYER ON SURFACE

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, TRACE CLAY, FINE GRAINS, DARK BROWN
SOME ROOTS

Sample ID/Time: SCR-PRI11-013 @ 1251

Bottles Filled: 1 GALLON ZIPLOK

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle) — N

Field Dup Y / N (circle) — N

Field Dup Sample ID ____________

EPA Split Samples Y / N (circle) — N

Analyses ____________

Signature [signature] Date 3/31/14

Surface Solids Sampling Form

ERM

1. Site Information SITE ID: PRI 11-014 DATE: 3/31/14 Begin Sampling Time: 1308 End Sampling Time: 1314 ERM Samplers: HAMADA, RIGARD EPA Oversight: —— Weather: CLEAR, WIND 5-10 mph, MID 40s	**2. Description / Location Notes** Description (Setting, Distance from Site Features): IN DRAINAGE BASIN ESE OF FACILITY ~300' NW OF POWER TRANSFORMER STATION
3. Location Lat: 4530043.40 N Long: 353827.59 E GPS Accuracy: ±22 ft PDOP= 1.52 Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	~12 m NORTH OF SAMPLE LOC. ATI ESCORT - ROB RHOADES
4. Field Preservation / Field Measurements Sample Collection Method: FLAT BOT. SCOOP Sample Depth Interval: 0-2 inches bgs Number of Grab Aliquots: 5 Saturated? Y / N (circle) Waste Potentially Present? Y / N (circle) Waste Thickness ____ inches Waste Depth ____ inches bgs Waste Appearance (describe):	Sampling Notes (Sample Recovery, Refusal, Observations) SOFT SOIL. SPARSE VEGITATION. BOTTOM OF DRAINAGE BASIN. DRY CRUST ON SURFACE

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, CLAYEY, GRAYISH BROWN, FEW ROCKS > .25"

Sample ID/Time: SCR-PRI 11-014 @ 1314

Bottles Filled: 1 GALLON ZIPLOK

___ 4-oz Glass (unpres)	___ 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace)	___ 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ________

EPA Split Samples Y / N (circle)

Analyses ________

Signature: [signature] Date: 3/31/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI 11-005

DATE 3/31/14

Begin Sampling Time 1358

End Sampling Time 1403

ERM Samplers HAMADA, RIGARD

EPA Oversight —

Weather SUNNY, WIND 5-10 mph MID TO HIGH 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

SOUTH OF RAIL SPUR ON S. BOUNDARY OF U.S. MAG PROPERTY ~600 Ft. SOUTH OF ERM TRAILER.

~10 m WEST OF SAMPLE LOC.

3. Location

Lat 4530485.43N

Long 353834.93E

GPS Accuracy ± 23 Ft PDOP = 1.73

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method FLAT BOT. SCOOP

Sample Depth Interval 0 - 2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

AREA PREVIOUSLY DISTURBED/ GRADED. VERY ROCKY

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, SILTY, LIGHT BROWN, SOME ROOTS

Sample ID/Time SCR-PRI11-005@1403

Bottles Filled 1 GALLON ZIPLOK

__ 4-oz Glass (unpres) __ 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

__ 4-oz Glass (1/3 headspace) __ 16-oz Glass (unpres) __ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ________

EPA Split Samples Y / N (circle)

Analyses ________

Signature [signature] Date 3/31/14

Attachment 2
Sieve Sample Laboratory Report

GeoStrata

Sieve Analysis Summary

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)

Data Summary

Sieve Size	SCR-PRI11-004	SCR-PRI11-002	SCR-PRI11-007	SCR-PRI11-010	SCR-PRI11-011	SCR-PRI11-013	SCR-PRI11-014	SCR-PRI11-005
	Passing (%)							
3/4"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1/2"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
#4	96.0	99.5	95.7	99.5	100.0	99.2	100.0	94.4
#10	81.5	98.5	78.8	98.2	100.0	97.7	100.0	83.1
#40	63.3	96.3	65.2	94.7	99.4	91.9	99.5	75.9
#50	60.4	95.3	63.1	93.9	99.0	90.5	99.3	75.0
#60	58.0	94.1	61.5	92.2	98.5	88.9	98.9	73.6

Procedures

In general, the procedures found in ASTM C136 were followed, with the exeption of the following:

1. The samples were dried at 80°C for a minimum of 24 hours and/or until constant mass was achieved.

Prepared By: S. Winkle

Reviewed By:

REGISTERED PROFESSIONAL ENGINEER
04/15/14
HIRAM
ALBA
175774
STATE OF UTAH

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI11-004

Lab # 8953
Date Sampled: 3/31/2014
Time Sampled: 9:53 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	20.0	4.04	4.0	96.0		
#10	71.6	14.48	18.5	81.5		
#40	89.9	18.18	36.7	63.3		
#50	14.3	2.89	39.6	60.4		
#60	12.1	2.45	42.0	58.0		
Total - #60	286.7	57.97	100.0	0.0		
Total	494.6	100.00				

Pan #: Z2

Wet Weight: 987.8
Dry Weight: 957.9
Weight of Water: 29.9
Pan Weight: 463.2
Water Content: 6.0%
Weight of Dry Soil 494.7

Dry Weight After Wash: 833.1
Weight -#200 Washed: 124.8
Weight -#60 Pan: 161.9

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI11-002

Lab # 8953
Date Sampled: 3/31/2014
Time Sampled: 10:24 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	1.6	0.47	0.5	99.5		
#10	3.7	1.08	1.5	98.5		
#40	7.4	2.16	3.7	96.3		
#50	3.6	1.05	4.7	95.3		
#60	3.8	1.11	5.9	94.1		
Total - #60	323.1	94.14	100.0	0.0		
Total	343.2	100.00				

Pan #: Z5

Wet Weight: 847.1
Dry Weight: 805.7
Weight of Water: 41.4
Pan Weight: 462.2
Water Content: 12.0%
Weight of Dry Soil 343.5

Dry Weight After Wash: 534.4
Weight -#200 Washed: 271.3
Weight -#60 Pan: 51.8

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI11-007

Lab # 8953
Date Sampled: 3/31/2014
Time Sampled: 10:56 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	23.7	4.34	4.3	95.7		
#10	92.1	16.86	21.2	78.8		
#40	74.3	13.60	34.8	65.2		
#50	11.4	2.09	36.9	63.1		
#60	8.9	1.63	38.5	61.5		
Total - #60	335.7	61.47	100.0	0.0		
Total	546.1	100.00				

Pan #: B2

Wet Weight: 954.1
Dry Weight: 919.0
Weight of Water: 35.1
Pan Weight: 372.9
Water Content: 6.4%
Weight of Dry Soil 546.1

Dry Weight After Wash: 780.6
Weight -#200 Washed: 138.4
Weight -#60 Pan: 197.3

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI11-010

Lab # 8953
Date Sampled: 3/31/2014
Time Sampled: 11:24 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	1.6	0.49	0.5	99.5		
#10	4.3	1.33	1.8	98.2		
#40	11.3	3.49	5.3	94.7		
#50	2.6	0.80	6.1	93.9		
#60	5.5	1.70	7.8	92.2		
Total - #60	298.8	92.19	100.0	0.0		
Total	324.1	100.00				

Pan #: Z1

Wet Weight: 822.8
Dry Weight: 789.3
Weight of Water: 33.5
Pan Weight: 465.4
Water Content: 10.3%
Weight of Dry Soil 323.9

Dry Weight After Wash: 696.6
Weight -#200 Washed: 92.7
Weight -#60 Pan: 206.1

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI11-011

Lab # 8953
Date Sampled: 3/31/2014
Time Sampled: 11:50 AM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	0.1	0.02	0.0	100.0		
#40	2.5	0.61	0.6	99.4		
#50	1.3	0.32	1.0	99.0		
#60	2.1	0.51	1.5	98.5		
Total - #60	403.9	98.54	100.0	0.0		
Total	409.9	100.00				

Pan #: BW

Wet Weight: 833.9
Dry Weight: 791.3
Weight of Water: 42.6
Pan Weight: 381.3
Water Content: 10.4%
Weight of Dry Soil 410.0

Dry Weight After Wash: 435.3
Weight -#200 Washed: 356.0
Weight -#60 Pan: 47.9

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI11-013

Lab # 8953
Date Sampled: 3/31/2014
Time Sampled: 12:51 PM

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	2.8	0.75	0.8	99.2		
#10	5.9	1.59	2.3	97.7		
#40	21.2	5.72	8.1	91.9		
#50	5.4	1.46	9.5	90.5		
#60	5.7	1.54	11.1	88.9		
Total - #60	329.9	88.95	100.0	0.0		
Total	370.9	100.00				

Pan #: PA3

Wet Weight: 804.4
Dry Weight: 745.8
Weight of Water: 58.6
Pan Weight: 375.3
Water Content: 15.8%
Weight of Dry Soil 370.5

Dry Weight After Wash: 504.0
Weight -#200 Washed: 241.8
Weight -#60 Pan: 88.1

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI11-014

Lab # 8953
Date Sampled: 3/31/2014
Time Sampled: 13:14

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	0.0	0.00	0.0	100.0		
#10	0.1	0.03	0.0	100.0		
#40	1.9	0.49	0.5	99.5		
#50	0.8	0.21	0.7	99.3		
#60	1.4	0.36	1.1	98.9		
Total - #60	382.9	98.91	100.0	0.0		
Total	387.1	100.00				

Pan #: B1

Wet Weight: 827.6
Dry Weight: 760.7
Weight of Water: 66.9
Pan Weight: 374.0
Water Content: 17.3%
Weight of Dry Soil 386.7

Dry Weight After Wash: 400.5
Weight -#200 Washed: 360.2
Weight -#60 Pan: 22.7

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

GeoStrata

Sieve Analysis - ASTM C 136

Client Name: Environmental Resources Management
Job Number: 807-004
Project: US Mag RI FS (#0132320)
Sample Location: SCR-PRI11-005

Lab # 8953
Date Sampled: 3/31/2014
Time Sampled: 14:03

	Wt. Ret.	% Ret	Cumulative % Ret.	% Pass	Target	Pass/ Fail
1/2"	0.0	0.00	0.0	100.0		
#4	29.7	5.55	5.6	94.4		
#10	60.5	11.31	16.9	83.1		
#40	38.6	7.21	24.1	75.9		
#50	4.8	0.90	25.0	75.0		
#60	7.7	1.44	26.4	73.6		
Total - #60	393.7	73.59	100.0	0.0		
Total	535.0	100.00				

Pan #: DC

Wet Weight: 878.9
Dry Weight: 840.9
Weight of Water: 38.0
Pan Weight: 305.8
Water Content: 7.1%
Weight of Dry Soil 535.1

Dry Weight After Wash: 719.0
Weight -#200 Washed: 121.9
Weight -#60 Pan: 271.8

Tested By: C. Schwendiman
Reviewed By: S. Winkelman

Environmental Resources Management

CHAIN OF CUSTODY RECORD

NO: 2930

7272 E. Indian School Road, Suite 100 • Scottsdale, AZ • 85251 • (480) 998-2401 • FAX (480) 998-2106

PROJECT #	PROJECT NAME
0132320	US MAG RI/FS

SAMPLER: (PRINT NAME)	(SIGNATURE)
TRENT HAMADA	[signature]

RECEIVING LABORATORY

GEO STRATA
14425 SOUTH CENTER POINT WAY
BLUFFDALE, UT 84065

REQUESTED PARAMETERS: GRAIN SIZE (<60 MESH) ASTM C-136

SAMPLE I.D.	DATE	TIME	COMP	GRAB	SAMPLING METHOD	PRESERVATIVE	ICE (Y/N)	SAMPLING VOLUME	# OF CONTAINERS	SOIL	WATER	GAS	GRAIN SIZE (<60 MESH) ASTM C-136
SCR-PRI11-004	3/31/14	0953	X		FLAT BOTTOM SCOOP	NONE	N		1	X			X
SCR-PRI11-002	↓	1024	X		↓	↓	N		1	X			X
SCR-PRI11-007	↓	1056	X		↓	↓	N		1	X			X
SCR-PRI11-010	↓	1124	X		↓	↓	N		1	X			X
SCR-PRI11-011	↓	1150	X		↓	↓	N		1	X			X
SCR-PRI11-013	↓	1251	X		↓	↓	N		1	X			X
SCR-PRI11-014	↓	1314	X		↓	↓	N		1	X			X
SCR-PRI11-005	↓	1403	X		↓	↓	N		1	X			X

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	4/1/14	0943			

FIELD REMARKS

REMARKS ON SAMPLE RECEIPT

☐ BOTTLE INTACT ☐ CUSTODY SEALS ☐ CHILLED
☐ PRESERVED ☐ SEALS INTACT ☐ SEE REMARKS

ERM REMARKS

SEND REPORT TO: KEVIN.LUNDMARK@ERM.COM

WHITE – LABORATORY COPY CANARY – FIELD COPY PINK – DATABASE GOLD – PROJECT FILE

Appendix B
Landfill Geophysical Survey Report

Technical Memorandum

To: Ken Wangerud, USEPA

From: Lonnie Mercer, ERM
Kevin Lundmark, ERM

Cc: David Gibby, US Magnesium
David Abranovic, ERM

Date: DRAFT 17 April 2014

Subject: Landfill Geophysical Survey Results

Environmental Resources Management

7272 E. Indian School Road
Suite 100
Scottsdale, AZ 8251
(480) 998-2401
(480) 424-1818 (fax)

ERM®

INTRODUCTION

This Technical Memorandum has been prepared by Environmental Resources Management (ERM) to present the results of the geophysical survey completed at the US Magnesium landfill on 5 and 6 March 2014. The geophysical survey was performed as described in the *Landfill Geophysical Survey Test Plan, Revision 1, January 2014* (Test Plan) which was incorporated as Attachment 11I to the USEPA *Phase 1A Remedial Investigation Sampling and Analysis Plan to Identify Chemicals of Potential Concern in Soils, Sediment, Solid Waste, Water and Air, and Receptor Surveys, Revision 0 for PRI Areas 2 and 8 through 17* (Phase 1A RI SAP) on 14 February 2014.

As described in the Phase 1A RI SAP and the Test Plan, the objectives of the landfill geophysical survey are to:

1. Characterize the depth of waste material in the landfill;

2. Identify the presence of large metal objects, cast material, or other debris that would be likely to result in refusal during subsurface sampling within the landfill;

3. Locate subsurface sampling locations where it is most likely to be able to fully penetrate the waste without encountering refusal; and

4. Evaluate trenching versus drilling methods for obtaining subsurface samples within the landfill for chemical analysis to identify chemicals of potential concern (COPCs).

GEOPHYSICAL SURVEY PERFORMED

An electrical resistivity survey was performed at the Landfill on 5 and 6 March 2014 by GeoStrata Engineering and Geosciences (GeoStrata) of Bluffdale, Utah under subcontract to ERM. A photograph log from the survey is included as Attachment 1 to this memo and GeoStrata's report *Electrical Resistivity Study at US Magnesium Landfill, Tooele County, Utah – Revised, April 8, 2014* is included as Attachment 2.

The survey locations are shown on Figure 1 and includes four resistivity survey lines (A – A′ through D – D′). Lines A – A′ through C –C′ were performed to screen boring locations identified in the Phase 1A RI SAP. Transect D – D′ was performed to confirm the location of a former diversion ditch beneath the landfill. The survey was performed in accordance with the Test Plan and ASTM International, formerly known as the American Society for Testing and Materials (ASTM), *Standard G57-06 Standard Test Method for Field Measurement of Soil Resistivity Using the Wenner Four-Electrode Method* (ASTM International 2012). Each resistivity line included 56 electrodes spaced at equal intervals (Wenner array).

A detailed description of the resistivity survey and associated data processing is provided in Attachment 2.

DEVIATIONS FROM TEST PLAN

There were no significant deviations from the Test Plan. Minor deviations from the Test Plan include the following:

- Resistivity survey line A – A′ was adjusted in the field based on ground conditions to avoid a topographic depression which would have confounded resistivity data reduction and interpretation (see Photograph 1).
- Resistivity survey lines B – B′ and C – C′ were adjusted in the field to better agree with the former ditch alignment (as visible on the north and southeast edges of the landfill) and to help avoid the break in slope at the landfill face.
- Resistivity survey line D – D′ was adjusted based on ground conditions to avoid large gravel piles on the landfill surface which would have confounded resistivity data reduction and interpretation (see Photograph 9) and to locate the line on the top of the landfill instead of the landfill face.

- Resistivity data processing was performed using EarthImager 2D software instead of RES2DINV software. These software packages are nearly identical.

All field adjustments to survey lines were reviewed and approved by USEPA's oversight contractor who was present for the duration of survey activities.

RECOMMENDED INVESTIGATION METHODS

The survey identified the depth to native soil material (and thickness of waste in the landfill) to be approximately 25 feet at all survey locations. The survey also confirmed that subsurface materials present within the landfill are heterogeneous, which is consistent with waste disposal practices visible at the active portions of the landfill. Based on the depth and heterogeneity of the landfill, trenching is considered infeasible for obtaining the subsurface samples within the landfill for chemical analysis to identify COPCs as required by the Phase 1A RI SAP. ERM recommends that subsurface sampling within the landfill be performed using a sonic drill rig. Sonic drilling was selected as the most likely methodology to penetrate the waste expected within the landfill.

RECOMMENDED DRILLING LOCATIONS

Based on the resistivity survey results, the following minor adjustments are recommended for each of the three subsurface solids sampling locations identified for PRI2 in the Phase 1A RI SAP:

- PRI2-006 should be moved 11 feet to the west to a location on the resistivity survey line survey line A – A′ and to avoid an electrical resistivity anomaly identified near the ground surface
- PRI2-009 should be moved 44 feet to the southeast to a location on the projected ditch alignment (survey line B – B′) and away from the break in slope on the landfill surface.
- PRI2-014 should be moved 23 feet to the northwest to a location on the projected ditch alignment (survey line C – C′) where the resistivity profile extends to the landfill-native soil interface.

The SAP sampling locations and proposed modified sampling locations are shown on Figure 1. The coordinates for the modified sampling locations are provided below and are included in the Record of

UFPQAPP-SAP Modification Form 14-C-2, which is Attachment 3 to this memo.

Proposed Modified Landfill Drilling/Sampling Locations

Location ID	Northing	Easting
PRI2-006	4531299.0	354362.7
PRI2-009	4531374.9	354459.8
PRI2-014	4531264.3	354607.5

ATTACHMENTS

Figure 1	Landfill Geophysical Survey Lines and Proposed Boring Locations
Attachment 1	Photograph Log
Attachment 2	GeoStrata Report: *Electrical Resistivity Study at US Magnesium Landfill, Tooele County, Utah – Revised, April 8, 2014*
Attachment 3	Record of SAP Modification Form 14-C-2

Modified surface and subsurface solids sampling location(s)

SAP surface and subsurface solids sampling location(s)

Resistivity Survey Lines

Approxmate Slope Break along Landfill Face

Former Diversion Ditch

Operating Facility

Preliminary Remedial Investigation (PRI) Areas

PRI-2: Landfill

Explanation:
Each resistivity profile included placement of 56 electrodes at equal spacing (Wenner array).

Notes:
All boundaries approximate, originally provided by EPA
Aerial Photo: NAIP (USDA) July 3, 2011

N

0 100 200 400
Feet

Figure 1

Landfill Geophysical Survey Lines and Proposed Boring Locations
U.S. Magnesium, LLC
Tooele County, Utah

usmag®

Environmental Resources Management
102 West 500 South, Suite 650
Salt Lake City, Utah 84101-2334
ERM

Attachment 1
Photograph Log

Photograph: *1*	*View of transect A-A′ (looking east). The surficial depression that caused the transect location to be modified is to the right of the workers in the photograph.*

Location: Transect A-A′ *Date: 3/5/14*	**ERM**	*US Magnesium* *Tooele County, Utah*

Photograph: *2*	*View of southeast end of transect C-C′ (looking southeast). The former diversion ditch is visible in the background.*

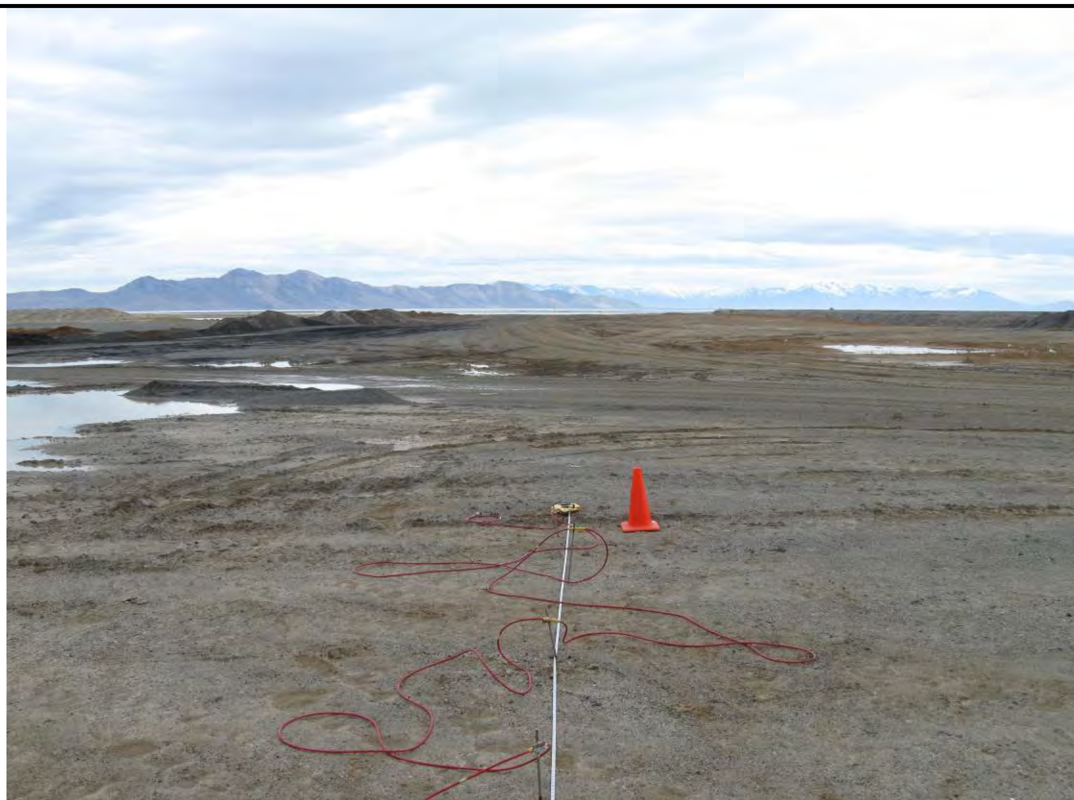
Location: Transect C-C′ *Date: 3/5/14*	**ERM**	*US Magnesium* *Tooele County, Utah*

Photograph: *3*	*View of transect C-C′ (looking northwest).*

Location: Transect C-C′ *Date: 3/5/14*	**ERM**	*US Magnesium* *Tooele County, Utah*

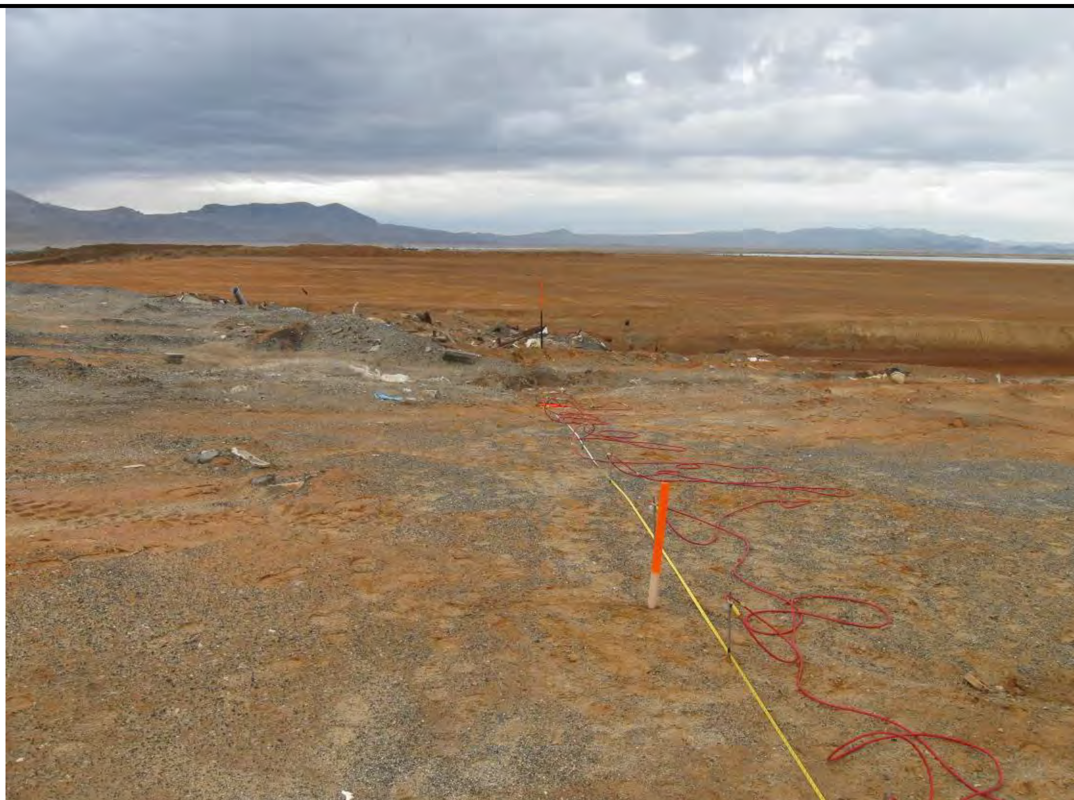
Photograph: *4*	*View of an electrode, a communications cable, and a measuring tape that are part of the electrical resistivity field equipment.*

Location: Transect C-C′ *Date: 3/5/14*	**ERM**	*US Magnesium* *Tooele County, Utah*



Photograph: 5	*View of the southeast end of transect B-B′ (looking southeast).*	
Location: Transect B-B′ *Date: 3/6/14*	**ERM**	*US Magnesium* *Tooele County, Utah*

Photograph: 6	*View of transect B-B′ (looking northwest).*	
Location: Transect B-B′ *Date: 3/6/14*	**ERM**	*US Magnesium* *Tooele County, Utah*



Photograph: *7*	*View of northwest end of transect B-B′ (looking northwest).*	
Location: Transect B-B′ *Date: 3/6/14*	**ERM**	*US Magnesium* *Tooele County, Utah*

Photograph: *8*	*View of the former diversion ditch off the north flank of the landfill where it is connected to the main wastewater ditch (looking northwest). The t-post in the foreground shows alignment of transect B-B′ with the former diversion ditch.*	
Location: Former Diversion Ditch *Date: 3/6/14*	**ERM**	*US Magnesium* *Tooele County, Utah*

Photograph: *9*	*View of transect D-D′ (looking northeast).*	
Location: Transect D-D′ *Date: 3/6/14*	**ERM**	*US Magnesium* *Tooele County, Utah*

Photograph: *10*	*View of transect D-D′ (looking southwest).*	
Location: Transect D-D′ *Date: 3/6/14*	**ERM**	*US Magnesium* *Tooele County, Utah*

Attachment 2
GeoStrata Report: Electrical Resistivity Study at US Magnesium Landfill, Tooele County, Utah – Revised, April 8, 2014

Engineering & Geosciences
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Electrical Resistivity Study at US Magnesium Landfill Tooele County, Utah-Revised

GeoStrata Job No. 807-005

April 8, 2014

Prepared for:

ERM
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Attn: Mr. Kevin Lundmark

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Electrical Resistivity Study at US Magnesium Landfill - Revised
Tooele County, Utah
GeoStrata Job No. 807-005

Prepared by:

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April 8, 2014

TABLE OF CONTENTS

APPENDICES

1.0 EXECUTIVE SUMMARY

This report presents the results of our electrical resistivity study conducted in accordance with our proposal signed February 10, 2014. The scope of work included collecting four electrical resistivity profiles atop the active landfill at U.S. Magnesium (Plate A-1). The purpose for the investigation was to evaluate where subsurface boring will most likely able to fully penetrate the landfill without encountering any large metal objects. Fieldwork for this project was conducted by qualified geologists from GeoStrata on March 5^{th} & 6^{th}, 2014.

GeoStrata used the AGI SuperSting R1 with Swift box to conduct the electrical resistivity studies at the subject site. The R1 system consists of the SuperSting, the Swift box, a communication cable, and 56 18-inch stainless steel electrodes. GeoStrata personnel used a laptop loaded with EarthImager 2D software for onsite data processing. GeoStrata used a handheld Trimble GeoXH GPS to record the end points and midpoints of each line.

GeoStrata used the software program EarthImager 2D developed by AGI to process the resistivity data. After the initial inversion the quality of the data was assessed using the data misfit histogram feature in EarthImager. GeoStrata used a threshold of 40% to remove poorly fit data points. GeoStrata decided to use this value based on experience and professional judgment because we expect to have noisy or highly variable data in this study. After the poorly fit data were removed the data was inverted again and this is the final model of the subsurface presented as part of this project in Plates B-1 through Plate B-4.

GeoStrata conducted four electrical resistivity surveys in the vicinity of the three proposed boring locations. The results of the surveys identified the landfill layer with an average resistivity value of approximately 30 ohm-m, with numerous electrical anomalies ranging up to 8000 ohm-m. The anomalies vary in magnitude and size. The material beneath the landfill layer has an average resistivity value of approximately 0.1 ohm-m.

There is a resistivity anomaly that spatially correlates with the projected location of the ditch on line D-D' (Plate B-4). It is GeoStrata's opinion that this anomaly likely represents the ditch as it became filled in with landfill material.

GeoStrata recommends that the proposed boring PRI2-006 be moved approximately 10 ft to the west on a bearing of 255°. It should be noted that survey line A-A' was moved approximately 10 ft north to avoid a depression on the ground surface of the landfill. The remaining borings do not appear to have significant high or low electrical resistivity anomalies in their vicinity.

NOTICE: This executive summary is not intended to replace the report of which it is part and should not be used separately from the report. The executive summary is provided solely for purposes of overview. The executive summary omits a number of details, any one of which could be crucial to the proper application of this report.

2.0 INTRODUCTION

2.1 PURPOSE AND SCOPE OF WORK

This report presents the results of our electrical resistivity study conducted in accordance with our proposal signed February 10, 2014. The scope of work included collecting four electrical resistivity profiles atop the active landfill at U.S. Magnesium (Plate A-1). The purpose for the investigation was as follows:

1. Characterize the depth of waste material in the landfill;

2. Identify the presence of large metal objects, cast material, or other debris that would be likely to result in refusal during subsurface sampling within the landfill;

3. Locate subsurface sampling locations where it is most likely to be able to fully penetrate the waste without encountering refusal; and

4. Evaluate trenching versus drilling methods for obtaining subsurface samples within the landfill for chemical analysis to identify chemicals of potential concern (COPCs).

Fieldwork for this project was conducted by qualified geologists from GeoStrata on March 5th & 6th, 2014.

The recommendations contained in this report are subject to the limitations presented in the **Limitations** section of this report (Section 5.0).

2.2 PROJECT DESCRIPTION

The US Magnesium facility is located in Tooele County, Utah approximately 12 miles north of Interstate 80. US Magnesium operates an active landfill that is approximately 20-25 ft thick. GeoStrata recommended utilizing the electrical resistivity method for this project because of the landfill depth, anticipated variation within the landfill layer and the potential influence this variability would have on other geophysical methods. Electrical resistivity collects hundreds of data points in the shape of an inverted pyramid beneath the survey line. The large number of data points increases the probability that the geophysical model reasonably represents the subsurface.

GeoStrata personnel conducted the surveys in close proximity to the proposed boring locations to assess the feasibility of advancing a boring through the landfill layer.

3.0 METHOD OF STUDY

3.1 FIELD EQUIPMENT

As previously noted, field investigations were completed at the subject site on March 5th & 6th, 2014. GeoStrata used the AGI SuperSting R1 with Swift box to conduct the electrical resistivity studies at the subject site. The R1 system consists of the SuperSting, the Swift box, a communication cable, and 56 18-inch stainless steel electrodes. GeoStrata personnel used a laptop loaded with EarthImager 2D software for onsite data processing. GeoStrata used a handheld Trimble GeoXH GPS to record the end points and midpoints of each line. Plate B-6 contains all of the GPS recorded as part of this project.

3.2 DATA ACQUISITION

Electrical resistivity data was acquired following the methodology outlined in the American Society for Testing and Materials (ASTM), standard G57-06 Standard Test Method for Field Measurement of Soil Resistivity Using the Wenner Four-Electrode Method (ASTM International 2012). Previous to conducting field studies at the subject site, GeoStrata personnel created a command file that describes the survey parameters to be used for the surveys. GeoStrata used AGI SuperSting Administrator command creator software to create the command file and upload it to the R1. GeoStrata decided to use a Wenner array based on our understanding of the scope of the project and the benefits of this type of array. The Wenner array uses equally spaced electrodes and typically is good at resolving vertical variations in the subsurface. Plate A-3 shows the typical electrode geometry for a Wenner array where current is injected into the subsurface via the exterior electrodes and then voltage is measured at the interior electrodes. GeoStrata used an electrode spacing of 5 ft which results in a theoretical maximum depth of investigation according to the manufacturer of 9.3 x the electrode spacing or approximately 46.5 ft. This spacing was chosen based on the project goals of imaging the landfill layer, and the depth of the landfill/native soil boundary.

GeoStrata used the GeoXH to navigate to the proposed boring locations. Once the proposed boring location was staked, measuring tapes were pulled in a line so that the stakes could be placed at 5 ft. intervals. The stakes were driven a minimum of 6 inches into the soil to ensure adequate coupling with the soil. Next the communication cable was connected to the electrodes with rubber bands. The communication cable then was plugged into the Swift unit. The Swift and the SuperSting are connected via the electrode cables. A 12 volt car battery was used as the power source for the survey.

Previous to starting the survey a contact resistance test which measures the resistivity of each cable/stake and stake/soil connection was completed for each stake location. This test is used to provide an assessment of the connection between the electrodes and cabling system. The contact resistance test only indicated a poor connection between the cable and stake at two locations. Both times the connection issue was the result of the rubber band blocking the contact between the stake and the electrode cable.

After completing the contact resistance test the resistivity survey was initiated. Each survey took approximately 90 minutes to complete. Upon completing the survey the data was downloaded and reviewed using the EarthImager 2D program. In this initial review of the data, GeoStrata was checking to ensure that a high percentage (>80%) of the 495 programmed data points were actually recorded and reviewing the range of resistivity values recorded. All of the survey lines collected as part of this study met GeoStrata's standards for initial data quality.

3.3 DATA PROCESSING

GeoStrata used the software program EarthImager 2D developed by AGI to process the resistivity data. Upon opening each file in EarthImager a smooth model inversion is run for a quick look at a model for the data. After the initial inversion the quality of the data was assessed using the data misfit histogram feature in EarthImager. This feature plots the absolute value of the difference between the calculated and the measured data to the measured data (apparent resistivity). In general, any data with a relative misfit larger than 50% is considered a poor fit and should be removed. GeoStrata used a threshold of 40% to remove poorly fit data points. GeoStrata decided to use this value based on experience and professional judgment because we expect to have noisy or highly variable data in this study. After the poorly fit data were removed the data was inverted again and this is the final model of the subsurface presented as part of this project in Plates B-1 through Plate B-4.

GeoStrata made the following assumptions for the data processing and modeling portion of this project: the original ground surface beneath the landfill was relatively flat, the landfill layer is 20-25 ft thick, the landfill consists of a combination of soils and man-made materials, and measured resistivity values may be highly variable in magnitude (ohm-m) and spatially.

4.0 RESULTS AND DISCUSSION

4.1 ELECTRICAL RESISTIVITY SURVEY RESULTS NEAR PROPOSED BORING PRI2-006

Plate A-2 shows the location of the survey line associated with the proposed boring PRI2-006. Field work associated for survey line A-A' was conducted at the subject site on March 5th. The center point of the survey was placed approximately 10 ft to the north of the proposed boring in order avoid a topographic depression which could potentially make data reduction problematic. Plate B-1a shows the measured apparent resistivity values recorded by the R1 system, these values are then adjusted for depth to produce calculated apparent resistivity values. The calculated apparent resistivity values are the data used in the inversion process to create the final model (Plate B-1b). GeoStrata made the decision to remove noisy data points using the methodology and criteria outlined in section 3.3 of this report, resulting in a final model with an RMS error of 12.77%. The final model presented in Plate B-1b shows a non-unique solution for the input data.

GeoStrata estimates that the landfill is approximately 25 ft thick at this location. The landfill layer was defined by the deepest horizontal boundary between low (0.1 ohm-m) and moderate resistivity (~30 ohm-m) materials. The landfill layer has an average resistivity of approximately 30 ohm-m with several anomalies located throughout the layer. There are several moderate anomalies with values in the range of 200 – 300 ohm-m and one high anomaly near the surface at 211 ft. The moderate resistivity anomalies have values that are typical of unconsolidated moist silt and sand. The 3,500 ohm m anomaly near 211 ft marker could be dry or moist sand and gravel or possibly a man-made item with similar resistivity properties.

The layer beneath the landfill layer is characterized by very low average resistivity value of 0.1 ohm-m. It is GeoStrata's opinion that the low resistivity values associated with this layer are the bi-product of the soil type, or the presence or addition of salts, and groundwater.

There is an anomaly in the landfill layer near the surface of the proposed boring location. It is GeoStrata's opinion that moving the proposed boring approximately 10 ft to the west on a bearing of 255° to avoid the identified resistivity anomalies.

4.2 ELECTRICAL RESISTIVITY SURVEY RESULTS NEAR PROPOSED BORING PRI2-009

Plate A-2 shows the location of the survey lines associated with the proposed boring PRI2-009. Field work associated with line B-B' and D-D' were conducted at the subject site on March 6th. Line D-D' was performed to attempt to detect the location of a historical ditch beneath the landfill. Plate B-2a and B-4a show the measured apparent resistivity values recorded by the R1 system for these surveys. The black dots on Plate B-2a and B-4a show the locations of measurements used in the inversion process to create the final model (Plate B-2b and 4b). The final model presented in Plate B-2b and Plate B-4b show a non-unique solution for the input data. GeoStrata made the decision to remove noisy data points using the methodology and criteria outlined in section 3.3 of this report, resulting in a final model with an RMS error of 10.76% for line B-B' and 7.54% for line D-D'.

GeoStrata estimates that the landfill is approximately 23-25 ft thick at this location. The landfill layer was defined by the deepest horizontal boundary between low (0.1 ohm-m) and moderate resistivity (~30 ohm-m) materials. The landfill layer in both of these survey lines has an average resistivity of approximately 30 ohm-m with several anomalies located throughout. The resistivity anomalies in the landfill layer of line B-B' have significantly higher peak values (4128 ohm-m) than the resistivity anomalies in line D-D'.

Plate B-4c shows the projected location of the ditch that underlies the landfill. The projected location of the ditch was centered on the line B-B'. The width of the projection was based on measurements made off Google Earth of the exposed ditch south of the landfill. There is a resistivity anomaly that spatially correlates with the projected location of the ditch. It is GeoStrata's opinion that this anomaly likely represents the ditch as it became filled with landfill material.

The layer beneath the landfill layer is characterized by a relatively low average resistivity value of 0.1 ohm-m. It is GeoStrata's opinion that the low resistivity values associated with this layer are the bi-product of the soil type, or the presence or addition of salts, and groundwater.

The proposed boring location is located directly on line B-B', which is on the edge of the model presented in Plate B-2c. There are no significant anomalies in the upper 14 ft. at this location. In GeoStrata's opinion the proposed boring location looks to be free of large high or low electrical resistivity anomalies.

4.3 ELECTRICAL RESISTIVITY SURVEY RESULTS NEAR PROPOSED BORING PRI2-014

Plate A-2 shows the location of the survey lines associated with the proposed boring PRI2-014. Field work associated with line C-C' was conducted at the subject site on March 5th. The survey was not centered over the proposed boring location in order to avoid running half of the survey down the face of the landfill. Plate B-3a shows the measured apparent resistivity values recorded by the R1 system for these surveys. The black dots on Plate B-3a show the locations of measurements used in the inversion process to create the final model (Plate B-3b). Noisy data points were removed using the methodology and criteria outlined in section 3.3 of this report. The final model presented in Plate B-3b show a non-unique solution for the input data. GeoStrata made the decision to remove noisy data points using the methodology and criteria outlined in section 3.3 of this report, resulting in a final model with an RMS error of 9.18% for line C-C'.

GeoStrata estimates that the landfill is approximately 25 ft thick at this location. The landfill layer was defined by the deepest horizontal boundary between low (0.1 ohm-m) and moderate resistivity (~30 ohm-m) materials The landfill layer in the vicinity of this survey line has an average velocity of approximately 30 ohm-m with several anomalies located throughout. The anomalies in the landfill layer of line C-C' have significantly higher peak values (8347 ohm-m) than the peaks identified in the other lines.

The layer beneath the landfill layer is characterized by very low average resistivity value of 0.1 ohm-m. It is GeoStrata's opinion that the low resistivity values associated with this layer are the bi-product of the soil type, or the presence or addition of salts, and groundwater.

There are no significant anomalies in the upper 12 ft. at this location. In GeoStrata's opinion the proposed boring location looks to be free of large high or low electrical resistivity anomalies.

5.0 CONCLUSIONS

This report presents the results of our electrical resistivity study at the landfill on US Magnesium property in Tooele County, Utah. GeoStrata was tasked to evaluate the feasibility of drilling through the landfill layer at the subject site. GeoStrata conducted four electrical resistivity surveys in the vicinity of the three proposed boring locations. The results of the surveys identified the landfill layer with an average resistivity values of approximately 30 ohm-m, with numerous anomalies ranging up to 8000 ohm-m. The electrical anomalies with in the landfill layer vary in magnitude and size. The material beneath the landfill layer has an average resistivity value of approximately 0.1 ohm-m.

There is a resistivity anomaly that spatially correlates with the projected location of the ditch on line D-D' (Plate B-4). It is GeoStrata's opinion that this anomaly likely represents the ditch as it became filled in with landfill material.

GeoStrata recommends that the proposed boring PRI2-006 be moved approximately 10 ft to the west on a bearing of 255°. It should be noted that survey line A-A' was moved approximately 10 ft north to avoid a steep depression. The remaining borings do not appear to have significant high or low electrical resistivity anomalies in their vicinity.

6.0 LIMITATIONS

The data presented in this report are based on limited field exploration. The subsurface data used in the preparation of this report were obtained from the geophysical surveys made for this investigation. The geophysical method used in this study is an indirect method for identifying the soil properties. As with all indirect methods of investigation, professional opinions and assessments must be made and some variances between our assessments and actual subsurface conditions should be anticipated. If any conditions are encountered at this site that are different from those described in this report, our firm should be immediately notified so that we may make any necessary revisions to recommendations contained in this report.

This report was prepared in accordance with the generally accepted standard of practice at the time the report was written. No warranty, expressed or implied, is made.

We appreciate the opportunity to be of service on this project. Should you have any questions regarding the report or wish to discuss additional services, please do not hesitate to contact us at your convenience at (801) 501-0583.

0 1,000 2,000 4,000 6,000 8,000 Feet

1:24,000

All Locations are Approximate.

Base Map: 2011 NAIP 1 Meter orthophotography obtained from the State of Utah AGRC.

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Tooele County, Utah
Project Number: 807-005

Site Vicinity Map

Plate A-1

0 50 100 200 300 400
Feet

1:2,400

All Locations are Approximate.

Base Map: 2011 NAIP 1 Meter Orthophotography obtained
from the State of Utah AGRC

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Legend

Proposed Boring Location

Electrical Resistivity Line

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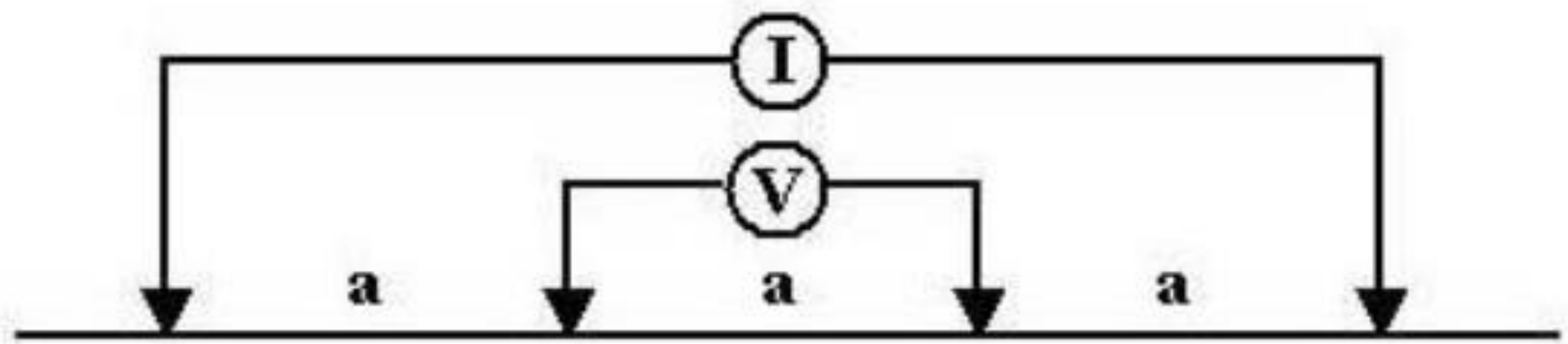
Tooele County, Utah
Project Number: 807-005

Exploration Location Map

Plate
A-2

Wenner Array



$$\rho_A = 2\pi \ a \frac{V}{I}$$

Pa=apparent resistivity, ohm-m
V= Voltage, V
I= Current, mA
a= electrode spacing, m

M.H. Loke, 1991, Electrical Imaging surveys for environmental and engineering studies. Heritage Geophysics.

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Wenner Array Geometry

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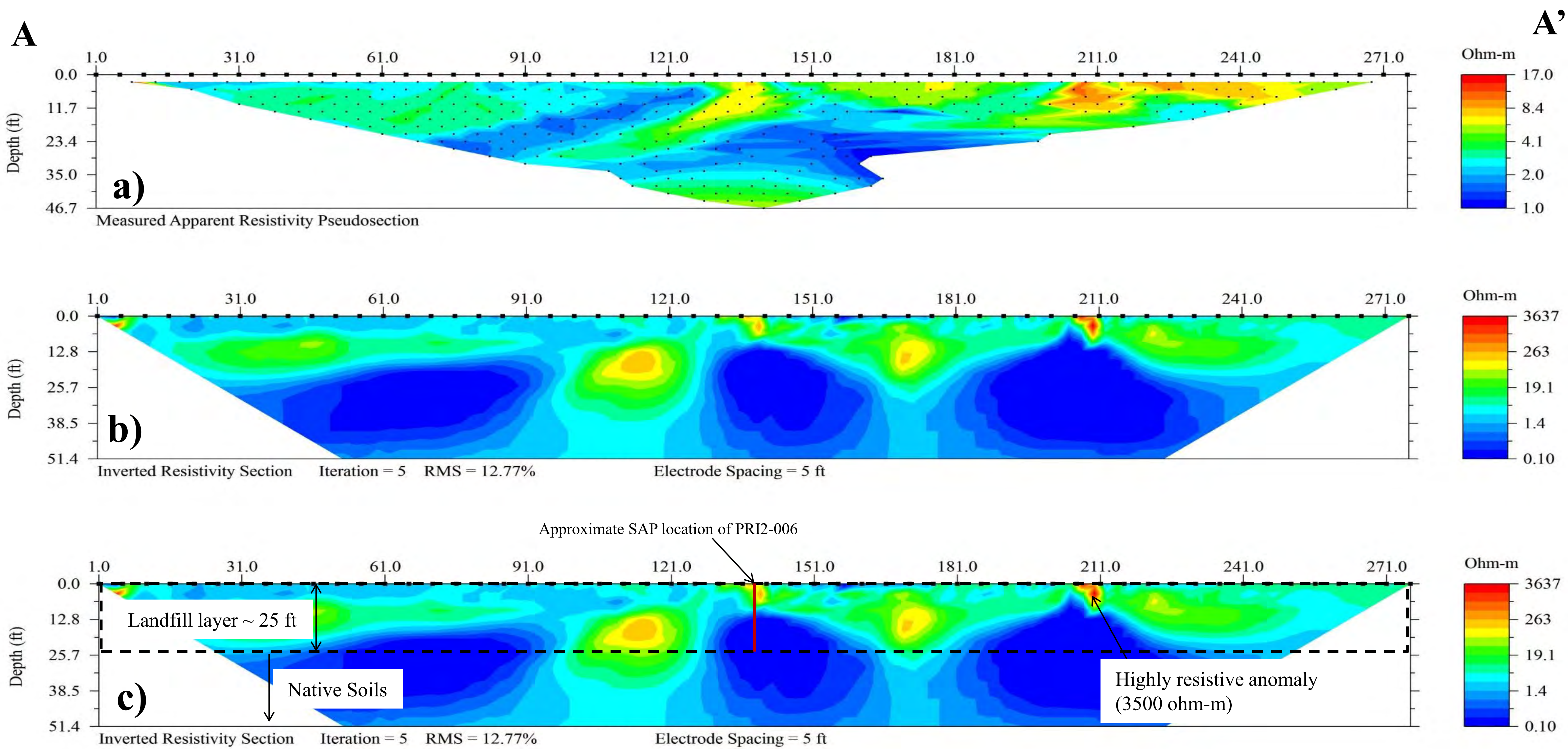
Plate A-3



Landfill layer has average resistivity value of ~ 30 ohm-m and maximum resistivity of 3600 ohm-m

Native Soils have an average resistivity value of 0.1 ohm-m

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Electrical Resistivity Model and Interpretation for 006

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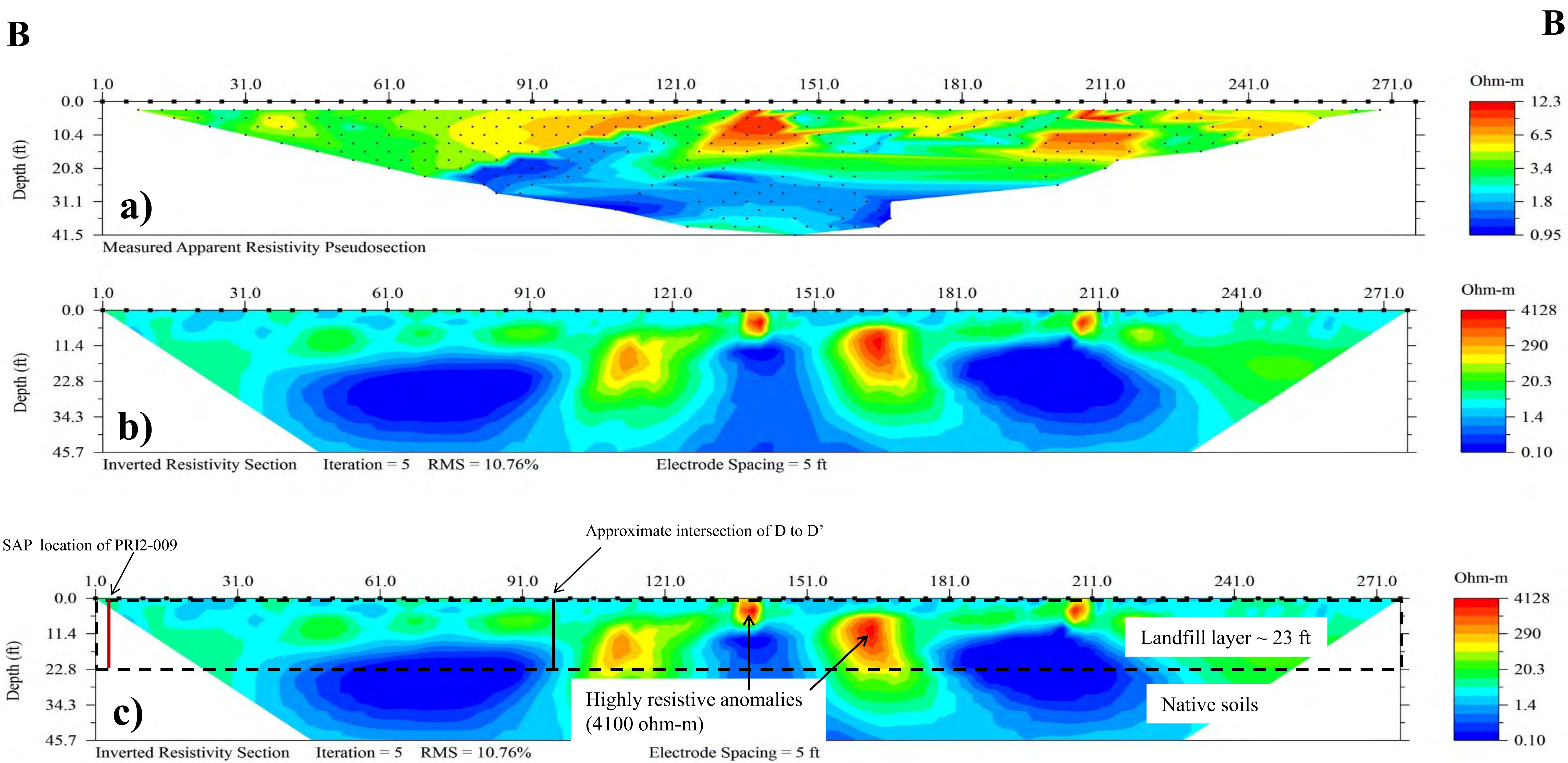
Project Number: 807-005

Plate B-1



Landfill layer has average resistivity value of ~ 30 ohm-m and maximum resistivity of 4100 ohm-m

Native Soils have an average resistivity value of 0.1 ohm-m

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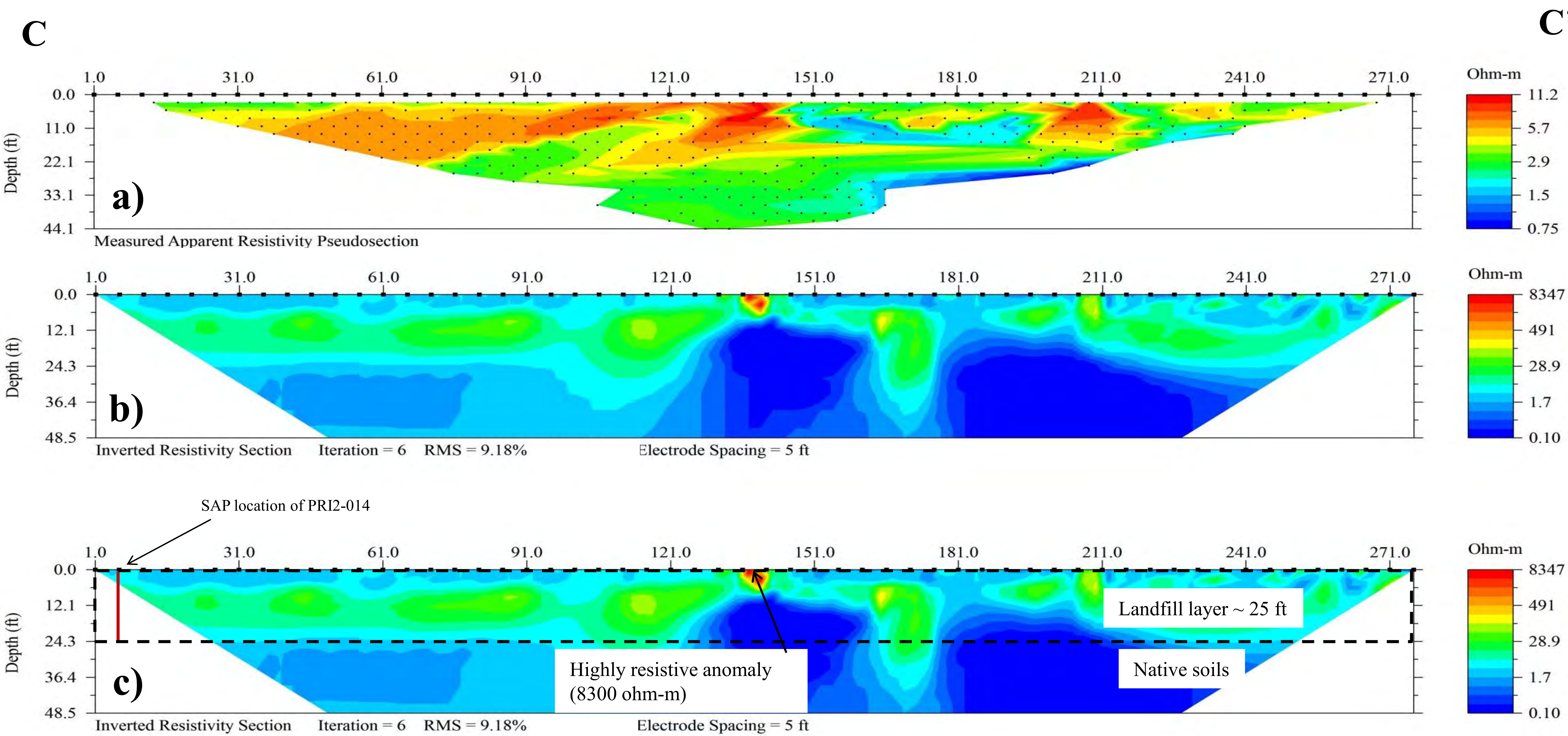
Electrical Resistivity Model and Interpretation for 009

ERM
U.S. Magnesium ER Survey
Project Number: 807-005

Plate B-2



Landfill layer has average resistivity value of ~ 30 ohm-m and maximum resistivity of 8300 ohm-m

Native Soils have an average resistivity value of 0.1 ohm-m

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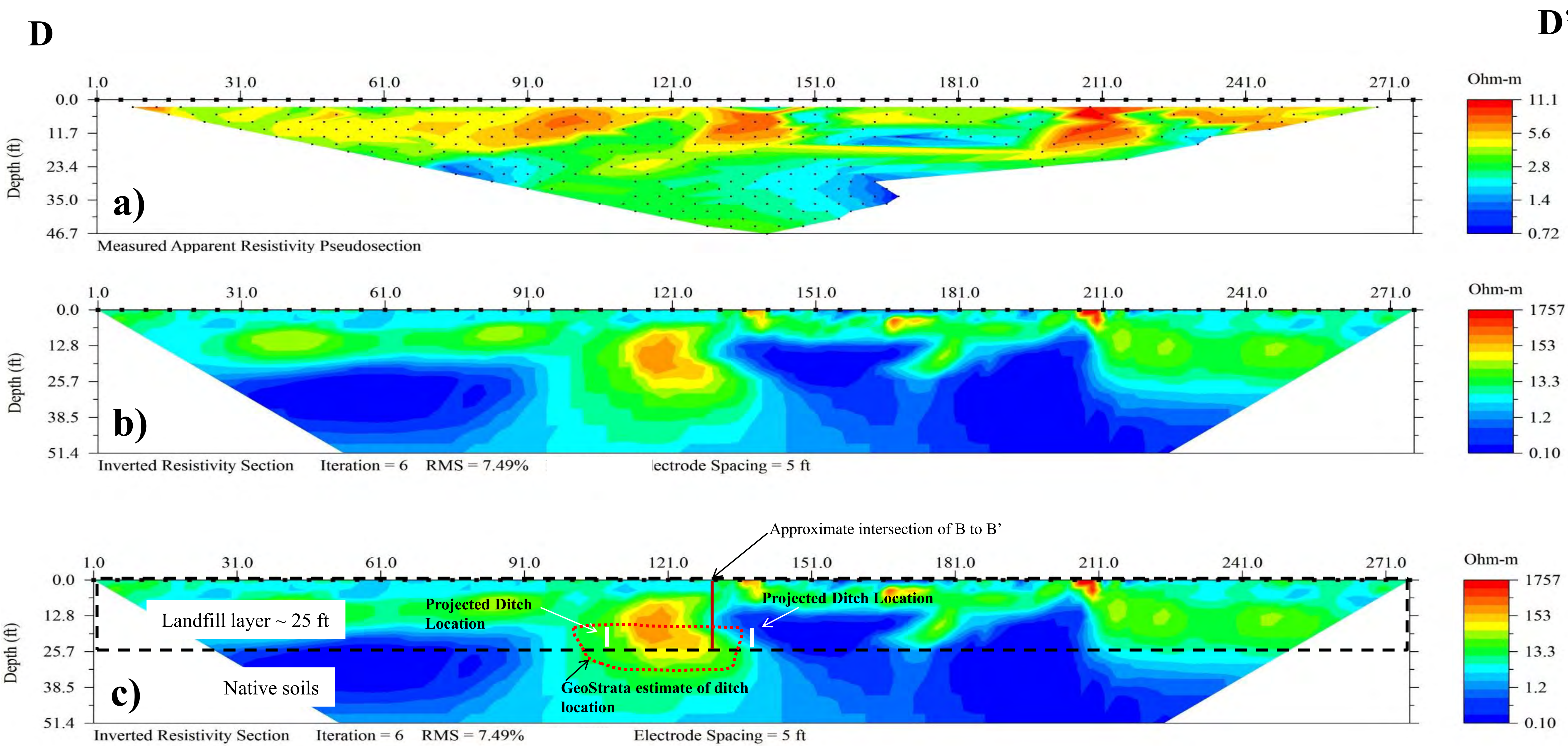
Electrical Resistivity Model and Interpretation for 014

ERM
U.S. Magnesium ER Survey
Project Number: 807-005

Plate B-3



Landfill layer has average resistivity value of ~ 30 ohm-m and maximum resistivity of 1700 ohm-m

Native Soils have an average resistivity value of 0.1 ohm-m

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Electrical Resistivity Model and Interpretation for 009

ERM
U.S. Magnesium ER Survey
Project Number: 807-005

Plate B-4

Typical Resistivity Values

Table 1. Resistivities of some common rocks, minerals and chemicals.

Material	Resistivity (Ω•m)	Conductivity (Siemen/m)
Igneous and Metamorphic Rocks		
Granite	$5x10^{3}$ - 10^{6}	10^{-6} - $2x10^{-4}$
Basalt	10^{3} - 10^{6}	10^{-6} - 10^{-3}
Slate	$6x10^{2}$ - $4x10^{7}$	$2.5x10^{-8}$ - $1.7x10^{-3}$
Marble	10^{2} - $2.5x10^{8}$	$4x10^{-9}$ - 10^{-2}
Quartzite	10^{2} - $2x10^{8}$	$5x10^{-9}$ - 10^{-2}
Sedimentary Rocks		
Sandstone	8 - $4x10^{3}$	$2.5x10^{-4}$ - 0.125
Shale	20 - $2x10^{3}$	$5x10^{-4}$ - 0.05
Limestone	50 - $4x10^{2}$	$2.5x10^{-3}$ - 0.02
Soils and waters		
Clay	1 - 100	0.01 - 1
Alluvium	10 - 800	1.25 $x10^{-3}$ - 0.1
Groundwater (fresh)	10 - 100	0.01 - 0.1
Sea water	0.2	5
Chemicals		
Iron	$9.074x10^{-8}$	$1.102x10^{7}$
0.01 M Potassium chloride	0.708	1.413
0.01 M Sodium chloride	0.843	1.185
0.01 M acetic acid	6.13	0.163
Xylene	$6.998x10^{16}$	$1.429x10^{-17}$

M.H. Loke, 1991, Electrical Imaging surveys for environmental and engineering studies. Heritage Geophysics.

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Electrical Resistivity Values

ERM
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Project Number: 807-005

Plate B-5

Northing	Easting	Elevation	ID	NAME	ATTRIBUTES	GPSTIME
4531357.275	354482.75	1293.193	4	Point_generic	009-Center	03/06/14 09:38:46pm
4531361.382	354470.164	1294.87	9	Point_generic	009P -Center	03/06/14 06:01:25pm
4531398.155	354491.655	1290.854	14	Point_generic	009P-S1	03/06/14 05:59:11pm
4531326.311	354449.215	1294.385	19	Point_generic	009P-S56	03/06/14 06:03:30pm
4531382.822	354449.516	1291.676	24	Point_generic	009-S1	03/06/14 09:49:24pm
4531380.491	354452.053	1292.418	29	Point_generic	009-S3	03/06/14 09:53:10pm
4531378.763	354454.354	1292.548	34	Point_generic	009-S5	03/06/14 09:54:14pm
4531376.858	354456.821	1292.274	39	Point_generic	009-S7	03/06/14 09:55:16pm
4531373.195	354461.648	1292.603	44	Point_generic	009-S11	03/06/14 09:56:12pm
4531368.475	354467.54	1291.903	49	Point_generic	009-S16	03/06/14 09:57:17pm
4531363.901	354473.769	1292.664	54	Point_generic	009-S21	03/06/14 09:58:24pm
4531332.34	354515.226	1291.576	59	Point_generic	009-S56	03/06/14 09:40:38pm
4531301.062	354369.041	1293.224	61	Point_generic	P006-S32	03/05/14 06:47:21pm
4531300.15	354364.367	1294.137	65	Point_generic	P006	03/05/14 06:33:37pm
4531289.126	354324.012	1293.764	73	Point_generic	P006 S1	03/05/14 06:36:33pm
4531300.341	354363.28	1293.001	81	Point_generic	P006 S28	03/05/14 06:43:58pm
4531301.062	354369.041	1293.224	89	Point_generic	P006-S32	03/05/14 06:47:21pm
4531302.275	354373.652	1292.739	97	Point_generic	P006-S35	03/05/14 06:49:14pm
4531303.458	354378.199	1293.123	105	Point_generic	P006-S38	03/05/14 06:51:08pm
4531304.539	354383.929	1294.399	113	Point_generic	P006-S42	03/05/14 06:52:45pm
4531305.668	354388.473	1293.731	121	Point_generic	P006-S45	03/05/14 06:54:29pm
4531307.167	354392.393	1294.039	129	Point_generic	P006-S48	03/05/14 06:55:49pm
4531308.446	354399.091	1295.124	137	Point_generic	P006-S52	03/05/14 06:57:22pm
4531308.829	354401.87	1294.198	145	Point_generic	P006-S54	03/05/14 06:59:08pm
4531309.518	354404.901	1294.214	153	Point_generic	P006-S56	03/05/14 07:01:15pm
4531284.158	354580.471	1293.287	161	Point_generic	P014-Center-S28	03/05/14 10:17:27pm
4531259.659	354613.389	1293.526	165	Point_generic	P014-S1	03/05/14 10:08:41pm
4531261.584	354610.785	1293.276	169	Point_generic	P014-S3	03/05/14 10:11:25pm
4531264.211	354607.317	1293.612	173	Point_generic	P014-S6	03/05/14 10:12:43pm
4531267.865	354602.528	1293.423	177	Point_generic	P014-S10	03/05/14 10:14:00pm
4531270.696	354598.809	1293.307	181	Point_generic	P014-S13	03/05/14 10:15:23pm
4531310.196	354545.491	1293.143	185	Point_generic	P014-S56	03/05/14 10:21:11pm

Coordinate System: UTM Zone 12
Datum: WGS84
Geoid: EMG96
Units: Meter

GeoStrata

GPS Data Points

ERM
U.S. Magnesium ER Survey
Project Number: 807-005

Plate
B-6

Attachment 3
Record of SAP Modification Form 14-C-2

Document Tracking Number: 14C-2-_______

RECORD OF UFPQAPP-SAP MODIFICATION

INSTRUCTIONS: This form is required anytime a modification is being made to any worksheets or sections for any portion of the Phase 1A SAP, including attachments, tables, figures, and/or SOPs.

Requestor: Kevin Lundmark

Title: ERM RI Field Task Lead

Name of Site/Field Event: US Magnesium Phase 1A RI SAP, Revision 0

Date of Proposed Modification: 17 April 2014

Modified SAP Section(s): Worksheet 14, Table 14-1

Describe the Modification:

Modify surface/subsurface solids sample locations at PRI2 as follows:

Location ID	Northing	Easting
PRI2-006	4531299.0	354362.7
PRI2-009	4531374.9	354459.8
PRI2-014	4531264.3	354607.5

Justification or Reason for the Modification:

The modifications to drilling locations are based on the results of the electrical resistivity survey performed at the landfill 5 to 6 March 2014.

EPA Review/Approval: ____**Date:** ________________
(RPM or designee)

Each approved UFPQAPP-SAP Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

Kevin Lundmark

From:	Wangerud, Ken <wangerud.ken@epa.gov>
Sent:	Thursday, April 24, 2014 11:27 AM
To:	David Abranovic; Kevin Lundmark
Cc:	Catherine D. LeCours (clecours@PWT.COM); Justin Burning; R. David Gibby (dgibby@usmagnesium.com); Wangerud, Ken; Howe, Robert; cgilgen@utah.gov
Subject:	RE: draft Geophysical Survey TM - US Magnesium RI/FS
Attachments:	Att 14C-2-21 - Landfill Drilling EPA acceptable.docx; Att 14C-2-21 - Landfill Drilling EPA redline 04242014.docx

David etal:

Thanks to ERM and GeoStrata for this substantial piece of pre-drilling reconn work.

The EPA accepts the draft landfill survey tech memo, with the following caveats:

1. Location for PRI2-014 should be moved 61 feet (plus/minus 10 feet) to the northwest along the projected ditch alignment. The Tech Memo suggests 23 feet; however, the location change being required by the EPA places the boring more within the 2-D spatial array of the geophysical imaging results.
2. The EPA is not approving the SAP Modification (adjusted locations) included as Attachment 3. Instead, ERM shall provide a field modification form documenting the "as-built" coordinates for the adjusted boring locations after the field work is complete. ERM should also attach to the field modification form copies of Plates B-1, B-2, and B-3 identifying the 'as-built' boring locations on the "c)" section of each plate.
3. Regarding the SAP mod submitted 11March2014 by Kevin Lundmark, I have attached two additional files.
    a. A "redline" marked up copy of ERM's original submission – to illustrate the changes proposed by the EPA for approval.
    b. A "clean" copy of a SAP Mod request that the EPA would find approvable.
4. EPA fully endorses ERM's recommendation to collect sub-landfill samples of the underlying native material. Please advise if you wish to resubmit a SAP-mod request, or if you'd prefer an EPA-issued mod.

Please contact CatherineL at PWT or me if you have follow-up questions.

Ken Wangerud, Remedial Project Manager
Superfund Remedial Program
Office of Ecosystems Protection and Remediation
USEPA Region 8 - EPR/SR
1595 Wynkoop, Denver CO 80202-1129
- -
ofc. tel. 303-312-6703
fax 303-312-7151
wangerud.ken@epa.gov

From: David Abranovic [mailto:David.Abranovic@erm.com]
Sent: Thursday, April 17, 2014 4:43 PM
To: Wangerud, Ken
Cc: Catherine D. LeCours (clecours@PWT.COM); Justin Burning; R. David Gibby (dgibby@usmagnesium.com); Kevin Lundmark
Subject: RE: draft Geophysical Survey TM - US Magnesium RI/FS

Ken,

Please find attached the draft Geophysical Survey TM for your review. We are currently scheduled to initiate the PRI-2 drilling on 5 May 2014, and need EPA approval of the revised drilling locations, as well the SAP Modification Request for subsurface sample collection at the landfill submitted by Kevin Lundmark on 3/11/2014. Feel free to contact Kevin or me anytime if you have any questions regarding this TM.

david

David J. Abranovic P.E.
Partner

ERM West, Inc.
7272 E. Indian School Road, Suite 100
Scottsdale, Arizona 85251
General: 480-998-2401
Direct: 480-455-6070
FAX: 480-998-2106
Cell: 602-284-4917
david.abranovic@erm.com
www.erm.com

One Planet. One Company. ERM.

Please consider the environment before printing this e-mail

Appendix C
Field Modification Forms

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704

US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-1

Requested by: Frank Utare   Date: 19 Nov 13

Description of Deviation:

Movement of PRI04-013 Due to water receding from original Sept 26 ~~Oct~~ 2013 Stake location. Original location less than 1" water. New location moved 197' North to deeper water. New location is in community water body. Location Staked + GPSed

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

[signature]
EPA RPM or Designee

11/19/13
Date

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704

US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1- 2

Requested by: Kevin Lundmark Date: 11-19-2013

Description of Deviation:

Request use of silicone tubing for SW sampling @ PRI14- locations on 11/19/13. (SOP USM-08 specifies Tygon tubing)

☐ EPA Region 8 has reviewed this field modification approves as proposed.

☒ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

Tygon tubing is too ridgid to work with peristaltic pump; therefore the use of silicone tubing is necessary. PWT sees no issue with using silicone tubing in PRI 14 due to mild PH and low HCl in surface water. PWT approves the use of silicone tubing for sampling surface water in PRI 14 only.

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

[signature] 11/19/13

EPA RPM or Designee Date

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704

US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-3

Requested by: Kevin Lundmark, RI Field Team Leader   Date: 11/25/13

Description of Deviation:

ERM requests to use a pole-mounted dipper to sample the gypsum slurry discharge, SAP location PRI14-013. A dipper may be a more appropriate sampling method than the tubing/peristaltic pump method described in SOP USM-08. Bottles which do not require filtration would be filled directly from the dipper. (Note that this sampling method is consistent with SAP Worksheet 11, Section 11.2.2, Step 7, Surface Water, Sampling and Analysis Methods.) For analyses requiring filtration, we propose to fill a decontaminated, new, 5-gallon bucket using the dipper and then filter water from the bucket.

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

EPA RPM or Designee   Date: 11/25/13

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM
EPA Site Identification Number UTN000802704
US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-4

Requested by: ERM

Date: 12-3-13

Description of Deviation:

change of screen interval at MW-18 due to lithological changes. Current MW-18 screen is from 7' to 17' bgs. Modification would change the screen interval to ~~11' to 21' bgs.~~ 12' to 22.' This will place the screen @ MW-18 entirely across the sand and not in clay.

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

This moditacation was approved by Andrew Schmidt in a phone call with Robert Howe

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

[signature]
EPA RPM or Designee

12/3/13
Date

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704

US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-5

Requested by: ERM   Date: 12-3-13

Description of Deviation:

SAP mod for MW-18 shows that ready mix cement or concrete should be used to seal the well from the bentonite seal to ground surface. ERM has concerns about the heat of hydration of the cement would damage the PVC casing on the monitoring well. ERM proposes to use bentonite chips to approx 1.5 ft bgs. Hydrate the chips, then use "quikcrete" to complete this well. EPA hydrogeologist Andrew has given Jill ~~Quotte~~ Quillen (ERM) verbal approval to use this method for MW-18.

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

[signature]
EPA RPM or Designee

12/4/13
Date

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704

US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1- 6

Requested by: EPA/ERM

Date: 12-5-13

Description of Deviation:

Due to lithological variation from the expected geology at MW-14B/MW-14A EPA/ERM requests the removal of MW-14A due to the presence of the clay layer from 3 to 5 ft bgs. EPA/ERM also requests a change in the screened interval for MW-14B to 5 to 15 bgs. Also change ~~note~~ name to MW-14.

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

[signature]

EPA RPM or Designee

12/5/13

Date

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704
US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1- 7

Requested by: ERM

Date: 12-6-13

Description of Deviation:

Due to flowing sands at MW-20B location, ERM would like to use SCH-40 PVC 2" - pre-pack well in order to make sure we set a non-natural sand pack around this well. Also changed screened interval on ~~MW-19A~~ on MW-20A to 12' to 17' bgs due lithology differences. Drillers unable to achieve TD of 30', got refusal at 28.5' with geoprobe sampler for lithological logging. Completed MW-20B from 19' to 29'.

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

ERM to note any evidence of silty clay once augers are removed.

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

Robert Rowe
EPA RPM or Designee

12/6/2013
Date

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704

US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-8

Requested by: Lonnie Mercer   Date: 12/6/13

Description of Deviation:

At soil sample location PRI13-003, ERM utilized ~~and~~ one additional hole, deviating from the SAP and SOPs, to provide enough volume for PWT split sample.

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

EPA RPM or Designee   Date: 12/6/13

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704

US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-9

Requested by: ERM

Date: 12-9-13

Description of Deviation:

Request to set MW-19B using a pre-pack well at depth specified in the SAP mod. Pre-pack well is SCH-40 w/ 0.010 slots and has a 1.5" ~~sand~~ 20x40 sand around the outside of the screen. ERM will attempt to add ~~[illegible]~~ additional 20x40 sand, if the flowing/heaving sands present at this location allow. ERM was unable to reach total depth to verify the clay layer shown in the SAP mod. ERM will photograph the last auger in the auger string as it is removed from the well boring ~~to~~ 3ft (28" inclusive) to attempt to confirm the clay layer is present. Also allow setting of well completions before 24 hr time as stated in SOP for pair MW-19 ~~[illegible]~~ & 17A MW-17A and use of 2x2 forms.

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

[signature]

EPA RPM or Designee

12/9/13

Date

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM
EPA Site Identification Number UTN000802704
US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-______

Requested by: ERA   Date: 12-10-13

Description of Deviation:
At soil sample location PRI12-~~001~~ 010 AB, ERM utilized ~~one~~ two AB additional aliquot (hole), deviating from the SAP and SOPs, to provide enough volume for PWT split samples.

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

EPA RPM or Designee   Date 12/10/13

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704

US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-11

Requested by: TRENT HAMADA Date: 12/11/2013

Description of Deviation:

AT SOIL SAMPLE LOCATION PRI14-005, ERM UTILIZED TWO ADDITIONAL HOLES, DEVIATING FROM THE SAP & SOPs, TO PROVIDE ENOUGH VOLUME FOR PWT SPLIT SAMPLES.

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

EPA RPM or Designee

12/11/13
Date

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM
EPA Site Identification Number UTN000802704
US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-12

Requested by: TRENT HAMADA Date: 12/12/2013

Description of Deviation:
AT SOIL SAMPLE LOCATION PRI10-003, EPM UTILIZED TWO ADDITIONAL HOLES, DEVIATING FROM THE SAP AND SOPs, TO PROVIDE ENOUGH VOLUME FOR PWT SPLIT SAMPLES.

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

EPA RPM or Designee

12/12/13
Date

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704

US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1- 13

Requested by: Kristopher Bensen Date: 12/20/13

Description of Deviation:
At soil sample locations PRI9-014 and PRI9-013, ERM utilized nine and six additional holes, respectively, deviating from the SAP and SOPs, to provide enough volume for PWT split samples and field QC samples.

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

EPA RPM or Designee Date: 12/20/13

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

ATTACHMENT 1 TO FIELD MOD 14-C-1-13

Surface Solids Sampling Form ERM

1. Site Information

SITE ID PRI9-013
DATE 12/20/13
Begin Sampling Time 10:40
End Sampling Time 11:00
ERM Samplers KB, TH
EPA Oversight Aaron Baird
Weather Clear, 10s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI9-013-SS01-122013 @ 11:00

3. Location

Lat ~~NA~~
Long
GPS Accuracy
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 6
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe): Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SALT, silty, gray, moist

Bottles Filled

2 4-oz Glass (unpres) 4 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
2 4-oz Glass (1/3 headspace) 2 ~~16~~ 32-oz Glass (unpres) __ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID PRI9-013-SS11-122013 @ 11:01

EPA Split Samples Y / N (circle)
Analyses

Signature ____________ Date 12/20/13

ATTACHMENT 2 TO FIELD MOD 14-C-1-13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI9-014
DATE 12/20/13
Begin Sampling Time 9:00
End Sampling Time 9:57
ERM Samplers KB, TH
EPA Oversight Aaron Baird
Weather Clear, 10s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI9-014-SS01-122013 @ 9:57

Collected Field Dup

PRI9-014-SS11-122013 @ 9:58

3. Location

Lat ______
Long ______
GPS Accuracy ______
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 9
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe): Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, salty, dark gray, wet

Bottles Filled

2 4-oz Glass (unpres) 4 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
2 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle) EPA Split Samples Y / N (circle)
Field Dup Y / N (circle) Analyses ______
Field Dup Sample ID PRI9-014-SS11-122013 @ ~~9:57~~ 9:58 TH

Signature ______ Date 12/20/13

Rev 1, Nov 2013

SOP USM-01
US Magnesium RI/FS

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704
US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-14

Requested by: EPM-Kristopher Benson Date: 1/6/14

Description of Deviation:
At soil sample locations PPI9-011 and PPI9-002, EPM utilized 8 and 4 additional holes, respectively, deviating from the SAP and SOPs to provide enough volume for PWT split samples and field QC samples.

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

[signature]
EPA RPM or Designee

1/6/14
Date

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704
US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-15

Requested by: EPM - Kristopher Benson Date: 1/8/14

Description of Deviation:
At soil sample location PRI2-003, EPM utilized 1 additional hole, deviating from the SAP and SOPs to provide enough volume for the PWT split sample.

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

EPA RPM or Designee

1/8/14
Date

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM
EPA Site Identification Number UTN000802704
US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-16

Requested by: Lonnie Mercer Date: 1/13/2014

Description of Deviation:
During hand augering to install MW-16, the clay unit was encountered at approximately 18 inches below grade. The borehole was advanced to 20 inches below grade. The well was set with a 2-inch end cap at the bottom, a 1-foot screen, and approximately 3 feet of well riser at the top. The sand pack extended from approximately 4 inches below grade (2 inches above the top of the well screen) to total depth. Hydrated bentonite chips were placed in the borehole from the ground surface to 4 inches below grade.

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

This well construction modification is consistent with the construction approved by Andrew Schmidt in an e-mail on 1/7/14

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

[signature] 1/13/14
EPA RPM or Designee Date

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704
US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-17

Requested by: Lonnie Mercer   Date: 1/13/2014

Description of Deviation:
ERM will collect surface solids sample PRI15-008 at the location identified in the Final Phase 1A SAP, not at the revised location identified in Field Modification Form 14-C-2-9. Location PRI15-008 had been re-located from private property onto ATI property to help facilitate access for sampling; however, access from ATI has not been obtained to date. ERM obtained approval from the landowner to collect sample PRI15-008 at the original SAP location 9 January 2014. Per WS14, Table 14-1 of the Final SAP:

PRI15-008   4529325 m N   352385 m E

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

[signature]
EPA RPM or Designee

1/13/14
Date

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704
US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-18

Requested by: Jill Quillin Date: 14 Jan 2104

Description of Deviation:

During the development of well MW-16, ERM proposes to deviate from SOP USM-10 in three ways. All deviations are in Section 6.4, Monitoring Well Development Procedure

Step 8. Using a well development rig, begin developing the well by lowering a bottom discharge bailer to the bottom of the well to remove fine-grained materials that have settled on the bottom of the well.

Deviation: The well is accessible by foot only, therefore a well development rig will not be used and the bailer will be lowered by hand.

Step 9. Using a well development rig, surge the well with a purpose-built surge block of approximately the same diameter as the well casing. Surging will be completed by raising and lowering the surge block across the saturated portion of the well screen for approximately five minutes.

Deviation: As noted above, the well is accessible by foot only, therefore surging will be performed by hand instead of with a well development rig. Due to the short (1 foot) screen interval and the shallow depth (1.5 feet bgs) of MW-16, the well will be surged using a bailer for one minute.

Step 12. Lower a submersible pump into the well and begin pumping at the top of the saturated portion of the well screen.

Deviation: MW-16 will be developed using a peristaltic pump instead of a submersible pump, and the tubing intake will be placed just above the bottom of the screened interval.

☒ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

Ken Wangerud 16 Jan 2014

EPA RPM or Designee Date

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704

US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-19

Requested by: Kevin Lundmark Date: 5 Feb 2014

Description of Deviation:

ERM proposes to use pumping rates greater than 500 mL/min during groundwater sampling, provided drawdown in the well is less than 10 centimeters (0.33 feet). This is a deviation from SOP USM-07, which identifies a target purge rate of 100 to 500 mL/min.

The higher flow rate is requested to accommodate the large number of sample bottles required at each well, and in consideration of the highly productive groundwater monitoring wells present at the Site as demonstrated during well development/re-development completed prior to Phase 1A groundwater sampling. A higher flow rate is also necessary to facilitate the collection of EPA split samples. The splitter required for collecting split samples does not function properly at low flow rates because the chamber has to be filled above the exit ports in order to ensure uniform flow though all ports.

☐ EPA Region 8 has reviewed this field modification approves as proposed.

☑ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

ERM shall ensure the lowest flow possible is maintained during sample collection of VOCs to minimize aeration, bubble formation, turbulent filling of sample bottles, and/or loss of volatile compounds.

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

EPA RPM or Designee Date: 6 Feb 2014

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704

US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-20

Requested by: Kevin Lundmark, ERM   Date: 9 May 2014

Description of Deviation:

Phase 1A RI SAP location PRI8-005 has been inaccessible since January 2014 due to the presence of water. Pursuant to SAP Modification 14-C-2-18, an alternate procedure was identified for obtaining sample PRI8-005. As directed by EPA, two samples would be required in order to obtain the soil/sediment sample called for in the Phase 1A SAP: one sample (PRI8-005A) would be collected southwest of SAP location PRI8-005 at the edge of the standing water and a second sample (PRI8-005B) would be collected at the edge of the "high water mark" from the January 2014 flooding event at PRI8. These samples were collected 8 May 2014 at the following locations:

Location ID	UTM N m	UTM E m
PRI8-005A	4533121.6	353311.9
PRI8-005B	4533081.1	353287.5

☑ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

Catherine LeCours   12May2014

EPA RPM or Designee   Date

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MODIFICATION APPROVAL FORM

EPA Site Identification Number UTN000802704

US Magnesium Phase 1A Sampling & Analysis Plan

Document Tracking Number: 14C-1-21

Requested by: Kevin Lundmark, ERM Date: 9 May 2014

Description of Deviation:

Drilling at the landfill (PRI2) was completed 6 to 7 May 2014. The boring locations from the SAP were adjusted based on the Geophysical Survey Tech Memo and recommendations from EPA (email from Ken Wangerud, 5 May 2014). The final "as-built" coordinates (UTM NAD 83 Zone 12N) for the adjusted boring locations are:

PRI2-006	4531299.0 m N	354362.7 m E
PRI2-009	4531374.9 m N	354459.8 m E
PRI2-014	4531278.5 m N	354588.1 m E

These adjusted "as-built" boring locations are shown in the attached copies of Plates B-1, B-2, and B-3 from the Geophysical Survey Tech Memo. As provided for in SAP Modification Form 14-C-2-21, some sample intervals were adjusted based on the characteristics of the materials encountered. The sample intervals (in feet below ground surface) for the landfill borings were as follow:

PRI2-006: 0.5-2, 2-5, 5-10, 11-17, 20-22, 22-24, 24-26, 27-29
PRI2-009: 0.5-2, 10-12, 12-14, 14 -18, 18-20, 21-23, 26-28, 28.5-30.5
PRI2-014:0.5-2, 3-10, 10-20, 22-27, 27-30, 30-31, 31-33

☑ EPA Region 8 has reviewed this field modification approves as proposed.

☐ EPA Region 8 has reviewed this field modification and approves with the following exceptions:

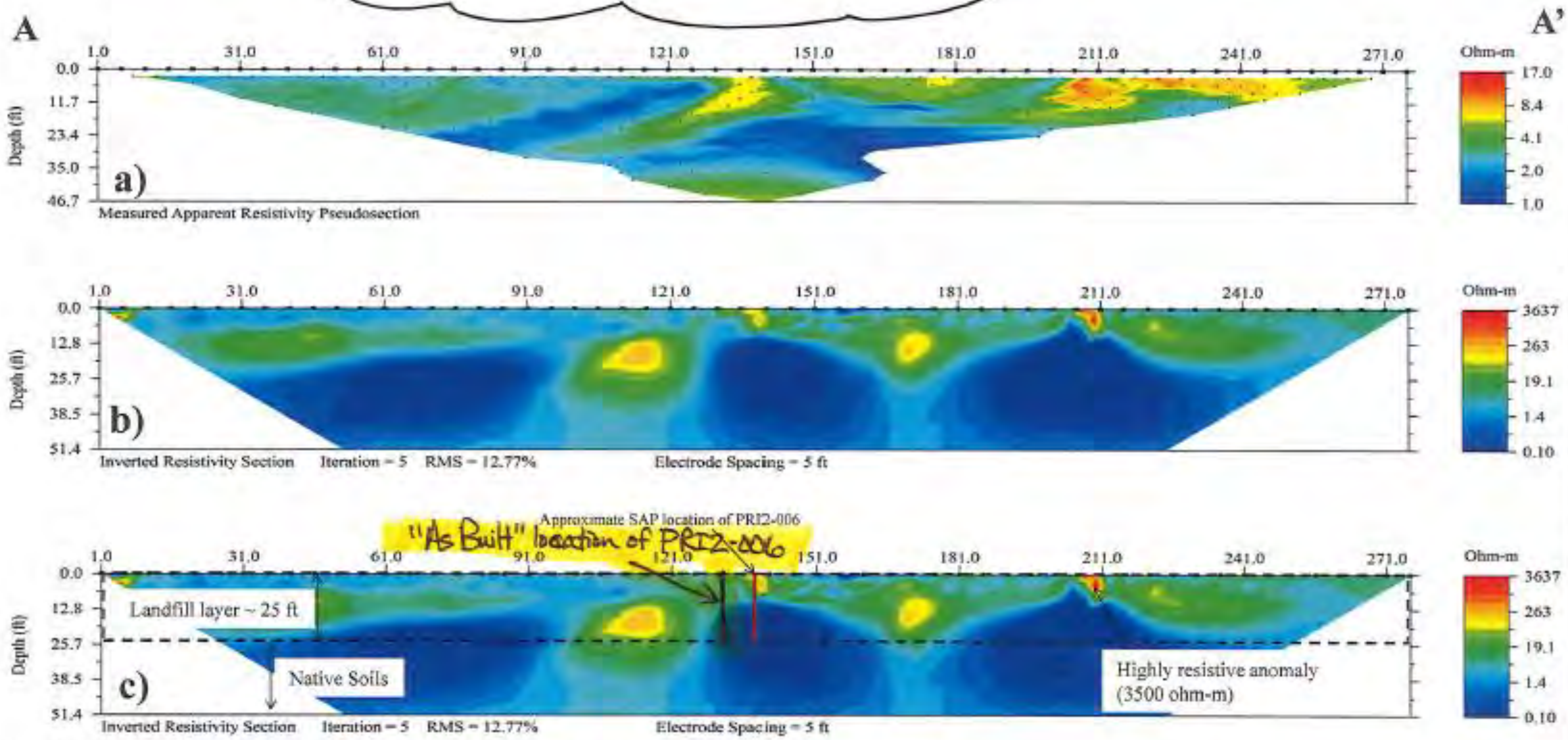
☐ EPA Region 8 has reviewed this field modification and does not agree with the proposed approach for the following reasons:

Catherine LeCours 12May2014

EPA RPM or Designee Date

Each approved Field Modification Form will become part of Attachment 17B in the Phase 1A Final SAP and also incorporated into the appropriate RI Results Report. A copy is to be provided to all recipients identified on SAP Worksheet #3.

FIELD MOD 14-C-1-21
ATTACHMENT 1



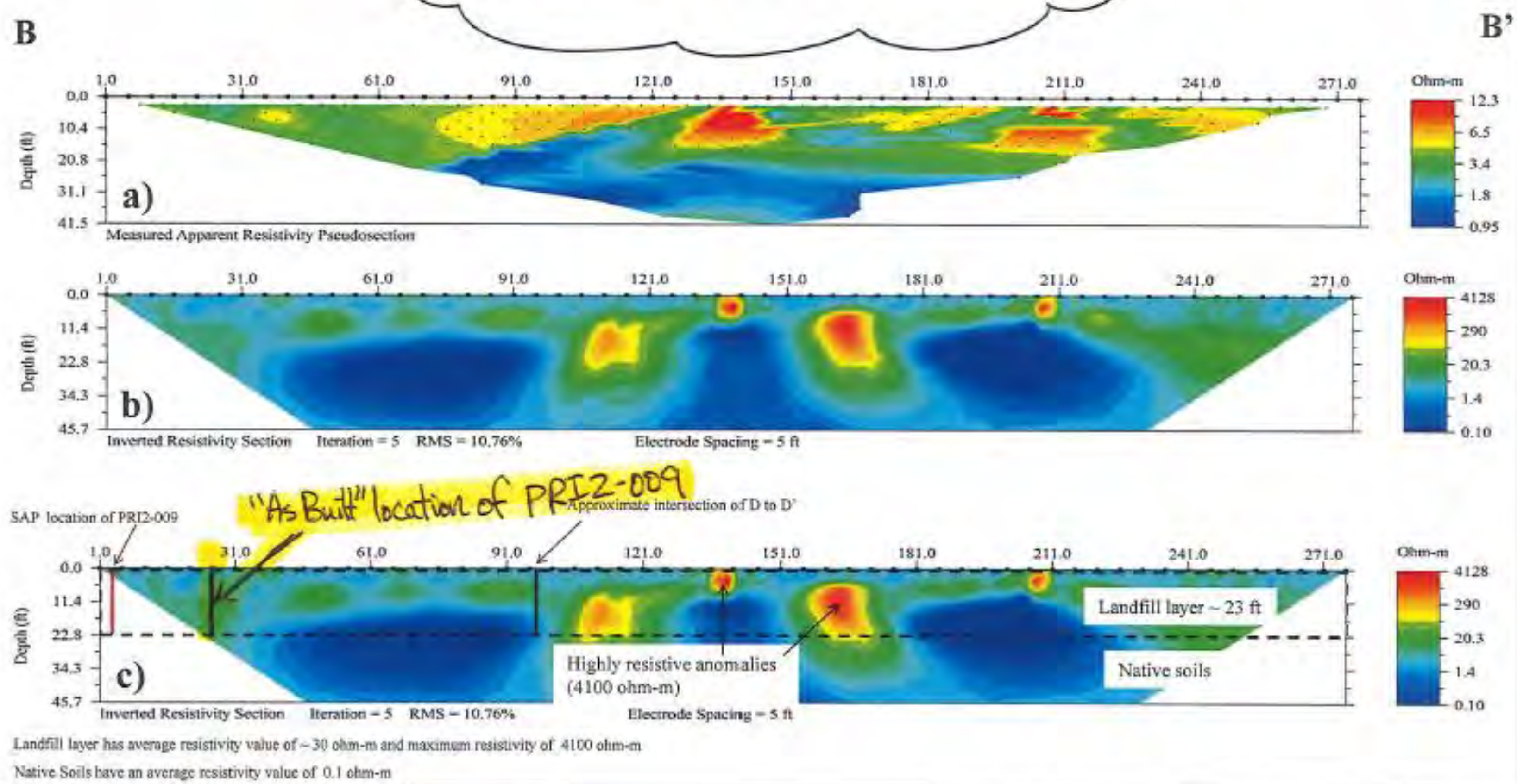
Landfill layer has average resistivity value of ~ 30 ohm-m and maximum resistivity of 3600 ohm-m

Native Soils have an average resistivity value of 0.1 ohm-m

GeoStrata

Electrical Resistivity Model and Interpretation for 006	
ERM U.S. Magnesium ER Survey Project Number: 807-005	Plate B-1

FIELD MOD 14-C-1-21
ATTACHMENT 2



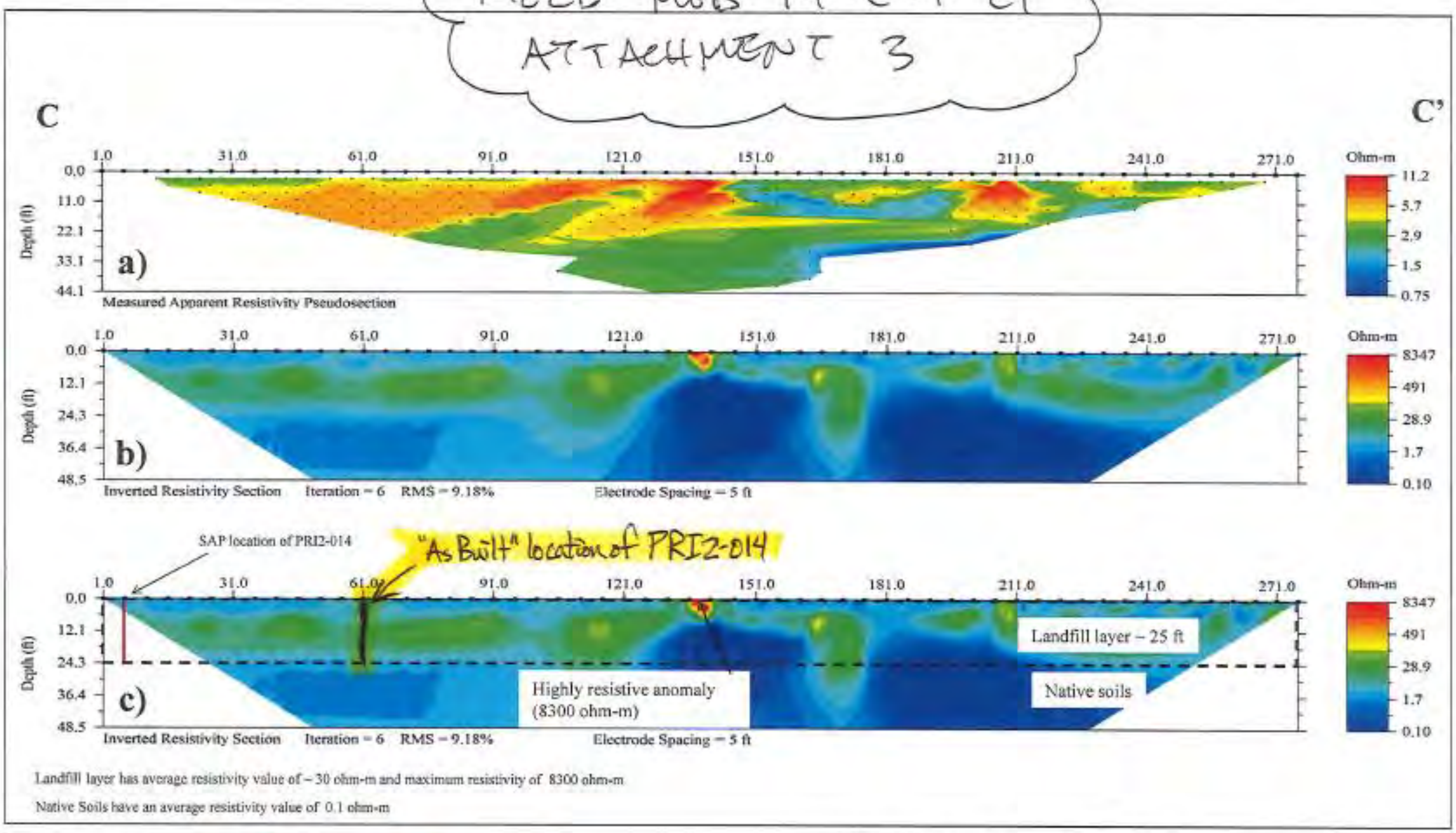
GeoStrata

Electrical Resistivity Model and Interpretation for 009

ERM
U.S. Magnesium ER Survey
Project Number: 807-005

Plate B-2

FIELD MOD 14-C-1-21
ATTACHMENT 3



GeoStrata

Electrical Resistivity Model and Interpretation for 014

ERM
U.S. Magnesium ER Survey
Project Number: 807-005

Plate B-3

ATTACHMENT 17B:
COMPLETED, APPROVED MODIFICATION FORMS AND SAP AMENDMENTS
(AMENDMENTS WILL BE COMPILED IN THIS ATTACHMENT AS GENERATED)

EPA-approved modification forms will be maintained and distributed through the Distribution List in WS#3.

Document Tracking Number	Modified Section / WS / Table / Attachment	Brief Description of Modification	Date Received	Date Approved	Date Distributed
14C-2-1	Attachment 14C	Correct forms	26 Sept 2013	30 Sept 2013	01 Oct 2013
14C-2-2	WS17	Field soil pH	26 Sept 2013	30 Sept 2013	01 Oct 2013
14C-2-3	Attachment 15A, Solids Other Table	Units	18 Oct 2013	22 Oct 2013	30 Oct 2013
14C-2-4	WS18, Table 18-1	MW sampling	18 Oct 2013	22 Oct 2013	30 Oct 2013
14C-2-5	WS14, Table 14-1	SW pond shore sample locations	18 Oct 2013	22 Oct 2013	30 Oct 2013
14C-2-6	WS14, WS17, Attachment 17A	IDW	22 Oct 2013	23 Oct 2013	30 Oct 2013
14C-2-7	WS11, Attachment 15A	Sieving	22 Oct 2013	24 Oct 2013	30 Oct 2013
14C-2-8	WS14	EDD schedule	23 Oct 2013	24 Oct 2013	30 Oct 2013
14C-2-9	WS14, Table 14-1, Table 14-2, Figures	Sample locations	28 Oct 2013	29 Oct 2013	30 Oct 2013
14C-2-10	WS14, Figure 14-14	Staff gauges	30 Oct 2013	31 Oct 2013	31 Oct 2013
14C-2-11	WS14	Lack of surface water	24 Oct 2013	31 Oct 2013	31 Oct 2013
14C-2-12	Multiple	Consistency between WSs, CrVI preservation/holding	05 Nov 2013	08 Nov 2013	18 Nov 2013
14C-2-13.1 through 4 of 4	WS14, Figure 14-13, Figure 14-16	MW13 - MW20 locations, text, and construction details	15 Nov 2013	18 Nov 2013	18 Nov 2013
14C-2-14	Attachment 19A	WS-WI-0037 Lab SIM SVOCs	18 Nov 2013	19 Nov 2013	19 Nov 2013
14C-2-15	Attachment 19A	WS-WI-0040 Lab sieving SOP	18 Nov 2013	19 Nov 2013	19 Nov 2013
14C-2-16	Multiple	Analysis for both total and dissolved metals	22 Nov 2013	26 Nov 2013	26 Nov 2013
14C-2-17	Table 18-1	Analysis for Cr(VI) in groundwater	22 Nov 2013	26 Nov 2013	26 Nov 2013
14C-2-18	WS14, Table 14-1 and Figure 14-14, WS18, Table 18-1, and WS20, Table 20-1,	Additional surface water samples and potential sediment samples in PRI 8	17 Jan 2014	22 Jan 2014	23 Jan 2014
14C-2-19	Attachment 19A, SOP WS-MS-0008	Not reporting nitrobenzene-d5 for PAH-SIM analysis	17 Jan 2014	23 Jan 2014	23 Jan 2014
14C-2-20	Table 12-1	Source blank analysis	27 Mar 2014	21 Apr 2014	21 Apr 2014

Document Tracking Number	Modified Section / WS / Table / Attachment	Brief Description of Modification	Date Received	Date Approved	Date Distributed
14C-2-21	WS14, Table 14-3, Table 18-1	Landfill subsurface borings and samples	2 May 2014	5 May 2014	8 May 2014
14C-2-22	Attachment 11A: Appendix C – Final Survey Questions	Special directions for BLM staff and managers	16 Oct 2014	16 Oct 2014	19 Feb 2015
14C-2-23	Attachment 19B	Updated laboratory certifications	18 Feb 2015	19 Feb 2015	19 Feb 2015
14C-2-24	WS14, Table 14-1, Figure 14-14, Table 18-1, Table 20-1	Additional surface water samples in and around PRI Area 5	21 April 2015	23 April 2015	27 Apr 2015
14C-2-25	WS11, WS15, Attachment 15A, Attachment 17A, WS19	Adding pentachlorobenzene to analytical list; eliminating use of splitter and 0.2 µm filter	4 May 2015, revised 8 May 2015	8 May 2015	8 May 2015
14C-2-26	WS19, Table 19-1	Preservation of Cr(VI) samples	14 July 2015 Revised 15 July 2015	15 July 2015	15 July 2015

Appendix D
Field Documentation

D-1 Surface Solids Sampling Forms

D-2 Field Borehole Logs

D-3 Well Development Forms

D-4 Groundwater Sampling Forms

D-5 Surface Water Sampling Forms

D-6 Water Level Measurement Forms

D-7 Field Logbooks

Appendix D-1
Surface Solids Sampling Forms

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI 2-001
DATE 1/9/14
Begin Sampling Time 9:45
End Sampling Time 9:57
ERM Samplers KB, TH
EPA Oversight Aaron Baird
Weather Cloudy, 30s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI 2-001-SS01-010914 @ 9:57

3. Location

Lat ______
Long ______
GPS Accuracy ______
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method MA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Engineered fill, recently placed

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, gravel, light brown, dry

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) 1 ~~16~~ 32-oz Glass (unpres) __ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______

EPA Split Samples Y / N (circle)
Analyses ______

Signature ______ Date 1/9/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI2-002

DATE 1/9/14

Begin Sampling Time 12:50

End Sampling Time 13:06

ERM Samplers KB, TH

EPA Oversight Aaron Baird

Weather Snow, 30s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI2-002-SS01-010914 @ 13:06

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness 2-6 inches

Waste Depth 2 inches bgs

Waste Appearance (describe): Smut, dark gray ~~w/~~ with white flecks, moist

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Smut, silty dark gray with white, moist

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	___ 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 1/9/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRIZ-003
DATE 1/8/14
Begin Sampling Time 10:00
End Sampling Time 10:40
ERM Samplers KB, TH
EPA Oversight Aaron Baird
Weather Snow, 20s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRIZ-003-SS01-010814 @ 10:40

3. Location

Lat ______
Long ______
GPS Accuracy ______
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 6
Saturated? Y N (circle)
Waste Potentially Present? Y N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Top 1.5 to 2 inches is frozen

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, silty, reddish brown, medium grain, dry to moist

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______
EPA Split Sample Y / N (circle)
Analyses All

Signature ______ Date 1/8/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PPI2-004
DATE 1/9/14
Begin Sampling Time 10:10
End Sampling Time 10:23
ERM Samplers KB, TH
EPA Oversight Aaron Baird
Weather Sunny 30s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PPI2-004-SS01-010914@10:23

3. Location

Lat
Long
GPS Accuracy
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness 1 inches
Waste Depth 5-6 inches bgs
Waste Appearance (describe):

Plastic bag, insolation

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, silty, reddish brown, moist

Bottles Filled

2 4-oz Glass (unpres) 4 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
2 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID PPI2-004-SS01-010914@10:24

EPA Split Samples Y / N (circle)
Analyses ___

Signature ___ Date 1/9/14

Surface Solids Sampling Form

1. Site Information		2. Description / Location Notes
SITE ID	PFI2-005	Description (Setting, Distance from Site Features):
DATE	1/9/14	PFI2-005-SS01-010914 @ 11:19
Begin Sampling Time	11:05	
End Sampling Time	11:19	
ERM Samplers	KB, TH	
EPA Oversight	Aaron Baird	
Weather	Snow, 30s	

3. Location

Lat ________

Long ________

GPS Accuracy ________

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness 1 inches

Waste Depth 5 inches bgs

Waste Appearance (describe):

Paper

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, sandy, reddish brown, moist

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	___ 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ________

EPA Split Samples Y / N (circle)

Analyses ________

Signature ________ Date 1/9/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI2-006

DATE 5/8/14

Begin Sampling Time 9:40

End Sampling Time 9:40

ERM Samplers FB, TH

EPA Oversight Aaron Baird

Weather Clear 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Collected at drilling (SB) location

3. Location

Lat

Long

GPS Accuracy

Location Field Modified? Y N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y N (circle)

Waste Potentially Present? Y N (circle)

Waste Thickness 0-6 inches

Waste Depth 0-6 inches bgs

Waste Appearance (describe):

Gypsum

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, silty, reddish brown, moist

Sample ID/Time PRI2-006-SS01-050814 @ 9:36

Bottles Filled

1 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | ___ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) | ___ 16-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y N (circle)

Field Dup Y N (circle)

Field Dup Sample ID

EPA Split Samples Y N (circle)

Analyses

Signature

Date 5/8/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI2-007
DATE 1/9/14
Begin Sampling Time 12:25
End Sampling Time 12:35
ERM Samplers KB, TH
EPA Oversight Aaron Baird
Weather Snow 30

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI2-007-SS01-010914 @ 12:35

3. Location

Lat ______
Long ______
GPS Accuracy ______
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Collected from stockpiled soil pile

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, silty, gray, coarse grain, moist

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______
EPA Split Samples Y / N (circle)
Analyses ______

Signature [signature] Date 1/9/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PPI2-008

DATE 1/9/14

Begin Sampling Time 10:46

End Sampling Time 10:56

ERM Samplers KB, TH

EPA Oversight Aaron Baird

Weather Cloudy, 30's

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PPI2-008-SS01-010914 @ 10:56

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, silty, reddish brown, moist

Bottles Filled

1 4-oz Glass (unpres)
2 8-oz Glass (unpres)
___ En Core® (unpres)
En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace)
1 ~~16~~ 32-oz Glass (unpres)
___ 40-mL VOA (Methanol)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 1/9/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI2-009
DATE 5/8/14
Begin Sampling Time 9:06
End Sampling Time 9:16
ERM Samplers PB, TH
EPA Oversight Aaron Baird
Weather Clear, 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):
Collected at drilling (SB) location

3. Location

Lat ______
Long ______
GPS Accuracy ______
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):
Gypsum

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, silty, reddish brown, moist

Sample ID/Time PRI2-009-SS01-050814 @ 9:16

Bottles Filled

1 4-oz Glass (unpres) | 1 8-oz Glass (unpres) | ___ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) | 1 ~~16~~ 32-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______
EPA Split Samples Y / N (circle)
Analyses ______

Signature ______ Date 5/8/14

Surface Solids Sampling Form

ERM

1. Site Information	2. Description / Location Notes
SITE ID PRI2-010-	Description (Setting, Distance from Site Features):
DATE 1/8/14	
Begin Sampling Time 11:05	PRI2-010-SS01-010814 @ 11:26
End Sampling Time 11:26	
ERM Samplers FB, TH	
EPA Oversight Aaron Baird	
Weather	
3. Location	
Lat	
Long	
GPS Accuracy	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness 2 inches

Waste Depth 4 inches bgs

Waste Appearance (describe):

Black, burned materal

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, orange brownish, medium grain, moist

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	___ 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses All

Signature ______ Date 1/8/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PPI2-011
DATE 1/8/14
Begin Sampling Time 12:45
End Sampling Time 13:01
ERM Samplers KB, TH
EPA Oversight Aaron Baird
Weather Snow, 30s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PPI2-011-SS01-010814 @13:01

3. Location

Lat ________
Long ________
GPS Accuracy ________
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, silty, brown, moist

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) 1 ~~16~~ 32-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ________

EPA Split Samples Y / N (circle)
Analyses ________

Signature ________ Date KB ~~2~~ 1/8/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI2-012

DATE 1/8/14

Begin Sampling Time 13:20

End Sampling Time 1335

ERM Samplers KB, TH

EPA Oversight Aaron Baird

Weather Snow, 30s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI2-012-SS01-010814 @ 13:35

Collected Equip. Blank -

PRI2-012-SS21-010814 @13:36

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y N (circle)

Waste Potentially Present? Y N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, silty, reddish brown, medium grain, moist

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) 1 ~~16~~ 32-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 1/8/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID: PPI2-013
DATE: 1/9/14
Begin Sampling Time: 12:00
End Sampling Time: 12:14
ERM Samplers: KB, TH
EPA Oversight: Aaron Baird
Weather: ~~St~~ Snow, 30s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PPI2-013-SS01-010914 @ 12:14

3. Location

Lat ____
Long ____
GPS Accuracy ____
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method: HA
Sample Depth Interval: 0-6 inches bgs
Number of Grab Aliquots: 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ____ inches
Waste Depth ____ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Native Soil

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, silty, brownish gray, moist

Bottles Filled

1 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | ___ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) | ___ 16-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ____

EPA Split Samples Y / N (circle)
Analyses ____

Signature ____ Date 1/9/14

Surface Solids Sampling Form

ERM

1. Site Information	2. Description / Location Notes
SITE ID: PRI2-014	Description (Setting, Distance from Site Features):
DATE: 5/8/14	Collected at drilling (SB) location
Begin Sampling Time: 9:55	
End Sampling Time:	
ERM Samplers: FB, TH	
EPA Oversight: Aaron Baird	
Weather: Clear, 50s	
3. Location	
Lat	
Long	
GPS Accuracy	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes* — N	

4. Field Preservation / Field Measurements

Sample Collection Method: HA

Sample Depth Interval: 0-6 inches bgs

Number of Grab Aliquots: 5

Saturated? Y / N (circle) — N

Waste Potentially Present? Y / N (circle) — Y

Waste Thickness: 0-6 inches

Waste Depth: 0-6 inches bgs

Waste Appearance (describe): Gypsum

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, silty, reddish brown, moist

Sample ID/Time: PRI2-014-SS01-050814 @ 9:58

Bottles Filled

1 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | ___ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) | ___ 16-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle) — N

Field Dup Y / N (circle) — N

Field Dup Sample ID ________

EPA Split Samples Y / N (circle) — N

Analyses ________

Signature ________ Date 5/8/14

Surface Solids Sampling Form

1. Site Information

SITE ID PRI8-001

DATE 12/17/13

Begin Sampling Time 1120

End Sampling Time 1136

ERM Samplers Trent Hamada/Lonnie Mercer

EPA Oversight Aaron Baird

Weather

very cold, fog (~150' visibility)

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Grassland north of Waste Pond. Flat ground surface. Grasses and sagebrush. ~4" snow cover.

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Walked ~1000' from road to sample location.

PRI8-001-SS01-121713

@1136

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SANDY SILT, brown, very fine sand, dry, trace clay, roots.

Bottles Filled

~~2~~ 1 LM 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | ___ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) | ___ 16-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y N (circle)

Analyses ______

Signature [signature] Date 12/17/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI8-002

DATE 12/17/13

Begin Sampling Time 1215

End Sampling Time 1230

ERM Samplers Trent Hamada / Lonnie Mercer

EPA Oversight Aaron Baird

Weather

very cold, fog (~150' visibility)

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Grassland north of Waste Pond. Flat ground surface. Grasses and brush. ~4" snow cover.

3. Location

Lat ____

Long ____

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ____ inches

Waste Depth ____ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Walked ~1,200' from road to sample location.

~~PRI8-002-SS02-12~~ LM

PRI8-002-SS01-121713 @ 1230

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SANDY SILT, brown, very fine sand, dry, trace clay, roots.

Bottles Filled

1 4-oz Glass (unpres)

1 4-oz Glass (1/3 headspace)

2 8-oz Glass (unpres)

__ 16-oz Glass (unpres)

__ En Core® (unpres)

__ 40-mL VOA (Methanol)

En Core® Pre-Engaged? (Y / N)

En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses ____

Signature [signature] Date 12/17/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI8-003

DATE 12/17/13

Begin Sampling Time 1330

End Sampling Time ~~1417~~ LM 1347

ERM Samplers Trent Hamada/Lonnie Mercer

EPA Oversight Aaron Baird

Weather

very cold, fog (~150' visibility)

3. Location

Lat

Long

GPS Accuracy

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Grasslands north of Waste Pond. Very flat ground surface near northwestern portion of the "angel wing". Grasses and brush. ~4" snow cover.

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Walked ~1,200' from road to sample location.

PRI8-003-SS01-121713 @ 1347

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAYEY SILT, brown, low plasticity, moist, trace very fine sand, roots.

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID

EPA Split Samples Y / N (circle)

Analyses

Signature [signature] Date 12/17/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI8-004

DATE 12/18/13

Begin Sampling Time 10:00

End Sampling Time 10:17

ERM Samplers KB, TH

EPA Oversight Aaron Baird

Weather Cloudy, 10s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI8-004-SS01-121813
@ 10:17

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

ML SILT, clayey, brown, dry

Bottles Filled

1 4-oz Glass (unpres)
2 8-oz Glass (unpres)
___ En Core® (unpres)
En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace)
___ 16-oz Glass (unpres)
___ 40-mL VOA (Methanol)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 12/18/13

Surface Solids Sampling Form

ERM

1. Site Information	2. Description / Location Notes
SITE ID PRI8-006A	Description (Setting, Distance from Site Features):
DATE 5/8/14	
Begin Sampling Time 10:18	
End Sampling Time 11:30	
ERM Samplers KB, TCl	
EPA Oversight Aaron Baird	
Weather Clear, 60s	
3. Location	
Lat 4533121.57 mN	
Long 353311.90 m E	
GPS Accuracy ____	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements	
Sample Collection Method HA	Sampling Notes (Sample Recovery, Refusal, Observations)
Sample Depth Interval 0-6 inches bgs	
Number of Grab Aliquots 5	
Saturated? Y / N (circle)	
Waste Potentially Present? Y / N (circle)	pH in sample hole = 7
Waste Thickness ____ inches	
Waste Depth ____ inches bgs	
Waste Appearance (describe):	

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, silty, gray, wet, percipitate pieces

Sample ID/Time PRI8-005A-SS01-050814@11:20

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	12 En Core® (unpres)	En Core® Pre-Engaged? Y / N
1 4-oz Glass (1/3 headspace)	___ 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? Y / N

6. QC Samples

MS/MSD Y / N (circle) VOCs only	EPA Split Samples Y / N (circle)
Field Dup Y / N (circle) VOCs Only	Analyses ____
Field Dup Sample ID PRI8-005A-SS11-050814@11:21	

Signature ____ Date 5/8/14

Surface Solids Sampling Form

ERM

1. Site Information	2. Description / Location Notes
SITE ID: PRI8-005B	Description (Setting, Distance from Site Features):
DATE: 5/8/14	Equipment Blank
Begin Sampling Time: ____	PRI8-005B-~~SS~~SS21-050814@12:12
End Sampling Time: 13:00	
ERM Samplers: FB, TH	Trip Blank
EPA Oversight: Aaron Baird	PRI8-005B-SS22-050814@ 12:13
Weather: Clear, 60s	

3. Location

Lat 4533081.05mN

Long 353287.54mE

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ____ inches

Waste Depth ____ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, silt, brown, moist

Sample ID/Time PRI8-005B-SS01-050814@12:11

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses ____

Signature ____ Date 5/8/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI8-006

DATE 3/25/14

Begin Sampling Time 9:00

End Sampling Time 10:45

ERM Samplers KB, TH

EPA Oversight Aaron Baird

Weather Clear, 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI8-006-SS01-032514@ 10:20

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, silty, gray, moist

Sample ID/Time PRI8-006-SS01-032514 @ 10:20

Bottles Filled

2 4-oz Glass (unpres) 4 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

2 4-oz Glass (1/3 headspace) 4 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID PRI8-006-SS11-032514 @ 10:21

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 3/25/14

Surface Solids Sampling Form

1. Site Information

SITE ID PRI8-007

DATE 12/18/13

Begin Sampling Time 14:00

End Sampling Time 1416

ERM Samplers KB, TH

EPA Oversight Aaron Baird

Weather Foggy, 20s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI8-007-SS01-121813 @ 14:16

3. Location

Lat ____

Long ____

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ____ inches

Waste Depth ____ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

~~SAND~~: SILT, sandy, brown, dry

Bottles Filled

1 4-oz Glass (unpres)
1 8-oz Glass (unpres)
__ En Core® (unpres)
En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace)
1 32 ~~16-oz~~ Glass (unpres)
__ 40-mL VOA (Methanol)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses ____

Signature ____ Date 12/18/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI8-008

DATE 12/18/13

Begin Sampling Time 11:10

End Sampling Time 11:20

ERM Samplers KB, TH

EPA Oversight Aaron, Baird

Weather Foggy, 10s

3. Location

Lat ____

Long ____

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI8-008-SS01-121813 @ 11:20

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ____ inches

Waste Depth ____ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, brown, dry

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses ____

Signature ____ Date 12/18/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI8-009

DATE 12/18/13

Begin Sampling Time 12:30

End Sampling Time 12:49

ERM Samplers KB, TH

EPA Oversight Aaron Baird

Weather Foggy, 20s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI8-009-SS01-121813 @ 12:49

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, brown, moist

Bottles Filled

1 4-oz Glass (unpres)
2 8-oz Glass (unpres)
__ En Core® (unpres)
En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace)
__ 16-oz Glass (unpres)
__ 40-mL VOA (Methanol)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 12/18/13

Surface Solids Sampling Form ERM

1. Site Information

SITE ID PRI8-010-
DATE 3/26/14
Begin Sampling Time 10:00
End Sampling Time 10:43
ERM Samplers KB, TH
EPA Oversight Aaron Baird
Weather Rain 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Trip Blank
PRI8-010-SS21-032614 @10:31

Equip Blank
PRI8-010-SS22-032614 @10:32

3. Location

Lat ____
Long ____
GPS Accuracy ____
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ____ inches
Waste Depth ____ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, silty, brown, moist

Sample ID/Time PRI8-010-SS01-032614 @10:30

Bottles Filled

1 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | ___ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) | ___ 16-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ____

EPA Split Samples Y / N (circle)
Analyses ____

Signature [signature] Date 3/26/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI8-011
DATE 12/17/13
Begin Sampling Time 13:20
End Sampling Time 13:30
ERM Samplers KB, GR
EPA Oversight —
Weather Foggy, 10s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI8-011-SS01-121713 @ 13:30

3. Location

Lat ____
Long ____
GPS Accuracy ____
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ____ inches
Waste Depth ____ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, silty, brown, medium grain, dry

Bottles Filled

1 4-oz Glass (unpres)
2 8-oz Glass (unpres)
__ En Core® (unpres)
En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)
__ 16-oz Glass (unpres)
__ 40-mL VOA (Methanol)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ____

EPA Split Samples Y / N (circle)
Analyses ____

Signature ____ Date 12/17/13

Surface Solids Sampling Form

1. Site Information

SITE ID PRI8-012
DATE 12/17/13
Begin Sampling Time 1250
End Sampling Time 1305
ERM Samplers KB, GR
EPA Oversight —
Weather foggy, 10s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI8-012-SS01-121713 @ 13:05

3. Location

Lat ____
Long ____
GPS Accuracy ____
Location Field Modified? Y N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ____ inches
Waste Depth ____ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, brown, medium grain, dry

Bottles Filled

1 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | ___ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) | 2 16-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y N (circle)
Field Dup Y N (circle)
Field Dup Sample ID ____

EPA Split Samples Y N (circle)
Analyses ____

Signature [signature] Date 12/17/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI8-013
DATE 12/18/13
Begin Sampling Time 13:05
End Sampling Time 13:16
ERM Samplers FB, TH
EPA Oversight Aaron Baird
Weather Foggy, 20s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI8-0~~0~~13-SS01-121813 @ 13:16

3. Location

Lat ______
Long ______
GPS Accuracy ______
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, dry to moist, brown

Bottles Filled

1 4-oz Glass (unpres)
2 8-oz Glass (unpres)
__ En Core® (unpres)
En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)
__ 16-oz Glass (unpres)
__ 40-mL VOA (Methanol)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______
EPA Split Samples Y / N (circle)
Analyses ______

Signature [signature] Date 12/18/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI8-014-41

DATE 3/26/14

Begin Sampling Time 9:00

End Sampling Time 9:55

ERM Samplers KB, TH

EPA Oversight Aaron Baird

Weather Rain, 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

2" of water at bottom of boreholes.

pH = 6.0

Approximately 40' NE of wastewater

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

~~CL~~ CLAY, silty, light brown, wet

Sample ID/Time PRI8-014-SS01-032614@9:25

Bottles Filled

2 4-oz Glass (unpres) | 4 8-oz Glass (unpres) | 6 En Core® (unpres) | En Core® Pre-Engaged? (Y / N)

2 4-oz Glass (1/3 headspace) | 2 ~~16~~ 32-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID PRI8-014-SS11-032614@9:26

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 3/26/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI8-015
DATE 3/25
Begin Sampling Time 11:00
End Sampling Time 12:15
ERM Samplers KB, TH
EPA Oversight Aaron Baird
Weather Clear, 60s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

3. Location

Lat ____
Long ____
GPS Accuracy ____
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ____ inches
Waste Depth ____ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Approximately 1 inch of water at bottom of borehole.

pH = 7

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, silty, gray, moist

Sample ID/Time PRI8-015-SS01-032514 @ 11:46

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) 3 En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y N (circle)
Field Dup Y N (circle)
Field Dup Sample ID ____

EPA Split Samples Y N (circle)
Analyses ____

Signature ____ Date 3/25/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI8-016

DATE 12/19/13

Begin Sampling Time 12:34

End Sampling Time 1317

ERM Samplers KB, TH

EPA Oversight Aaron

Weather Snow 30s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI8-016-SS01-121913 @ 1317

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, brown, moist

Bottles Filled

1 4-oz Glass (unpres)

1 4-oz Glass (1/3 headspace)

1 8-oz Glass (unpres)

1 ~~16~~ 32-oz Glass (unpres)

__ En Core® (unpres)

__ 40-mL VOA (Methanol)

En Core® Pre-Engaged? (Y / N)

En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses All 7NO VOCS

Signature ______ Date 12/19/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI8-017
DATE 3/25/14
Begin Sampling Time
End Sampling Time 13:50
ERM Samplers KB, TH
EPA Oversight Aaron Baird
Weather Clear, 60s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

12 feet north of Wastewater

~~Cotter~~

Trip Blank =

PRI8-017-21-032514 @

13:31

3. Location

Lat
Long
GPS Accuracy
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Water to (ground surface) top of borehole

pH = 6.5

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, sand, gray, coarse, wet

Sample ID/Time PRI8-017-SS01-032514 @ 13:30

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) 9 En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ____________

EPA Split Samples Y / N (circle)
Analyses ____________

Signature [signature] Date 3/25/14

Surface Solids Sampling Form

1. Site Information

SITE ID PRI9-001
DATE 1/6/14
Begin Sampling Time 13:00
End Sampling Time 13:20
ERM Samplers XB, TH
EPA Oversight Aaron Baird
Weather Clear, 20s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI9-001-SS01-010614@13:20

3. Location

Lat ____
Long ____
GPS Accuracy ____
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness 0-6 inches
Waste Depth >6 inches bgs
Waste Appearance (describe): Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Smut, gray to black, moist to wet

Bottles Filled

1 4-oz Glass (unpres)
1 8-oz Glass (unpres)
___ En Core® (unpres)
En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)
1 ~~16~~ 32-oz Glass (unpres)
___ 40-mL VOA (Methanol)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ____
EPA Split Samples Y / N (circle)
Analyses ____

Signature ____ Date 1/6/14

Surface Solids Sampling Form

1. Site Information		2. Description / Location Notes
SITE ID	PRI9-002	Description (Setting, Distance from Site Features):
DATE	1/6/14	
Begin Sampling Time	11:20	
End Sampling Time	12:04	PRI9-002-SS01-010614 @
ERM Samplers	KB, JH	12:04
EPA Oversight	Aaron Baird	
Weather	Clear, 20s	

3. Location

Lat ____

Long ____

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 9

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness 0-6 inches

Waste Depth >6" inches bgs

Waste Appearance (describe):

Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Smut, white to black, moist to wet

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y/N)
1 4-oz Glass (1/3 headspace)	1 ~~16~~ 32-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y/N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses AQ

Signature [signature] Date 1/6/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI9-003
DATE 1/6/14
Begin Sampling Time 13:30
End Sampling Time 1357
ERM Samplers KB, TH
EPA Oversight Aaron Baird
Weather Clear, 30s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI9-003-SS01-010614 @ 1357

3. Location

Lat
Long
GPS Accuracy
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness 0-6 inches
Waste Depth >6 inches bgs
Waste Appearance (describe): Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Smut, white to black, moist

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID PRI9-003-SS11-010613 @ 1358

EPA Split Samples Y / N (circle)
Analyses

Signature [signature] Date 1/6/14

Surface Solids Sampling Form

ERM

1. Site Information		**2. Description / Location Notes**
SITE ID	PRI9-004	Description (Setting, Distance from Site Features):
DATE	1/7/14	
Begin Sampling Time	9:00	
End Sampling Time	9:14	PRI9-004-SS01-010714 @ 9:14
ERM Samplers	KB, TH	
EPA Oversight	Aaron Baird	
Weather	Cloudy, 20s	
3. Location		
Lat		
Long		
GPS Accuracy		
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*		

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness 0-6 inches

Waste Depth >6 inches bgs

Waste Appearance (describe): Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Smut, brown & White, dry

Bottles Filled

1 4-oz Glass (unpres)	4 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	2 ~~16~~ 32-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID PRI9-004-SS11-010714 @ 9:15

EPA Split Samples Y / N (circle)

Analyses ___

Signature ___ Date 1/7/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI9-005

DATE 1/7/14

Begin Sampling Time 12:10

End Sampling Time 12:28

ERM Samplers KB, TH

EPA Oversight Aaron Baird

Weather Cloudy, 30s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI9-005-SS01-010714

@ 12:28

3. Location

Lat ____

Long ____

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots ~~76~~ 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness 0-6 inches

Waste Depth 76 inches bgs

Waste Appearance (describe): Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Smut, black & gray, moist

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses ____

Signature ____ Date 1/7/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI 9-006

DATE 1/7/14

Begin Sampling Time 10:45

End Sampling Time 11:05

ERM Samplers KB, TH

EPA Oversight Aaron Baird

Weather Cloudy, 30s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI 9-006-SS01-D10714

@ 11:05

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y N (circle)

Waste Thickness 0-6 inches

Waste Depth >6 inches bgs

Waste Appearance (describe):

Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Smut, black with white, moist

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 1/7/14

Surface Solids Sampling Form

1. Site Information

SITE ID PRI9-007
DATE 1/7/14
Begin Sampling Time 9:35
End Sampling Time 9:48
ERM Samplers KB, TH
EPA Oversight Aaron Baird
Weather Cloudy, 20s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI9-007-SS01-010714 @ 9:48

3. Location

Lat ________
Long ________
GPS Accuracy ________
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? ~~Y~~ / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

~~Smut~~

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, silty, brown, fine sand, dry,

Bottles Filled

2 4-oz Glass (unpres)
4 8-oz Glass (unpres)
___ En Core® (unpres)
En Core® Pre-Engaged? (Y / N)
2 4-oz Glass (1/3 headspace)
___ 16-oz Glass (unpres)
___ 40-mL VOA (Methanol)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
EPA Split Samples Y / N (circle)
Field Dup Y / N (circle)
Analyses ________
Field Dup Sample ID PRI9-007-SS11-010714 @ 9:49

Signature ________ Date 1/7/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI9-008

DATE 1/7/14

Begin Sampling Time 12:50

End Sampling Time 13:01

ERM Samplers KB, TH

EPA Oversight Aaron Baird

Weather Cloudy, 30s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI9-008-SS01-010714@ 13:01

3. Location

Lat ____

Long ____

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness 0-6 inches

Waste Depth 56 inches bgs

Waste Appearance (describe): Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Smut, gray, wet

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses ____

Signature ____ Date 1/7/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PEI9-009

DATE 1/7/14

Begin Sampling Time 10:15

End Sampling Time 10:28

ERM Samplers KB, TH

EPA Oversight Aaron Baird

Weather Cloudy, 30s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PEI9-009-SS01-010714 @ 10:28

3. Location

Lat

Long

GPS Accuracy

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness 0-6 inches

Waste Depth 76 inches bgs

Waste Appearance (describe): Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Smut, black & white, moist

Bottles Filled

2 4-oz Glass (unpres)

2 4-oz Glass (1/3 headspace)

4 8-oz Glass (unpres)

___ 16-oz Glass (unpres)

___ En Core® (unpres)

___ 40-mL VOA (Methanol)

En Core® Pre-Engaged? (Y / N)

En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID PEI9-009-SS11-010714 @ 10:29

EPA Split Samples Y / N (circle)

Analyses

Signature

Date 1/7/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI9-010

DATE 1/7/14

Begin Sampling Time 13:10

End Sampling Time 13:24

ERM Samplers KB, TH

EPA Oversight Aaron Baird

Weather Cloudy, 30s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI9-010-SS01-010714

@ 13:24

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness 0-6 inches

Waste Depth 76 inches bgs

Waste Appearance (describe):

Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Smut, grayish black, moist

Bottles Filled

1 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | ___ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) | 1 ~~16~~ 32-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 1/7/14

Surface Solids Sampling Form

ERM

1. Site Information		2. Description / Location Notes
SITE ID	PRI9-011	Description (Setting, Distance from Site Features):
DATE	1/6/14	
Begin Sampling Time	10:10	PRI9-011-SS01-010614
End Sampling Time	10:57	@ 10:57
ERM Samplers	KB, TH	
EPA Oversight	Aaron Baird	
Weather	Clear, 20s	

3. Location

Lat ____________

Long ____________

GPS Accuracy ____________

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 13

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness 0-6 inches

Waste Depth 24+ inches bgs

Waste Appearance (describe): Smut, gray to white

Sampling Notes (Sample Recovery, Refusal, Observations)

~4" of snow on top

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Smut, gray to white, wet,

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	0 2 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____________

EPA Split Samples Y / N (circle)

Analyses All

Signature ____________ Date 1/6/14

Surface Solids Sampling Form

1. Site Information

SITE ID PRI9-012
DATE 12/20/13
Begin Sampling Time 11:40
End Sampling Time 11:52
ERM Samplers FB, TH
EPA Oversight Aaron Baird
Weather Clear, 20s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI9-012-SS01-122013 @ 11:52

Collected an equipment blank
PRI9-012-SS21-122013 @ 11:54

3. Location

Lat ____
Long ____
GPS Accuracy ____
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ____ inches
Waste Depth ____ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, brown, moist

Bottles Filled

2 4-oz Glass (unpres)
2 4-oz Glass (1/3 headspace)
4 8-oz Glass (unpres)
__ 16-oz Glass (unpres)
__ En Core® (unpres)
__ 40-mL VOA (Methanol)
En Core® Pre-Engaged? (Y / N)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID PRI9-012-SS11-122013@11:53
EPA Split Samples Y / N (circle)
Analyses ____

Signature ____ Date 12/20/13

Rev 1, Nov 2013

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI9-013

DATE 12/20/13

Begin Sampling Time 10:40

End Sampling Time 11:00

ERM Samplers KB, TH

EPA Oversight Aaron Baird

Weather Clear, 10s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI9-013-SS01-122013 @ 11:00

3. Location

Lat ~~NA~~

Long

GPS Accuracy

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 6

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe): Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SALT, silty, gray, moist

Bottles Filled

2 4-oz Glass (unpres)   4 8-oz Glass (unpres)   __ En Core® (unpres)   En Core® Pre-Engaged? (Y / N)

2 4-oz Glass (1/3 headspace)   2 ~~16~~ 32-oz Glass (unpres)   __ 40-mL VOA (Methanol)   En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID PRI9-013-SS11-122013 @ 11:01

EPA Split Samples Y / N (circle)

Analyses

Signature

Date 12/20/13

Surface Solids Sampling Form ERM

1. Site Information

SITE ID PRI9-014

DATE 12/20/13

Begin Sampling Time 9:00

End Sampling Time 9:57

ERM Samplers FB, TH

EPA Oversight Aaron Baird

Weather Clear, 10s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI9-014-SS01-122013 @ 9:57

Collected Field Dup

PRI9-014-SS11-122013 @ 9:58

3. Location

Lat ____

Long ____

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 9

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ____ inches

Waste Depth ____ inches bgs

Waste Appearance (describe): Smut

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, salty, dark gray, wet

Bottles Filled

2 4-oz Glass (unpres) 4 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) __ 16-oz Glass (unpres) __ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID PRI9-014-SS11-122013 @ ~~9:57~~ TH 9:58

EPA Split Samples Y / N (circle)

Analyses ____

Signature ____ Date 12/20/13

Rev 1, Nov 2013

SOP USM-01
US Magnesium RI/FS

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI10-001
DATE 12/12/13
Begin Sampling Time 1028
End Sampling Time 1042
ERM Samplers HAMADA, RIGARD
EPA Oversight A. BAIRD
Weather FOG, CALM, 2°F

2. Description / Location Notes

Description (Setting, Distance from Site Features):
NORTHWEST OF WASTE POND ~1000 FT FROM DIKE.

PRI10-001-SSO-121213

3. Location

Lat
Long
GPS Accuracy
Location Field Modified? Y N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HAND AUGER
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y N (circle)
Waste Potentially Present? Y N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)
~3" OF SNOW ON TOP OF SOIL.

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents
SANDY SILT W/ CLAY, GRAYISH BROWN, VERY LITTLE MOISTURE.

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y N (circle)
Field Dup Y N (circle)
Field Dup Sample ID ______

EPA Split Samples Y N (circle)
Analyses ______

Signature Marutt Rigard Date 12/12/13

Surface Solids Sampling Form

ERM

1. Site Information		**2. Description / Location Notes**
SITE ID	PRI10-002	Description (Setting, Distance from Site Features):
DATE	12/12/13	200 FT WEST OF ROAD LEADING NORTH TO "ANGEL WING", NW OF WASTE POND.
Begin Sampling Time	1330	
End Sampling Time	1417	
ERM Samplers	HAMADA, RIGARD	
EPA Oversight	A. BAIRD	
Weather	OVERCAST, 1°F	
3. Location		
Lat		
Long		
GPS Accuracy		
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	N	PRI10-002-SS01-121213

4. Field Preservation / Field Measurements

Sample Collection Method HAND AUGER

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle) — N

Waste Potentially Present? Y / N (circle) — N

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~3" SNOW ON SURFACE OF GROUND

SOME ROOTS/ORGANIC MATERIAL PRESENT

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILTY CLAY, GRAY, FINE GRAINS, SMALL/SUB-ANGULAR GRAVEL, MOIST TO WET (FROZEN), SOME ROOTS/OM PRESENT

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	___ 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle) — N

Field Dup Y / N (circle) — N

Field Dup Sample ID ____________

EPA Split Samples Y / N (circle) — N

Analyses ____________

Signature [signature] Date 12/12/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI10-003
DATE 12/12/13
Begin Sampling Time 1149
End Sampling Time 1157
ERM Samplers HAMADA, RIGARD
EPA Oversight A. BAIRD
Weather OVERCAST, 5°F

2. Description / Location Notes

Description (Setting, Distance from Site Features):
~50 FT NORTH OF CLAY EXCAVATION AREA, NEAR BARIUM SULPHATE PILE.

~~3-4" SNOW PRESENT~~ TH 12/12/13

PRI10-003-SS01-121213

3. Location

Lat ______
Long ______
GPS Accuracy ______
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HAND AUGER
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 7
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)
TWO EXTRA HOLES TO PROVIDE ADDITIONAL VOLUME FOR EPA/PWT SPLIT SAMPLE (DUPE)
3-4" SNOW PRESENT ON SURFACE

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILTY SAND, COARSE SUB-ANGULAR SAND GRAINS, BROWN, SOME ROOTS/O.M.

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______

EPA Split Samples Y / N (circle)
Analyses DUPLICATE

Signature [signature] Date 12/12/13

Surface Solids Sampling Form

ERM

1. Site Information		2. Description / Location Notes
SITE ID	PRI10-004	Description (Setting, Distance from Site Features):
DATE	12/12/13	EAST OF EXCAVATION NEAR NORTH ROAD OF WASTE POND,
Begin Sampling Time	1112	
End Sampling Time	1034	SURFACE SOIL DISTURBED, TRACTOR/BACKHOE TRACKS ON SURFACE IN AREA.
ERM Samplers	HAMADA, RIGARD	
EPA Oversight	A. BAIRD	~10 FT. FROM EXCAVATION IN CLAY SOIL
Weather	OVERCAST, FOG, 5°F	
3. Location		
Lat		
Long		
GPS Accuracy		
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	N	PRI10-004-SS01-121213

4. Field Preservation / Field Measurements

Sample Collection Method HAND AUGER

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle) N

Waste Potentially Present? Y / N (circle) N

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILTY CLAY, GRAY, TRACE FINE GRAVEL, MOIST.

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle) N

Field Dup Y / N (circle) N

Field Dup Sample ID ____________

EPA Split Samples Y / N (circle) N

Analyses ____________

Signature [signature] Date 12/12/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI10-005

DATE 12/13/13

Begin Sampling Time 9:15

End Sampling Time 9:28

ERM Samplers KB, TH

EPA Oversight Arron Baird

Weather Foggy, 16°

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI10-005-SS01-121313 @ 9:28

3. Location

Lat ____________

Long ____________

GPS Accuracy ____________

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, silty, light brown to brown, coarse grain, moist

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____________

EPA Split Samples Y / N (circle)

Analyses ____________

Signature ____________ Date 12/13/13

Surface Solids Sampling Form

ERM

1. Site Information	***2. Description / Location Notes***
SITE ID PRS10-006	Description (Setting, Distance from Site Features):
DATE 12/13/13	
Begin Sampling Time 9:38	
End Sampling Time 10:14	PRS10-006-SS01-121313
ERM Samplers KB, TH	@ 10:14
EPA Oversight Aaron Baird	
Weather Foggy, 10's	
3. Location	
Lat ______	
Long ______	
GPS Accuracy ______	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, sandy, brown, fine grain, moist

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) 2 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 12/13/13

Surface Solids Sampling Form

ERM

1. Site Information **SITE ID** PRI10-007 **DATE** 12/13/13 Begin Sampling Time 10:40 End Sampling Time 11:00 ERM Samplers KB, TH EPA Oversight Aaron Baird Weather Foggy, 10s	***2. Description / Location Notes*** Description (Setting, Distance from Site Features): PRI10-007-SS01-121313 @ 11:00
3. Location Lat ___ Long ___ GPS Accuracy ___ Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ___ inches

Waste Depth ___ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, brown, moist

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	__ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	2 16-oz Glass (unpres)	__ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ___

EPA Split Samples Y / N (circle)

Analyses ___

Signature [signature] Date 12/13/13

Surface Solids Sampling Form

1. Site Information

SITE ID PR-I10-008
DATE 12/17/13
Begin Sampling Time 10:30
End Sampling Time 10:45
ERM Samplers KB, GR
EPA Oversight —
Weather Foggy, 10s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PR-I10-008-SS01-121713
@10:45

3. Location

Lat ________
Long ________
GPS Accuracy ________
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, silty, brown, moist

Bottles Filled

1 4-oz Glass (unpres)
1 4-oz Glass (1/3 headspace)
2 8-oz Glass (unpres)
2 16-oz Glass (unpres)
__ En Core® (unpres)
__ 40-mL VOA (Methanol)
En Core® Pre-Engaged? (Y / N)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ________

EPA Split Samples Y / N (circle)
Analyses ________

Signature ________ Date 12/17/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI10-009

DATE 12/13/13

Begin Sampling Time 11:30

End Sampling Time 11:46

ERM Samplers KB, TH

EPA Oversight Aaron Baird

Weather Cloudy. 10's

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI10-009-SS01-121313 @ 11:46

Collected Equipment Blank PRI10-009-SS21-121313 @ 11:47

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, silty, brown, moist

Bottles Filled

1 4-oz Glass (unpres)
2 8-oz Glass (unpres)
___ En Core® (unpres)
En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace)
2 16-oz Glass (unpres)
___ 40-mL VOA (Methanol)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 12/13/13

Surface Solids Sampling Form

1. Site Information

SITE ID PRI10-010

DATE 12/17/13

Begin Sampling Time 9:10

End Sampling Time 9:30

ERM Samplers KB, GR

EPA Oversight —

Weather Foggy, 14°

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI10-010-SS01-121713 @ 9:30

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y (N) (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / (N) (circle)

Waste Potentially Present? Y / (N) (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, brown, moist

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	__ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	__ 16-oz Glass (unpres)	__ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / (N) (circle)

Field Dup Y / (N) (circle)

Field Dup Sample ID ______

EPA Split Samples Y / (N) (circle)

Analyses ______

Signature ______ Date 12/17/13

Surface Solids Sampling Form

ERM

1. Site Information		2. Description / Location Notes
SITE ID	PRI10-011	Description (Setting, Distance from Site Features):
DATE	12/17/13	
Begin Sampling Time	10:50	
End Sampling Time	11:00	
ERM Samplers	KB, GR	
EPA Oversight	—	
Weather	Foggy 10s	Sample ID = PRI10-011-SS01-121713 @ 1100

3. Location

Lat ______
Long ______
GPS Accuracy ______
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method: HA
Sample Depth Interval: 0-6 inches bgs
Number of Grab Aliquots: 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, silty, brown, moist

Bottles Filled

1 4-oz Glass (unpres)
1 4-oz Glass (1/3 headspace)
2 8-oz Glass (unpres)
___ 16-oz Glass (unpres)
___ En Core® (unpres)
___ 40-mL VOA (Methanol)
En Core® Pre-Engaged? (Y / N)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______
EPA Split Samples Y / N (circle)
Analyses ______

Signature [signature] Date 12/17/13

Surface Solids Sampling Form ERM

1. Site Information

SITE ID PRI10-012
DATE 12-16-2013
Begin Sampling Time 1355
End Sampling Time 1402
ERM Samplers Lundmark, Rizzard
EPA Oversight None
Weather
Foggy, low 20's

2. Description / Location Notes

Description (Setting, Distance from Site Features):

on BaSO4 cell

PRI10-012-SS01-121613
@1355

3. Location

Lat
Long
GPS Accuracy
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger
Sample Depth Interval 0 - 6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~2 inches snow on ground

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, sandy, moist, med. brown, some roots

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) 2 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)
Analyses ________________

Signature [signature] Date 12/16/13

Surface Solids Sampling Form

ERM

1. Site Information		2. Description / Location Notes
SITE ID	PRF10-013	Description (Setting, Distance from Site Features):
DATE	12/12/13	~30 FT NORTH OF PONDED WASTE WATER, 0.2 MILES EAST OF ROAD TO ANGEL WING
Begin Sampling Time	1430	
End Sampling Time	1505	
ERM Samplers	HAMADA, RIGARD	
EPA Oversight	A. BAIRD	
Weather	OVERCAST, 1°F	

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

PRF10-013-SS01-121213

4. Field Preservation / Field Measurements

Sample Collection Method HAND AUGER

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle) — N circled

Waste Potentially Present? Y / N (circle) — N circled

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~2" SNOW ON SURFACE
RESISTANCE TO HAND AUGER, THICK CLAY

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILTY CLAY TRACE SAND, GRAY, FEW SMALL (~1/2") GRAVEL, MOIST (FROZEN) SOME ROOTS

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	___ 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle) — N circled

Field Dup Y / N (circle) — N circled

Field Dup Sample ID ______

EPA Split Samples Y / N (circle) — Y circled

Analyses ALL

Signature [signature] Date 12/12/13

Surface Solids Sampling Form

1. Site Information

SITE ID PRI10 - 014
DATE 12 - 16 - 2013
Begin Sampling Time 1341
End Sampling Time 1349
ERM Samplers Lundmark, Rizzard
EPA Oversight None
Weather Foggy, low 20s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

On $BaSO_4$ cell

PRI10-014-SS01-121613
@1341

3. Location

Lat ____
Long ____
GPS Accuracy ____
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger
Sample Depth Interval 0 - 6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ____ inches
Waste Depth ____ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~2 inches snow on ground

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, sandy, med. brown, moist, tr. gravel

Bottles Filled

1 4-oz Glass (unpres)
2 8-oz Glass (unpres)
__ En Core® (unpres)
En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)
__ 16-oz Glass (unpres)
__ 40-mL VOA (Methanol)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID PRI10-014-SS11-121613
@ 1342

EPA Split Samples Y / N (circle)
Analyses ____

Signature [signature] Date 12/16/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI11-001
DATE 5/7/14
Begin Sampling Time 1117
End Sampling Time 1132
ERM Samplers T. HAMADA
EPA Oversight A. BAIRD
Weather OVERCAST, 40s, WIND 2-5mph

2. Description / Location Notes

Description (Setting, Distance from Site Features):
WEST OF ATI MAIN FACILITY BUILDING.

JASON DEFOREST - ATI ESCORT

3. Location

Lat ____
Long ____
GPS Accuracy ____
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method FLAT BOT. SCOOP
Sample Depth Interval 0-2 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ____ inches
Waste Depth ____ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)
ArTH SAMPLE LOC. IN IMPORTED FILL. SPARSE VEGETATION.

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, SILTY, BROWN, COARSE ROUNDED GRAINS, SOME GRAVEL

Sample ID/Time PRI11-001-SS01-050714 @ 1127

Bottles Filled

1 4-oz Glass (unpres)
2 8-oz Glass (unpres)
___ En Core® (unpres)
En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)
___ 16-oz Glass (unpres)
___ 40-mL VOA (Methanol)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
EPA Split Samples Y / N (circle)
Field Dup Y / N (circle)
Analyses ____
Field Dup Sample ID ____

Signature [signature] Date 5/7/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI11-002
DATE 5/7/14
Begin Sampling Time 1343
End Sampling Time 1358
ERM Samplers T. HAMADA
EPA Oversight A. BAIRD
Weather RAIN, 40s, WIND 2-5 mph

2. Description / Location Notes

Description (Setting, Distance from Site Features):
NEAR S. BORDER OF USMAG PROPERTY NEAR "GLAMA HIGHWAY"

3. Location

Lat ______
Long ______
GPS Accuracy ______
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method FLAT BOT. SCOOP
Sample Depth Interval 0-2 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)
PREVIOUSLY DISTURBED AREA. MODERATE VEGETATION PRESENT

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, SANDY, DARK BROWN, FINE GRAINS, MOIST, ROOTS & ORGANIC MATTER PRESENT, SOME GRAVEL (≤ 1") PRESENT

Sample ID/Time PRF11-002-SS01-050714 @ 1353

Bottles Filled

1 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | ___ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) | ___ 16-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______

EPA Split Samples Y / N (circle)
Analyses ______

Signature [signature] Date 5/7/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI11-003
DATE 5/6/14
Begin Sampling Time 12:15
End Sampling Time 12:40
ERM Samplers KB, TH
EPA Oversight Aaron Baird
Weather Clear, 60s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

3. Location

Lat ____
Long ____
GPS Accuracy ____
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel
Sample Depth Interval 0-2 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y N (circle)
Waste Thickness ____ inches
Waste Depth ____ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, light brown, dry

Sample ID/Time PRI11-003-SS01-050614 @ 12:40

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y N (circle)
Field Dup Sample ID ____

EPA Split Samples Y N (circle)
Analyses ____

Signature ____ Date 5/6/14

Surface Solids Sampling Form

ERM

1. Site Information	**2. Description / Location Notes**
SITE ID PRI11-004	Description (Setting, Distance from Site Features):
DATE 5/7/14	NORTH SIDE OF ATI PROPERTY (TH)
Begin Sampling Time 1143	
End Sampling Time 1200	
ERM Samplers T. HAMADA	
EPA Oversight A. BAIRD	
Weather OVERCAST, 40s, WIND 2-5mph	
3. Location	
Lat	
Long	
GPS Accuracy	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	JASON DEFOREST - ATI ESCORT

4. Field Preservation / Field Measurements	
Sample Collection Method FLAT BOT. SCOOP	Sampling Notes (Sample Recovery, Refusal, Observations)
Sample Depth Interval 0-2 inches bgs	SAMPLE LOC. IN IMPORTED FILL AREA, NO VEGETATION, 1-3" SUB-ANGULAR GRAVEL PRESENT.
Number of Grab Aliquots 5	
Saturated? Y / N (circle)	
Waste Potentially Present? Y / N (circle)	
Waste Thickness ______ inches	
Waste Depth ______ inches bgs	
Waste Appearance (describe):	

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, SILTY, COARSE ROUNDED GRAINS, LIGHT BROWN, SOME GRAVEL

Sample ID/Time PRI11-004-SS01-050714 @ 1155

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	1 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)	EPA Split Samples Y / N (circle)
Field Dup Y / N (circle)	Analyses ____________
Field Dup Sample ID ____________	

Signature [signature] Date 5/7/14

Surface Solids Sampling Form

ERM

1. Site Information	2. Description / Location Notes
SITE ID PRI11-002 5 TH	Description (Setting, Distance from Site Features):
DATE 5/7/14	S. OF SOUTHER RAIL LINE
Begin Sampling Time 1403	ON US MAG PROPERTY
End Sampling Time 1421	
ERM Samplers T. HAMADA	
EPA Oversight A. BAIRD	
Weather RAIN, 40's, WIND 5-10 mph	
3. Location	
Lat ______	
Long ______	
GPS Accuracy ______	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method FLAT BOT. SCOOP

Sample Depth Interval 0 - 2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

SOME SURFACE GARBAGE PRESENT
SPARSE VEGETATION

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, SANDY, LIGHT BROWN, MOIST, SOME GRAVEL ≤ 1"

Sample ID/Time PRI11-005-SS01-050714 @ 1416

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	1 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 5/7/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI11-006
DATE 5/7/14
Begin Sampling Time 1315
End Sampling Time 1333
ERM Samplers T. HAMADA
EPA Oversight A. BAIRD
Weather OVERCAST, LIGHT RAIN, 50s WIND 5-10 mph

2. Description / Location Notes

Description (Setting, Distance from Site Features):
N. OF ATI VISITOR PARKING LOT IN LANDSCAPED AREA.

3. Location

Lat
Long
GPS Accuracy
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method FLAT BOT. SCOOP
Sample Depth Interval 0 - 2 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)
IMPORTED SOIL + LANDSCAPING.

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, CLAYEY, DARK BROWN, MOIST, ROOTS + ORGANIC MATTER PRESENT, SOME GRAVEL (< 1")

Sample ID/Time PRI11-006-SS01-050714 @ 1328

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID
EPA Split Samples Y / N (circle)
Analyses

Signature [signature] Date 5/7/14

...ce Solids Sampling Form

ERM

1. Site Information

SITE ID PRI11-007

DATE 5/7/14

Begin Sampling Time 0931

End Sampling Time 0957

ERM Samplers T. HAMADA

EPA Oversight A. BAIRD

Weather RAIN, 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~ 5 m NORTH of RAIL SPUR SOUTH of ATI MAIN BUILDING, ~ 50' EAST of WEST END of TH RAIL SPUR.

JASON DEFOREST - ATI ESCORT

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method FLAT BOT. SCOOP

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

THIN LAYER (~ 0.5 cm) DARK SOIL ON ~~TOP TH~~ SURFACE.

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, SANDY, LIGHT BROWN, MOIST, ~~TO~~ TH SOME GRAVEL

Sample ID/Time PRI11-007-SS01 - 050714 @ 0952

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) 1 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y N (circle) FINES ONLY

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 5/7/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI11-008

DATE 5/7/14

Begin Sampling Time 1005

End Sampling Time 1027

ERM Samplers T. HAMADA

EPA Oversight A. BAIRD

Weather RAIN, 40S

2. Description / Location Notes

Description (Setting, Distance from Site Features):

SW OF ATI PROPERTY FENCE LINE. ON TOP OF RIDGE.

ATI OVERSIGHT: JASON DEFOREST

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method FLAT. BOT SCOOP

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

SAMPLE WET DUE TO HEAVY RAIN BUILDUP IN MIXING PAN.

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, CLAYEY, LIGHT GRAY, FINE GRAINS, SOME GRAVEL

Sample ID/Time PRI11-008-SS01-050714 @ 1022

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 5/7/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRIM-009
DATE 5/7/14
Begin Sampling Time 0901
End Sampling Time 0919
ERM Samplers T. HAMADA
EPA Oversight A. BAIRD
Weather RAIN, 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):
SOUTH OF RAIL SPUR. ~ 300' EAST OF HOLDING POND.

JASON DEFOREST - ATI ESCORT

3. Location

Lat ____
Long ____
GPS Accuracy ____
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method FLAT BOT. SCOOP
Sample Depth Interval 0 - 2 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ____ inches
Waste Depth ____ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)
SAMPLE LOC. IN OLD ROAD/ PATH.

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents
SANDY SILT, LIGHT BROWN, MOIST, SOME GRAVEL PRESENT

Sample ID/Time PRI/1-009-SS01-050714 @ 0914

Bottles Filled

1 4-oz Glass (unpres)
2 8-oz Glass (unpres)
__ En Core® (unpres)
En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)
__ 16-oz Glass (unpres)
__ 40-mL VOA (Methanol)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ____
EPA Split Samples Y / N (circle)
Analyses ____

Signature [signature] Date 5/7/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI11-010

DATE 5/7/14

Begin Sampling Time 1035

End Sampling Time 1111

ERM Samplers T. HAMADA

EPA Oversight A. BAIRD

Weather RAIN, 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

ON RIDGE S. OF ATI FENCE LINE. N. FACING SLOPE OF HILL S. OF PROPERTY

JASON DEFOREST - ATI ESCORT

3. Location

Lat ________

Long ________

GPS Accuracy ________

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method FLAT BOT. SCOOP

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, SANDY, LIGHT BROWN, FINE GRAINS, SOFT, SLIGHTLY MOIST, ROOTS PRESENT

Sample ID/Time PRI11-010-SS01-050714 @ 1058

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) 1 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples TH

MS/MSD ~~Y~~ / N (circle) ~~FINES ONLY~~ TH

Field Dup Y / N (circle)

Field Dup Sample ID ________

EPA Split Samples Y / N (circle)

Analyses ________

Signature [signature] Date 5/7/14

Surface Solids Sampling Form

ERM

1. Site Information		**2. Description / Location Notes**
SITE ID	PRI11-011	Description (Setting, Distance from Site Features):
DATE	5/6/14	
Begin Sampling Time	11:17	
End Sampling Time	11:35	
ERM Samplers	KB, TH	
EPA Oversight	Aaron B	
Weather	Clear, 50s	

3. Location

Lat ____________

Long ____________

GPS Accuracy ____________

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, light brown, dry

Sample ID/Time PRI11-011-~~0501~~-050614 @ 11:35

Bottles Filled

2 4-oz Glass (unpres) 4 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

2 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____________

EPA Split Samples Y / N (circle)

Analyses ____________

Signature ____________ Date 5/6/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI11-012
DATE 5/6/14
Begin Sampling Time ______
End Sampling Time 11:03
ERM Samplers KB, TH
EPA Oversight Aaron Baird
Weather Clear, 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

3. Location

Lat ______
Long ______
GPS Accuracy ______
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel
Sample Depth Interval 0-2 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, light brown, dry

Sample ID/Time PRI11-012-SS01-050614@11:03

Bottles Filled

2 4-oz Glass (unpres) 4 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

2 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______

EPA Split Samples Y / N (circle)
Analyses ______

Signature [signature] Date 5/6/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI1-013

DATE 5/6/14

Begin Sampling Time 10:09

End Sampling Time 10:30

ERM Samplers KB, TH

EPA Oversight Aaron Baird

Weather Clear, 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

3. Location

Lat ____

Long ____

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ____ inches

Waste Depth ____ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, light brown, dry

Sample ID/Time PRI1-013-SS01-050614 @ 10:30

Bottles Filled

2 4-oz Glass (unpres) 4 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

2 4-oz Glass (1/3 headspace) 1 32 ~~16~~-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle): Fines Only

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses ____

Signature ____ Date 5/6/14

Surface Solids Sampling Form ERM

1. Site Information	**2. Description / Location Notes**
SITE ID PRI II-014	Description (Setting, Distance from Site Features):
DATE 5/6/14	
Begin Sampling Time 9:42	
End Sampling Time 9:55	
ERM Samplers KB, TH	
EPA Oversight Aaron Baird	
Weather Clear, 50s	
3. Location	
Lat ______	
Long ______	
GPS Accuracy ______	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

~~Clayey Silt, light brown~~ KB SILT, clayey, light brown, dry

Sample ID/Time PRI II-014-SS01-050614 @ 9:55

Bottles Filled

2 4-oz Glass (unpres)	4 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
2 4-oz Glass (1/3 headspace)	___ 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 5/6/14

Surface Solids Sampling Form

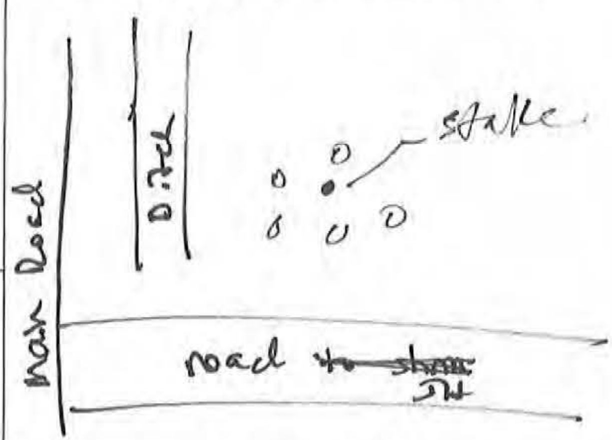
ERM

1. Site Information

SITE ID: PRI12-001
DATE: 12-10-13
Begin Sampling Time: 9:05
End Sampling Time: 9:20
ERM Samplers: T. Hamada / G. Rigard
EPA Oversight: A. Baird
Weather: -6°F, cleary, sunny

2. Description / Location Notes

Description (Setting, Distance from Site Features):



3. Location

Lat ______
Long ______
GPS Accuracy ______
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method: hand auger
Sample Depth Interval: 0-6 inches bgs
Number of Grab Aliquots: 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~ 4" of snow over soil sample location

PRI12-001-SS01-121013 @ 0905

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty SAND, w/ little gravel, trace organics, sand is fine grained, silt is non-plastic, dry?

Bottles Filled

1 4-oz Glass (unpres)
1 4-oz Glass (1/3 headspace)
2 8-oz Glass (unpres)
2 16-oz Glass (unpres)
__ En Core® (unpres)
__ 40-mL VOA (Methanol)
En Core® Pre-Engaged? (Y / N)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______
EPA Split Samples Y / N (circle)
Analyses ______

Signature ______ Date 12-10-13

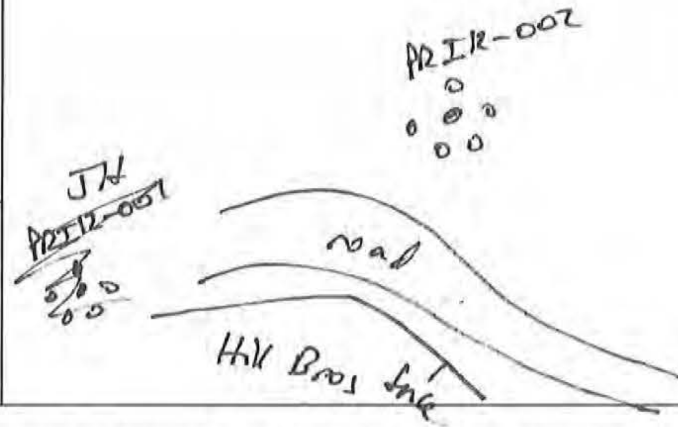
Surface Solids Sampling Form

1. Site Information

SITE ID PRI12-002
DATE 12-10-13
Begin Sampling Time ~~9:30~~ 9:34
End Sampling Time 9:48
ERM Samplers T. Hamada
EPA Oversight A. Baird
Weather
-6°F, clear, calm

2. Description / Location Notes

Description (Setting, Distance from Site Features):



3. Location

Lat ______
Long ______
GPS Accuracy ______
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0 - 6 inches bgs
Number of Grab Aliquots 7
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

- SAP mod so EPA can take split here

- ~4" of snow over sample locations

PRI12-002-SS01-121013 @ 0934

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

silty SAND, w/ little gravel, sand is fine, gravel is fine, subrounded, dry, brown, trace organics (roots)

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID n/a

EPA Split Samples Y / N (circle)
Analyses ______

Signature [signature] Date 12-10-13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID ~~Pratt~~ PRI12-003

DATE 12-10-13

Begin Sampling Time 9:51

End Sampling Time 10:20

ERM Samplers G. Rigard

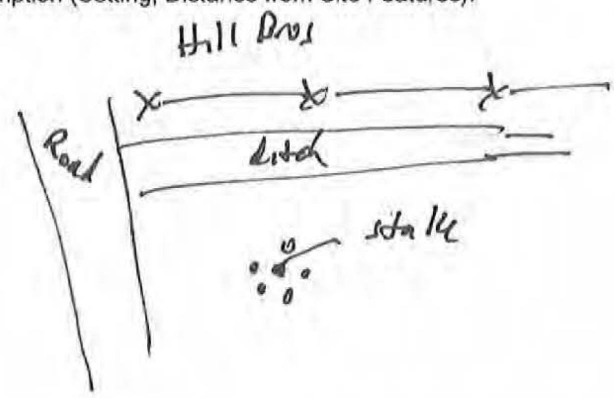
EPA Oversight A. Baird

Weather

~6°F, clear, sunny

2. Description / Location Notes

Description (Setting, Distance from Site Features):



3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~ 4" snow over sample location

PRI12-003-SS01-121013

@ 0951

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty sand w/ little clay, damp, sand is fine, brown, trace organics (roots)

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) 2 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 12-10-13

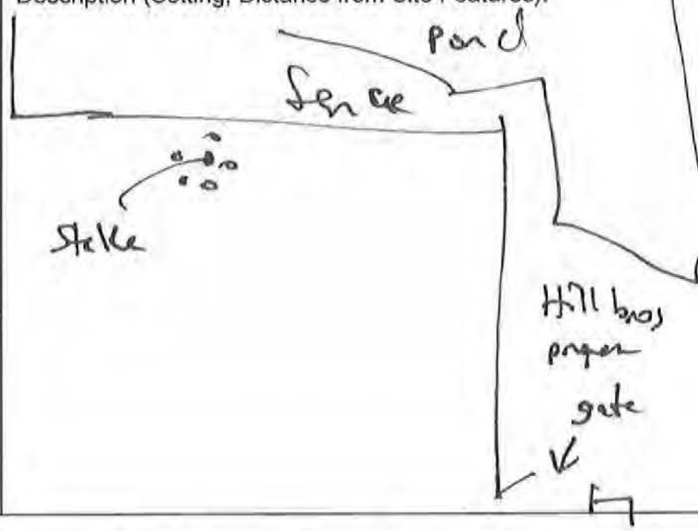
Surface Solids Sampling Form

1. Site Information

SITE ID	PRI12-004
DATE	12-10-13
Begin Sampling Time	10:28
End Sampling Time	10:49
ERM Samplers	T. Hamada
EPA Oversight	A. Baird
Weather	-6°F, sunny, calm

2. Description / Location Notes

Description (Setting, Distance from Site Features):



3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

Circled: N

4. Field Preservation / Field Measurements

Sample Collection Method: hand auger

Sample Depth Interval: 0-6 inches bgs

Number of Grab Aliquots: 5

Saturated? Y / N (circle) — circled: N

Waste Potentially Present? Y / N (circle) — circled: N

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~4" snow over soil sample locations

PRI12-004-SS01-121013 @1028

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

silty SAND, w/ trace ~~roots~~ silt roots, little gravel, brown, ~~damp~~ dry. gravel is fine, subangular

Bottles Filled

1 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | __ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) | 2 16-oz Glass (unpres) | __ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle) — circled: N

Field Dup Y / N (circle) — circled: N

Field Dup Sample ID ______

EPA Split Samples Y / N (circle) — circled: N

Analyses ______

Signature [signature] Date 12-10-13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI12-005

DATE 12-10-13

Begin Sampling Time 9:34

End Sampling Time 9:45

ERM Samplers G. Risgard

EPA Oversight A. Bard

Weather

-6° F, clear, sunny

2. Description / Location Notes

Description (Setting, Distance from Site Features):

stake

3. Location

Lat

Long

GPS Accuracy

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 0 - 6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~4" of snow over sample locations

PRI12-005-SS01-121013 @ 0934

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

silty SAND w/ little gravel, sand is fine, gravel is fine, subrounded, dry, brown, trace organics (roots)

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ——

EPA Split Samples Y / N (circle)

Analyses ——

Signature [signature] Date 12-10-13

Surface Solids Sampling Form

1. Site Information

SITE ID PRI 12 - 006

DATE 12-10-13

Begin Sampling Time 10:28

End Sampling Time 10:42

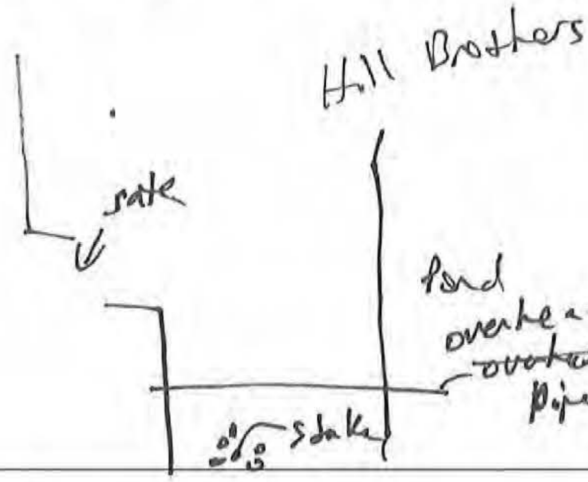
ERM Samplers G. Risard

EPA Oversight A. Davd

Weather
-6°F, sunny, calm

2. Description / Location Notes

Description (Setting, Distance from Site Features):



3. Location

Lat ____

Long ____

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 0 - 6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ____ inches

Waste Depth ____ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~4" snow on top of
soil sample locations

PRI12-006-SS01-121013 @ 1028

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND w/ trace silt, weak cementation, gray, dry, sand is fine to medium grained.

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	__ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	__ 16-oz Glass (unpres)	__ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses ____

Signature [signature] Date 12-10-13

Surface Solids Sampling Form

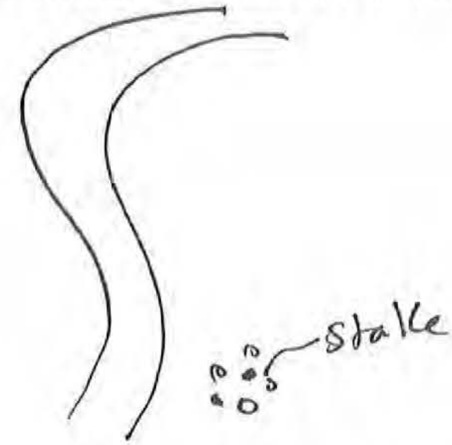
ERM

1. Site Information

SITE ID PRII2-007
DATE 12-10-13
Begin Sampling Time 10:59
End Sampling Time 11:10
ERM Samplers T Hamala
EPA Oversight A. Bard
Weather
-6° F, clear, sunny

2. Description / Location Notes

Description (Setting, Distance from Site Features):



3. Location

Lat ____
Long ____
GPS Accuracy ____
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method hand auger
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ____ inches
Waste Depth ____ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~4" of snow over sample locations

PRI12-007-SS01-121013 @ 1059

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

silty SAND, brown, trace roots, dry, sand is fine grained

Bottles Filled

2 ~~1~~ 3 4-oz Glass (unpres) 4 ~~2~~ 3 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
2 ~~1~~ 3 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup ~~Y / N (circle)~~ yes-3rd
Field Dup Sample ID PRI12-007-SS11-121013 @ 11:00

EPA Split Samples Y / N (circle)
Analyses ____

Signature [signature] Date 12-10-13

Surface Solids Sampling Form

1. Site Information

SITE ID: PRIR-008

DATE: 12-10-13

Begin Sampling Time: 11:19

End Sampling Time: 11:29

ERM Samplers: G. Rigard

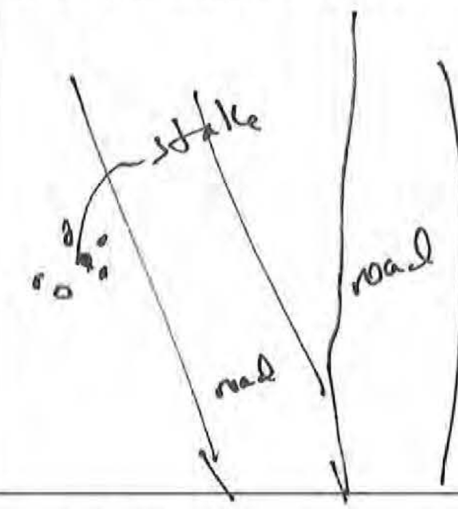
EPA Oversight: A. Baird

Weather

-6°F, clear, sunny

2. Description / Location Notes

Description (Setting, Distance from Site Features):



3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method: hand auger

Sample Depth Interval: 0-6 inches bgs

Number of Grab Aliquots: 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~4" of snow at sample location

PRI12-008-SS01-121013 @ 1119

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

silty SAND, trace organics (roots), dry, sand is fine, weak cementation light brown

Bottles Filled

1 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | __ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) | 2 16-oz Glass (unpres) | __ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 12-10-13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI12-009

DATE 12-10-13

Begin Sampling Time ~~11:20~~ JH ~~11:38~~ JH 11:42

End Sampling Time ~~11:33~~ JH 11:53

ERM Samplers T. Hamada

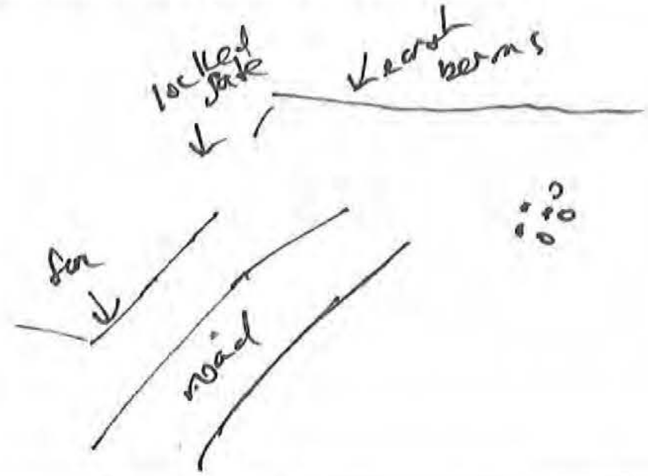
EPA Oversight A. Baird

Weather

-6°F, sunny, calm

2. Description / Location Notes

Description (Setting, Distance from Site Features):



3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~4" of snow at sample location

PRI12-009-SS01-121013 @ 1142

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

silty SAND w/ little gravel, brown, damp, sand is fine grained, gravel is fine grained, ~~subround~~ JH sub angular.

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	__ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	2 16-oz Glass (unpres)	__ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 12-10-13

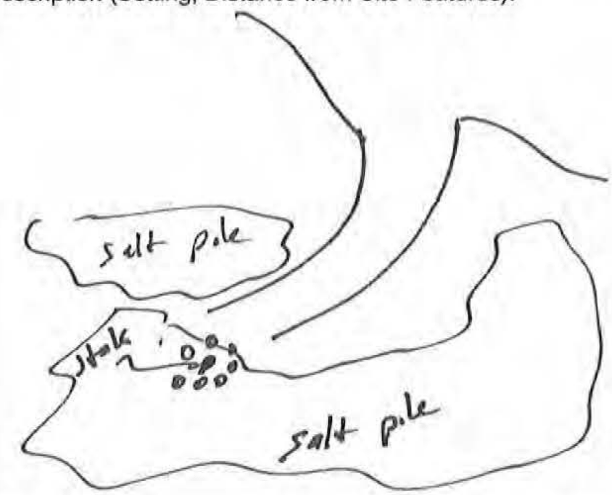
Surface Solids Sampling Form ERM

1. Site Information

SITE ID: PRI12-010
DATE: 12-10-13
Begin Sampling Time: 12:01
End Sampling Time: 12:20
ERM Samplers: T. Hamada / G. R.gard
EPA Oversight: A. Bard
Weather: -6° F, clear, sunny

2. Description / Location Notes

Description (Setting, Distance from Site Features):



3. Location

Lat ____
Long ____
GPS Accuracy ____
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method: hand auger
Sample Depth Interval: 0-6 inches bgs
Number of Grab Aliquots: 7
Saturated? Y / N (circle) North yes
Waste Potentially Present? Y / N (circle)
Waste Thickness: 6 inches
Waste Depth: 6 inches bgs
Waste Appearance (describe): - salt from salt waste pile (some in various states of weathering)

Sampling Notes (Sample Recovery, Refusal, Observations): ~4" snow over sample location

- salt pile was sampled for this.

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SALT, light brown to tan, coarse to fine grained, moist

PRI12-010-SS01-121013 @ 1201

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ____

EPA Split Samples Y / N (circle)
Analyses ____

Signature ____ Date 12-10-13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI12-011

DATE 12/11/13

Begin Sampling Time 1340

End Sampling Time 1358

ERM Samplers HAMADA, RIGARD

EPA Oversight A. BAIRD

Weather PARTLY CLOUDY, NORTH BREEZE, ~15°

2. Description / Location Notes

Description (Setting, Distance from Site Features):

TOP OF SMALL PILE OF DIRT/SALT. ~~SOFTH~~ NORTH OF 1ST GATE ON SOUTHERN ACCESS ROAD

3. Location

Lat

Long

GPS Accuracy

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HAND AUGER

Sample Depth Interval 0 - 6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ≥6" inches

Waste Depth 0 - 6 inches bgs

Waste Appearance (describe):

RED SALT

Sampling Notes (Sample Recovery, Refusal, Observations)

SOFT SOIL, ~1" SNOW ON TOP OF SOIL

PRI12-011-SS01-121113 @ 1358

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SALTY SAND, GRAINS SUB-ANGULAR, REDDISH BROWN, WELL DRAINED

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) 2 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID

EPA Split Samples Y / N (circle)

Analyses

Signature [signature] Date 12/11/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI12-012
DATE 12/12/13
Begin Sampling Time 0911
End Sampling Time 0919
ERM Samplers HAMADA, RIGARD
EPA Oversight A. BAIRD
Weather HEAVY FOG UNDER CLEAR SKIES 1°F

2. Description / Location Notes

Description (Setting, Distance from Site Features):
SOUTHEAST of STAR POND ~1000 FT. FLAT AREA of SAGE BRUSH.

PRI12-012-SS01-121213

3. Location

Lat ______
Long ______
GPS Accuracy ______
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HAND AUGER
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)
~3" SNOW PRESENT ON TOP OF SOIL

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents
SANDY SILT, LIGHT BROWN, FINE SAND, LITTLE TO NO MOISTURE, SOME ROOTS/ORGANIC MATERIAL PRESENT

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______
EPA Split Samples Y / N (circle)
Analyses ______

Signature [signature] Date 12/12/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI12-013
DATE 12/12/13
Begin Sampling Time 0933
End Sampling Time 0944
ERM Samplers HAMADA, RIGARD
EPA Oversight A. BAIRD
Weather HEAVY FOG UNDER CLEAR SKIES 1°F

2. Description / Location Notes

Description (Setting, Distance from Site Features):
SOUTHEAST OF STAR POND ~ 800 FT.
FLAT AREA OF SAGE BRUSH

PRI12-013-SS01-121213

3. Location

Lat ______
Long ______
GPS Accuracy ______
Location Field Modified? Y (N) (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HAND AUGER
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y (N) (circle)
Waste Potentially Present? Y (N) (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)
~3" SNOW ON TOP OF SOIL.

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents
SANDY SILT, LIGHT BROWN, FINE SAND, VERY LITTLE MOISTURE, SOME ROOTS / ORGANICS.

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) 2 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y (N) (circle)
Field Dup Y (N) (circle)
Field Dup Sample ID ______
EPA Split Samples Y/ (N) (circle)
Analyses ______

Signature [signature] Date 12/12/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI12-014
DATE 12/12/13
Begin Sampling Time 0953
End Sampling Time 1006
ERM Samplers HAMADA, RIGARD
EPA Oversight A. BAIRD
Weather HEAVY FOG UNDER CLEAR SKIES. 2°F

2. Description / Location Notes

Description (Setting, Distance from Site Features):
EAST OF STAR POND ~100 FT
FLAT AREA W/ SAGE BRUSH

PRI12-014-SS01-121213

3. Location

Lat ____
Long ____
GPS Accuracy ____
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HAND AUGER
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ____ inches
Waste Depth ____ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)
~3" SNOW ON TOP OF SOIL

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents
SANDY SILT, LIGHT BROWN, FINE SAND, VERY LITTLE MOISTURE, SOME ROOTS / ORGANICS

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ____
EPA Split Samples Y / N (circle)
Analyses ____

Signature [signature] Date 12/12/13

Surface Solids Sampling Form ERM

1. Site Information

SITE ID PRI13-001

DATE 12/6/13

Begin Sampling Time 1330

End Sampling Time 1354

ERM Samplers Trent Hamada / Lonnie Mercer

EPA Oversight Aaron Baird

Weather cloudy, very cold, light wind

2. Description / Location Notes

Description (Setting, Distance from Site Features): Mud flats north of Old Waste Pond. Sparse vegetation. Very flat ground surface. Up to 2" snow cover.

3. Location

Lat ____

Long ____

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ____ inches

Waste Depth ____ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI13-001-SS01-120613 @1354

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILTY CLAY with sand, gray, high plasticity, firm, oolitic sand, moist, trace gravel.

Bottles Filled

1 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | ___ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) | 2 16-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses ____

Signature [signature] Date 12/6/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID: PRI17-002

DATE: 12-7-13

Begin Sampling Time: 9:53

End Sampling Time: 10:09

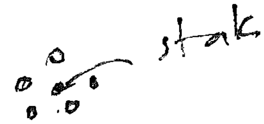
ERM Samplers: J. Hik / D. Deborne

EPA Oversight: none

Weather: mod snow, clouds, 13°F

2. Description / Location Notes

Description (Setting, Distance from Site Features):



3. Location

Lat: 4533512.39 N

Long: 355177.00 E

GPS Accuracy: PDOP= 1.14, ± 13ft

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method: hand auger

Sample Depth Interval: 0-6" inches bgs

Number of Grab Aliquots: 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~ 2" of snow ~~over~~ on over sample location

PRI13-002-SS01-120713 @ 0957

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

0-3" → ~~SAND~~ SAND (oolite) w/ trace silt, sand is tan to brown, fine to med.

3"-6" → mod. to weakly cemented oolite SAND w/ little clay, gray to white, moist

Bottles Filled

1 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | ___ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) | ___ 16-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)

Analyses ________________________

Signature [signature] Date 12-7-13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI13-003

DATE 12/6/13

Begin Sampling Time 1130

End Sampling Time 1234

ERM Samplers Trent Hamada / Lonnie Mercer

EPA Oversight Aaron Baird

Weather

mostly cloudy, very cold, breezy

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Mud flats north of Old Waste Pond. Very flat ground surface. No vegetation. Up to 2" snow cover.

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 6 0 inches bgs

Number of Grab Aliquots 6

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Silty clay soil was very difficult to sieve through 0.25 in screen. Field mod with 6 aliquots (see field mod approval form).

PRI13-003-SS01-120613 @ 1234

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILTY CLAY, gray, high plasticity, firm to stiff, moist. Gravelly sand encountered at approximately 5 inches bgs. ~~Majority of~~ LM ~~san~~ LM

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 12/6/13

Surface Solids Sampling Form ERM

1. Site Information

SITE ID PRI13-004

DATE 12-7-13

Begin Sampling Time 9:28

End Sampling Time 9:43

ERM Samplers J. Hiller / D. Debore

EPA Oversight none

Weather
mod snow, cloudy, 13° F

2. Description / Location Notes

Description (Setting, Distance from Site Features):

o o
o • stake
o

3. Location

Lat 45 33 533.69N

Long 355609.19 E

GPS Accuracy PDOP = 1.15, ± 12

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~1" of snow on top

e 6" - very hard layer

PRI13-004-SS01-120713 @ 0928

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

clayey SILT w/ little fine sand. gray, sand is fine to v.fine (cooltr), black organic layer w/in top 4", ~~wet~~ moist

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)

Analyses ______________________________

Signature [signature] Date 12-7-13

Surface Solids Sampling Form

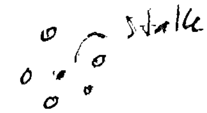
ERM

1. Site Information

SITE ID: PRI13-005
DATE: 12-7-13
Begin Sampling Time: 9:06
End Sampling Time: 9:23
ERM Samplers: J. Miller, D. Debore
EPA Oversight: none
Weather: Mod snow, cloudy, 15°

2. Description / Location Notes

Description (Setting, Distance from Site Features):



3. Location

Lat: 4533380.05N
Long: 355835.86E
GPS Accuracy: PDOP = 1.35, ± 13ft
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method: hand auger
Sample Depth Interval: 0-6 inches bgs
Number of Grab Aliquots: 5
Saturated? Y / N (circle) ~~yes~~ – no
Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~1.5" of snow over sample area

PRI13-005-SS01-120713 @ 0906

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

clay SILT w/ trace sand, silt is grayish brown, ~~damp~~, sand is fine, ~~clay is~~ JH ~~low plasticity~~ JH ~~wet~~ JH ~~JH~~ moist

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ____________

EPA Split Samples Y / N (circle)
Analyses ____________

Signature [signature] Date 12-7-13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI13-006

DATE 12-7-13

Begin Sampling Time 8:51

End Sampling Time 9:02

ERM Samplers J.Hilken, D. LeBore

EPA Oversight none

Weather mild snow, cloudy, 15°F

2. Description / Location Notes

Description (Setting, Distance from Site Features):

o-stake

3. Location

Lat 4533549.66 N

Long 356052.68 E

GPS Accuracy PDOP= 1.45 & ±11ft

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~1" of snow over sample area

PRI13-006-SS01-120713 @ 0851

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND w/ trace silt, color sand, tan to brown, dry, sand is fine to med grained silt is non plastic

Bottles Filled

1 - X 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | ___ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)

1 - X 4-oz Glass (1/3 headspace) | 2 16-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____________

EPA Split Samples Y / N (circle)

Analyses ____________

Signature Jon Hilken Date 12-7-13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI13-007

DATE 12-7-13

Begin Sampling Time 8:19

End Sampling Time 8:45

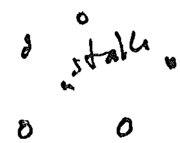
ERM Samplers J. Hiller, D. Debore

EPA Oversight none

Weather light snow, cloudy, 15°F

2. Description / Location Notes

Description (Setting, Distance from Site Features):



3. Location

Lat 4533359.38N

Long 356284.09 E

GPS Accuracy PDOP=1.19 or ±11ft

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness n/a inches

Waste Depth n/a inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI13-007-SS01-120713 @0819

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

clayey SILT w/ little sand, gray, sand is fine grained, damp, ~1" of snow over sampling location, no odor

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	___ 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ________________

EPA Split Samples Y / N (circle)

Analyses ________________

Signature [signature] Date 12-7-13

ec

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI13-008

DATE 12/6/13

Begin Sampling Time 1038

End Sampling Time 1043

ERM Samplers Trent Hamada/Lonnie Meyer

EPA Oversight Aaron Baird

Weather

mostly cloudy, very cold, breezy

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Mud flats east of Old Waste Pond. Very flat ground surface. No vegetation. ATV tracks from brine shrimp workers.

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 6 - 0 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI13-008-SS01-120613 @ 1043

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILTY SAND, light gray, oolitic sand, medium to coarse-grained, moist, trace caliche gravel.

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) 2 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 12/6/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI13-009

DATE 12/6/13

Begin Sampling Time 1000

End Sampling Time 1018

ERM Samplers Trent Hamada / Lenne Meyer

EPA Oversight Aaron Baird

Weather

mostly cloudy, very cold, breezy

3. Location

Lat

Long

GPS Accuracy

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Mud flats east of Old Waste Pond. Very flat ground surface. No vegetation. Thin (<1") snow cover. Location is in path of main ATV route for brine shrimp workers. Stake was run over and Trimble GPS was used to relocate position.

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI13-009-SS01-120613
@ 1018

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILTY SAND, light gray, oolitic sand, medium to coarse-grained sand, moist, trace gravel, caliche.

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) 2 16-oz Glass (unpres) __ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle) LM

Field Dup Y / N (circle)

Field Dup Sample ID

EPA Split Samples Y / N (circle)

Analyses

Signature [signature] Date 12/6/13

Surface Solids Sampling Form

ERM

1. Site Information	2. Description / Location Notes
SITE ID PRI13-010	Description (Setting, Distance from Site Features):
DATE 12/5/13	Mud flats east of Old Waste Pond. Very flat ground surface. No vegetation. ATV tracks from brine shrimp workers.
Begin Sampling Time 1300	
End Sampling Time 1340	
ERM Samplers Trent Hamada / Lonnie Mercer	
EPA Oversight Aaron Baird	
Weather Partly cloudy, cold	

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI13-010-SS01-120513
@ 1340

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILTY CLAY, gray, high plasticity, very stiff, moist, trace gravel.

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) __ 16-oz Glass (unpres) __ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Y / N (circle) Analyses ______

Field Dup Sample ID PRI13-010-SS01-120513 @ 1341

Signature [signature] Date 12/5/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI13-011
DATE 12/5/13
Begin Sampling Time 1235
End Sampling Time 1250
ERM Samplers T. HAMADA, L. MERCER
EPA Oversight AARON BAIRD
Weather PARTLY CLOUDY, CALM, LOW 20s

2. Description / Location Notes

Description (Setting, Distance from Site Features):
MUD FLATS EAST OF OLD WASTE POND. VERY FLAT, NO VEGETATION. <1" SNOW ON GROUND, TRACKS FROM SHRIMPER'S ATVs THROUGHOUT AREA

3. Location

Lat ____
Long ____
GPS Accuracy ____
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HAND AUGER
Sample Depth Interval 6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ____ inches
Waste Depth ____ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)
PRI13-011-SS01-120513
@ 1250

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents
SILTY SAND, LIGHT GRAY, MOIST, ODDS

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) __ 16-oz Glass (unpres) __ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ____
EPA Split Samples Y / N (circle)
Analyses ____

Signature [signature] Date 12/5/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI13-012

DATE ~~12/6/12~~ LH 12/6/13

Begin Sampling Time 930

End Sampling Time 945

ERM Samplers Trent Hamada, Lonnie Heper

EPA Oversight Aaron Baird

Weather

partly cloudy, very cold, breezes

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Mud flats east of Old Waste Pond. Sparse grasses. Very flat ground surface. ATV tracks from brine shrimpers. Up to 6" snow cover.

3. Location

Lat ________

Long ________

GPS Accuracy ________

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Stake at location was no longer present. Relocated sample location with Trimble GPS. Placed new stake at location.

PRI13-012-SS01-120613 @945

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILTY SAND, light grey, oolitic sand, medium to coarse-grained, moist, trace gravel at surface, caliche.

Bottles Filled

1 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | ___ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) | ___ 16-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ________

EPA Split Samples Y / N (circle)

Analyses ________

Signature [signature] Date 12/6/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI13-013

DATE 12/5/13

Begin Sampling Time 1100

End Sampling Time 1115

ERM Samplers Trent Hamada/Lorrie Mercer

EPA Oversight Aaron Baird

Weather partly cloudy, cold

2. Description / Location Notes

Description (Setting, Distance from Site Features): Mud flats. Very flat ground surface. No vegetation. Thin (<1") cover of snow. ATV tracks from brine shrimp workers.

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method hand auger

Sample Depth Interval 6" inches bgs

Number of Grab Aliquots 5

Saturated? Y N (circle)

Waste Potentially Present? Y N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI13-013-SS01-120513
@ 1115

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAYEY SILT, light gray, low plasticity, moist, trace sand, trace gravel.

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) 2 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y N (circle)

Field Dup Y N (circle)

Field Dup Sample ID ______

EPA Split Samples Y N (circle)

Analyses ______

Signature [signature] Date [signature] 12/5/13

Surface Solids Sampling Form ERM

1. Site Information	**2. Description / Location Notes**
SITE ID: PRI13-014	Description (Setting, Distance from Site Features): Mud flats at southern end of PRI13. Very flat ground surface. No vegetation. Thin (<1") cover of snow. ATV tracks from brine shrimp workers throughout area.
DATE: 12/5/13	
Begin Sampling Time: 1025	
End Sampling Time: 1040	
ERM Samplers: Trent Hamagla / Lonnie Mercer	
EPA Oversight: Aaron Baird	
Weather: partly cloudy, cold, occasional snow flurries	
3. Location	
Lat ______	
Long ______	
GPS Accuracy ______	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method: hand auger

Sample Depth Interval: 6 inches bgs

Number of Grab Aliquots: 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI13-014-SS01-120513 @ 1040

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

~~SIB~~ CLAYEY SILT, light gray, moist, trace sand, low plasticity.

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) __ 16-oz Glass (unpres) __ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Y / N (circle) Analyses ______

Field Dup Sample ID ______

Signature [signature] Date 12/5/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI14-001

DATE 12/2/13

Begin Sampling Time 13:40

End Sampling Time 1350

ERM Samplers KB, TH

EPA Oversight —

Weather Cloudy, Windy, 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI14-001-SS01-120213 @ 13:50

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, light brown, medium grain, dry

Bottles Filled

2 4-oz Glass (unpres)	4 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
2 4-oz Glass (1/3 headspace)	___ 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

EPA Split Samples Y / N (circle)

Field Dup Y / N (circle)

Analyses ______

Field Dup Sample ID PRI14-001-SS11-120213@13:51

Signature ______ Date 12/2/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI14-002

DATE 12/3/13

Begin Sampling Time 9:40

End Sampling Time 10:00

ERM Samplers KB, TH

EPA Oversight —

Weather Cloudy, 20s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI14-002-SS01-120313 @ 10:00

3. Location

Lat

Long

GPS Accuracy

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, grayish brown, moist, some pebbles

Bottles Filled

1 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | __ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) | __ 16-oz Glass (unpres) | __ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ________

EPA Split Samples Y / N (circle)

Analyses ________

Signature ________ Date 12/3/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID	PRI14-003
DATE	12/4/13
Begin Sampling Time	9:30
End Sampling Time	9:55
ERM Samplers	KB, TH
EPA Oversight	Aaron Baird
Weather	Windy, 20s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI14-003-SS01-120413 @ 9:55

3. Location

Lat ____

Long ____

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ____ inches

Waste Depth ____ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, blackish gray, wet

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) 3 En Core® (unpres) En Core® Pre-Engaged? Y / N)

1 4-oz Glass (1/3 headspace) 2 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses ____

Signature [signature] Date 12/4/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI14-004
DATE 12/4/13
Begin Sampling Time 13:00
End Sampling Time 13:20
ERM Samplers KB, TH
EPA Oversight —
Weather Windy, 10s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI14-004-SS01-120413 @ 13:20

Trip Blank PRI14-004-SS21-120413 @ 13:21

3. Location

Lat ________
Long ________
GPS Accuracy ________
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ________ inches
Waste Depth ________ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, blackish grey, wet

Bottles Filled

1 4-oz Glass (unpres)
2 8-oz Glass (unpres)
3 En Core® (unpres)
En Core® Pre-Engaged? Y / N)
1 4-oz Glass (1/3 headspace)
___ 16-oz Glass (unpres)
___ 40-mL VOA (Methanol)
En Core® Hand-Filled? Y N)

6. QC Samples

MS/MSD Y N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ________
EPA Split Samples Y N (circle)
Analyses ________

Signature ________ Date 12/4/13

Surface Solids Sampling Form

ERM

1. Site Information		2. Description / Location Notes
SITE ID	PRI14-005	Description (Setting, Distance from Site Features):
DATE	12/11/13	SAMPLE LOCATION ~ 5' WEST OF PREVIOUS SAMPLE LOCATION. SAMPLES UNDER ~2" FROZEN WATER
Begin Sampling Time	0910	
End Sampling Time	0944	
ERM Samplers	HAMADA, RIGARD	
EPA Oversight	A. BAIRD	
Weather	SUNNY, CALM, 10°F	

3. Location

Lat ____

Long ____

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HAND AUGER

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 7

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ____ inches

Waste Depth ____ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

SAMPLE UNDER ~2" FROZEN WATER. SAMPLES SATURATED.
- SALT CRUST
- ANAEROBIC ~~SILTY~~ TH SANDY SILT

PRI14-005-SS01-121113 @ 0944

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SANDY SILT, BLACK, SATURATED, TRACE CLAY, AGGREGATES OF SALT CRUST

Bottles Filled

1 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | 3 En Core® (unpres) | En Core® Pre-Engaged? Y / N)

1 4-oz Glass (1/3 headspace) | ___ 16-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses ALL

Signature [signature] Date 12/11/13

Surface Solids Sampling Form

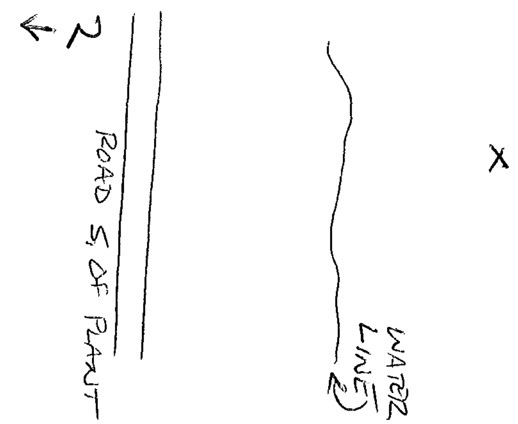
ERM

1. Site Information

SITE ID	PRI14-006
DATE	12/11/13
Begin Sampling Time	1005
End Sampling Time	1020
ERM Samplers	HAMADA, RIGARD
EPA Oversight	A. BAIRD
Weather	SUNNY, CALM, 10°

2. Description / Location Notes

Description (Setting, Distance from Site Features):



3. Location

Lat	
Long	
GPS Accuracy	

Location Field Modified? Y / N (circle) *If Yes, explain in Notes* — N

4. Field Preservation / Field Measurements

Sample Collection Method: HAND AUGER

Sample Depth Interval: 0-6 inches bgs

Number of Grab Aliquots: 1

Saturated? Y / N (circle) — Y

Waste Potentially Present? Y / N (circle) — N

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

- 1.5" ICE ON SURFACE
- 2-3" SALT CRUST LAYER
- SANDY SILT / CLAY LAYER

PRI14-006-SS01-121113 @1020

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SANDY SILT, BLACK, ANAEROBIC ODOR, TRACE CLAY, SALT CRUST PRESENT

Bottles Filled

___ 4-oz Glass (unpres)	___ 8-oz Glass (unpres)	3 En Core® (unpres)	En Core® Pre-Engaged? (Y / N) — Y
___ 4-oz Glass (1/3 headspace)	___ 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N) — Y

6. QC Samples

MS/MSD Y / N (circle) — N

Field Dup Y / N (circle) — N

Field Dup Sample ID ______

EPA Split Samples Y / N (circle) — Y

Analyses: VOC (MS/MSD)

Signature [signature] Date 12/11/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI14-006
DATE 12/3/13
Begin Sampling Time 14:10
End Sampling Time 14:25
ERM Samplers KB, TH
EPA Oversight Aaron Baird
Weather Cloudy, 20s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI14-006-SS01-120313 @14:25

3. Location

Lat
Long
GPS Accuracy
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, sandy, gray, wet,

Bottles Filled

1 4-oz Glass (unpres)
2 8-oz Glass (unpres)
3 En Core® (unpres)
En Core® Pre-Engaged? Y / N)
1 4-oz Glass (1/3 headspace)
2 16-oz Glass (unpres)
___ 40-mL VOA (Methanol)
En Core® Hand-Filled? Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ________

EPA Split Samples Y / N (circle)
Analyses VOCs, PCB, D/F, PAH, pH, Perchlorate, SVOCs, Metals, TOC, Cyanide

Signature ________________ Date 12/3/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI14-007
DATE 12/11/13
Begin Sampling Time 1043
End Sampling Time 1102
ERM Samplers HAMADA, PILLARD
EPA Oversight A. BAIRD
Weather SUNNY, CALM, 15°F

2. Description / Location Notes

Description (Setting, Distance from Site Features):
~ 600 FT SOUTH OF E-W ROAD
SOUTH OF GATE ACCESS TO
PRI 7

3. Location

Lat
Long
GPS Accuracy
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HAND AUGER
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 1
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)
~1" ICE ON SURFACE
SALT CRUST
SILTY CLAY, BLACK + GRAY
PRI14-007-SS01-121113 @ 1102

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILTY CLAY, BLACK/GRAY, SALT AGGREGATES PRESENT, SATURATED
SLIGHT ANAEROBIC ODOR

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) 6 En Core® (unpres) En Core® Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID PRI14-007-SS11-121113 @ 1103

EPA Split Samples Y / N (circle)
Analyses

Signature [signature] Date 12/11/13

Surface Solids Sampling Form

ERM

1. Site Information	2. Description / Location Notes
SITE ID PRI14-007	Description (Setting, Distance from Site Features):
DATE 12/3/13	
Begin Sampling Time 11:00	
End Sampling Time 11:15	
ERM Samplers FB, TH	PRI14-007-SS01-120313 @ 11:15
EPA Oversight —	
Weather Snow, 20s	~~Collected trip~~ TS
3. Location	Trip Blank - PRI14-007-SS21-120313
Lat	
Long	
GPS Accuracy	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, black, wet

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	3 En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	___ 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____________

EPA Split Samples Y / N (circle)

Analyses ____________

Signature ____________ Date 12/3/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI14-008

DATE 12/11/13

Begin Sampling Time 1133

End Sampling Time 1140

ERM Samplers HAMADA, RIGARD

EPA Oversight A. BAIRD

Weather SUNNY, CALM, 15°F

2. Description / Location Notes

Description (Setting, Distance from Site Features):

~500 FT NORTH OF SOUTH DIKE OF EVAPORATION POND.

3. Location

Lat ____

Long ____

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HAND AUGER

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 1

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ____ inches

Waste Depth ____ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

~5" OF WATER ON SURFACE.

~2" HARD SALT CRUST.

SILTY CLAY, BLACK & GRAY

PRI14-008-SS01-121113 @ 1140

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILTY CLAY, BLACK & GRAY, SALT AGGREGATES PRESENT, SATURATED

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) 3 En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ~~PRI14-008~~ GR

EPA Split Samples Y / N (circle)

Analyses ____

Signature [signature] Date 12/11/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI14-008

DATE 12/2/13

Begin Sampling Time 9:45

End Sampling Time 10:00

ERM Samplers KB, TH

EPA Oversight —

Weather Cloudy, Windy, 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI14-008-SS01-120213 @ 10:00

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

saturated

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, salty, dk grey, wet, anarobic smell

Bottles Filled

1 4-oz Glass (unpres)

1 4-oz Glass (1/3 headspace)

~~2~~ 1 8-oz Glass (unpres)

∅ 16-oz Glass (unpres)

3 En Core® (unpres)

___ 40-mL VOA (Methanol)

En Core® Pre-Engaged? (Y / N)

En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 12/2/13

Surface Solids Sampling Form ERM

1. Site Information

SITE ID PRI14-009

DATE 12/2/13

Begin Sampling Time 12:40

End Sampling Time 12:45

ERM Samplers KB, TH

EPA Oversight —

Weather Cloudy, Windy 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI14-009-SS01-120213
@ 12:45

3. Location

Lat ________

Long ________

GPS Accuracy ________

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, light brown, medium, dry, some pebbles

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) 2 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ________

EPA Split Samples Y / N (circle)

Analyses ________

Signature ________ Date 12/2/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI14-010
DATE 12/2/13
Begin Sampling Time 13:10
End Sampling Time 1320
ERM Samplers KB, TH
EPA Oversight —
Weather Cloudy, Windy, 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI14-010-SS01-120213 @ 13:20

3. Location

Lat ______
Long ______
GPS Accuracy ______
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method HA
Sample Depth Interval 0-6 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, blackish grey, moist

Bottles Filled

1 4-oz Glass (unpres)   2 8-oz Glass (unpres)   ___ En Core® (unpres)   En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)   2 16-oz Glass (unpres)   ___ 40-mL VOA (Methanol)   En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______

EPA Split Samples Y / N (circle)
Analyses ______

Signature ______ Date 12/2/13

Surface Solids Sampling Form

ERM

1. *Site Information*	2. *Description / Location Notes*
SITE ID: PRI14-011	Description (Setting, Distance from Site Features):
DATE: 12/2/13	PRI14-011-SS01-120213
Begin Sampling Time: 11:20	@ 11:35
End Sampling Time: 11:35	
ERM Samplers: KB, TH	
EPA Oversight: —	
Weather: Cloudy, Windy, 40s	
3. *Location*	
Lat ________	
Long ________	
GPS Accuracy ________	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. *Field Preservation / Field Measurements*

Sample Collection Method: Hand Auger

Sample Depth Interval: 0-6 inches bgs

Number of Grab Aliquots: 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. *Sample Description*

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

CLAY, ~~@~~ sandy, grey, fine grain, moist

Bottles Filled

1 4-oz Glass (unpres) | 2 8-oz Glass (unpres) | ___ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) | ___ 16-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. *QC Samples*

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ________

EPA Split Samples Y / N (circle)

Analyses ________

Signature ________ Date 12/2/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID ~~PRI4~~ 125 PRI14-012

DATE 11/25/13

Begin Sampling Time 14:30

End Sampling Time 14:40

ERM Samplers KB, TH

EPA Oversight —

Weather Clear, 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI14-012-SS01-112513 @ 1440

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, clayey, grayish brown, fine grain, moist

Bottles Filled

1 4-oz Glass (unpres) | 4 8-oz Glass (unpres) | ___ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) | ___ 16-oz Glass (unpres) | ___ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

EPA Split Samples Y / N (circle)

Field Dup Y / N (circle)

Analyses ______

Field Dup Sample ID PRI14-012-SS11-112513 @ 1441

Signature ______ Date 11/25/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI/4-013

DATE 11/25/13

Begin Sampling Time 13:30

End Sampling Time 1347

ERM Samplers KB, TH

EPA Oversight —

Weather Clear, 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI/4-013-SS01-112513 @ 1347

3. Location

Lat

Long

GPS Accuracy

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Hard salt layer @ surface ≈ 2" thick.

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SALT, clayey, gray, wet

Bottles Filled

1 4-oz Glass (unpres)
2 8-oz Glass (unpres)
__ En Core® (unpres)
En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace)
2 16-oz Glass (unpres)
__ 40-mL VOA (Methanol)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ________

EPA Split Samples Y / N (circle)

Analyses ________

Signature ________ Date 11/25/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PR114-014

DATE 11/25/13

Begin Sampling Time 11:45

End Sampling Time 11:57

ERM Samplers KB, TH

EPA Oversight —

Weather Clear, 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PR114-014-SS01-112513 @ 11:57

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, clayey, grayish brown, finegrained, moist

Bottles Filled

1 4-oz Glass (unpres)
2 8-oz Glass (unpres)
___ En Core® (unpres)
En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace)
2 16-oz Glass (unpres)
___ 40-mL VOA (Methanol)
En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 11/25/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI14-015

DATE 11/25/13

Begin Sampling Time 10:20

End Sampling Time 10:37

ERM Samplers KB, TH

EPA Oversight —

Weather Clear, 30s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

PRI14-015-SS01-112513

@10:37

3. Location

Lat ________

Long ________

GPS Accuracy ________

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Hand Auger

Sample Depth Interval 0-6 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Sand, silty, brown, moist, fine grain,

Bottles Filled

1 4-oz Glass (unpres)

1 4-oz Glass (1/3 headspace)

2 8-oz Glass (unpres)

2 16-oz Glass (unpres)

___ En Core® (unpres)

___ 40-mL VOA (Methanol)

En Core® Pre-Engaged? (Y / N)

En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ________

EPA Split Samples Y / N (circle)

Analyses ________

Signature ________ Date 11/25/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID	PRI 15-001
DATE	23 NOV 2013
Begin Sampling Time	1008
End Sampling Time	1015
ERM Samplers	JW/DD
EPA Oversight	None
Weather	Sunny 30°

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Approx 200' East of Road
Soils on surface dessicated with cracking - Dark Black
1" Below surface soils Light Brown
- Significant amount of rabbit stool

3. Location

Lat	
Long	
GPS Accuracy	

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method	Scarp
Sample Depth Interval	2" inches bgs
Number of Grab Aliquots	5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI 15-001-SS01-~~[illegible]~~ 112313

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Fine silt+clay (CL), Dark Black on surface and tan 1" Below surface, Dessicated w/no odor,
5% organic matter - roots + rabbit stool - 5% did not pass screen (rabbit stool + roots)

Bottles Filled

___ 4-oz Glass (unpres) ___ 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____________

EPA Split Samples Y / N (circle)

Analyses ____________

Signature [signature] Date 11/23/13

Surface Solids Sampling Form

ERM

1. Site Information		2. Description / Location Notes
SITE ID	PRI 15-002	Description (Setting, Distance from Site Features):
DATE	24 NOV 13	Approx 500' west of Dirt road
Begin Sampling Time	0845	
End Sampling Time	0850	
ERM Samplers	JH/TH	
EPA Oversight	Ann B	
Weather	P Cloudy 40°	

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Scoop

Sample Depth Interval 2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI 15-002-SS01-112413

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty Clay (CL) Brown with coarse Evaporite fragments. Dry - No odor or staining 5% organic Matter - Grass Roots

10% material would not pass screen (roots + evaporite frags)

Bottles Filled

___ 4-oz Glass (unpres)	___ 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
___ 4-oz Glass (1/3 headspace)	___ 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses Same

Signature ______ Date 11/24/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID	PRI15-003
DATE	23 Nov 2013
Begin Sampling Time	1035
End Sampling Time	1040
ERM Samplers	JA/DD
EPA Oversight	None
Weather	Sunny 35

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Located 300' East of Road
Soils dessicated at surface with cracks
Black/Dark Brown soils on surface to 1/4"
Significant Rabbit stool / organic matter

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Scoop

Sample Depth Interval 2" inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI15-003-SS01-112313

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty clay (CL), Black/Brown at surface to 1/4" Depth, Tan Below 1/4"-2". Dessicated, no odor
5% organic matter - 1% Did not pass screen due to dryness (organic) of rabbitt stool

Bottles Filled

2 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 11/23/13

Surface Solids Sampling Form

ERM

1. Site Information	**2. Description / Location Notes**
SITE ID PRI15-004	Description (Setting, Distance from Site Features):
DATE 24 Nov 2013	Approx 400' E of Road in flat Basin - grasses an shrubs present
Begin Sampling Time 0915	- surface of basin covered in white evaporite cavity
End Sampling Time 0920	
ERM Samplers JM/TH	
EPA Oversight AAron B	
Weather Cloudy 40	
3. Location	
Lat ____	
Long ____	
GPS Accuracy 0	
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method Scoop

Sample Depth Interval 2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ____ inches

Waste Depth ____ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI15-004-SS01-112413

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silt + Clay (CL) Brown at depth with 1/8" cavity of white Evaporite. Semi dry, no odor or stain
<5% Brown EvaPorite particles. <5% Did not pass screen (Evaporite)

Bottles Filled

2 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses ____

Signature [signature] Date 112413

Surface Solids Sampling Form ERM

1. Site Information

SITE ID PRI15-005

DATE 11/22/13

Begin Sampling Time 1155

End Sampling Time 1204

ERM Samplers Lonnie Mercer; Trent Hamada

EPA Oversight

Weather

clear, light breeze, cold (~35°F)

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Foothills of Lakeside Mountains. Transitional between foothills and GSL mudflats. Gradual slope to east. Low grasses.

3. Location

Lat

Long

GPS Accuracy

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method ~~flat~~ bottom scoop

Sample Depth Interval 2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI15-005-SS01-112213 @ 1204

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SANDY SILT, light brown, dry, trace clay, trace gravel.

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID

EPA Split Samples Y / N (circle)

Analyses

Signature [signature] Date 11/22/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI15-006

DATE 23 NOV 2013

Begin Sampling Time 1105

End Sampling Time 1110

ERM Samplers JG/DP

EPA Oversight None

Weather Sunny 35°

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Approx 500' from road (East)

Position not staked in field. Used GPS to navigate and place new stake at correct sample location

GPS Accuracy 8 ft

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Scoop

Sample Depth Interval 2" inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI15-006-SS01-112313

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silt and clay (CL), Dark tan w/ desiccation cracks to 1" depth, 1-2" soils reddish tan, soils dry
- No odor
- roots and rabbit droppings 1% did not pass screen (rabbit stool)

Bottles Filled

2 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 112313

Surface Solids Sampling Form ERM

1. Site Information

SITE ID PRI15-007
DATE 11/22/13
Begin Sampling Time 1240
End Sampling Time 1250
ERM Samplers Trent Hamada, Lonnie Mercer
EPA Oversight ____
Weather
clear, light breeze, cold (~40°F)

3. Location

Lat ____
Long ____
GPS Accuracy ____
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

2. Description / Location Notes

Description (Setting, Distance from Site Features):
Transitional between foothills of Lakeside Mountains and GSL mudflats. Slight slope to east. Low grasses and sagebrush.

4. Field Preservation / Field Measurements

Sample Collection Method flat bottom scoop
Sample Depth Interval 2 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ____ inches
Waste Depth ____ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI15-007-SS01-112213@ 1250

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents
SANDY SILT, light brown, dry, trace clay, trace gravel.

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ____
EPA Split Samples Y / N (circle)
Analyses ____

Signature [signature] Date 11/22/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI15-008

DATE 1/13/14

Begin Sampling Time 1340

End Sampling Time 1350

ERM Samplers Trent Handa/Lonnie Mercer

EPA Oversight Aaron Baird

Weather

Sunny, breezy, ~35°F

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Private property used for ranching located southwest of ATI. Low rolling hills. Sage brush and grasses.

3. Location

Lat ____________

Long ____________

GPS Accuracy ____________

Location Field Modified? Y N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method flat bottom scoop

Sample Depth Interval 2 inches bgs

Number of Grab Aliquots 5

Saturated? Y N (circle)

Waste Potentially Present? Y N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI15-008-SS01-011314

5. Sample Description

Modified USCS; GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILTY SAND, light brown, fine-grained sand, moist, trace clay.

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) __ EnCore (unpres) EnCore Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) __ 40-mL VOA (Methanol) EnCore Hand-Filled? (Y / N)

6. QC Samples

Field Duplicate Y N (circle)

Field Dup Sample ID ____________

EPA Split Samples Y N (circle)

Analyses ____________

Lonnie Mercer 1/13/14

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI15-009-SS01-112313

DATE 112313

Begin Sampling Time 0910

End Sampling Time 0915

ERM Samplers FU/DD

EPA Oversight None

Weather

Sunny 30°

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Approx 200' North of gravel Road and 300' West of chlorine rail car siding yard.

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method ~~Flat shovel~~ FU / Scoop

Sample Depth Interval 2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI15-009-SS01-112313

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

- Fine Silt & clay (CL) tan to light brown ~~[illegible]~~ Silt, Dry, No odor. Salt brush/Scrub brush Roots <5%
- Less than 1% would not pass through sieve due to dryness (soils)

Bottles Filled

2 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 112313

Surface Solids Sampling Form

ERM

1. Site Information		2. Description / Location Notes
SITE ID	RRI15-010	Description (Setting, Distance from Site Features):
DATE	24NOV 2014	Appox 500' W of Road
Begin Sampling Time	0952	- Stake Ja on slope of Berm.
End Sampling Time	0958	- First 1/2" soil Frozen
ERM Samplers	Ja TH	- Soils have Black lichen cover
EPA Oversight	Aaron B	
Weather	PCloudy 40s	

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method ~~Sp~~ Scoop

Sample Depth Interval 2" inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI15-010 ~~X~~ Ja -SS01-112413

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Clay Silt (CL) Brown, semi dry - Frozen first 1/2", No odor or staining. Approx < 5% organics (grass)

Bottles Filled

2 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses Same

Signature ______ Date 112413

Surface Solids Sampling Form

ERM

1. Site Information		2. Description / Location Notes
SITE ID	PRI 15-011	Description (Setting, Distance from Site Features):
DATE	23 NOV 2013	Approx 200' west of Ditch
Begin Sampling Time	1242	- Dessication cracks on ground
End Sampling Time	1248	- Significant Rabbitt stool
ERM Samplers	JW/DM	
EPA Oversight	None	
Weather	P Cloudy 40°	

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Scoop

Sample Depth Interval 2" inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI15-011-SS01-112313

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silty and Clay (CL) tan to light tan at depth. Surface Black to Brown. Dry w significant roots and rabbitt stool. No stains or ~~odors~~ oders

All Material passed screen

Bottles Filled

2 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Y / N (circle) Analyses ______

Field Dup Sample ID ______

Signature [signature] Date 112313

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID	PRI15-012
DATE	24 Nov 2013
Begin Sampling Time	1020
End Sampling Time	1025
ERM Samplers	JW/TH
EPA Oversight	—
Weather	Sunny 40°

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Approx 500 ft west of road + RR tracks
- Land flat covered with ~~sage~~ sa shrubs

3. Location

Lat ____

Long ____

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Scoop

Sample Depth Interval 2" inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ____ inches

Waste Depth ____ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI15-012-SS01-112413

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silt and clay (CL) ~~Black~~ Black on surface w/Lichen, Brown at depth. First 1" Brown soils w/vuggy texture
Dry no odor or staining, All passed screen

Bottles Filled

2 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses —

Signature [signature] Date 24 Nov 2013

Surface Solids Sampling Form ERM

1. Site Information	**2. Description / Location Notes**
SITE ID PRI 15-013	Description (Setting, Distance from Site Features):
DATE 24 NOV 2013	Approx 200' West of Road and water filled ditch
Begin Sampling Time 1106	- on flat land w/significant shrubs
End Sampling Time 1111	- Surface covered w Black lichen
ERM Samplers JW TH	
EPA Oversight —	
Weather Sunny 45°	

3. Location

Lat ____

Long ____

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Scoop

Sample Depth Interval 2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ____ inches

Waste Depth ____ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI15-013-SS01-~~1124~~ 112413

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Clayey Silt (CL), tan to Brown at depth. Dry w no odor or stain. <5% organics (roots)
<1% Did not pass screen (organics)

Bottles Filled

2 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Y / N (circle) Analyses ____

Field Dup Sample ID ____

Signature [signature] Date 24 Nov 2013

Surface Solids Sampling Form ERM

1. Site Information

SITE ID PRI 15-014

DATE 24 Nov 2013

Begin Sampling Time 1042

End Sampling Time 1048

ERM Samplers [illegible]

EPA Oversight ~~[illegible]~~ None

Weather Sunny 45°

2. Description / Location Notes

Description (Setting, Distance from Site Features):

Approx 50' N of road and 300' East of Ditch
- flat open pasture
- Surface of ground covered with grasses and lichen (Black)

3. Location

Lat ____

Long ____

GPS Accuracy ____

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Scoop

Sample Depth Interval 2 inches bgs

Number of Grab Aliquots 3

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ____ inches

Waste Depth ____ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI 15-014-SS01-112413

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Clay Silt (LL) Brown/tan, Dry with little organics, No staining or odors - All material passes screen

Bottles Filled

2 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses ____

Signature [signature] Date 24 Nov 2013

Surface Solids Sampling Form

ERM

1. Site Information		2. Description / Location Notes
SITE ID	PRI16-001	Description (Setting, Distance from Site Features): Foothills of Lakeside Mountains. Sample location is on an east-facing, gradual slope. Approximately several hundred yards west of access road. Vegetation consists of low grasses. Observed herd of antelope.
DATE	11/22/13	
Begin Sampling Time	1055	
End Sampling Time	1107	
ERM Samplers	Trent Hamada, Lonnie Meyer	
EPA Oversight		
Weather	clear, light breeze, cold (~35°F)	
3. Location		
Lat		
Long		
GPS Accuracy		
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*		

4. Field Preservation / Field Measurements

Sample Collection Method flat bottom scoop

Sample Depth Interval 2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle) — N

Waste Potentially Present? Y / N (circle) — N

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI16-001-SS01-112213 @ 1107

MS/MSD this sample

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, minor gravel, light brown, gravel commonly 0.25-0.5 inch diameter, up to cobble size, subangular to angular gravel, dry, trace sand, roots.

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	___ 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle) — Y

Field Dup Y / N (circle) — N

Field Dup Sample ID ____________

EPA Split Samples Y / N (circle) — N

Analyses ____________

Signature [signature] Date 11/22/13

Surface Solids Sampling Form ERM

1. Site Information

SITE ID PRI16-002

DATE 11/22/13

Begin Sampling Time 1020

End Sampling Time 1028

ERM Samplers Trent Hamada, Lonnie Mercer

EPA Oversight

Weather

Clear, light breeze, cold (~30-35°F)

2. Description / Location Notes

Description (Setting, Distance from Site Features):

In foothills of Lakeside Mountains. Sample location is on an east-facing slope with ridge to the west. Vegetation consists of sparse grasses. Boulders and cobbles are spread across slope.

3. Location

Lat

Long

GPS Accuracy

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Flat bottom scoop

Sample Depth Interval 2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Gravel did not affect scoop sampling (i.e., sparse gravel).

PRI16-002-SS01-112213 @ 1028

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, minor gravel, light brown, gravel commonly 0.25-0.5 inch diameter, up to boulder size, subangular to angular gravel, dry, trace sand, roots

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID

EPA Split Samples Y / N (circle)

Analyses

Signature Lonnie Mercer Date 11/22/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI16-003
DATE 11/20/13
Begin Sampling Time 14:10
End Sampling Time 14:22
ERM Samplers KB, TH
EPA Oversight —
Weather Cloudy 50s

3. Location

Lat
Long
GPS Accuracy
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

2. Description / Location Notes

Description (Setting, Distance from Site Features):

4. Field Preservation / Field Measurements

Sample Collection Method Shovel
Sample Depth Interval 0-2 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI16-003-SS01-112013 @ 1422

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, light brown, dry,

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID PRI16-003-SS11-112013 @ 1423

EPA Split Samples Y / N (circle)
Analyses

Signature ______________ Date 11/20/13

Surface Solids Sampling Form ERM

1. Site Information	**2. Description / Location Notes**
SITE ID PRI16-004	Description (Setting, Distance from Site Features):
DATE 11/20/13	
Begin Sampling Time 9:20	
End Sampling Time 9:27	
ERM Samplers KB, TH	
EPA Oversight Aaron Baird	
Weather Cloudy, 40s	
3. Location	
Lat ________	
Long ________	
GPS Accuracy ________	
Location Field Modified? Y N (circle) *If Yes, explain in Notes*	

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI16-004-SS01-112013 @ 0927

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, light brown, dry

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	___ 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ~~PRI16-004-SS01-112013@~~ KL

EPA Split Samples Y N (circle)

Analyses PCB, Perchlorate, SVOCs, PAH, PCDD, PCDF, PH, TOC

Signature ________ Date 11/20/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI16-005

DATE 12/20/13

Begin Sampling Time 12:20

End Sampling Time 12:32

ERM Samplers KB, TH

EPA Oversight —

Weather Cloudy, 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

3. Location

Lat

Long

GPS Accuracy

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI16-005-SS01-112013@1232

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SAND, brown, fine, dry

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID

EPA Split Samples Y / N (circle)

Analyses

Signature ________ Date 12/20/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID	PRI6-006
DATE	11/19/13
Begin Sampling Time	15:05
End Sampling Time	15:13
ERM Samplers	KB, TH
EPA Oversight	—
Weather	Cloudy, 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI16-006-SS01-111913 @ 1513

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, light brown, dry

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

EPA Split Samples Y / N (circle)

Field Dup Y / N (circle)

Analyses ______

Field Dup Sample ID ~~PRI16006-SS01-111913 @ 1513~~ KL

Signature ______ Date 11/19/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI16-007

DATE 11/19/13

Begin Sampling Time 14:30

End Sampling Time 14:40

ERM Samplers KB, TH

EPA Oversight —

Weather Cloudy, 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

3. Location

Lat

Long

GPS Accuracy

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI16-007-SS01-111913 @1440

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, light brown, dry, some organic matter

Bottles Filled

1 4-oz Glass (unpres) | 1 8-oz Glass (unpres) | __ En Core® (unpres) | En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) | __ 16-oz Glass (unpres) | __ 40-mL VOA (Methanol) | En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ~~PRI16-007-SS01-111913 @~~ KL

EPA Split Samples Y / N (circle)

Analyses

Signature ____________ Date 11/19/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI16-008
DATE 11/20/13
Begin Sampling Time 10:30
End Sampling Time 10:40
ERM Samplers KB, TH
EPA Oversight Aaron Baird
Weather Cloudy 40s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

3. Location

Lat
Long
GPS Accuracy
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel
Sample Depth Interval 0-2 inches bgs
Number of Grab Aliquots 5
Saturated? Y N (circle)
Waste Potentially Present? Y N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI16-008-SS01-112013@ 1040

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, light brown, dry, some organic matter

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) __ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) __ 16-oz Glass (unpres) __ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y N (circle)
Field Dup Y N (circle)
Field Dup Sample ID ____________

EPA Split Samples Y / N (circle) (MS/MSD)
Analyses PCBs, SVOCs, PAHs, PH, Perchlorate, TOC, PCDD, PCDF, metals

Signature ____________ Date 11/20/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI16-009
DATE 11/19/13
Begin Sampling Time 14:50
End Sampling Time 14:57
ERM Samplers FB, TH
EPA Oversight —
Weather Cloudy 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

3. Location

Lat
Long
GPS Accuracy
Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method shovel
Sample Depth Interval 0-2 inches bgs
Number of Grab Aliquots 5
Saturated? Y / N (circle)
Waste Potentially Present? Y / N (circle)
Waste Thickness ______ inches
Waste Depth ______ inches bgs
Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI16-009-SS01-111913@1457

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, clayey, light brown, dry, some organic matter

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ~~PRI16-009-SS01-111913@1457~~ KL

EPA Split Samples Y / N (circle)
Analyses

Signature ______ Date 11/19/13

Surface Solids Sampling Form ERM

1. Site Information

SITE ID PRI16-010

DATE 11/19/13

Begin Sampling Time 10:20

End Sampling Time 10:30

ERM Samplers KB, TH

EPA Oversight —

Weather Cloudy, 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI16-010-SS01-111913 @1030

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

~~clay~~ TB CLAY, silty, light brown, dry

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle) EPA Split Samples Y / N (circle)

Field Dup Y / N (circle) Analyses ______

Field Dup Sample ID ~~PRI16-010-SS01-111913@1030~~ KL

Signature ______ Date 11/19/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI16-011

DATE 23 Nov 2013

Begin Sampling Time 1208

End Sampling Time 1215

ERM Samplers SM/DD

EPA Oversight None

Weather Sunny 40°

2. Description / Location Notes

Description (Setting, Distance from Site Features):

- Approx 200 ft west of Road

- High amounts of grass in soils

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Scoop

Sample Depth Interval 2" inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI16-011-SS01-1123D

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silt and clay (CL) tan to grey dry w/ grass roots, No odor or staining.
5% Did not pass screen (roots)

Bottles Filled

2 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

___ 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 11/23/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI16-012

DATE 11/19/13

Begin Sampling Time 11:35

End Sampling Time 11:46

ERM Samplers KB, TH

EPA Oversight —

Weather Light Rain, 50s

2. Description / Location Notes

Description (Setting, Distance from Site Features):

3. Location

Lat

Long

GPS Accuracy

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ________ inches

Waste Depth ________ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI16-012-SS01-111913 @ 1146

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

Silt, clayey, dk brown, moist, some organic matter

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ~~PRI16-012-SS01-111913@1146~~ KL

EPA Split Samples Y / N (circle)

Analyses

Signature

Date 11/19/13

Surface Solids Sampling Form ERM

1. Site Information	2. Description / Location Notes
SITE ID PRI16-013-	Description (Setting, Distance from Site Features):
DATE 11/22/13	In foothills of Lakeside Mountains. Sample location is near headlands of a small drainage and along a slope at southern side of the drainage. Vegetation consists of sparse grasses. Boulders and gravel are spread across slopes of drainage.
Begin Sampling Time 900	
End Sampling Time 914	
ERM Samplers Trent Hamada, Lonnie Mercer	
EPA Oversight	
Weather clear, light breeze, cold (~30°F)	

3. Location

Lat

Long

GPS Accuracy

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

4. Field Preservation / Field Measurements

Sample Collection Method flat bottom scoop

Sample Depth Interval 2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

Gravel made scoop sampling difficult. Soil had thin cover (<1cm) of snow.

PRI16-013-SS01-112213@ 0914

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

GRAVELLY SILT, light brown, dry, trace sand, up to boulder size, gravel is subangular to angular, roots.

Bottles Filled

1 4-oz Glass (unpres)	2 8-oz Glass (unpres)	___ En Core® (unpres)	En Core® Pre-Engaged? (Y / N)
1 4-oz Glass (1/3 headspace)	___ 16-oz Glass (unpres)	___ 40-mL VOA (Methanol)	En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID

EPA Split Samples Y / N (circle)

Analyses

Signature [signature] Date 11/22/13

Surface Solids Sampling Form

ERM

1. Site Information

SITE ID PRI16-014

DATE 11/21/13

Begin Sampling Time 8:58

End Sampling Time 9:05

ERM Samplers KB, TH

EPA Oversight —

Weather Snow, windy, 30s

3. Location

Lat

Long

GPS Accuracy

Location Field Modified? Y / N (circle) *If Yes, explain in Notes*

2. Description / Location Notes

Description (Setting, Distance from Site Features):

4. Field Preservation / Field Measurements

Sample Collection Method Shovel

Sample Depth Interval 0-2 inches bgs

Number of Grab Aliquots 5

Saturated? Y / N (circle)

Waste Potentially Present? Y / N (circle)

Waste Thickness ______ inches

Waste Depth ______ inches bgs

Waste Appearance (describe):

Sampling Notes (Sample Recovery, Refusal, Observations)

PRI16-014-SS01-112113 @ 0905

Eqpt Blank = PRI16-014-SS21-112113 @ 0906

5. Sample Description

Modified USCS: GRAIN SIZE, modifier, color, coarse and fine-grained descriptors, moisture content, odors/staining, minor constituents

SILT, sandy, brown, moist, some organic matter

Bottles Filled

1 4-oz Glass (unpres) 2 8-oz Glass (unpres) ___ En Core® (unpres) En Core® Pre-Engaged? (Y / N)

1 4-oz Glass (1/3 headspace) ___ 16-oz Glass (unpres) ___ 40-mL VOA (Methanol) En Core® Hand-Filled? (Y / N)

6. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID

EPA Split Samples Y / N (circle)

Analyses

Signature ______ Date 11/21/13

Appendix D-2
Field Borehole Logs

ERM

Environmental Resources Management
5950 S. Willow Dr. Suite 200
Greenwood Village, CO 80111
(303) 741-5050

BOREHOLE LOG

Borehole Number: PRI10-008

Project Number:	0132320
Project Name:	US Magnesium
Location:	Rowley, UT
Owner:	US Magnesium
Drilling Company:	Cascade Drilling
Drilling Method:	Sonic
Driller:	Ty Kroll
Log By:	Lonnie Mercer
Date Drilled:	5/5/14
Borehole Diameter:	6"
Total Depth:	10'

Sketch Map

PRI10-008

Barium sulfate area

Well Construction

Blank Casing Type: N/A Diameter:
Interval: From - To -

Screen
Type: Slot Size: Diameter:
Interval: From - To -

Annular Fill Intervals
Type: From - To -
Type: From - To -
Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
0						SILTY CLAY, trace sand, dark brown with trace dark gray ~~st~~ LM coloring, medium plasticity, firm, moist, roots.
0.5			↓	PRI10-008-SB01-0.5-050514 @1320		
1						
1.5						
2					0.0	
2.5	▽		↓	PRI10-008-SB02-2-050514 @1335		@2.5' groundwater
3						GRAVEL, trace sand, gravel is fine to coarse, angular, light gray, saturated, loose.
3.5					0.0	SILTY CLAY, some sand, high plasticity, gray, saturated.
4			↓	PRI10-008-SB03-4-050514 @1350		GRAVEL, trace sand, gravel is fine to coarse, angular, light gray, saturated, very loose to loose.
4.5						
5						
5.5					0.0	
6			↓	PRI10-008-SB04-6-050514 @1400		
6.5						

ERM	Environmental Resources Management 5950 S. Willow Dr. Suite 200 Greenwood Village, CO 80111 (303) 741-5050	BOREHOLE LOG	Borehole Number: PRI10-008

Project Number:	Sketch Map	Well Construction
Project Name:		Blank Casing Type: Diameter:
Location:		Interval: From - To -
Owner:		Screen
Drilling Company:		Type: Slot Size: Diameter:
Drilling Method:		Interval: From - To -
Driller:		Annular Fill Intervals
Log By:		Type: From - To -
Date Drilled:		Type: From - To -
Borehole Diameter: Total Depth:		Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
7						
7.5					0.0	SILTY SAND, trace clay, medium to coarse sand, rounded oolitic sand, dark gray, wet, loose.
8				PRI10-008-SB05-8-050514 @1500		CLAYEY SILT, trace sand, brown, moist, roots.
8.5						SANDY SILT, trace clay, dark gray with white nodes, saturated, appears to be waste with similar appearance to smut.
9						SILTY CLAY, gray, stiff, wet, roots (Native soil?).
9.5					0.0	GRAVEL, trace sand, gravel is fine, angular, light gray, saturated, loose.
10						

TD @ 10' bgs

ERM

Environmental Resources Management
5950 S. Willow Dr. Suite 200
Greenwood Village, CO 80111
(303) 741-5050

BOREHOLE LOG

Borehole Number: PRI2-006

Project Number: 0132320
Project Name: US Magnesium
Location: Rowley, UT
Owner: US Magnesium
Drilling Company: Cascade Drilling
Drilling Method: Sonic
Driller: Ty Kroll
Log By: Lonnie Mercer
Date Drilled: 5/6/14 - 5/7/14
Borehole Diameter: 4" Total Depth: 30'

Sketch Map

Well Construction
Blank Casing Type: N/A Diameter:
Interval: From - To -
Screen
Type: Slot Size: Diameter:
Interval: From - To -
Annular Fill Intervals
Type: From - To -
Type: From - To -
Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
0					0.9	SANDY SILT (gypsum cap), trace clay and gravel, brownish red, moist, soft.
1			↓	PRI2-006-SB01-0.5-050614 @1615	2.6	SANDY GRAVEL, fine to coarse gravel, gray, moist.
2					4.3	CLAYEY SILT, some gravel, low plasticity, firm, brownish red to dark gray with white nodes (salt), moist.
3			↓	PRI2-006-SB02-2-050614 @1625		
4					5.7	
5				PRI2-006-SB03-5-050614 @1635	14.3	@5' grades to dark brown; large cobble.
6						CLAYEY SILT, minor gravel, dark gray matrix with white nodes (salt), moist, appears like smut waste.
7					2.6	
8						
9						
10			↓		Little	~~No~~ LM recovery, wood and metal debris.
11				PRI2-006-SB03-11-050614 @1700	6.2	SILTY GRAVEL, fine to coarse gravel, subrounded, dark reddish brown, ~~wood debris~~ LM copper wires, paper debris, moist.
12						
13						@13' metal shard (½" thick).
14					11.5	
15						

BOREHOLE LOG

ERM
Environmental Resources Management
5950 S. Willow Dr. Suite 200
Greenwood Village, CO 80111
(303) 741-5050

Borehole Number: PRI2-006

Project Number:	
Project Name:	
Location:	
Owner:	
Drilling Company:	
Drilling Method:	
Driller:	
Log By:	
Date Drilled:	
Borehole Diameter:	Total Depth:

Sketch Map

Well Construction

Blank Casing Type: Diameter:
Interval: From - To -

Screen
Type: Slot Size: Diameter:
Interval: From - To -

Annular Fill Intervals
Type: From - To -
Type: From - To -
Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
16						
17						@17' metal debris (2" thick)
18			LM			
19						@19' wood debris, tar paper, plastic, cobbles. No sample from 17-20' due to coarse debris.
20				PRI2-006-SB05-20-050714 @945		
21					11.7	
22				PRI2-006-SB06-22-050714 @1000	~~11.7~~ 30.2 LM	
23					15.6	
24					9.7	
24				PRI2-006-SB07-24-050714 @1020	15.8	CLAYEY SILT, minor gravel, dark gray matrix with white nodes (salt), moist, appears to be smut waste.
25						
26					31.6	
26					4.9	CLAYEY GRAVEL, dark brown, wet. Poor recovery; no sample.
27				PRI2-006-SB08-27-050714 @1035	2.1	CLAYEY SAND, some silt, gray, medium to coarse oolitic sand, saturated. (Native soil)
28					1.6	
29						SILTY CLAY, very stiff, high plasticity, gray with orange-brown mottling, moist.
30					1.3	

TD @ 30'

ERM

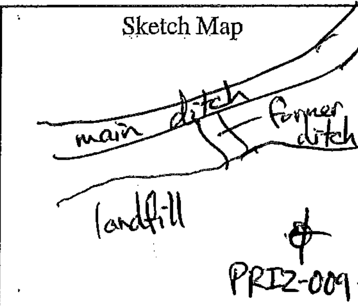
Environmental Resources Management
5950 S. Willow Dr. Suite 200
Greenwood Village, CO 80111
(303) 741-5050

BOREHOLE LOG

Borehole Number: PRI2-009

Project Number: 0132320
Project Name: US Magnesium
Location: Rowley, UT
Owner: US Magnesium
Drilling Company: Cascade Drilling
Drilling Method: Sonic
Driller: Ty Kroll
Log By: Lonnie Mercer
Date Drilled: 5/6/14
Borehole Diameter: 4" | Total Depth: 30.5'

Sketch Map



Well Construction

Blank Casing Type: N/A Diameter:
Interval: From - To -
Screen
Type: Slot Size: Diameter:
Interval: From - To -
Annular Fill Intervals
Type: From - To -
Type: From - To -
Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
0						SANDY SILT (Gypsum cap), trace clay, trace gravel, brownish red, moist, soft.
1			↓	PRI2-009-SB01-0.5-050614 @915	0.0	
2						
3						GRAVEL, fine to coarse gravel, black, moist, metal debris. No recovery
4						
5						
6						
7						
8						
9						
10		LM	↓	PRI2-009-SB02-10-050614 @1015	9.6	GRAVELLY SAND, some silt, fine to coarse gravel and sand, brown with white nodes (salt) and trace black coloring, moist, paper debris, wood debris, metal debris, plastic debris.
11					20.6	
12			↓	PRI2-009-SB05-12-050614 @1200	15.7 / 9.4	
13					20.8 / 22.0	@13.5' 6" layer of white salt.
14						

Environmental Resources Management
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Greenwood Village, CO 80111
(303) 741-5050

BOREHOLE LOG

Borehole Number: PRI2-009

Project Number:	Sketch Map	Well Construction
Project Name:		Blank Casing Type: Diameter:
Location:		Interval: From - To -
Owner:		Screen
Drilling Company:		Type: Slot Size: Diameter:
Drilling Method:		Interval: From - To -
Driller:		Annular Fill Intervals
Log By:		Type: From - To -
Date Drilled:		Type: From - To -
Borehole Diameter: Total Depth:		Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
14			↓	PRI2-009-SB06-14-050614 @1230	14.6	
15						
16						
17					21.2	
18			↓	PRI2-009-SB07-18-050614 @1245	24.6	@18' used absorbent towels.
19					1.2	
20					14.7	@20' metal debris (½" metal), wood debris, concrete debris No recovery
21			↓	PRI2-009-SB08-21-050614 @1310	4.7	GRAVELLY SAND, as above.
22					9.6	
23						@23' coarse material, no sample collected from 23-26'.
24						
25						
26			↓	PRI2-009-SB04-26-050614 @1100 ~~@1100~~ EM	0.5	@26' wood debris, brick debris.
27					5.4	
28					6.7	@28' black staining, ~~saturated~~.
29			↓	PRI2-009-SB03-28.5-050614 @1040	0.9	@28.5 SILTY CLAY, very stiff, high plasticity, light gray with yellow-orange mottling, moist to wet, roots, (Native soil).
30 TD@30.5'					4.6	

BORING LOG

ERM
Environmental Resources Management
5950 S. Willow Dr. Suite 200
Greenwood Village, CO 80111
(303) 741-5050

BOREHOLE LOG

Borehole Number: PRI2-014

Project Number:	0132320
Project Name:	US Magnesium
Location:	Rowley, UT
Owner:	US Magnesium
Drilling Company:	Cascade Drilling
Drilling Method:	Sonic
Driller:	Ty Kroll
Log By:	Lonnie Mercer
Date Drilled:	5/7/14
Borehole Diameter:	6"
Total Depth:	35'

Sketch Map

GPS Coordinates for PRI2-014
4531278.50 N
354588.13 E

Well Construction

Blank Casing Type: N/A Diameter:
Interval: From - To -
Screen
Type: Slot Size: Diameter:
Interval: From - To -
Annular Fill Intervals
Type: From - To -
Type: From - To -
Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
0			↓ (0–2)		PID not working	SANDY SILT (gypsum cap), trace clay and gravel, ~~tan~~ LM brownish red, moist.
1				PRI2-014-SB01-0.5-050714 @0230		
2						@2' grades to some gravel.
3			↓ (3–10)	PRI2-014-SB02-3-050714 @1240		SALT WASTE, pinkish orange to white to dark reddish brown, dry, granular with coarse sand-sized ~~particles~~ LM and gravel-sized pieces, angular pieces, appears to soften and swell when wetted.
4						
5						
6						
7						
8						
9						
10				PRI2-014-SB03-10-050714 @1330		
11						
12						
13						

Environmental Resources Management
5950 S. Willow Dr. Suite 200
Greenwood Village, CO 80111
(303) 741-5050

BOREHOLE LOG

Borehole Number: PRI2-014

Project Number:	
Project Name:	
Location:	
Owner:	
Drilling Company:	
Drilling Method:	
Driller:	
Log By:	
Date Drilled:	
Borehole Diameter:	Total Depth:

Sketch Map

Well Construction

Blank Casing Type: Diameter:
Interval: From - To -

Screen
Type: Slot Size: Diameter:
Interval: From - To -

Annular Fill Intervals
Type: From - To -
Type: From - To -
Type: From - To -

Description/Soil Classification: (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining.

Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description
14			14–20			
15						
16						
17						
18						@18' grades to wet.
19						
20						No recovery.
21						
22			22–27	PRI2-014-SB04-22-050714 @1415		SALT WASTE, as above.
23						
24						
25						
26						
27				PRI2-014-SB05-27-050714 @1420		

ERM	Environmental Resources Management 5950 S. Willow Dr. Suite 200 Greenwood Village, CO 80111 (303) 741-5050	**BOREHOLE LOG**	Borehole Number: PRI2-014

	Sketch Map	Well Construction
Project Number:		**Blank Casing** Type: Diameter:
Project Name:		Interval: From - To -
Location:		**Screen**
Owner:		Type: Slot Size: Diameter:
Drilling Company:		Interval: From - To -
Drilling Method:		**Annular Fill Intervals**
Driller:		
Log By:		Type: From - To -
Date Drilled:		Type: From - To -
Borehole Diameter: Total Depth:		Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
28						
29						
30				PRI2-014-SB06-30-050714 @1500		SILTY CLAY, trace gravel, some sand, gray with brownish red staining, wet to saturated, high plasticity, firm.
31				PRI2-014-SB07-31-050714 @1510		SILTY CLAY, high plasticity, very stiff, brownish red, moist. (Native soil).
32						@32.5' grades to gray.
33						SANDY CLAY, low plasticity, coarse oolitic sand, light gray, saturated.
34						
35						

TD @ 35'

Environmental Resources Management
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(303) 741-5050

BOREHOLE LOG

Borehole Number: PRI8-017

Project Number:	013232D
Project Name:	US Mag
Location:	Rowley, UT
Owner:	US Mag
Drilling Company:	DPS
Drilling Method:	Direct push
Driller:	Ryan Roodbol
Log By:	Lonnie Mercer
Date Drilled:	12/16/13
Borehole Diameter:	2.25"
Total Depth:	~~6'~~ 12' LM

Sketch Map

PRI8
PRI8-017
Road
Waste Pond

Well Construction N/A

Blank Casing Type: Diameter:
Interval: From - To -

Screen
Type: Slot Size: Diameter:
Interval: From - To -

Annular Fill Intervals
Type: From - To -
Type: From - To -
Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
0.5			FILL			SILTY SAND, brown, coarse sand, few gravel, fill material, oolitic sand, dry.
1.0						
1.5						GRAVELLY SILT, brown, few sand, dry.
2.0						SILTY SAND, white to gray, coarse sand, dry, oolitic sand, few gravel.
3.0						
4.0						
5.0						
6.0						SILTY CLAY, gray, high plasticity, few coarse sand, saturated.
7.0				PRI8-017-SB01-6-121613 @1230		Grades to dark gray.
8.0						SILTY SAND, white to gray, coarse sand, saturated, little gravel.
9.0						
10.0				PRI8-017-SB02-8-121613 @1240		
11.0						
12.0				PRI8-017-SB03-10-121613 @1250		
				TD @ 12' bgs		

ERM

Environmental Resources Management
5950 S. Willow Dr. Suite 200
Greenwood Village, CO 80111
(303) 741-5050

BOREHOLE LOG

Borehole Number: PRI14-005

Project Number:	0132320
Project Name:	US Mag
Location:	Rowley, UT
Owner:	US Mag
Drilling Company:	DPS
Drilling Method:	Direct push
Driller:	Ryan Roodhbl
Log By:	Lonnie Mercer
Date Drilled:	12/16/13
Borehole Diameter: 2.25'	Total Depth: 6'

Sketch Map

Road

↑ N

mud flats

PRI14-005

Well Construction N/A

Blank Casing Type: Diameter:
Interval: From - To -

Screen
Type: Slot Size: Diameter:
Interval: From - To -

Annular Fill Intervals
Type: From - To -
Type: From - To -
Type: From - To -

Description/Soil Classification

(Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining.

Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description
~~0.0~~ 0 LM					0.0	SANDY SILT, black, coarse sand, saturated, few gravel (caliche?), sulfur odor.
0.5						
1.0						CLAYEY SILT, gray, saturated, few sand and gravel (caliche?).
1.5						SILTY SAND, white to gray, coarse sand, saturated, few gravel (caliche?), trace clay.
2.0	PRI14-005-SB01-0.5-121613 @1020				0.0	
2.5						
3.0						GRAVELLY SAND, white to gray, coarse sand, saturated, ~~few~~ LM trace silt and clay.
3.5						
4.0	PRI14-005-SB02-2-121613 @1040				0.0	
4.5						Note: Pushed 3 borings to 6' bgs. Collected VOC aliquots from 1st ~~and~~ LM boring at 2.0' and 6.0' bgs. Collected VOC aliquots from 2nd boring at 4.0' bgs. → see reverse
5.0						
5.5						
6.0	PRI14-005-SB03-4-121613 @1030				0.0	

TD @ 6.0 ft bgs

PR114-005 SB

Note cont'd: Recovery on 1st boring 0-2' - 100%
2-4' - 25%
4-6' - 100%

2nd boring 0-2' - 100%
2-4' - 100%
4-6' - 100%

3rd boring 0-2' - 100%
2-4' - ~~100%~~ LM 90%
4-6' 100%

Borings advanced ~3' from stake, which could not be accessed due to very soft soil and risk of drilling rig getting stuck. Three borings were within a 2' area.

ERM Environmental Resources Management 5950 S. Willow Dr. Suite 200 Greenwood Village, CO 80111 (303) 741-5050	# BOREHOLE LOG	Borehole Number: MW-13

Project Number:	Sketch Map	Well Construction
Project Name: U.S. mag	road	Blank Casing Type: PVC Diameter: 2" sch 40
Location:	• MW-13 A+B	Interval: From - +3 To - 9'
Owner:	Pond	Screen
Drilling Company: DPS		Type: PVC Slot Size: 0.010 Diameter: 2" sch 40
Drilling Method: ~~Ryan~~ direct push / HSA		Interval: From - 9' To - 19'
Driller: Ryan		Annular Fill Intervals
Log By: J. Hillen		Type: 20x40 sand From - To - 8
Date Drilled: 12-4-13		Type: From - To -
Borehole Diameter: Total Depth:		Type: From - To -

Description/Soil Classification

(Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining.

Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description
0		SP		n/a	n/a	(65) SAND w/ (30) gravel + trace (5) fines, sand is fine ~~to~~ to v. fine grained, gravel is fine, subangular, tan, dry, with roots, oolitic sand (?)
1						
2		SP	Hand Auger			@2' - (90) SAND w/ trace organics w/ trace gravel, tan, roots, (5) clay, oolitic sand (?) (5)
3						void while hand auger
4						
5	▽	CL				@5' → water @5' → (95) Clay - w/ trace (5) fine sand (grey) wet
6						
7			No recovery			- little recovery → 0 5' to 9.5' - based upon recovery, ~~[illegible]~~ and hand auger
8						
9		CL				
10		SP				@9.5' → (95) oolitic SAND w/ trace (5) fines, wet sand is fine to med, subangular, white, w/ weak cementation
11						
12						@12 - ~~SAND~~ (50) SAND w/ (40) silt + (10) little fine gravel & clay (40), sand is coarse to fine, subangular, gravel is fine, subangular, silt is brown, non-plastic
13		SM				
		→ Screen				

over →

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BOREHOLE LOG

Borehole Number: MW-13

Project Number:	
Project Name:	
Location:	
Owner:	
Drilling Company:	
Drilling Method:	
Driller:	
Log By:	
Date Drilled:	
Borehole Diameter:	Total Depth:

Sketch Map

Well Construction

Blank Casing Type: Diameter:
Interval: From - To -
Screen
Type: Slot Size: Diameter:
Interval: From - To -
Annular Fill Intervals
Type: From - To -
Type: From - To -
Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
				n/c		(60) (40) (mottled)
13						13.5 to 14 → SAND w/ silt - greyish brown, wet, sand is fine,
14		SM	80% rec			14-14.5 → mod cemented ~~SP~~ white, fine to med
		SP				
15		SP-SM				14.5 →
						w/ few silt stronger in top 2"
16						SAND w/ silt, grey to dark grey (70) (30)
						fines
17						→ Sand is med to fine, "little silt"
						lalk
18			90% rec			→ Sand fine to v. fine
						wet, silt is non plastic
19						
20						TD = 20
						◯ - main grain size if not capitalized

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BOREHOLE LOG

Borehole Number: MW-14

Project Number:	
Project Name:	
Location:	
Owner:	
Drilling Company:	DPS
Drilling Method:	direct push / HSA
Driller:	Ryan
Log By:	J. Hille
Date Drilled:	12-4-13
Borehole Diameter:	Total Depth:

Sketch Map

Well Construction

Blank Casing Type:		Diameter:
Interval: From -		To -
Screen		
Type:	Slot Size:	Diameter:
Interval: From -		To -
Annular Fill Intervals		
Type:	From -	To -
Type:	From -	To -
Type:	From -	To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
0	SP					SAND (90) w/ gravel trace gravel (5). sand is poorly sorted, fine to med, subangular. Gravel is fine, subangular, brown, damp
1						
2			Hand auger			
3	CL					@3' - CLAY - grey to grayish brown, damp to wet, low plasticity
4 ▽						
5	SP					@5' → SAND SAND (100). poorly sorted, fine to medium, weak to moderate cementation, wet, gray brown.
6						
7			100% recovery			
8						
9						@9.5' → sand is med to coarse
10						(10) (20) (50) (40) 30 (10) (20)
11	SM-SC					@11' → SAND w/ clay, silt and trace gravel (5) mottled brown to gray, sand is fine to med, subangular, wet, non-plastic, "talc odor"
12			100 rec			
13						

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BOREHOLE LOG

Borehole Number: MW-14

Project Number:	
Project Name:	
Location:	
Owner:	
Drilling Company:	
Drilling Method:	
Driller:	
Log By:	
Date Drilled:	
Borehole Diameter:	Total Depth:

Sketch Map

Well Construction		
Blank Casing Type:		Diameter:
Interval: From -		To -
Screen		
Type:	Slot Size:	Diameter:
Interval: From -		To -
Annular Fill Intervals		
Type:	From -	To -
Type:	From -	To -
Type:	From -	To -

Description/Soil Classification

(Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining.

Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description
13			100% rec			@13 → SILT (60) w/ sand (40), gray, wet, non-plastic sand is fine to v. fine, organic odor, few cemented nodules
14						
15	SP-SM					@14.5 → SAND (90) w/ silt (10) - gray to dark gray, sand fine to v. fine, organic odor, wet
16						
17						
18			100% rec			
19						
20						TD = 20

ERM Environmental Resources Management 5950 S. Willow Dr. Suite 200 Greenwood Village, CO 80111 (303) 741-5050	# BOREHOLE LOG	Borehole Number: MW-15

Project Number:	Sketch Map	Well Construction
Project Name:		Blank Casing Type: Diameter:
Location:		Interval: From - To -
Owner:		Screen
Drilling Company: DPS		Type: Slot Size: Diameter:
Drilling Method: direct push		Interval: From - To -
Driller: Ryan		Annular Fill Intervals
Log By: J. Hille		Type: From - To -
Date Drilled: 12-5-13		Type: From - To -
Borehole Diameter: Total Depth:		Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
0	SP			n/a	NA	SAND - oolitic, tan w/ trace roots, some weak cementation, fine to med grained
1						
2						
3						
4						
5 ▽	CL					@5' - clay (5-5.5') (we took a 2nd 3' core to confirm this interval for 5'-10')
6	SP	60% recov 1" tube				@5.5 - SP
7						@7 → clay - (same as 5-5.5') gray, few Fe stains, trace fine sand, damp
8	CL					
9	SP					@9.5 → SAND - oolitic, weak cementation, sand is fine to med, trace fines, wet, white to gray, few rust stains
10						
11						
12	SM-SC					@11' 11" → SILT w/ clay, sand & trace gravel, (40) (30) (20) to 12.5 black to grey, "lake" odor, sand is fine, wet
13	SP					→ oolitic sand, w/ nodules, weak cementation

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Project Number:	Sketch Map	Well Construction
Project Name:		Blank Casing Type: Diameter:
Location:		Interval: From - To -
Owner:		Screen
Drilling Company:		Type: Slot Size: Diameter:
Drilling Method:		Interval: From - To -
Driller:		Annular Fill Intervals
Log By:		Type: From - To -
Date Drilled:		Type: From - To -
Borehole Diameter: Total Depth:		Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
13	SM		80% recov			@13 -> silty sand (40) (60) - grey, sand is fine to ~~med~~ v. fine well cementation, wet, silt is non-plastic
14						@14.5 -> SAND w/silt (90) (10) -> grey to dark grey, wet sand is fine to v. fine silt is non-plastic. "lake" odor
15	SP-SM					
16						
17			100% recovery			
18						
19						
						TD = 20'
20						

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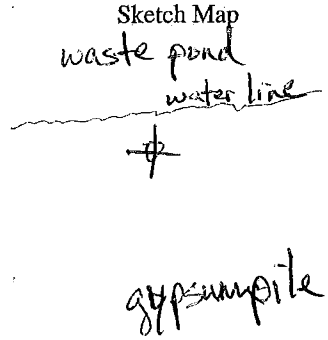
BOREHOLE LOG

Borehole Number: MW-16

Project Number:	0132370
Project Name:	US Mag RI/FS
Location:	Rowley, UT
Owner:	US Magnesium
Drilling Company:	ERM
Drilling Method:	hand auger
Driller:	Lonnie Mercer
Log By:	Lonnie Mercer
Date Drilled:	1/13/2014
Borehole Diameter:	6"
Total Depth:	20"

Sketch Map



Well Construction

Blank Casing Type: PVC Diameter: 2"
Interval: From - ~6" To - +2.5'
Screen Prepack with 4" diameter outer casing
Type: PVC Slot Size: 0.010 Diameter: 2"
Interval: From - -18" To - -6"

Annular Fill Intervals
Type: bentonite From - -4" To - 0
Type: 20/40 sand From - -20" To - -4"
Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
0						Gypsum waste sediments: CLAY, reddish brown, high plasticity, very soft, wet.
10"	▽					Ground Water flowing into borehole during hand augering.
20"						~~Sandy ~~Lean~~ CLAY, gray, firm, wet.~~ SILTY CLAY, gray, stiff, wet.
		TD @ 20" bgs				

lithology only - direct push

BOREHOLE LOG

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Borehole Number: MW-17

Project Number:	
Project Name:	U.S. mag
Location:	Rowley, UT
Owner:	
Drilling Company:	DPS
Drilling Method:	direct push
Driller:	Ryan
Log By:	J. Hilla
Date Drilled:	12-2-13
Borehole Diameter:	2"
Total Depth:	

Sketch Map

MW-17

Well Construction

Blank Casing Type: Diameter:
Interval: From - To -
Screen
Type: Slot Size: Diameter:
Interval: From - To -
Annular Fill Intervals
Type: From - To -
Type: From - To -
Type: From - To -

	Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
0		SM-CL			N/a		silty (20) sand (70) w/ clay (10). Sand is yellow to reddish brown, fine to medium, damp to wet silt/clay is low to non-plastic.
1				Hand auger			-water 2'
2	▽	CL					- clay, gray w/ trace fine sand, some organic w/ roots zone (black staining), high plasticity
3							
4							
5		SM MC					
6							
7							
8		SP		80% recov			- sand (poorly sorted), oolitic, white to gray, wet sand (80) fine to med grained, subangular
9							@ 9.5' → few fines, some cementation.
10		SM MC					
11				No recovery			
12							
13		SM					→ see pg 2

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BOREHOLE LOG

see pge 1

Borehole Number: MW-17

Project Number:	
Project Name:	
Location:	
Owner:	
Drilling Company:	
Drilling Method:	
Driller:	
Log By:	
Date Drilled:	
Borehole Diameter:	Total Depth:

Sketch Map

Well Construction

Blank Casing Type: Diameter:
Interval: From - To -
Screen
Type: Slot Size: Diameter:
Interval: From - To -
Annular Fill Intervals
Type: From - To -
Type: From - To -
Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
13	SM					→ silty sand (20) (70) w/ few gravels (10). light gray to brown, wet, sand is fine to medium, silt is non-plastic
14		90% recovery				
15	SP-SM					(90%) Sand w/ (10%) silt. Gray, wet. sand is fine to v. fine
16						@16 - flowing sands
17		100% recovery				
18						TD = 18' bgs
						TD @ 12 2-13

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BOREHOLE LOG

Borehole Number: MW-18

Project Number:	
Project Name:	U.S. mag
Location:	MW-18
Owner:	
Drilling Company:	DPS
Drilling Method:	direct push / HSA
Driller:	Ryan
Log By:	J. Hiller
Date Drilled:	12-3-13
Borehole Diameter:	Total Depth:

Sketch Map: ramp - covered; Parking area; MW-18; Smunt

Well Construction

Blank Casing Type: 2"	Diameter: PVC sch 80	
Interval: From - +	To - 12'	
Screen Type: PVC - sch 80	Slot Size: 0.010	Diameter: 2"
Interval: From - 12'	To - 22'	
Annular Fill Intervals		
Type: 20 x 40 sand	From - 10.8"	To - 22.5"
Type: Bentonite chips	From - 1.5'	To - 10'8"
Type: Quickcrete	From - 0	To - 1.5

also used in completion ~~[illegible]~~ JH

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
0	SP-SM ~~SC~~			n/a	n/a	→ sand w/ silt + clay, ~~yellow~~ brown, sand (SP) is fine grained, ~~silt~~ clay is low plasticity, damp (fill)
1						
2			hand auger			
3						
4						
5						~~@5' → fill ends~~ JH
6						sand is fine to med; @6' → oolitic sand seam; @6.5' → resume SP-SM
7						
8	SP		80% recov			8-8.5 - oolitic sand ~~pocket~~ seam, fine to med, subangular, damp.
9	▽ CL					@9' - water
10						
11			see next page			
12	SP					- oolitic sands, white to tan, fine to medium, subangular, damp, trace fines
13						

→ over

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Project Number:	Sketch Map	Well Construction
Project Name:		Blank Casing Type: Diameter:
Location:		Interval: From - To -
Owner:		Screen
Drilling Company:		Type: Slot Size: Diameter:
Drilling Method:		Interval: From - To -
Driller:		Annular Fill Intervals
Log By:		Type: From - To -
Date Drilled:		Type: From - To -
Borehole Diameter: Total Depth:		Type: From - To -

Description/Soil Classification

(Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining.

Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description
			100% recovery	10 NA	NA	
13						
14						
15						(90) (10)
16	SP-SM		100% recovery			- ~~silty sand~~ Sand w/ silt, black to gray, sand is fine to v-fine, silt is non-plastic, wet
17						
18						
19						
20			95% recovery			(10)
21	SM-SC					(20) (70) w/ little clay - silty sand - silt is grey to dark greenish (clayey sand) gray seams, sand is fine to v. fine damp to wet, weak cementation - damp from 21.5-22' musty odor
22						
						TD = 22'

lithology only - direct push

BOREHOLE LOG

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Borehole Number: MW-15B

Project Number:	
Project Name:	U.S. mag
Location:	Rowley, UT
Owner:	
Drilling Company:	DPS
Drilling Method:	Geoprobe
Driller:	Ryan
Log By:	J. Hiller
Date Drilled:	12-2-13
Borehole Diameter:	2"
Total Depth:	

Sketch Map: MW-15B; road

Well Construction
Blank Casing Type: Diameter:
Interval: From - To -
Screen
Type: Slot Size: Diameter:
Interval: From - To -
Annular Fill Intervals
Type: From - To -
Type: From - To -
Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
				n/a		- silty sand w/ clay
1 ▽			hand auger			@10" - water
2	CH					@2' → clay - gray w/ roots + organic (stacked) staining, plastic (high)
3	JH					@3.5 →
4						
5						
6			70% recovery			
7						
8	SP					@8.5 → oolite sand, fine to medium grained, gray/white, wet, subangular
9						@9-9.5 → dark stains @9.5 → back to white/gray
10						
11						(20) 70 sand w/ trace gravel (10) JH
12	SM		100% recov			@12 → silty sand - brown to gray, gravel is fine grained, subangular, sand is fine to v. fine
13	SP-SM					@13 → over

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BOREHOLE LOG

- see page 1

Borehole Number: MW-19

Project Number:	
Project Name:	
Location:	
Owner:	
Drilling Company:	
Drilling Method:	
Driller:	
Log By:	
Date Drilled:	
Borehole Diameter:	Total Depth:

Sketch Map

Well Construction

Blank Casing Type:		Diameter:
Interval: From -		To -
Screen Type:	Slot Size:	Diameter:
Interval: From -		To -
Annular Fill Intervals Type:	From -	To -
Type:	From -	To -
Type:	From -	To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification — (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
	SP-SM		100% rec	n/a	n/a	@13 - sand (90) w/ few silt (10). Gray w/ fine to v. fine sand, wet, silt is non-plastic
14						
15						
16						
17			100% recovery			
18						
19						@19 → sand heaving into sampler per driller - add water to help slow this problem
20			100% recovery			
21						
22						@21 → sand heaving into sampler per driller - add water to help slow this problem
23			100% rec			
24						
25						- stop @ 25 due to flow of sand making it up into sample sleeve.
26						- have to get new sampler down out tomorrow
27						

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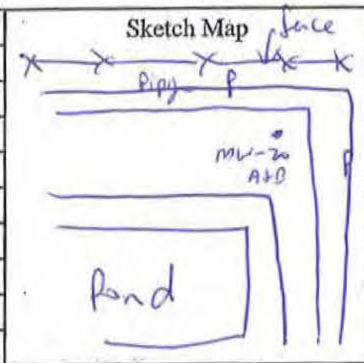
BOREHOLE LOG

Borehole Number: MW-20

Project Number:
Project Name:
Location:
Owner:
Drilling Company:
Drilling Method:
Driller:
Log By:
Date Drilled:
Borehole Diameter: Total Depth:

Sketch Map



Well Construction
Blank Casing Type: Diameter:
Interval: From - To -
Screen
Type: Slot Size: Diameter:
Interval: From - To -
Annular Fill Intervals
Type: From - To -
Type: From - To -
Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
				fill(?)	n/c	6" -> ~~rock~~ gravel - fine, subrounded. (fill) frozen
	SM					@6" -> Sandy ~~SILT~~ SILT - brown, damp, sand ~~silt~~ (40) (60) fine to v. fine.
	SP					@2.5 -> poorly SAND -> tan to brown, weak cementation, sand is fine, rounded subrounded
	SP			n/c		@3.5 -> SAND w/ trace silt, sand is tan to light brown, damp, (90) (5) sand is fine to v. fine grained
	SP					@4.5 -> same as 2.5
		no record				@7.5 -> same as 3.5
						~~@8 -> clay 3?~~
	CL					@8.15 -> CLAY - mottled, gray to tan to brown, low to med plasticity, wet, rust stains
						@12 -> ~~OC~~
	SP					@15 ->

Environmental Resources Management 5950 S. Willow Dr. Suite 200 Greenwood Village, CO 80111 (303) 741-5050	**BOREHOLE LOG**	Borehole Number: mw-20

Project Number:	Sketch Map	Well Construction
Project Name:		Blank Casing Type: Diameter:
Location:		Interval: From - To -
Owner:		Screen
Drilling Company:		Type: Slot Size: Diameter:
Drilling Method:		Interval: From - To -
Driller:		Annular Fill Intervals
Log By:		Type: From - To -
Date Drilled:		Type: From - To -
Borehole Diameter: Total Depth:		Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
13		SP	70% recov			@13 → altn SAND (95) → weak cementation, med to fine sand, few fines (5), white to gray, wet
14						
15						
16						
17						@17 - SAND (90) w/ ~~little~~ few silt (10), - black to dark gray, wet, sand is fine to v. fine graded, silt is non-plastic.
18		SP-SM	90% recovery			
19						
20						
21						
22			100% rec			
23						
24						@24 → DPS notes that sand is flowing up sample assembly once he pushes a sample. switching to 'lock-in' to get clean sample
25						
26						

ERM	Environmental Resources Management 5950 S. Willow Dr. Suite 200 Greenwood Village, CO 80111 (303) 741-5050	**BOREHOLE LOG**	Borehole Number: ML-20

Project Number:	Sketch Map	Well Construction
Project Name:		Blank Casing Type: Diameter:
Location:		Interval: From - To -
Owner:		Screen
Drilling Company:		Type: Slot Size: Diameter:
Drilling Method:		Interval: From - To -
Driller:		Annular Fill Intervals
Log By:		Type: From - To -
Date Drilled:		Type: From - To -
Borehole Diameter: Total Depth:		Type: From - To -

Depth (ft. BGS)	Graphic Log	Well Construction	Sample Interval	Lab Sample Identification	Organic Vapor (ppm)	Description/Soil Classification (Description Interval) GRAIN SIZE: lithologic descriptive modifier, color and mottling, grain size modifier, coarse and fine grained descriptors, moisture content, minor constituents, description of odors/staining. Trace <5%, Few = 5-10%, Little = 15-25% (ASTM D 2488)
26						
27						
28						@28.5 → refusd per DPS sample indicate still SP-SM, but at this may still be from flowy sand
29						
30						
						TD w/ augers is 30' bgs.

Appendix D-3
Well Development Forms

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/5/13
Set up time: 0910
Weather: Cloudy, cold, 7°
Field Staff: D. LeBer

WELL # LF-01

Construction Depth (ft TOC):	20.27 ~~22.6'~~ btoc	Water column (ft):	9.40'
Construction Materials:	2" PVC	Casing inside radius (ft):	0.104'
Screened Interval (ft TOC):	5.4 - 15.4' bgs	Casing volume (ft^3):	0.32
Pump Intake Depth (ft TOC):	17.20	Saturated thickness of sand pack (ft):	9.40
Initial depth to water (ft TOC):	~~3.84~~ 8.62	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	8.62	Casing outside radius (ft):	
Initial total depth (ft TOC):	17.94 + 0.28' = 18.22'	Annular volume (ft^3):	
Final total depth (ft TOC):	17.96 + 0.28' = 18.24'	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	40 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
0920	1500	0	7.12	10.65	6.71	90700	1.03	-76	max	silty grey
0932		8	8.80	13.48	6.82	59200	3.12	-88	446	"
0944		16	8.84	14.17	6.72	58700	1.30	-80	490	"
0956		24	8.90	14.56	6.70	58500	1.04	-79	498	"
1008		32	8.88	14.63	6.69	57300	1.08	-77	42.5	"
1020		40	8.90	14.89	6.70	58000	1.16	-80	40.6	"

FIELD OBSERVATIONS well in good condition, purged w/ bladder pump.
1x borehole = ~8.5 gal

12 ~~1~~ min = 8 gal

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date:	12/4/13
Set up time:	1145
Weather:	Clear 16°
Field Staff:	D. DeBoer

WELL # LF-03

Construction Depth (ft TOC):	15.24'	Water column (ft):	10.38
Construction Materials:	2" PVC	Casing inside radius (ft):	0.083'
Screened Interval (ft TOC):	2-12' bgs	Casing volume (ft^3):	0.22
Pump Intake Depth (ft TOC):	14.10'	Saturated thickness of sand pack (ft):	10.38'
Initial depth to water (ft TOC):	4.78'	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	4.85	Casing outside radius (ft):	
Initial total depth (ft TOC):	14.88 + 0.28' = 15.16'	Annular volume (ft^3):	
Final total depth (ft TOC):	14.90 + 0.28 = 15.18'	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	40 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1155	2500	0	4.90	9.84	6.07	81900	1.07	-13	Max	Silty, grey, Cl odor
1210	↓	10	4.84	12.26	6.34	95000	2.05	-75	195	" " "
1225		20	4.86	13.44	6.37	94000	0.81	-87	59.4	" "
1240		30	4.90	13.29	6.45	94100	1.87	-86	34.4	" "
1255	↓	40	4.88	13.75	6.45	94600	1.86	-89	30.6	" "

FIELD OBSERVATIONS Well in good condition, purged w/ bladder pump

1x borehole = 9.3 gal

15 min = 10 gal purge

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/9/13
Set up time: 1235
Weather: clear, cold, 14°
Field Staff: D. [illegible]

WELL # MW-13A

Construction Depth (ft TOC):		Water column (ft):	2.58'
Construction Materials:	2" PVC	Casing inside radius (ft):	0.083
Screened Interval (ft TOC):		Casing volume (ft³):	0.06
Pump Intake Depth (ft TOC):	10.56	Saturated thickness of sand pack (ft):	2.58
Initial depth to water (ft TOC):	8.44	Borehole radius (ft):	0.33
Final depth to water (ft TOC):	8.44	Casing outside radius (ft):	
Initial total depth (ft TOC):	10.74 + 0.28' = 11.02'	Annular volume (ft³):	
Final total depth (ft TOC):	10.76 + 0.28' = 11.04'	Water added during well drilling/construction (gal):	0 gal
Final total depth (ft TOC):		Total purge volume (gal):	14 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1235	450	0	see	5.83	6.27	48100	nm	16	max	turbid brown
1252	↓	2.	note	6.31	6.05	50700	4.73	28	max	" "
1309	↓	4	below	6.90	6.03	49300	5.72	29	max	" "
1318 ~~1326~~	850	6		6.84	6.02	50200	6.16	31	max	" "
1327		8		6.95	6.00	51700	3.83	40	max	" "
1336		10		6.86	5.98	51700	3.81	47	max	cloudy, brown, minimal
1345		12	↓	6.96	6.05	51500	3.21	40	100	amount of sediment
1354	↓	14	↓	6.96	5.99	51400	3.45	44	113	" "

FIELD OBSERVATIONS new well, no lock. Purged w/ bladder pump.

1 borehole = ~ 2.3 gal

DTW - cannot gauge DTW during purging, probe hits top of pump.

17 min = 2 gal

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/9/13
Set up time: 0800
Weather: clear, cold, ~2°
Field Staff: D. deBoer

WELL # MW-13B

Construction Depth (ft TOC):		Water column (ft):	12.62
Construction Materials:	2" PVC	Casing inside radius (ft):	0.083
Screened Interval (ft TOC):		Casing volume (ft^3):	0.27
Pump Intake Depth (ft TOC):	19.75	Saturated thickness of sand pack (ft):	12.62
Initial depth to water (ft TOC):	8.16	Borehole radius (ft):	0.33
Final depth to water (ft TOC):	8.62	Casing outside radius (ft):	
Initial total depth (ft TOC):	20.50 + 0.28' = 20.78	Annular volume (ft^3):	
Final total depth (ft TOC):	21.06 + 0.28 = 21.34	Water added during well drilling/construction (gal):	20 gal
Final total depth (ft TOC):		Total purge volume (gal):	121 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
0935	2600	0	9.60	11.69	6.04	64900	2.99	8	max	silty grey, no odor
0951	↓	11	10.14	10.43	5.88	66900	2.32	-17	max	cloudy grey
1007		22	10.24	10.65	5.93	68800	1.64	-22	673	" "
1023		33	10.26	10.91	5.88	69200	1.84	-37	235	" "
1039		44	10.20	11.23	5.91	68200	1.60	-49	223	" "
1055		55	10.16	10.57	5.86	70800	1.97	-60	153	" "
1111		66	10.18	10.84	5.76	69600	1.70	-55	141	" "
1127		77	10.24	10.39	5.86	70000	1.67	-59	61.2	turbid grey, faint Cl odor
1143		88	10.19	10.86	5.85	71800	1.98	-83	26.9	clear, faint Cl odor
1159		99	10.20	10.97	5.84	70300	1.77	-76	19.5	" "
1215		110	10.20	10.99	5.90	71500	1.50	-81	15.6	" "
1231	↓	121.	10.18	10.90	5.84	71800	1.59	-94	13.9	" "

FIELD OBSERVATIONS New well, good condition. missing lock and well cap. Purged w/ bladder pump
1 borehole volume = ~11.3 gal
16 min = 11 gal purged
Min. volume = 5x borehole + 3x H_2O added
= 5(11.3) + 3(20) = 116.5

Monitoring Well Development
Project # C132320
Environmental Resources Management

Date: 12/10/13
Set up time: 1145
Weather: Clear, 15°
Field Staff: D. deBoer

WELL # MW-14

Construction Depth (ft TOC):
Construction Materials: 2" PVC
Screened Interval (ft TOC):
Pump Intake Depth (ft TOC): 17.00
Initial depth to water (ft TOC): 5.84
Final depth to water (ft TOC): 6.48
Initial total depth (ft TOC): 17.08 + 0.28 = 17.36 (soft bottom)
Final total depth (ft TOC): 18.58 + 0.28 = 18.86
Final total depth (ft TOC):

Water column (ft): 11.52
Casing inside radius (ft): 0.083
Casing volume (ft³): 0.11
Saturated thickness of sand pack (ft):
Borehole radius (ft): 0.33
Casing outside radius (ft):
Annular volume (ft³):
Water added during well drilling/construction (gal): 20 gal
Total purge volume (gal): 120 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1205	2500	0	8.05	11.51	6.15	68400	4.92	-4	max	silty grey
1220		10	9.06	12.16	6.04	69900	NM	-45	max	"
1235		20	8.95	12.66	6.07	70600	2.55	-78	290	"
1250		30	9.32	12.51	5.95	72600	1.65	-126	156	"
1305		40	9.20	12.75	6.01	73200	1.34	-168	132	"
1320		50	9.28	12.60	6.04	73300	1.31	-196	57.0	"
1335		60	9.24	12.25	6.03	74200	4.06	-209	39.5	clear, grey tint, septic odor
1350		80	9.20	12.85	5.96	74800	0.79	-223	57.7	"
1405		90	9.22	12.94	5.97	75000	1.13	-233	48.6	"
1420		100	9.18	13.01	6.01	75100	1.04	-235	36.5	"
1435		110	9.24	13.17	6.03	75000	1.00	-238	32.2	"
1450		120	9.20	13.06	6.04	75800	0.97	-240	30.2	"

FIELD OBSERVATIONS new well. Good condition, missing lock & well plug.
Purged using bladder pump.
1x borehole vol. = 10.4 gal.
Minimum purge vol = 5x borehole + 3x H_2O added
= 5(10.4) + 3(20) = 112 gal
15 min purge time = 10 gal.

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/9/13
Set up time: 1410
Weather: Clear, 15°
Field Staff: D. & Boer

WELL # MW-15A

Construction Depth (ft TOC):	
Construction Materials: 2" PVC	
Screened Interval (ft TOC):	
Pump Intake Depth (ft TOC): 10.0	
Initial depth to water (ft TOC): 6.94	
Final depth to water (ft TOC): 6.96	
Initial total depth (ft TOC): 10.68 + 0.28 = 10.96	
Final total depth (ft TOC): 10.70 + 0.28 = 10.98	
Final total depth (ft TOC):	
Water column (ft): 4.01	
Casing inside radius (ft): 0.083	
Casing volume (ft^3): 0.09	
Saturated thickness of sand pack (ft): 4.02	
Borehole radius (ft): 0.33'	
Casing outside radius (ft):	
Annular volume (ft^3):	
Water added during well drilling/construction (gal): N/A	
Total purge volume (gal): 24 gal	

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1419	1400	0	see	7.14	6.26	48500	3.97	31	max	silty grey
1427	↓	3	note	7.92	5.89	54900	2.92	58	max	" "
1435		6	below	8.16	5.84	56900	5.94	51	max	" "
1443		9		7.94	5.88	57200	2.39	49	max	" "
1451		12		7.56	5.84	58100	2.89	48	~~max~~ 990	" "
1459		15		7.63	5.86	58500	6.73	54	654	" "
1507		18	↓	7.48	5.91	59160	6.34	60	492	" "
1515		21		7.68	5.90	59960	2.47	70	388	" "
1523	↓	24	↓	7.80	5.97	59600	2.36	61	426	" "

FIELD OBSERVATIONS New well, good condition, missing lock. Water level probe hits top of pump

1 borehole = 3.6 gal
5x borehole = 18 gal
8 min = 3 gal.

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/10/13
Set up time: 0720
Weather: clear, cold, 1°
Field Staff: D. deBoer

WELL # MW-15B

Construction Depth (ft TOC):	Water column (ft): 13.42
Construction Materials: 2" PVC	Casing inside radius (ft): 0.083
Screened Interval (ft TOC):	Casing volume (ft^3): 0.29
Pump Intake Depth (ft TOC): 19.50	Saturated thickness of sand pack (ft):
Initial depth to water (ft TOC): 6.72	Borehole radius (ft): 0.33
Final depth to water (ft TOC): 6.80	Casing outside radius (ft):
Initial total depth (ft TOC): 19.86 + 0.28 = 20.14 (soft bottom)	Annular volume (ft^3):
Final total depth (ft TOC): 20.80 + 0.28 = 21.08	Water added during well drilling/construction (gal): 20
Final total depth (ft TOC):	Total purge volume (gal): 120 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
~~0735~~	2500	0	7.40	9.57	6.20	44400	2.86	38	max	silty grey, lots of sediment
~~0753~~ 0800	↓	12	7.66	10.37	5.87	58000	2.87	-25	max	" " "
0818		24	7.37	10.25	5.85	60400	2.43	-33	max	" minimal sediment
0836		36	7.38	10.61	5.81	61600	1.60	-37	732	cloudy grey
0854		48	7.42	10.86	5.79	60400	1.58	-23	424	"
0912		60	7.81	10.66	5.83	62200	1.49	-41	255	"
0930		72	7.60	10.69	5.89	62800	1.48	-38	194	"
0948		84	8.12	11.12	5.90	62900	1.64	-35	130	"
1006		96	8.20	10.67	6.00	63000	1.38	-22	112	"
1024		108	8.15	10.66	5.94	63400	1.25	-32	91.3	slightly cloudy
1042	↓	120	8.01	11.19	5.94	63000	1.41	-29	98.8	"

FIELD OBSERVATIONS new well, good condition. Missing lock and plug. Silt fills tubing & freezes @ 0745.
purged w/ bladder pump

1 x borehole volume = 12 gal

minimum purge vol = 5x borehole + 3x H_2O added
= 5(12) + 3(20)
~~18~~ = 120 gal.

18 min = 12 gal

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/16/13
Set up time: 10:00
Weather: Foggy, 40s
Field Staff: K. Benson

WELL # MW-17

Top of Sand Pack = 5.75 ft bgs

Construction Depth ~~(ft TOC)~~:	17.5 ft BGS	Water column (ft):	12.62
Construction Materials:	2 in PVC Pre Pack	Casing inside radius (ft):	0.0833 ft (1 inch)
Screened Interval (ft TOC):		Casing volume (ft^3):	~~10.26~~ 0.27
Pump Intake Depth (ft TOC):		Saturated thickness of sand pack (ft):	11.75 ft (5.75 to 17.5 ft BGS)
Initial depth to water (ft TOC):	4.88	Borehole radius (ft):	0.33 ft (4 in)
Final depth to water (ft TOC):	4.88	Casing outside radius (ft):	Assume 0.0833 ft
Initial total depth (ft TOC):	17.5	Annular volume (ft^3):	
Final total depth (ft TOC):	17.5	Water added during well drilling/construction (gal):	None
Final total depth (ft TOC):		Total purge volume (gal):	55 gallons

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
10:19	2000	0	4.92	11.41	6.80	89,100	4.58	-3	852	Silty, gray
10:40	↓	10	5.40	11.22	6.60	134,000	2.98	-192	6.0	Slightly cloudy, gray
10:55	↓	20	↓	11.38	6.55	135,500	2.46	-197	625	clear, no color
11:08	↓	30	↓	11.41	6.51	138,500	3.71	-205	440	↓
11:20	↓	40	↓	11.35	6.54	139,000	2.18	-205	335	↓
11:30	↓	50	↓	10.94	6.56	138,000	2.89	-203	247	↓
11:35	↓	55	↓	11.42	6.59	139,500	2.73	-210	163	↓

FIELD OBSERVATIONS new well, good condition, missing lock & well plug. Purged with bladder pump

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/6/13
Set up time: 1220
Weather: clear, cold, 12°
Field Staff: D. DeBoer

WELL # MW-18

Construction Depth (ft TOC):		Water column (ft):	9.94'
Construction Materials:	2" pvc	Casing inside radius (ft):	0.0833'
Screened Interval (ft TOC):		Casing volume (ft³):	0.22
Pump Intake Depth (ft TOC):	23.38'	Saturated thickness of sand pack (ft):	9.94'
Initial depth to water (ft TOC):	14.44'	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	14.38'	Casing outside radius (ft):	0.09'
Initial total depth (ft TOC):	24.10 + 0.28 = 24.38'	Annular volume (ft³):	
Final total depth (ft TOC):	24.10 + 0.28 = 24.38	Water added during well drilling/construction (gal):	20 gal
Final total depth (ft TOC):		Total purge volume (gal):	108 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1235	2250	0	14.54	9.87	7.43	37500	5.32	-196	max	silty grey
1250		9	14.52	12.38	7.44	34400	4.69	-143	943	"
1305		18	14.64	12.50	7.28	33600	4.50	-92	239	"
1320		27	14.62	12.94	7.22	32800	4.44	-11	140	"
1335		36	14.62	12.47	7.25	32900	7.71	-3	93.9	"
1350		45	14.60	12.93	7.10	33000	3.32	-18	46.9	tinted grey
1405		54	14.60	12.95	7.12	32400	4.45	-20	39.3	"
1420		63	14.62	12.86	7.22	32800	7.72	-3	36.6	"
1435		72	14.60	13.28	7.21	32500	6.35	9	28.2	clear, no odor
1450		81	14.48	13.37	7.12	32700	3.42	22	30.2	" "
1505		90	14.54	13.42	7.05	32300	3.08	13	27.5	" "
1520		99	14.50	13.38	7.04	32500	3.71	23	30.5	" "
1535	↓	108	14.55	13.40	7.06	32700	3.70	27	26.3	" "

FIELD OBSERVATIONS New well - in good condition, missing lock, purge w/ bladder pump

1x borehole vol = ~8.9 gal
15 min = 9 gal purged

Minimum volume = 5x borehole + 3x H2O added
= 5(9) + 3(20) = 45 + 60 = 105 gal

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/11/13
Set up time: 1400
Weather: Cloudy, cold, 20°
Field Staff: D.deBoer

WELL # MW-19A

Construction Depth (ft TOC):		Water column (ft):	15.58
Construction Materials:	2" PVC	Casing inside radius (ft):	0.083
Screened Interval (ft TOC):		Casing volume (ft^3):	0.34
Pump Intake Depth (ft TOC):	19.00	Saturated thickness of sand pack (ft):	
Initial depth to water (ft TOC):	3.90	Borehole radius (ft):	0.33'
Final depth to water (ft TOC):	3.84	Casing outside radius (ft):	
Initial total depth (ft TOC):	19.20 + 0.28 = 19.48	Annular volume (ft^3):	
Final total depth (ft TOC):	19.20 + 0.28 = 19.48	Water added during well drilling/construction (gal):	0
Final total depth (ft TOC):		Total purge volume (gal):	70 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1410	2500	6	4.08	11.55	6.47	16500	0.95	-118	max	silty grey, EC diluted 10x
1425		10	4.00	12.37	6.79	17200	0.55	-124	950	" "
1440		20	3.92	13.56	6.62	17900	0.46	-156	366	" "
1455		30	3.92	12.99	6.62	17200	0.68	-252	89.5	Tinted grey, EC diluted 10x
1510		40	3.95	13.39	6.62	17500	0.93	-256	39.4	clear, dilute EC 10x
1525		50	3.92	13.80	6.64	18100	0.80	-259	23.9	" "
1540		60	3.96	13.85	6.62	17900	0.97	-258	15.0	" "
1555		70	3.92	14.01	6.62	17300	1.03	-261	14.1	" "

FIELD OBSERVATIONS new well. good condition, missing lock. purge w/ bladder pump

1x borehole = 14 gal, 5x borehole = 70 gal
15 min = 10 gal

Monitoring Well Development
Project # 0132326
Environmental Resources Management

Date: 12/16/13
Set up time: 11:20
Weather: Foggy, 10s
Field Staff: K. Benson

WELL # MW-19B

Construction Depth (ft TOC): 33.5 ft BGS	Water column (ft): 32.90
Construction Materials: 2-in. PVC Pre-Pack	Casing inside radius (ft): 0.0833 (1 inch)
Screened Interval (ft TOC): 33.5-23.5 ft BGS	Casing volume (ft^3): ~~0.73~~ 0.70
Pump Intake Depth (ft TOC):	Saturated thickness of sand pack (ft): 13.5 ft (top of sand 20 ft BGS)
Initial depth to water (ft TOC): 3.00	Borehole radius (ft):
Final depth to water (ft TOC): 6.97	Casing outside radius (ft):
Initial total depth (ft TOC): 35.90	Annular volume (ft^3):
Final total depth (ft TOC): 35.90	Water added during well drilling/construction (gal): 30 gal
Final total depth (ft TOC):	Total purge volume (gal): 165

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
11:55	2800	0	4.70	10.19	7.94	69,700	5.76	-350	0.0	Silty, grey
12:05		15	12.06	11.79	7.83	76,400	6.15	-361	667	Slightly cloudy, grey
12:16		30	15.21	11.67	7.81	77,200	6.21	-350	101	clear, no color, sulfur odor
12:27		45	14.36	11.23	7.82	78,400	6.42	-361	92.1	
12:38		60	15.21	12.12	7.84	78,900	6.42	-355	89.3	
12:50		85	16.31	11.42	7.79	79,800	6.48	-352	88.8	
13:01		90	15.14	11.73	7.86	79,000	7.14	-352	88.3	
13:12		105	14.70	11.67	7.73	79,000	6.27	-359	32.9	
13:24		120	14.60	11.97	7.70	79,400	6.73	-352	15.3	
13:35		135	16.18	11.99	7.72	80,600	6.45	-351	12.4	
13:48		150	15.20	11.53	7.70	80,800	6.45	-352	7.3	
14:10		165	15.70	12.41	7.71	80,100	6.37	-352	7.2	

FIELD OBSERVATIONS new well, good condition, missing lock & well plug. Frozen at top of water column, push ice plug down and let melt before purging. Purged with bladder pump.

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/11/13
Set up time: 1220
Weather: clear, cold 20°
Field Staff: D. deBoer

WELL # MW-20A

Construction Depth (ft TOC):	Water column (ft): 6.44
Construction Materials: 2" PVC	Casing inside radius (ft): 0.83
Screened Interval (ft TOC):	Casing volume (ft³): 0.14
Pump Intake Depth (ft TOC): 19.25, 20.0'	Saturated thickness of sand pack (ft):
Initial depth to water (ft TOC): 13.78	Borehole radius (ft): 0.33
Final depth to water (ft TOC): 13.84	Casing outside radius (ft):
Initial total depth (ft TOC): 19.94 + 0.28 = 20.22 (soft bottom)	Annular volume (ft³):
Final total depth (ft TOC): 19.96 + 0.28 = 20.24 (hard bottom)	Water added during well drilling/construction (gal): 0 gal
Final total depth (ft TOC):	Total purge volume (gal): 35 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1222	2400	0	13.94	14.34	6.16	96400	1.71	-71	max	silty grey
1228		5	13.90	15.50	6.02	96500	7.26	-57	870	"
1234		10	13.84	15.33	6.05	96200	1.51	-54	448	"
1242		15	13.84	16.28	6.00	95600	1.41	-51	226	"
1250		20	13.82	15.93	6.24	69100	0.25	-60	max	silty grey, lower pump
1258		25	13.84	15.71	6.06	92900	1.65	-57	220	cloudy grey
1306		30	13.84	15.95	6.08	94300	1.42	-52	247	"
1314	↓	35	13.86	16.09	6.09	93900	1.32	-54	269	"

FIELD OBSERVATIONS new well, good condition, missing lock, purged w/ bladder pump
8 min purge = 5 gal
1x borehole vol = 5.8 gal
5x borehole = 29 gal

Monitoring Well Development
Project # 0132326
Environmental Resources Management

Date: 12/11/13
Set up time: 0725
Weather: Clear, Cold, -2°
Field Staff: DeBoer

WELL # MW-20B

Construction Depth (ft TOC):		Water column (ft):	18.77
Construction Materials:	2" PVC	Casing inside radius (ft):	0.083
Screened Interval (ft TOC):		Casing volume (ft³):	0.41
Pump Intake Depth (ft TOC):	37.75	Saturated thickness of sand pack (ft):	
Initial depth to water (ft TOC):	13.41	Borehole radius (ft):	0.33
Final depth to water (ft TOC):	21.74	Casing outside radius (ft):	
Initial total depth (ft TOC):	31.90 + 0.28 = 32.18 (soft bottom)	Annular volume (ft³):	
Final total depth (ft TOC):	31.98 + 0.28 = 32.26	Water added during well drilling/construction (gal):	30
Final total depth (ft TOC):		Total purge volume (gal):	180

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
0815	2800	0	19.63	17.53	6.74	61200	6.61	-47	max	silty grey
0835		15	23.10	15.56	6.18	98600	1.16	-12	max	"
0850		30	25.80	15.15	6.07	12600	1.13	-32	294	silty grey EC diluted 10x
0915		45	26.30	14.90	5.99	13400	0.96	-48	20.3	clear, EC diluted 10x
0935		60	26.62	14.64	5.99	13500	0.74	-52	2.9	" "
0955		75	26.71	15.03	5.98	13900	1.08	-57	0.0	" "
1015		90	26.80	14.55	6.00	13700	0.85	-51	3.6	" "
1035		105	26.93	14.82	6.01	14100	0.90	-58	7.4	" "
1055		120	27.12	14.67	5.95	13800	0.76	-61	17.8	" "
1115		135	27.05	14.76	5.93	13200	0.89	-59	0.6	" "
1135		150	27.20	15.11	5.91	13000	0.70	-71	8.0	" "
1155		165	27.16	15.22	5.90	13760	0.64	-69	7.6	" "
1215	↓	180	27.30	15.21	5.89	13200	0.72	-73	4.3	" "

FIELD OBSERVATIONS new well, good condition, missing lock & well plug. Purged w/ bladder pump

20 min purge = 15 gal

1x borehole = ~16.9 gal

min. purge vol = 5x borehole + 3x H_2O added

= 5(16.9) + 3(30) = 175 gal

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/5/13
Set up time: 1345
Weather: Clear, 19°
Field Staff: D. deBoer

WELL # MW-04A

Construction Depth (ft TOC):	17.56	Water column (ft):	8.37'
Construction Materials:	2.5" PVC	Casing inside radius (ft):	0.104'
Screened Interval (ft TOC):	4-14' bgs	Casing volume (ft³):	0.28'
Pump Intake Depth (ft TOC):	15.75'	Saturated thickness of sand pack (ft):	8.37'
Initial depth to water (ft TOC):	8.35	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	8.40	Casing outside radius (ft):	
Initial total depth (ft TOC):	16.44 + 0.28 = 16.72'	Annular volume (ft³):	
Final total depth (ft TOC):	16.50 + 0.28 = 16.78'	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	32 gallons

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1355	2500	0	8.53	14.86	6.27	73100	1.99	-149	max	cloudy, brown
1407	↓	8	8.62	16.18	6.00	65600	3.08	-168	23.3	tinted brown,
1419		16	8.60	16.45	5.96	54600	2.17	-168	7.4	clear, no odor
1431		24	8.60	16.38	5.98	54800	2.10	-165	3.1	" "
1443		32	8.62	16.48	6.00	55000	1.99	-165	0.6	" "

FIELD OBSERVATIONS well in good condition, purged w/ bladder pump
1x borehole volume = ~ 8.0 gal
12 min purge = 8 gal

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date:	12/4/13
Set up time:	1445
Weather:	Clear, cool, 25°
Field Staff:	D.ckBoe

WELL # MW-05A

Construction Depth (ft TOC):	22.62'	Water column (ft):	9.77'
Construction Materials:	2.5" PVC	Casing inside radius (ft):	0.104
Screened Interval (ft TOC):	8-18' bgs	Casing volume (ft^3):	0.33ft
Pump Intake Depth (ft TOC):	19.75'	Saturated thickness of sand pack (ft):	9.77'
Initial depth to water (ft TOC):	11.02	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	11.04	Casing outside radius (ft):	
Initial total depth (ft TOC):	20.51 + 0.28 = 20.79	Annular volume (ft^3):	
Final total depth (ft TOC):	20.56 + 0.28 = 20.84	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	40 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1455	2500	0	11.16	12.26	6.77	75800	0.43	-89	max	black, septic odor
1510	↓	10	11.16	13.34	6.66	68500	NM	-138	128	grey, septic odor
1525		20	11.16	13.90	6.58	68700	1.60	-137	29.3	" "
1540		30	11.16	13.70	6.71	68700	2.76	-131	87.1	" "
1555		40	11.16	13.65	6.67	69100		-123	86.0	" "

FIELD OBSERVATIONS well in good condition, lock severely corroded, cut prior to development, purged w/ bladder pump

1 borehole volume = ~ 9.3 gal

15 min = 10 gal purge

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/5/13
Set up time: 1220
Weather: clear, 17°
Field Staff: D. de Boer

WELL # MW-06

Construction Depth (ft TOC):	22.79'	Water column (ft):	8.79'
Construction Materials:	2.5" PVC	Casing inside radius (ft):	0.104'
Screened Interval (ft TOC):	7-17' bgs	Casing volume (ft^3):	0.30'
Pump Intake Depth (ft TOC):	18.0	Saturated thickness of sand pack (ft):	8.79'
Initial depth to water (ft TOC):	10.15	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	10.20	Casing outside radius (ft):	
Initial total depth (ft TOC):	18.66 + 0.28' = 18.94	Annular volume (ft^3):	
Final total depth (ft TOC):	18.70 + 0.28 = 18.94'	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	32 gal.

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1231	2500	0	10.36	13.76	6.84	54900	1.63	-243	max	black, septic odor
1243	↓	8	10.43	14.20	6.86	40400	1.43	-277	15.1	black tint, septic odor.
1255		16	10.43	13.47	6.82	40500	1.25	-286	14.0	" "
1307		24	10.42	13.04	6.95	40700	1.51	-282	23.3	" "
1319		32	10.46	12.87	6.93	40600	1.64	-288	24.9	" "

FIELD OBSERVATIONS well in good condition, purged w/ bladder pump.

1x borehole volume = ~ 8.4 gal.

12 min purge = 8 gal

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/5/13
Set up time: 1035
Weather: Cloudy, 7°
Field Staff: D. de Boer

WELL # MW-07

Construction Depth (ft TOC):	22.59	Water column (ft):	8.30'
Construction Materials:	2.5" PVC	Casing inside radius (ft):	0.104'
Screened Interval (ft TOC):	7.5-17.5' bgs	Casing volume (ft^3):	0.28
Pump Intake Depth (ft TOC):	18.50	Saturated thickness of sand pack (ft):	8.30
Initial depth to water (ft TOC):	11.32	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	11.38'	Casing outside radius (ft):	
Initial total depth (ft TOC):	19.34 + 0.28' = 19.62	Annular volume (ft^3):	
Final total depth (ft TOC):	19.37 + 0.28 = 19.65	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	40 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1045	2500	0	11.36	12.66	6.82	30700	2.01	-131	738	black, septic odor
1057	↓	8	11.40	14.60	6.38	42100	2.22	-308	92.6	" "
1109		16	11.46	15.17	6.39	42700	0.82	-331	91.5	" "
1121		24 air compressor gets wet and stops.								
1140	- resume purging									
1145	2500	24	11.40	15.44	6.45	42500	1.05	-327	35.2	black tint, septic odor
1157	↓	32	11.38	15.40	6.44	42100	1.24	-320	49.3	" "
1209	↓	40	11.38	15.32	6.44	41800	1.13	-325	34.6	" "

FIELD OBSERVATIONS well in good condition, purged using bladder pump.

1x borehole vol = ~7.9 gal

12 min = 8 gal

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/6/13
Set up time: 0745
Weather: Clear, cold. 60°
Field Staff: D. deBoer

WELL # MW-08A

Construction Depth (ft TOC):	26	Water column (ft):	10.80'
Construction Materials:	2.5" PVC	Casing inside radius (ft):	0.104'
Screened Interval (ft TOC):	6-21' bgs	Casing volume (ft^3):	0.37 ft^3
Pump Intake Depth (ft TOC):	21.25'	Saturated thickness of sand pack (ft):	
Initial depth to water (ft TOC):	10.48	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	10.32	Casing outside radius (ft):	
Initial total depth (ft TOC):	22.00 + 0.28 = 22.28'	Annular volume (ft^3):	
Final total depth (ft TOC):	22.12 + 0.28 = 22.40	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	50

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
0905	2500	0	10.50	7.36	6.32	82300	1.34	-188	max	silty grey
0920	↓	10	10.65	10.99	6.23	72500	2.16	-148	314	" "
0935		20	10.48	11.53	6.02	69700	2.89	-110	74.6	tinted grey
0950		30	10.46	9.21	6.17	74100	1.69	-88	max	black
1005		40	10.48	11.39	5.98	67500	1.54	-113	110	black tint
1020	↓	50	10.50	10.99	6.00	66500	1.53	-113	930	" "
										Note: wearing respirator, cannot detect odor

FIELD OBSERVATIONS well good condition, lock corroded had to cut, purged w/ bladder pump.

1x borehole vol = 10.26

15 min = 10 gal purged

* wearing 1/2 face respirator, cannot detect water odor *

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/6/13
Set up time: 1030
Weather: cloudy, 12°
Field Staff: D. deBoer

WELL # MW-08B

Construction Depth (ft TOC):		Water column (ft):	29.56'
Construction Materials:	2.5" PVC	Casing inside radius (ft):	0.104'
Screened Interval (ft TOC):	27-37' bgs	Casing volume (ft^3):	1.00 ft^3
Pump Intake Depth (ft TOC):	38.40'	Saturated thickness of sand pack (ft):	14'
Initial depth to water (ft TOC):	9.88	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	22.16	Casing outside radius (ft):	
Initial total depth (ft TOC):	39.16 + 0.28' = ~~39.~~ 39.44	Annular volume (ft^3):	1.32
Final total depth (ft TOC):	39.18 + 0.28' = 39.46	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	72 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1030	3406	0	9.90	8.51	7.09	92500	1.63	-295	MAX	silty grey
1050	↓	18	~~21.46~~	10.57	7.05	84800	1.87	-293	334	"
1110		36	21.46	10.41	7.13	87300	1.81	-302	46.8	tinted grey,
1130		54	22.13	11.27	7.13	88500	1.71	-305	22.7	"
1150	↓	72	23.18	11.65	7.15	88100	1.70	-305	9.1	"
										wearing respirator, cannot detect odor

FIELD OBSERVATIONS lock corroded, cut prior to development - purged w/ bladder pump.

$V_c = \pi (0.104^2) 29.56 = 1.00$

Sand pack 24 - 38' bgs (~ 26-40' TOC): 14' filter pack

$V_a = \pi (0.333^2 - 0.104^2) 14 = 4.4 ft^3 \times 0.3 = 1.32 ft^3$

1 borehole vol = ~ 17.35 gal

20 min = 18 gal

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/2/13
Set up time: 1423
Weather: Cloudy, 59°
Field Staff: P. deBoer, ERM

WELL # PZ-01

Construction Depth (ft TOC): 19.2
Construction Materials: 2" PVC
Screened Interval (ft TOC): ~~10-20'~~ PJ 9.2-19.2' bgs
Pump Intake Depth (ft TOC):
Initial depth to water (ft TOC): 12.40
Final depth to water (ft TOC):
Initial total depth (ft TOC): 20.30 + 0.28' = 20.58'
Final total depth (ft TOC):
Final total depth (ft TOC):

Water column (ft): 8.18
Casing inside radius (ft): 0.0833'
Casing volume (ft^3): 0.178
Saturated thickness of sand pack (ft): 8.18
Borehole radius (ft): 0.333'
Casing outside radius (ft): 0.0885'
Annular volume (ft^3): 2.671
Water added during well drilling/construction (gal): N/A
Total purge volume (gal):

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments

FIELD OBSERVATIONS Pad, vault, ~~casing~~ in good condition. Missing lock, casing has a bend @ ~4' TOC, bladder pump will not go past.

$V_c = \pi r^2 h = \pi(0.0833^2)8.18 = 0.178\ ft^3$

$V_a = \pi(0.333^2 - 0.0885^2)8.18 =$

$(0.111 - 0.007)$

$\pi(0.104)8.18 = 2.671$

$V_t = 5(0.178 + [2.671 \times 0.3]) \times 7.48 =$ ~~23 gal~~ 36.6 gal PJ ; 1 vol = 7.3 gal ~~1 vol ≈ 4.6 gal~~ PJ

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 1/24/14
Set up time: 10:45
Weather: Clear, 80°
Field Staff: PB, TH

WELL # PZ - 01

Construction Depth (ft TOC): 19.5	Water column (ft): 5.65
Construction Materials: 2" PVC	Casing inside radius (ft):
Screened Interval (ft TOC):	Casing volume (ft^3): 3.69
Pump Intake Depth (ft TOC): 19.5	Saturated thickness of sand pack (ft):
Initial depth to water (ft TOC): 13.85	Borehole radius (ft):
Final depth to water (ft TOC):	Casing outside radius (ft):
Initial total depth (ft TOC): 19.5	Annular volume (ft^3):
Final total depth (ft TOC):	Water added during well drilling/construction (gal):
Final total depth (ft TOC): 17.25	Total purge volume (gal): 20

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
10:55	1500	0		13.75	5.39	97000	6.30	174	0.0	Silty, brownish grey
11:00		3		14.08	5.75	97800	6.41	147	759	
11:05		6		14.24	6.08	99500	2.81	133	443	
11:10		9		14.22	6.22	98900	5.78	141	225	Clear, yellowish color
11:15		12		14.64	6.33	97400	5.72	124	198	
11:25		15		14.32	6.37	97100	4.54	117	174	
11:30		18		14.43	6.45	98000	3.21	116	70.3	
11:35		20		14.30	6.50	98100	2.98	106	58.2	

FIELD OBSERVATIONS

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/2/13
Set up time: 1000
Weather: Cloudy, cool, 49°
Field Staff: D. deBoer

WELL # PZ-4

Construction Depth (ft TOC):	20.75'	Water column (ft):	10.42'
Construction Materials:	2" PVC	Casing inside radius (ft):	0.0833'
Screened Interval (ft TOC):	6.5-16.5' bgs	Casing volume (ft³):	0.23
Pump Intake Depth (ft TOC):	18.75'	Saturated thickness of sand pack (ft):	10.42
Initial depth to water (ft TOC):	9.34'	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	9.39'	Casing outside radius (ft):	
Initial total depth (ft TOC):	19.48' + 0.28' = 19.76'	Annular volume (ft³):	
Final total depth (ft TOC):	19.52 + 0.28 = 19.80'	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	70 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1105	1750	0	9.32	14.26	6.28	96400	5.43	185	905	turbid grey
1127		10	9.36	14.64	6.30	15800	1.90	186	120	EC diluted 10x
1149		20	9.35	14.63	6.34	16000	1.96	189	20.5	" " "
1211		30	9.36	14.69	6.54	14600	1.98	185	17.5	" " "
1234		40	9.38	14.70	6.59	15900	1.63	180	9.1	" " "
1256		50	9.38	14.65	6.42	16600	1.49	175	6.0	" " "
1320		60	9.35	14.51	6.42	15500	1.50	170	9.9	" " "
1345		70	9.40	14.82	6.43	15800	1.59	168	9.8	" " "

FIELD OBSERVATIONS well in good condition, purged w/ bladder pump
1 borehole = 9.4 gal

minimum purge volume 5x borehole
→ correction: as per SOP, redevelopment = 3x borehole minimum.

Monitoring Well Development
Project # 6132320
Environmental Resources Management

Date: 2/4/13
Set up time: 0940
Weather: Clear, cold, 15°
Field Staff: D. deBoer

WELL # 02-06

Construction Depth (ft TOC):	17.68'	Water column (ft):	6.61
Construction Materials:	2" PVC	Casing inside radius (ft):	0.0833'
Screened Interval (ft TOC):	3.5-13.5' bgs	Casing volume (ft^3):	0.14 ft^3
Pump Intake Depth (ft TOC):	16.30	Saturated thickness of sand pack (ft):	6.61
Initial depth to water (ft TOC):	10.71	Borehole radius (ft):	0.333
Final depth to water (ft TOC):	11.22	Casing outside radius (ft):	
Initial total depth (ft TOC):	17.04 + 0.28' = 17.32'	Annular volume (ft^3):	
Final total depth (ft TOC):	17.04 + 0.28' = 17.32'	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	24 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
0952	2300	0	11.54	6.32	6.25	89200	2.09	-21	764	black, septic odor
1002	↓	6	11.68	10.44	6.56	97500	1.10	-85	19.7	black particles, septic odor
1012		12	11.50	11.54	6.57	98300	2.07	-90	18.4	" " "
1022		18	11.28	11.86	6.58	99000	0.95	-100	16.0	" " "
1032	↓	24	11.26	11.97	6.55	99000	0.90	-101	12.2	" " "

FIELD OBSERVATIONS well in good condition, purged w/ bladder pump
1 borehole vol = ~6 gal
10 min = 6 gal

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/3/13
Set up time: 1210
Weather: Snow, 30°
Field Staff: D. deBoer

WELL # PZ-08

Construction Depth (ft TOC):	17.81'	Water column (ft):	10.82'
Construction Materials:	2.5" pvc	Casing inside radius (ft):	0.104'
Screened Interval (ft TOC):	3.5-13.5' bgs	Casing volume (ft³):	0.37'
Pump Intake Depth (ft TOC):	15.25'	Saturated thickness of sand pack (ft):	10.82
Initial depth to water (ft TOC):	5.42	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	5.28	Casing outside radius (ft):	
Initial total depth (ft TOC):	15.96 +0.28' = 16.24'	Annular volume (ft³):	
Final total depth (ft TOC):	15.96 +0.28' = 16.24'	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	40 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1214	2400	0	5.34	8.45	5.76	62900	1.95	8	max	grey, septic odor
1230	↓	10	5.45	11.06	5.75	63200	NM	-10	10.6	clear, septic odor
1246		20	5.49	11.76	5.83	63406	2.59	-20	2.0	" "
1302		30	5.30	12.18	5.80	63300	4.74	-13	1.5	" "
1318	↓	40	5.38	12.12	5.79	62900	4.67	-15	1.2	" "

FIELD OBSERVATIONS well in good condition., purged w/ bladder pump
~ 10.25 / borehole volume.
16 min = 10 gal

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/3/13
Set up time: 1035
Weather: Snow, 27°
Field Staff: D. deBoer

WELL # P2-10

Construction Depth (ft TOC):	17.73	Water column (ft):	11.07'
Construction Materials:	2.5" PVC	Casing inside radius (ft):	0.104'
Screened Interval (ft TOC):	4-14' bgs	Casing volume (ft^3):	0.37'
Pump Intake Depth (ft TOC):	16'	Saturated thickness of sand pack (ft):	~~16.92~~ 11.07
Initial depth to water (ft TOC):	5.85	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	6.32	Casing outside radius (ft):	
Initial total depth (ft TOC):	16.64 + 0.28 = 16.92	Annular volume (ft^3):	
Final total depth (ft TOC):	16.64 + 0.28 = 16.92	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	40 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1043	3500	0	6.03	6.40	6.24	5780	7.3	[illegible]	418	black particulates
1059	↓	10	6.32	9.70	5.87	57400	[illegible]	-40	22.7	clear, slight septic odor
1115		20	6.28	10.49	6.11	57500	1.29	-41	12.3	" "
1131		30	6.30	10.73	6.11	57100	2.11	-4[illegible]	9.9	" "
1147		40	6.28	10.49	6.09	570[illegible]0	2.15	-39	8.6	" "

FIELD OBSERVATIONS well in good condition, purged w/ bladder pump

1x borehole ≈ ~~[illegible]~~ 10.5 gal

16 min / 5 gal

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/4/13
Set up time: 0745
Weather: Clear, cold, 11°
Field Staff: D. deBoer

WELL # PZ-12

Construction Depth (ft TOC):	17.59	Water column (ft):	9.66
Construction Materials:	2.5" PVC	Casing inside radius (ft):	0.104'
Screened Interval (ft TOC):	4-14' bgs	Casing volume (ft³):	0.33
Pump Intake Depth (ft TOC):	15.75'	Saturated thickness of sand pack (ft):	
Initial depth to water (ft TOC):	7.14	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	7.18	Casing outside radius (ft):	
Initial total depth (ft TOC):	16.52 + 0.28' = 16.80'	Annular volume (ft³):	
Final total depth (ft TOC):	16.54 + 0.28' = 16.82'	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	36 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
0810	2500	0	7.26	2.52	5.85	55800	1.51	2	514	black, septic odor
0824	↓	9	7.30	6.83	5.69	60400	2.80	-14	26.5	grey tint, septic odor
0838		18	7.31	8.62	5.76	58100	3.08	-15	29.1	" "
0852		27	7.30	8.37	5.77	57200	3.40	-12	28.7	" "
0906		36	7.30	8.68	5.77	57400	3.37	-16	28.4	" "

FIELD OBSERVATIONS Lock corroded, cut prior to development, purged w/ bladder pump
1 borehole volume = 9.2 gal
14 min = 9 gal purge

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/3/13
Set up time: 0840
Weather: Cold, 25°, snow
Field Staff: D. deBoer

WELL # PZ-16

Construction Depth (ft TOC):	17.89	Water column (ft):	11.40
Construction Materials:	2.5" PVC	Casing inside radius (ft):	0.104
Screened Interval (ft TOC):	4-14' bgs	Casing volume (ft³):	0.39'
Pump Intake Depth (ft TOC):	15.75'	Saturated thickness of sand pack (ft):	11.40
Initial depth to water (ft TOC):	5.38'	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	5.55'	Casing outside radius (ft):	
Initial total depth (ft TOC):	16.50 + 0.28 = 16.78	Annular volume (ft³):	
Final total depth (ft TOC):	16.52 + 0.28 = 16.80	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	40 gallons

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
0855	2-700	0	5.68	6.21	6.49	71600	4.56	-11	max	septic odor, grey
0909	↓	10	5.47	11.18	6.20	69300	3.20	-48	15.6	" clear
0923		20	5.54	11.64	6.07	68500	1.68	-68	15.1	" clear
0937		30	5.49	11.69	6.16	68700	2.14	-71	2.5	" clear
0951	↓	40	5.60	11.64	6.10	68400	2.19	-69	2.4	" clear

FIELD OBSERVATIONS well in good condition, purged w/ bladder pump.
1 borehole = 10.25 gal

Monitoring Well Development
Project # G132320
Environmental Resources Management

Date: 12/2/13
Set up time: 1510
Weather: Cloudy, 56°
Field Staff: D. [illegible]

WELL # PZ-18

Construction Depth (ft TOC):	19.68'	Water column (ft):	9.90
Construction Materials:	2" PVC	Casing inside radius (ft):	0.0833'
Screened Interval (ft TOC):	3.3-13.3' bgs	Casing volume (ft^3):	0.22
Pump Intake Depth (ft TOC):	15.25'	Saturated thickness of sand pack (ft):	9.90
Initial depth to water (ft TOC):	6.32	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	7.14	Casing outside radius (ft):	
Initial total depth (ft TOC):	15.94 + 0.28 = 16.22'	Annular volume (ft^3):	
Final total depth (ft TOC):	15.94 + 0.28 = 16.22'	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	~~[illegible]~~ 45 gallons

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	±1 Temp. (°C)	±0.1 pH	±3% EC (uS/cm)	±10% DO (mg/L)	±10% ORP (mV)	±10% Turbidity (NTU)	Comments
1523	2100	0	~~9.96~~ 6.32	13.15	7.13	15400	1.69	-370	max	septic odor, dilute EC 10x
1539		9	10.12	12.85	6.82	98000	1.60	-293	29.9	septic odor, black tint
1555		18	9.90	12.35	6.74	16000	1.54	-322	10.9	" dilute EC 10x
1613		27	9.90	12.44	6.64	16300	1.58	-300	12.4	" "
1631		36	10.10	12.52	6.63	16000	1.56	-303	11.9	" "
1649		45	9.95	12.29	6.63	16200	1.53	-307	10.0	" "

FIELD OBSERVATIONS well in good condition, purged w/ bladder pump.
5x borehole = 45 gal, 1 borehole ~ 9 gal
3x borehole = 27 gal

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/5/13
Set up time: 0745
Weather: clear, cold, 9°
Field Staff: D. deBoer

WELL # PZ-22

Construction Depth (ft TOC):	17.82'	Water column (ft):	9.96'
Construction Materials:	2.5" PVC	Casing inside radius (ft):	0.104
Screened Interval (ft TOC):	3-13' bgs	Casing volume (ft^3):	0.34'
Pump Intake Depth (ft TOC):	14.75'	Saturated thickness of sand pack (ft):	9.96'
Initial depth to water (ft TOC):	5.82	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	5.84	Casing outside radius (ft):	
Initial total depth (ft TOC):	15.50 + 0.28 = 15.78 (soft bottom)	Annular volume (ft^3):	
Final total depth (ft TOC):	15.58 + 0.28 = 15.86 (hard bottom)	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	40 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
0750	2500	0	5.86	10.12	6.28	99600	0.78	-59	max	silty grey, lots of silt
0805	↓	10	5.87	10.81	6.37	13600	1.26	-66	max	" " dilute EC 10x
0820		20	5.87	11.42	6.45	14200	1.35	-71	623	cloudy grey, septic, dilute EC 10x
0835		30	5.87	12.52	6.53	14600	0.38	-77	269	septic odor, dilute EC 10x
0850		40	5.87	12.23	6.57	14900	0.46	-74	180	" " "

FIELD OBSERVATIONS well in good condition, purged w/ bladder pump.
1 borehole volume = ~9.5 gal, 3x ≈ 30 gal
15 min = 10 gal purged

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/4/13
Set up time: 1320
Weather: Clear, 20°
Field Staff: D. deBoer

WELL # PZ-24

Construction Depth (ft TOC):	17.71	Water column (ft):	11.36'
Construction Materials:	2.5" PVC	Casing inside radius (ft):	0.104
Screened Interval (ft TOC):	3-13' bgs	Casing volume (ft^3):	0.39'
Pump Intake Depth (ft TOC):	~14.75	Saturated thickness of sand pack (ft):	11.36'
Initial depth to water (ft TOC):	4.46	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	4.50	Casing outside radius (ft):	
Initial total depth (ft TOC):	15.54 + 0.28 = 15.82	Annular volume (ft^3):	
Final total depth (ft TOC):	15.54 + 0.28 = 15.82	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	40 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1325	2500	0	4.46	9.85	6.56	93200	0.68	-60	max	silty grey, no odor
1340	↓	10	4.50	11.06	6.29	91400	1.44	-59	max	silty grey, C/2 odor
1355		20	4.86	12.49	6.23	89800	1.89	-49	104	" "
1410		30	4.96	13.45	6.17	88600	1.16	-65	18.6	clear, C/2 odor
1425	↓	40	4.85	13.62	6.17	87000	1.11	-68	18.2	" "

FIELD OBSERVATIONS missing well plug, lock corroded, had to cut., purged w/ bladder pump
1x borehole volume = 10.8 gal
15 min = 10 gal purge

Monitoring Well Development
Project # 0132320
Environmental Resources Management

Date: 12/3/13
Set up time: 1410
Weather: Snow, 25°
Field Staff: D. deBoer

WELL # PZ-26

Construction Depth (ft TOC):	17.59'	Water column (ft):	10.30'
Construction Materials:	2.5" PVC	Casing inside radius (ft):	2.5" 0.104'
Screened Interval (ft TOC):	3.5-13.5' bgs	Casing volume (ft^3):	0.35'
Pump Intake Depth (ft TOC):	15.50'	Saturated thickness of sand pack (ft):	10.30'
Initial depth to water (ft TOC):	6.14	Borehole radius (ft):	0.333'
Final depth to water (ft TOC):	6.08	Casing outside radius (ft):	
Initial total depth (ft TOC):	16.16 + 0.28 = 16.44	Annular volume (ft^3):	
Final total depth (ft TOC):	16.16 + 0.28 = 16.44	Water added during well drilling/construction (gal):	N/A
Final total depth (ft TOC):		Total purge volume (gal):	40 gal

Time	Purge Rate (mL/min)	Volume Removed (gallons)	Depth to Water (ft TOC)	Temp. (°C)	pH	EC (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Comments
1421	~~1200~~ 2400	0	6.16	4.35	6.12	65900	7.46	-20	max	silty brown, Cl odor
1437	↓	10	6.12	9.18	5.91	66800	2.46	-10	22.3	clear, Cl odor
1453		20	6.15	10.71	5.90	68000	1.92	-10	3.5	" "
1509		30	6.14	10.38	5.93	65800	1.73	-26	4.1	" "
1525		40	6.14	10.46	6.01	65700	1.61	[illegible]	[illegible]	" "

FIELD OBSERVATIONS Lock rusted, had to cut. Well in good condition., purged w/ bladder pump.

1 borehole volume ~ 9.8 gal

16 min = 10 gal

purge rate ~ 2400 mL/min

Appendix D-4
Groundwater Sampling Forms

Groundwater Sampling Form ERM
Page 1

1. Site Information		**2. Description**	
WELL ID	LF-01	Description (Well Condition, Evidence of Tampering):	
DATE	2/17/14		
Begin Sampling Time	9:15		
End Sampling Time	10:25	Total Well Depth	20.27
ERM Samplers	KB, GR	Screen Interval	5.8-15.8
EPA Oversight	Aaron Baird	Static Water Depth	8.4 Time
Weather	Clear, 30s	Measuring Point	N. Side
		Sample Tubing Intake Depth	5' from bottom

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
9:18	8.15	2000	FW	12.57	40.1	3.22	7.63	266	50.7	Clear, slightly brown
9:21	8.15	1800	1.5	14.23	43.1	0.00	7.15	-71	11.3	Clear, No color
9:24			3	14.29	44.0	0.0	7.15	-88	7.6	
9:27			5.5	14.40	44.0	0.0	7.16	-94	6.7	
9:30			7	14.51	44.1	0.0	7.17	-97	5.2	
9:33			9.5	14.48	44.0	0.0	7.17	-97	5.1	

Additional Remarks

Groundwater Sampling Form
Page 2

ERM

WELL ID LF-01 DATE 2/17/14

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check Pos / Neg (circle)

# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement

pH test strip (s.u.) 6.0

Cl_2 test strip (mg/L) 0.0

LR Result (mg/L) 0.00

HR Result (mg/L) ______ Dilution ______

Observations (Yellow color, pink color fades)

Cyanide Analysis

pH adjustment req Y / N (circle)

drops NaOH to bring pH>12 100 - pH 11.5

Initial Cl_2 check Pos / Neg (circle)

# of drops $NaAsO_2$ reqd. ______

Observations (Precipitate, color)

Cr(VI) Analysis

pH of preserved sample: 9.3

5. Sample Description

Color —

Turbidity 5.1

Solids —

Sample ID/Time LF-01-01-021714 @ 9:15

Sheen —

Odor —

Reactivity —

Bottles Filled

___ 40-mL VOA (HCl)

___ 125-mL HDPE [$(NH_4)_2SO_4$]

___ 250-mL HDPE ($NaAsO_2$)

___ 250-mL Amber (NH_4Cl)

___ 250-mL HDPE (FF unpres 2/3-full)

___ 500-mL HDPE (H_2SO_4)

___ 1-L Amber (unpres)

___ 1-L HDPE (unpres)

___ 1-L HDPE, FF (HNO_3)

___ 1-L HDPE (HNO_3)

6. Water Quality Parameters

Temp (°C) 14.48

pH (s.u.) 7.17

Conductivity (mS/cm) 44.0

DO (mg/L) 0.0

ORP (mV) -97

Turbidity (NTU) 5.1

Meter Type: Horiba

S/N:

Calibration Date: 2/17/14

Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 2/17/14

Groundwater Sampling Form
Page 1

ERM

1. Site Information

WELL ID LF-03
DATE 2/17/14
Begin Sampling Time 11:15
End Sampling Time
ERM Samplers KB, GR
EPA Oversight Aaron Baird
Weather Clear

2. Description

Description (Well Condition, Evidence of Tampering):

Total Well Depth 15.24
Screen Interval 2-12
Static Water Depth 4.45 Time 11:15
Measuring Point N. Side
Sample Tubing Intake Depth 5' from bottom

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
11:21	4.45	1800	FW	10.97	80.8	3.44	7.29	-63	18.9	Clear, No color
11:24	4.45	1800	1.0	14.46	84.7	0.0	6.94	-87	17.1	
11:27			2.5	14.51	84.5	0.0	6.89	-102	18.1	
11:30			4	14.48	84.5	0.0	6.89	-113	13.7	
11:33			5.5	14.52	84.6	0.0	6.89	-118	8.5	
11:36			7.0	14.51	84.6	0.0	6.89	-121	6.5	
11:39			8.5	14.52	84.5	0.0	6.89	-121	7.6	

Additional Remarks

Trip Blank - LF-03-21-021714@11:16

Groundwater Sampling Form
Page 2

ERM

WELL ID LF-03 **DATE** 2/7/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement
pH test strip (s.u.) 6.0
Cl_2 test strip (mg/L) 0.0
LR Result (mg/L) 0.00
HR Result (mg/L) ______ Dilution ______
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 100 - pH 11.5
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. ______
Observations (Precipitate, color)

Cr(VI) Analysis
pH of preserved sample: 9.0

5. Sample Description

Color —
Turbidity 7.6
Solids —
Sample ID/Time LF-03-01-021714@1115

Sheen —
Odor —
Reactivity —

Bottles Filled
___ 40-mL VOA (HCl)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE ($NaAsO_2$)
___ 250-mL Amber (NH_4Cl)
___ 250-mL HDPE (FF unpres 2/3-full)
___ 500-mL HDPE (H_2SO_4)
___ 1-L Amber (unpres)
___ 1-L HDPE (unpres)
___ 1-L HDPE, FF (HNO_3)
___ 1-L HDPE (HNO_3)

6. Water Quality Parameters

Temp (°C) 14.52
pH (s.u.) 6.89
Conductivity (mS/cm) 8.45
DO (mg/L) 0.00
ORP (mV) -121
Turbidity (NTU) 7.6

Meter Type: Horiba
S/N:
Calibration Date: 2/17/14
Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______

EPA Split Samples Y / N (circle)
Analyses ______

Signature ______ Date 2/17/14

Groundwater Sampling Form ERM
Page 1

1. Site Information		**2. Description**	
WELL ID	MW-13A	Description (Well Condition, Evidence of Tampering):	good
DATE	2/4/14		
Begin Sampling Time	1050		
End Sampling Time	1130	Total Well Depth	11.04
ERM Samplers	Trent Hamada / Lonnie Mercer	Screen Interval	2.5-7.5' btoc
EPA Oversight	Aaron Baird	Static Water Depth	7.55 Time 1015
Weather	Cloudy, Cold (25°F)	Measuring Point	north side of casing
		Sample Tubing Intake Depth	9' btoC

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
1017	7.67	500	0.4	5.91	52.9	1.48	5.87	+106	99.3	
1021	7.65	500	0.9	5.44	54.0	0.74	5.78	+99	80.3	
1025	7.63	500	1.3	5.06	54.7	0.46	5.75	+97	79.7	
1028	7.63	500	1.7	4.90	54.9	0.33	5.74	+96	78.6	
1031	7.63	500	2.0	4.89	55.1	0.22	5.73	+95	78.1	
1034	7.63	500	2.4	4.72	55.7	0.14	5.74	+96	77.9	
1037	7.63	500	2.8	4.48	58.0	0.15	5.72	+96	9.5	
1041	7.63	500	3.2	4.56	57.4	0.00	5.74	+95	7.1	
1044	7.66	500	3.6	4.64	59.1	0.00	5.73	+97	8.5	
1047	7.66	500	4.0	4.60	58.9	0.00	5.73	+97	9.8	

Additional Remarks

WELL ID MW-13A **DATE** 2/4/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. 0

Field Chlorine Measurement
pH test strip (s.u.) 6
Cl_2 test strip (mg/L) 0
LR Result (mg/L) 0.05
HR Result (mg/L) ______ Dilution ______
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 100
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. 0
Observations (Precipitate, color)
WHITE PRECIPITATE

Cr(VI) Analysis
pH of preserved sample: 7.5

5. Sample Description

Color Clear
Turbidity low
Solids none
Sample ID/Time MW-13A-01-020414 @ 1050

Sheen none
Odor none
Reactivity none

Bottles Filled
3 40-mL VOA (HCl)
1 125-mL HDPE [$(NH_4)_2SO_4$]
1 ~~250~~ 125-mL HDPE (~~$NaAsO_2$~~ NaOH)
1 250-mL Amber (NH_4Cl)
1 250-mL HDPE (FF unpres 2/3-full)
1 ~~500~~ 250-mL HDPE (H_2SO_4)
8 1-L Amber (unpres)
1 1-L HDPE (unpres)
1 1-L HDPE, FF (HNO_3)
1 1-L HDPE (HNO_3)
1 500mL HDPE FF (NaOH)

6. Water Quality Parameters

Temp (°C) 4.60
pH (s.u.) 5.73
Conductivity (mS/cm) 58.9
DO (mg/L) 0.00
ORP (mV) +97
Turbidity (NTU) 9.8

Meter Type: Horiba U52
S/N:
Calibration Date: 2/4/14
Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______

EPA Split Samples Y / N (circle)
Analyses ______

Signature [signature] Date 2/4/14

Groundwater Sampling Form

Page 1

ERM

1. Site Information

WELL ID MW-13B

DATE 2/4/14

Begin Sampling Time 1225

End Sampling Time 1300

ERM Samplers T. Hamada / L. Mercer

EPA Oversight Aaron Baird

Weather cloudy, cold (25-30°F)

2. Description

Description (Well Condition, Evidence of Tampering): good

Total Well Depth 21.34' btoc

Screen Interval 9-19' btoc

Static Water Depth 7.47 Time 1200

Measuring Point toc - north

Sample Tubing Intake Depth 14' btoc

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
1209	8.15	500	1.2	10.15	6.79	0.00	6.11	+34	245	
1212	8.12	500	1.6	10.19	6.74	0.00	6.01	+35	231	
1215	8.15	500	2.0	10.22	6.83	0.00	5.96	+31	230	
1218	8.16	500	2.4	10.23	6.85	0.01	5.92	+28	221	
1221	8.16	500	2.8	10.20	6.97	0.02	5.90	+27	214	
1224	8.15	500	3.2	10.22	6.95	0.01	5.87	+26	206	

Additional Remarks

Groundwater Sampling Form
Page 2

ERM

WELL ID	MW-13B	**DATE**	2/4/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. 0

Field Chlorine Measurement
pH test strip (s.u.) 5.87
Cl_2 test strip (mg/L) 0
LR Result (mg/L) 0.04
HR Result (mg/L) ______ Dilution ____
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y N (circle)
drops NaOH to bring pH>12 10
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. 0
Observations (Precipitate, color)
white, light blue precipitate

Cr(VI) Analysis
pH of preserved sample: 8

5. Sample Description

Color: Clear
Turbidity: slight
Solids: None
Sample ID/Time: MW-13B-LI-020414 @1225
Sheen: None
Odor: None
Reactivity: None,

Bottles Filled
3 40-mL VOA (HCl)
1 125-mL HDPE [$(NH_4)_2SO_4$]
1 ~~250~~ 500-mL HDPE (~~$NaAsO_2$~~ NaOH)
1 250-mL Amber (NH_4Cl)
1 250-mL HDPE (FF unpres 2/3-full)
1 ~~500~~ 250-mL HDPE (H_2SO_4)
8 1-L Amber (unpres)
1 1-L HDPE (unpres)
1 1-L HDPE, FF (HNO_3)
1 1-L HDPE (HNO_3)
1 500-mL HDPE, FF (NaOH)

6. Water Quality Parameters

Temp (°C) 10.22
pH (s.u.) 5.87
Conductivity (mS/cm) 69.5
DO (mg/L) 0.01
ORP (mV) +26
Turbidity (NTU) 206

Meter Type: Horiba U52
S/N:
Calibration Date: 2/4/14
Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______
EPA Split Samples Y / N (circle)
Analyses ______

Signature [signature] Date 2/4/14

Groundwater Sampling Form
Page 1

ERM

1. Site Information

WELL ID MW-14

DATE 2/5/14

Begin Sampling Time 1020

End Sampling Time 1125

ERM Samplers T. Hamada/L. Mercer

EPA Oversight —

Weather partly cloudy, cold (20°F)

2. Description

Description (Well Condition, Evidence of Tampering): good

Total Well Depth 18' btoc

Screen Interval 8-18' btoc

Static Water Depth 6.33' btoc Time 948

Measuring Point toc, north side

Sample Tubing Intake Depth 13' btoc

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
951	6.78	500	0.4	10.39	61.2	0.37	5.22	+37	329	
954	6.80	500	0.8	10.95	62.3	0.00	5.28	+12	92.9	
957	6.84	500	1.2	11.14	62.5	0.00	5.31	+2	102	
1000	6.86	500	1.6	11.09	62.4	0.00	5.32	-1	62.3	
1003	6.84	500	2.0	11.26	62.5	0.00	5.33	-4	41.4	
1006	6.86	500	2.4	11.25	61.8	0.00	5.33	-5	26.4	
1009	6.86	500	2.8	11.27	61.9	0.00	5.33	-6	15.5	
1012	6.87	500	3.2	11.25	61.9	0.00	5.34	-8	8.9	
1015	6.87	500	3.6	11.38	62.4	0.00	5.35	-9	4.6	
1018	6.87	500	4.0	11.35	61.7	0.00	5.34	-8	2.6	

Additional Remarks

WELL ID MW-14 DATE 2/5/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement
pH test strip (s.u.) 5
Cl_2 test strip (mg/L) 0
LR Result (mg/L) 0.03
HR Result (mg/L) ______ Dilution ______
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 50
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. ______
Observations (Precipitate, color)
WHITE PRECIPITATE

Cr(VI) Analysis
pH of preserved sample: 7.5

5. Sample Description

Color Clear
Turbidity very low
Solids none
Sample ID/Time MW-14-01-020514 @1020

Sheen none
Odor none
Reactivity none

Bottles Filled
1 ~~250~~ 500-mL HDPE (~~$NaAsO_2$~~ NaOH)
250 ~~500~~-mL HDPE (H_2SO_4)
1 1-L HDPE, FF (HNO_3)
3 40-mL VOA (HCl)
1 250-mL Amber (NH_4Cl)
8 1-L Amber (unpres)
1 1-L HDPE (HNO_3)
1 125-mL HDPE [$(NH_4)_2SO_4$]
1 250-mL HDPE (FF unpres 2/3-full)
1 1-L HDPE (unpres)
1 500 mL HDPE (NaOH) FF

6. Water Quality Parameters

Temp (°C) 11.35
pH (s.u.) 5.34
Conductivity (mS/cm) 61.7
DO (mg/L) 0.66
ORP (mV) -8
Turbidity (NTU) 2.6

Meter Type: Horiba U52
S/N:
Calibration Date: 2/5/14
Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID MW-14-11-020514 @ 1021

EPA Split Samples Y / N (circle)
Analyses ______

Signature [signature] Date 2/5/14

Groundwater Sampling Form
Page 1

ERM

1. Site Information

WELL ID MW-15A
DATE 2/5/14
Begin Sampling Time 1156
End Sampling Time 1225
ERM Samplers T. Hanada / L. Mercer
EPA Oversight —
Weather partly cloudy, cold (25°F)

2. Description

Description (Well Condition, Evidence of Tampering): good

Total Well Depth 10.98' btoc
Screen Interval 5-10' btoc
Static Water Depth 6.08' btoc Time 1134
Measuring Point toc, north
Sample Tubing Intake Depth 7.5' btoc

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
1137	6.21	500	0.4	6.44	49.6	0.02	5.76	+86	482	
1140	6.22	500	0.8	5.89	50.6	0.00	5.60	+84	257	
1143	6.22	500	1.2	5.74	50.9	0.00	5.55	+83	260	
1146	6.21	500	1.6	5.67	51.0	0.00	5.53	+79	193	
1149	6.21	500	2.0	5.78	51.0	0.00	5.52	+78	98.1	
1152	6.23	500	2.4	5.70	51.1	0.00	5.51	+78	100	
1155	6.25	500	2.8	5.76	51.1	0.00	5.50	+77	96.7	

Additional Remarks

Groundwater Sampling Form
Page 2

WELL ID MW-15A **DATE** 2/5/14

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check Pos / Neg (circle)

# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement

pH test strip (s.u.) 5

Cl_2 test strip (mg/L) 0

LR Result (mg/L) 0.01

HR Result (mg/L) ______ Dilution ______

Observations (Yellow color, pink color fades)

Cyanide Analysis

pH adjustment req Y / N (circle)

drops NaOH to bring pH>12 100

Initial Cl_2 check Pos / Neg (circle)

# of drops $NaAsO_2$ reqd. ______

Observations (Precipitate, color)
WHITE PRECIPITATE

Cr(VI) Analysis

pH of preserved sample: 6.5

5. Sample Description

Color clear

Turbidity slight

Solids none

Sample ID/Time MW-15A-01-020514 @ 1156

Sheen none

Odor none

Reactivity none

Bottles Filled

3 40-mL VOA (HCl)

1 125-mL HDPE [$(NH_4)_2SO_4$]

1 ~~250~~ 500-mL HDPE (~~$NaAsO_2$~~ NaOH)

1 250-mL Amber (NH_4Cl)

1 250-mL HDPE (FF unpres 2/3-full)

1 ~~500~~ 250-mL HDPE (H_2SO_4)

8 1-L Amber (unpres)

1 1-L HDPE (unpres)

? 1-L HDPE, FF (HNO_3)

1 1-L HDPE (HNO_3)

1 500mL HDPE, FF (NaOH)

6. Water Quality Parameters

Temp (°C) 5.76

pH (s.u.) 5.50

Conductivity (mS/cm) 51.1

DO (mg/L) 0.00

ORP (mV) +77

Turbidity (NTU) 96.7

Meter Type: Horiba U52

S/N:

Calibration Date: 2/5/14

Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 2/5/14

Groundwater Sampling Form

Page 1

1. Site Information

WELL ID: MW-15B

DATE: 2/5/14

Begin Sampling Time: 1308

End Sampling Time: 1340

ERM Samplers: T. Hamada / L. Mercer

EPA Oversight:

Weather: partly cloudy, cold (30°F)

2. Description

Description (Well Condition, Evidence of Tampering): good

Total Well Depth: 21' btoc

Screen Interval: 11-21' btoc

Static Water Depth: 5.83' btoc Time: 1230

Measuring Point: toc, north

Sample Tubing Intake Depth: 16' btoc

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
1236	6.15	500	0.8	7.00	49.5	0.00	5.35	+85	180	
1239	6.24	500	1.2	7.59	50.5	0.00	5.28	+63	89.9	
1242	6.29	500	1.6	7.90	53.1	0.00	5.28	+29	97.7	
1245	6.32	500	2.0	8.25	54.1	0.00	5.28	+14	163	
1248	6.32	500	2.4	8.41	53.8	0.00	5.29	+7	70.6	
1251	6.34	500	2.8	8.53	55.0	0.00	5.30	0	197	
1254	6.36	500	3.2	8.80	55.4	0.00	5.31	-6	145	
1257	6.38	500	3.6	8.92	55.5	0.00	5.32	-8	136	
LM ~~12~~1300	6.38	500	4.0	8.93	55.5	0.00	5.32	-11	137	
1303	~~6.38~~ 6.40 LM	500	4.4	9.06	55.4	0.00	5.32	-11	133	
1306	6.40	500	4.8	9.21	56.0	0.00	5.34	-12	130	

Additional Remarks

 ERM

WELL ID MW-15B **DATE** 2/5/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement
pH test strip (s.u.) 5
Cl_2 test strip (mg/L) 0
LR Result (mg/L) 0.00
HR Result (mg/L) ______ Dilution ____
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 50
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. ______
Observations (Precipitate, color)
WHITE PRECIPITATE, BLUE PRECIPITATE

Cr(VI) Analysis
pH of preserved sample: 6

5. Sample Description

Color clear
Turbidity slight
Solids none
Sample ID/Time MW-15B-01-020514 @ 1308

Sheen none
Odor none
Reactivity none

Bottles Filled
1 ~~250~~ 500 -mL HDPE (~~$NaAsO_2$~~ NaOH)
3 40-mL VOA (HCl)
1 250-mL Amber (NH_4Cl)
1 125-mL HDPE [$(NH_4)_2SO_4$]
1 250-mL HDPE (FF unpres 2/3-full)
1 ~~500~~ 250 -mL HDPE (H_2SO_4)
8 1-L Amber (unpres)
1 1-L HDPE (unpres)
1 1-L HDPE, FF (HNO_3)
1 1-L HDPE (HNO_3)
1 500mL HDPE, FF (NaOH)

6. Water Quality Parameters

Temp (°C) 9.21
pH (s.u.) 5.34
Conductivity (mS/cm) 56.0
DO (mg/L) 0.00
ORP (mV) -12
Turbidity (NTU) 130

Meter Type: Horiba U52
S/N:
Calibration Date: 2/5/14
Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______

EPA Split Samples Y / N (circle)
Analyses ______

Signature [signature] Date 2/5/14

Groundwater Sampling Form ERM
Page 1

1. Site Information

WELL ID MW-17
DATE 2/5/14
Begin Sampling Time 1508
End Sampling Time 1540
ERM Samplers T Hamada / L Mercer
EPA Oversight
Weather partly cloudy, cold (30°F)

2. Description

Description (Well Condition, Evidence of Tampering): good
Total Well Depth 20' btoc
Screen Interval 10 - 20' btoc
Static Water Depth 4.41' btoc Time 1445
Measuring Point toc, north
Sample Tubing Intake Depth 15' btoc

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
~~1518~~ 1448	4.54	500	0.4	11.68	>100	3.46	6.48	-183	102	
1451	4.58	500	0.8	11.44	>100	0.39	6.49	-215	50.1	
1454	4.58	500	1.2	12.44	>100	0.13	6.48	-230	20.9	
1457	4.58	500	1.6	12.46	>100	0.02	6.45	-239	11.2	
1500	4.60	500	2.0	12.68	>100	0.00	6.43	-244	3.8	
1503	4.60	500	2.4	12.67	>100	0.00	6.42	-248	0.0	
1506	4.60	500	2.6	12.79	>100	0.00	6.41	-253	0.0	Cond mS/cm = 156 (10x dilution)

Additional Remarks

Groundwater Sampling Form
Page 2

ERM

WELL ID MW-17 DATE 2/5/14

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check Pos / Neg (circle)

# of 5-mg NH_4Cl aliquots reqd. ____

Field Chlorine Measurement

pH test strip (s.u.) 6

Cl_2 test strip (mg/L) 0

LR Result (mg/L) 0.11

HR Result (mg/L) ____ Dilution ____

Observations (Yellow color, pink color fades)

Cyanide Analysis

pH adjustment req Y N (circle)

drops NaOH to bring pH>12 —

Initial Cl_2 check Pos / Neg (circle)

# of drops $NaAsO_2$ reqd. ____

Observations (Precipitate, color)
WHITE PRECIPITATE, GREYISH COLOR

Cr(VI) Analysis

pH of preserved sample: 11

5. Sample Description

Color clear

Turbidity very low

Solids none

Sample ID/Time MW-17-DL-020514 @ 1528

Sheen none

Odor none

Reactivity none

Bottles Filled

1 ~~250~~ 500-mL HDPE (~~$NaAsO_2$~~ NaOH)

3 40-mL VOA (HCl)

1 250-mL Amber (NH_4Cl)

1 125-mL HDPE [$(NH_4)_2SO_4$]

1 250-mL HDPE (FF unpres 2/3-full)

1 ~~500~~ 250-mL HDPE (H_2SO_4)

8 1-L Amber (unpres)

1 1-L HDPE (unpres)

1 1-L HDPE, FF (HNO_3)

1 1-L HDPE (HNO_3)

1 500 mL HDPE, FF (NaOH)

6. Water Quality Parameters

Temp (°C) 12.79

pH (s.u.) 6.41

Conductivity (mS/cm) 156

DO (mg/L) 0.00

ORP (mV) -253

Turbidity (NTU) 0.0

Meter Type: Horiba U52

S/N:

Calibration Date: 2/5/14

Dilution Required for Conductivity? Yes, 10x dilution

7. QC Samples

MS/MSD Y N (circle)

Field Dup Y N (circle)

Field Dup Sample ID ____

EPA Split Samples Y N (circle)

Analyses ____

Signature [signature] Date 2/5/14

Groundwater Sampling Form
Page 1

ERM

1. Site Information		**2. Description**	
WELL ID	MW-18	Description (Well Condition, Evidence of Tampering):	
DATE	2/13/14		
Begin Sampling Time	9:40		
End Sampling Time	11:30	Total Well Depth	22
ERM Samplers	KB, GR	Screen Interval	12-22
EPA Oversight	Aaron Baird	Static Water Depth	14.00 Time 9:40
Weather	Cloudy, 40s	Measuring Point	N. Side
		Sample Tubing Intake Depth	5' from bottom

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
9:45	14.05	1100	FW	18.60	16.7	5.36	7.12	241	571	Cloudy, gray
9:50	14.05	1100	1	17.04	28.0	0.0	7.20	231	74.0	Clear, No odor
9:53	14.05	1100	2.5	16.96	28.5	0.0	7.35	141	16.7	
9:56	↓	↓	4	17.04	28.8	0.0	7.36	122	12.9	↓
9:59	↓	↓	5	17.05	28.8	0.0	7.39	105	8.6	↓
10:02	↓	↓	6	17.03	28.8	0.0	7.40	103	8.0	↓

Additional Remarks

 ERM

WELL ID MW-18 DATE 2/13/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. ____

Field Chlorine Measurement
pH test strip (s.u.) 6.0
Cl_2 test strip (mg/L) 0.0
LR Result (mg/L) 0.07
HR Result (mg/L) ____ Dilution ____
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y N (circle)
drops NaOH to bring pH>12 50 = pH 12
Initial Cl_2 check Pos Neg (circle)
# of drops $NaAsO_2$ reqd. ____
Observations (Precipitate, color)

Cr(VI) Analysis
pH of preserved sample: 9.3

5. Sample Description

Color None
Turbidity 8.0
Solids —
Sample ID/Time MW-18-01-021314@9:40

Sheen —
Odor —
Reactivity —

Bottles Filled
___ 40-mL VOA (HCl)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE ($NaAsO_2$)
___ 250-mL Amber (NH_4Cl)
___ 250-mL HDPE (FF unpres 2/3-full)
___ 500-mL HDPE (H_2SO_4)
___ 1-L Amber (unpres)
___ 1-L HDPE (unpres)
___ 1-L HDPE, FF (HNO_3)
___ 1-L HDPE (HNO_3)

6. Water Quality Parameters

Temp (°C) 17.03
pH (s.u.) 7.40
Conductivity (mS/cm) 28.8
DO (mg/L) 0.0
ORP (mV) 103
Turbidity (NTU) 8.0

Meter Type: Horiba
S/N:
Calibration Date: 2/13/14
Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y N (circle)
Field Dup Y N (circle)
Field Dup Sample ID ____

EPA Split Samples Y / N (circle) FIELD DUP ALSO
Analyses ____

Signature [signature] Date 2/13/14

Groundwater Sampling Form
Page 1

1. Site Information

WELL ID MW-19A
DATE 2/14/14
Begin Sampling Time 945
End Sampling Time 1145
ERM Samplers L.Mercer / T. Hamada
EPA Oversight Aaron Baird
Weather
Cloudy, light winds, ~40°F

2. Description

Description (Well Condition, Evidence of Tampering):
good, WW pond at base of well stickup

Total Well Depth 19.5' btoc
Screen Interval 9'-19' btoc
Static Water Depth 3.30' btoc Time 1800
Measuring Point toc, north
Sample Tubing Intake Depth 14' btoc

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
1003	3.41	1800		13.01	>100.0	0.00	6.85	-205	22.9	
1006	3.42	1800		12.91	>100.0	0.00	6.98	-231	0.0	
1009	3.40	1800		12.96	>100.0	0.00	7.02	-242	0.0	
1012	3.41	1800		12.98	>100.0	0.00	7.04	-251	0.0	
1015	3.41	1800		13.01	>100.0	0.00	7.07	-250	0.0	cond 171 mS/cm (10x dilution)

Additional Remarks

WELL ID MW-19A **DATE** 2/14/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
\# of 5-mg NH_4Cl aliquots reqd. ________

Field Chlorine Measurement
pH test strip (s.u.) 6.5
Cl_2 test strip (mg/L) 0
LR Result (mg/L) 0.08
HR Result (mg/L) ________ Dilution _____
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
\# drops NaOH to bring pH>12 50
Initial Cl_2 check Pos / Neg (circle)
\# of drops $NaAsO_2$ reqd. ________
Observations (Precipitate, color)
WHITE + BLUE PRECIPITATE

Cr(VI) Analysis
pH of preserved sample: 10.5

5. Sample Description

Color Clear
Turbidity very low
Solids —
Sample ID/Time MW-19A-01-021414 1020
Sheen —
Odor sulfur
Reactivity —

Bottles Filled
___ 40-mL VOA (HCl)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE ($NaAsO_2$)
___ 250-mL Amber (NH_4Cl)
___ 250-mL HDPE (FF unpres 2/3-full)
___ 500-mL HDPE (H_2SO_4)
___ 1-L Amber (unpres)
___ 1-L HDPE (unpres)
___ 1-L HDPE, FF (HNO_3)
___ 1-L HDPE (HNO_3)

6. Water Quality Parameters

Temp (°C) 13.01
pH (s.u.) 7.07
Conductivity (mS/cm) 171
DO (mg/L) 0.00
ORP (mV) -250
Turbidity (NTU) 0.0

Meter Type: Horiba U-52
S/N:
Calibration Date: 2/14/14
Dilution Required for Conductivity? Yes, 10x dilution performed

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ________
EPA Split Samples Y / N (circle)
Analyses All

Signature [signature] Date 2/14/14

Groundwater Sampling Form

ERM

1. Site Information

WELL ID ~~MW 19AB~~ LM MW-19B

DATE 2/14/14

Begin Sampling Time 1240

End Sampling Time 1440

ERM Samplers L. Mercer / T. Hamada

EPA Oversight Aaron Baird

Weather Cloudy, light wind, ~45°F

2. Description

Description (Well Condition, Evidence of Tampering): good, ww at base of well stickup

Total Well Depth 35.5' btoc

Screen Interval 25-35' btoc

Static Water Depth 2.52' btoc Time 1244

Measuring Point toc, north

Sample Tubing Intake Depth 30' btoc

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
1249	5.22	800	1.2	15.68	84.1	0.14	8.35	-406	1.4	
1253	5.30	800	1.8 ~~2.4~~ LM	15.70	84.2	0.02	8.30	-407	0.0	
1256	5.31	800	2.4 ~~4.8~~ LM	15.73	83.8	0.00	8.25	-409	0.0	
1259	5.33	800	3.0	15.77	83.4	0.01	8.23	-410	0.0	
1302	5.34	800	3.6	15.85	83.4	0.01	8.22	-411	0.0	
1305	5.36	800	4.2	15.89	83.3	0.00	8.21	-409	0.0	

Additional Remarks

Groundwater Sampling Form
Page 2

ERM

WELL ID MW-19B **DATE** 2/14/14

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check Pos / Neg (circle)

# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement

pH test strip (s.u.) 7.0

Cl_2 test strip (mg/L) 0

LR Result (mg/L) 0.02

HR Result (mg/L) ______ Dilution ______

Observations (Yellow color, pink color fades)

Cyanide Analysis

pH adjustment req Y / N (circle)

drops NaOH to bring pH>12 ______

Initial Cl_2 check Pos / Neg (circle)

# of drops $NaAsO_2$ reqd. ______

Observations (Precipitate, color)

Cr(VI) Analysis

pH of preserved sample: 11.0

5. Sample Description

Color Clear (black residue)

Turbidity very low

Solids —

Sample ID/Time MW-19B-01-021414 @ 1310

Sheen —

Odor —

Reactivity —

Bottles Filled

___ 40-mL VOA (HCl)

___ 125-mL HDPE [$(NH_4)_2SO_4$]

___ 250-mL HDPE ($NaAsO_2$)

___ 250-mL Amber (NH_4Cl)

___ 250-mL HDPE (FF unpres 2/3-full)

___ 500-mL HDPE (H_2SO_4)

___ 1-L Amber (unpres)

___ 1-L HDPE (unpres)

___ 1-L HDPE, FF (HNO_3)

___ 1-L HDPE (HNO_3)

6. Water Quality Parameters

Temp (°C) 15.89

pH (s.u.) 8.21

Conductivity (mS/cm) 83.3

DO (mg/L) 0.00

ORP (mV) -409

Turbidity (NTU) 0.0

Meter Type: Horiba U-52

S/N:

Calibration Date: 2/14/14

Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses All

Signature ______ Date 2/14/14

Groundwater Sampling Form
Page 1

ERM

1. Site Information

WELL ID MW-20A
DATE 1/31/14
Begin Sampling Time 13:00
End Sampling Time 14:20
ERM Samplers KB, TH
EPA Oversight —
Weather Cloudy, 30s

2. Description

Description (Well Condition, Evidence of Tampering):

Total Well Depth 20.24
Screen Interval 12-17
Static Water Depth 13.18 Time 13:03
Measuring Point North Side
Sample Tubing Intake Depth 15

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
13:08	13.18	1400	FW	15.88	77.1	2.67	7.30	-26	0.0	Slightly cloudy, gray
13:13	13.18	1100	2	18.26	74.9	1.81	6.46	-68	158	Clear, No color
13:18	↓	1100	3.5	18.34	75.0	1.19	6.31	-85	61.9	↓
13:23	↓	1100	4.5	18.26	74.5	0.60	6.25	-100	14.6	↓
13:28	↓	↓	6	18.25	73.9	0.0	6.23	-115	7.2	↓
13:33	↓	↓	7.5	18.29	73.8	0.0	6.23	-116	7.4	↓
13:35	↓	↓	8	18.24	73.8	0.0	6.22	-117	7.1	↓

Additional Remarks

Groundwater Sampling Form
Page 2

ERM

WELL ID MW-20A **DATE** 1/31/14

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check Pos / Neg (circle)

# of 5-mg NH_4Cl aliquots reqd. ____

Field Chlorine Measurement

pH test strip (s.u.) 6.0

Cl_2 test strip (mg/L) 0.0

LR Result (mg/L) 0.02

HR Result (mg/L) — Dilution —

Observations (Yellow color, pink color fades)

Clear

Cyanide Analysis

pH adjustment req Y / N (circle)

drops NaOH to bring pH>12 100

Initial Cl_2 check Pos / Neg (circle)

# of drops $NaAsO_2$ reqd. ____

Observations (Precipitate, color)

WHITE PRECIPITATE, BLUE ~~LIQUID~~ PRECIPITATE

Cr(VI) Analysis

pH of preserved sample: 9.0

5. Sample Description

Color Clear, No Color

Turbidity ____

Solids None

Sample ID/Time MW-20A-013114

Sheen None

Odor None

Reactivity None

Bottles Filled

___ 250-mL HDPE ($NaAsO_2$)

___ 500-mL HDPE (H_2SO_4)

___ 1-L HDPE, FF (HNO_3)

___ 40-mL VOA (HCl)

___ 250-mL Amber (NH_4Cl)

___ 1-L Amber (unpres)

___ 1-L HDPE (HNO_3)

___ 125-mL HDPE [$(NH_4)_2SO_4$]

___ 250-mL HDPE (FF unpres 2/3-full)

___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 18.24

pH (s.u.) 6.22

Conductivity (mS/cm) 73.8

DO (mg/L) 0.0

ORP (mV) -117

Turbidity (NTU) 7.1

Meter Type: Horiba

S/N:

Calibration Date: 1/31/14

Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses ____

Signature ____ Date 1/31/14

Groundwater Sampling Form ERM
Page 1

1. Site Information		**2. Description**	
WELL ID	MW-20B	Description (Well Condition, Evidence of Tampering):	Arrive MW-20B. Top of stickup = 44" above ground. TOC ~ 41" above ground
DATE	1/31/14	Total Well Depth	32
Begin Sampling Time	1352	Screen Interval	19-29 bgs
End Sampling Time	1458	Static Water Depth	13.93 Time 1309
ERM Samplers	~~Now~~ KL/LM	Measuring Point	N side TOC
EPA Oversight	NO	Sample Tubing Intake Depth	28 ft below TOC
Weather	Partly cloudy, 30s		

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
1309	13.93									
1327	15.50									
1329	15.73	200	1	16.30	>100	1.03	5.41	+48	139	
1332	15.55			15.95	>100	0.40	5.45	+48	129	
1336	15.49	200		15.73	>100	0.62	5.47	+51	125	
1339	15.47			15.63	>100	0.56	5.50	+52	122	
1342	15.45	200		15.47	>100	0.49	5.49	+52	123	
1345	15.45		1.5	15.24	>100	0.42	5.40	+64	123	
1348	15.40			15.09	>100	0.39	5.31	+69	123	
1351	15.35		~2	14.88	>100	0.36	5.30	+69	121	
										Cond = 414 (1:10 dil)

Additional Remarks

Groundwater Sampling Form ERM
Page 2

WELL ID MW-20B **DATE** 1/31/14

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check Pos / Neg (circle)

# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement

pH test strip (s.u.) 5.5

Cl_2 test strip (mg/L) 0

LR Result (mg/L) 0.14

HR Result (mg/L) ______ Dilution ______

Observations (Yellow color, pink color fades)

Cyanide Analysis

pH adjustment req Y / N (circle)

drops NaOH to bring pH>12 >100 final pH 11.5

Initial Cl_2 check Pos / Neg (circle)

# of drops $NaAsO_2$ reqd. ______

Observations (Precipitate, color)

BLUE COLOR (IN PRESERVED BOTTLE)

Cr(VI) Analysis

pH of preserved sample: 10.0

BLUE COLOR

5. Sample Description

Color Clear

Turbidity Slight

Solids No

Sample ID/Time 1/31/14 1352

Sheen No

Odor No

Reactivity Some Effervescence

Bottles Filled

3 40-mL VOA (HCl)

1 125-mL HDPE $[(NH_4)_2SO_4]$

2 250-mL HDPE ($NaAsO_2$)

1 250-mL Amber (NH_4Cl)

1 250-mL HDPE (FF unpres 2/3-full)

1 500-mL HDPE (H_2SO_4)

4 1-L Amber (unpres)

1 1-L HDPE (unpres)

1 1-L HDPE, FF (HNO_3)

1 1-L HDPE (HNO_3)

6. Water Quality Parameters

Temp (°C) 14.88

pH (s.u.) 5.30

Conductivity (mS/cm) 4.14

DO (mg/L) 0.36

ORP (mV) +69

Turbidity (NTU) 123

Meter Type: Horiba U-52

S/N: Pine #15799

Calibration Date: 1/31/14

Dilution Required for Conductivity? Yes, 1:10

7. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 1/31/14

Groundwater Sampling Form
Page 1

1. Site Information		**2. Description**	
WELL ID	MW-04A	Description (Well Condition, Evidence of Tampering):	
DATE	2/5/14		
Begin Sampling Time	13:55		
End Sampling Time		Total Well Depth	17.56
ERM Samplers	KB, LM	Screen Interval	4-14' bgs
EPA Oversight	Aaron Baird	Static Water Depth	7.64 Time 1400
Weather	Pt. Cloudy 20's	Measuring Point	N. Side
		Sample Tubing Intake Depth	9

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
14:06	7.85	500	FW	12.64	64.0	0.23	5.85	-11	63.1	Clear, No odor
14:11	7.70	500	1.0	14.06	55.8	0.0	6.01	-8	52.9	
14:16	7.70	500	1.5	14.03	53.7	0.0	6.02	-15	31.8	
14:19			2.0	14.07	52.0	0.0	6.02	-19	18.5	
14:22			2.5	14.07	52.1	0.0	6.02	-21	12.3	
14:25			3.0	14.19	51.3	0.0	6.02	-23	4.0	
14:28			3.5	14.10	51.0	0.0	6.02	-24	2.5	

Additional Remarks

TripBlank - MW-4A-21-020514 @ 14:36

Groundwater Sampling Form ERM
Page 2

WELL ID MW-4A DATE 2/5/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement
pH test strip (s.u.) 6.0
Cl_2 test strip (mg/L) 0.0
LR Result (mg/L) 0.0
HR Result (mg/L) ______ Dilution ______
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 100 = pH 11
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. ______
Observations (Precipitate, color)

Cr(VI) Analysis
pH of preserved sample: 8.2

5. Sample Description

Color —
Turbidity 2.5
Solids —
Sample ID/Time MW-4A-01-020514@14:35
Sheen ______
Odor ______
Reactivity ______

Bottles Filled
___ 250-mL HDPE ($NaAsO_2$)
___ 500-mL HDPE (H_2SO_4)
___ 1-L HDPE, FF (HNO_3)
___ 40-mL VOA (HCl)
___ 250-mL Amber (NH_4Cl)
___ 1-L Amber (unpres)
___ 1-L HDPE (HNO_3)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE (FF unpres 2/3-full)
___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 14.10
pH (s.u.) 6.02
Conductivity (mS/cm) 51.0
DO (mg/L) 0.0
ORP (mV) -24
Turbidity (NTU) 2.5

Meter Type: Horiba
S/N:
Calibration Date: 2/5/14
Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______

EPA Split Samples Y / N (circle)
Analyses ______

Signature ______ Date 2/5/14

ERM

1. Site Information

WELL ID MW-5A
DATE 2/7/14
Begin Sampling Time 11:26
End Sampling Time 12:30
ERM Samplers CB, TH
EPA Oversight Aaron Baird
Weather Cloudy, 30s

2. Description

Description (Well Condition, Evidence of Tampering): Removed tubing, No lock

Total Well Depth 22.62
Screen Interval 8-18
Static Water Depth 10.46 Time 11:24
Measuring Point 5' from bottom
Sample Tubing Intake Depth 14' Side

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
11:36	10.45	500	FW	13.74	87.2	2.22	7.26	-138	96.3	Cloudy, grayish
11:39			0.5	14.77	84.8	0.04	6.99	-168	87.9	"
11:42			1.0	14.84	83.5	0.0	6.95	-173	31.3	Clear, No color,
11:45			2.0	15.36	83.2	0.0	6.95	-172	19.4	
11:48			2.5	15.31	82.9	0.0	6.94	-172	13.2	
11:51			3.0	15.12	82.0	0.0	6.95	-171	9.8	

Additional Remarks

WELL ID MW-5A **DATE** 2/7/14

4. Field Preservation / Field Measurements

<u>HAA Analysis</u>
Initial Cl_2 check Pos / Neg (circle)
\# of 5-mg NH_4Cl aliquots reqd. ______

<u>Field Chlorine Measurement</u>
pH test strip (s.u.) 5
Cl_2 test strip (mg/L) 0
LR Result (mg/L) 0.00
HR Result (mg/L) ______ Dilution ______
Observations (Yellow color, pink color fades)

<u>Cyanide Analysis</u>
pH adjustment req Y / N (circle)
\# drops NaOH to bring pH>12 50
Initial Cl_2 check Pos / Neg (circle)
\# of drops $NaAsO_2$ reqd. ______
Observations (Precipitate, color)

<u>Cr(VI) Analysis</u>
pH of preserved sample: 10.0

5. Sample Description
Color Clear
Turbidity 9.7
Solids —
Sample ID/Time MW-5A-01-020714 @ 12:00
Sheen —
Odor —
Reactivity —

Bottles Filled
___ 40-mL VOA (HCl)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE ($NaAsO_2$)
___ 250-mL Amber (NH_4Cl)
___ 250-mL HDPE (FF unpres 2/3-full)
___ 500-mL HDPE (H_2SO_4)
___ 1-L Amber (unpres)
___ 1-L HDPE (unpres)
___ 1-L HDPE, FF (HNO_3)
___ 1-L HDPE (HNO_3)

6. Water Quality Parameters
Temp (°C) 15.12
pH (s.u.) 6.95
Conductivity (mS/cm) 82.0
DO (mg/L) 0.0
ORP (mV) -171
Turbidity (NTU) 9.7

Meter Type: Horiba
S/N:
Calibration Date: 2/7/14
Dilution Required for Conductivity? No

7. QC Samples
MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______
EPA Split Samples Y / N (circle)
Analyses ______

Signature ______ Date 2/7/14

Groundwater Sampling Form ERM
Page 1

1. Site Information		2. Description	
WELL ID	MW-6	Description (Well Condition, Evidence of Tampering):	Remove Tubing, No lock
DATE	2/7/14		
Begin Sampling Time	9:45	Total Well Depth	12.79
End Sampling Time		Screen Interval	7-17
ERM Samplers	EB, TH	Static Water Depth	9.58 Time 9:49
EPA Oversight	Aaron Baird	Measuring Point	N. Side
Weather	Cloudy, 30s	Sample Tubing Intake Depth	5' off bottom

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
10:00	9.70	500	FW	13.82	30.4	0.74	6.74	-147	26.7	Clear, No color
10:05	9.70	↓	1.0	14.68	30.8	0.0	6.95	-182	7.7	↓
10:08			1.5	15.19	35.6	0.0	6.96	-190	0.1	
10:11	↓			15.28	36.6	0.0	7.01	-197	0.0	
10:14				15.49	36.4	0.0	7.06	-204	0.0	
10:17	↓	↓		15.17	36.1	0.0	7.06	-217	0.0	↓

Additional Remarks

Groundwater Sampling Form
Page 2

ERM

WELL ID MW-6 DATE 2/7/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement
pH test strip (s.u.) 6.0
Cl_2 test strip (mg/L) 0.0
LR Result (mg/L) 0.00
HR Result (mg/L) ______ Dilution ______
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 100 = pH 13
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. ______
Observations (Precipitate, color)
White Precipitate

Cr(VI) Analysis
pH of preserved sample: 9.3

5. Sample Description

Color ——
Turbidity 0.0
Solids ——
Sample ID/Time MW-6-01-020714 @ 10:25
Sheen ——
Odor ——
Reactivity ——

Bottles Filled
___ 250-mL HDPE ($NaAsO_2$)
___ 500-mL HDPE (H_2SO_4)
___ 1-L HDPE, FF (HNO_3)
___ 40-mL VOA (HCl)
___ 250-mL Amber (NH_4Cl)
___ 1-L Amber (unpres)
___ 1-L HDPE (HNO_3)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE (FF unpres 2/3-full)
___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 15.17
pH (s.u.) 7.16
Conductivity (mS/cm) 36.1
DO (mg/L) 0.0
ORP (mV) -217
Turbidity (NTU) 0.0

Meter Type: Horiba
S/N:
Calibration Date: 2/7/14
Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______

EPA Split Samples Y / N (circle)
Analyses ______

Signature ______ Date 2/7/14

WELL ID MW-7 **DATE** 2/6/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement
pH test strip (s.u.) 5.5
Cl_2 test strip (mg/L) 0
LR Result (mg/L) 0.00
HR Result (mg/L) ______ Dilution ______
Observations (Yellow color, pink color fades)
NO COLOR CHANGE

Cyanide Analysis TH
pH adjustment req ~~Y~~/N (circle)
drops NaOH to bring pH>12 —
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. ______
Observations (Precipitate, color)
MILKY WHITE PRECIPITATE

Cr(VI) Analysis
pH of preserved sample: 9.3

5. Sample Description

Color NO COLOR
Turbidity CLEAR
Solids NO SOLIDS
Sample ID/Time MW-7-01-020614 @ 1126

Sheen NO SHEEN
Odor UNDESIREABLE, ANAEROBIC
Reactivity NONE

Bottles Filled
3 40-mL VOA (HCl)
1 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE ($NaAsO_2$)
1 250-mL Amber (NH_4Cl)
1 250-mL HDPE (FF unpres 2/3-full)
___ 500-mL HDPE (H_2SO_4)
8 1-L Amber (unpres)
1 1-L HDPE (unpres)
1 1-L HDPE, FF (HNO_3)
1 1-L HDPE (HNO_3)

6. Water Quality Parameters

Temp (°C) 15.69
pH (s.u.) 5.31
Conductivity (mS/cm) 145
DO (mg/L) 0.26
ORP (mV) -387
Turbidity (NTU) 0.0

Meter Type: HORIBA U-52
S/N: SNUONHVC
Calibration Date: 2/6/14
Dilution Required for Conductivity? YES

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______

EPA Split Samples Y / N (circle)
Analyses ______

Signature [signature] Date 2/6/14

Groundwater Sampling Form ERM
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1. Site Information		**2. Description**	
WELL ID	MW-7	Description (Well Condition, Evidence of Tampering):	TUBING IN WELL. REMOVED
DATE	2/6/14		
Begin Sampling Time	1026		
End Sampling Time	1110	Total Well Depth	22.59 ft.
ERM Samplers	T. HAMADA / G. RIGARD	Screen Interval	7.5 - 17.5
EPA Oversight	A. BAIRD	Static Water Depth	10.73 Time 0954
Weather	OVERCAST 19°F	Measuring Point	N. SIDE, TOC
		Sample Tubing Intake Depth	13.5 ft

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
1000	10.76	600		12.98	78.6	0.70	5.34	-178	10.5	
1003	10.76	500		14.92	95.7	2.38	5.66	-285	1.9	
1006	10.77			15.69	>100	2.66	5.91	-367	0.0	
1009	10.77			15.76	>100	2.54	5.68	-381	0.0	
1012	10.77			15.87	>100	2.35	5.57	-382	0.0	
1015	10.77			15.80	>100	2.22	5.45	-384	0.0	
1018	10.77			15.78	>100	0.67	5.40	-386	0.0	
1021	10.77			15.75	>100	0.35	5.36	-387	0.0	
1024	10.77			15.74	>100	0.27	5.32	-387	0.0	
1027	10.77			15.69	>100	0.26	5.31	-387	0.0	

Additional Remarks

Groundwater Sampling Form

Page 1

ERM

1. Site Information		2. Description	
WELL ID	MW-8A	Description (Well Condition, Evidence of Tampering):	Removed tubing, Not locked
DATE	2/18/14		
Begin Sampling Time	1320		
End Sampling Time	1420	Total Well Depth	26 ft btoc
ERM Samplers	KWL / LM	Screen Interval	9-24 ft btoc
EPA Oversight	AB (PWT)	Static Water Depth	9.82 Time 1325
Weather	Cloudy, 40s, Breezy	Measuring Point	N side TOC
		Sample Tubing Intake Depth	17 ft btoc

3. Well Purging Begin ~~G~~ KWL Purge @ 1335

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
1338	9.87			15.23	68.5	4.97	6.88	-114	0.0	Turbidity suspect
1343	9.87	2000		15.70	67.7	0.00	6.71	-117	0.0	
1347	9.87			15.92	67.6	0.00	6.62	-120	0.0	
1350	9.87	2000		16.07	67.5	0.00	6.57	-121	0.0	Some black silt observed in purge water bucket
1353	9.87		5	16.09	67.6	0.00	6.53	-123	0.0	
1356	9.87		6	16.12	67.5	0.00	6.51	-124	0.0	No silt/No turbidity visible

Additional Remarks

Purge water dumped to Main Ditch @ well location

Groundwater Sampling Form
Page 2

WELL ID MW-8A **DATE** 2/18/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement KWL
pH test strip (s.u.) ~~0~~ 6.5
Cl_2 test strip (mg/L) 0
LR Result (mg/L) 0.0
HR Result (mg/L) — Dilution ____
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 100
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. ______
Observations (Precipitate, color)
Blue, precipitate

Cr(VI) Analysis
pH of preserved sample: 9.5
Gray precipitate

5. Sample Description

Color Slight Yellow
Turbidity No
Solids No
Sample ID/Time MW-8A-01-021814@1420

Sheen No
Odor N/A - Respirator
Reactivity No

Bottles Filled
___ 40-mL VOA (HCl)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE ($NaAsO_2$)
___ 250-mL Amber (NH_4Cl)
___ 250-mL HDPE (FF unpres 2/3-full)
___ 500-mL HDPE (H_2SO_4)
___ 1-L Amber (unpres)
___ 1-L HDPE (unpres)
___ 1-L HDPE, FF (HNO_3)
___ 1-L HDPE (HNO_3)

6. Water Quality Parameters

Temp (°C) 16.12
pH (s.u.) 6.51
Conductivity (mS/cm) 67.5
DO (mg/L) 0.0
ORP (mV) -124
Turbidity (NTU) 0* SUSPECT

Meter Type: HORIBA U-52
S/N: PINE SNUONHVC
Calibration Date: 2/18/14
Dilution Required for Conductivity? NO

7. QC Samples TRIP BLANK MW-8A-21-021814 @1422

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID MW-8A-11-021814 @1421

EPA Split Samples Y / N (circle)
Analyses ______

Signature [signature] Date 2/18/14

Groundwater Sampling Form
Page 1

ERM

1. Site Information		**2. Description**	
WELL ID	MW-9B	Description (Well Condition, Evidence of Tampering):	Removed tubing. No lock (Rusted, cut previously)
DATE	2/19/2014	Total Well Depth	40.78
Begin Sampling Time	1055	Screen Interval	27 - 37 ft below ~~TOC~~ gs
End Sampling Time	1315	Static Water Depth	9.70 Time 1047
ERM Samplers	KWL, LM	Measuring Point	N side TOC
EPA Oversight	~~AB(PWT)~~	Sample Tubing Intake Depth	~~32~~ 35' btoc
Weather	Sunny, 40s		

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
1115	12.5	500		17.53	92.2	2.01	7.68	-330	0.0	
1119				17.33	93.8	5.44	7.64	-354	0.0	
1124	13.91			17.33	97.1	3.14	7.47	-362	0.0	
1128	14.00	400		17.33	96.3	3.08	7.44	-362	0.0	
1132	14.05			17.35	96.2	3.19	7.40	-356	0.0	
1135	14.15	600		17.35	96.3	3.03	7.40	-360	0.0	Incr Pump Rate
1138	14.30			17.50	95.5	1.01	7.45	-356	0.0	
1141	14.31	600		17.50	96.8	0.45	7.44	-360	0.0	
1144	14.35			17.45	94.8	3.00	7.40	-362		
1147	14.36			17.43	94.6	3.05	7.37	-364		
1150			5	17.43	94.4	2.95	7.39	-364		

Additional Remarks

Purge Water to Main Ditch
Sample Time = 1150

WELL ID MW-8B **DATE** 2/18/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement
pH test strip (s.u.) 7
Cl_2 test strip (mg/L) 0
LR Result (mg/L) 0.0
HR Result (mg/L) — Dilution —
Observations (Yellow color, pink color fades)
None

Cyanide Analysis
pH adjustment req Y N (circle)
drops NaOH to bring pH>12 50
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. ______
Observations (Precipitate, color)
White ppt.

Cr(VI) Analysis
pH of preserved sample: 10

5. Sample Description

Color Clear
Turbidity V. Slight
Solids No
Sample ID/Time MW8B-01-021814 1150

Sheen No
Odor N/A - Respirator
Reactivity No

Bottles Filled
___ 250-mL HDPE ($NaAsO_2$)
___ 500-mL HDPE (H_2SO_4)
___ 1-L HDPE, FF (HNO_3)
___ 40-mL VOA (HCl)
___ 250-mL Amber (NH_4Cl)
___ 1-L Amber (unpres)
___ 1-L HDPE (HNO_3)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE (FF unpres 2/3-full)
___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 17.43
pH (s.u.) 7.39
Conductivity (mS/cm) 94.4
DO (mg/L) 2.95
ORP (mV) -364
Turbidity (NTU) 0.0 * Not suspect, consistent w/sample appearance

Meter Type: Horiba U-52
S/N: Pine SN 40 NHVC
Calibration Date: 2/18/14
Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID MW-8B-11-021814 @ 1151

EPA Split Samples Y / N (circle)
Analyses ______

Signature [signature] Date 2/18/14

Groundwater Sampling Form

1. Site Information		**2. Description**	
WELL ID	PZ-01	Description (Well Condition, Evidence of Tampering):	Good condition no lock
DATE	2/4/14		
Begin Sampling Time	9:44	Total Well Depth	22.6
End Sampling Time	11:20	Screen Interval	9.2-19.2
ERM Samplers	KB, GR	Static Water Depth	13.21 Time 9:54
EPA Oversight	Aaron Baird	Measuring Point	N. Side
Weather	Cloudy 20s	Sample Tubing Intake Depth	14

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
10:07	13.56	1200	FW	13.27	>100	4.26	6.14	137	158	Cloudy, brown
10:12	13.40	1000	2.0	13.67	>100	4.12	6.31	62	63.4	Cloudy
10:17	13.40	↓	4.0	13.57	>100	<1.00	6.33	35	0.0	Clear, No color
10:22	↓		5	13.60	>100	3.94	6.33	25	0.0	↓
10:25			6	13.57	>100	3.81	6.32	17	0.0	
10:28			7	13.58	>100	3.76	6.32	15	0.0	
10:31	↓	↓	8	13.59	>100	3.75	6.32	14	0.0	↓

Additional Remarks

Groundwater Sampling Form
Page 2

WELL ID PZ-01 **DATE** 2/4/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. ________

Field Chlorine Measurement
pH test strip (s.u.) 6.0
Cl_2 test strip (mg/L) 0.0
LR Result (mg/L) 0.06
HR Result (mg/L) ________ Dilution ____
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 100 to pH 8
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. ________
Observations (Precipitate, color)
White Precipitate

Cr(VI) Analysis
pH of preserved sample: 8

5. Sample Description

Color Clear
Turbidity 0.0
Solids —
Sample ID/Time PZ-01-01-020414 @ 10:35
Sheen —
Odor —
Reactivity —

Bottles Filled
___ 250-mL HDPE ($NaAsO_2$) ___ 500-mL HDPE (H_2SO_4) ___ 1-L HDPE, FF (HNO_3)
___ 40-mL VOA (HCl) ___ 250-mL Amber (NH_4Cl) ___ 1-L Amber (unpres) ___ 1-L HDPE (HNO_3)
___ 125-mL HDPE [$(NH_4)_2SO_4$] ___ 250-mL HDPE (FF unpres 2/3-full) ___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 13.59
pH (s.u.) 6.32
Conductivity (mS/cm) 358
DO (mg/L) 3.75
ORP (mV) 14
Turbidity (NTU) 0.0

Meter Type: Horiba
S/N:
Calibration Date: 2/4/14
Dilution Required for Conductivity? Yes

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ________

EPA Split Samples Y / N (circle)
Analyses ________

Signature ________ Date 2/4/14

Groundwater Sampling Form
Page 1

ERM

1. Site Information

WELL ID PZ-04
DATE 2/13/14
Begin Sampling Time 12:30
End Sampling Time 14:30
ERM Samplers KB, GR
EPA Oversight Aaron Baird
Weather Pt. Cloudy, 40s

2. Description

Description (Well Condition, Evidence of Tampering):

Total Well Depth 17
Screen Interval 6.5-16.5
Static Water Depth 8.80 Time 12:30
Measuring Point N. Side
Sample Tubing Intake Depth 5' from bottom

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
12:37	8.90	1600	FW	19.15	> 100.0	4.20	7.14	154	192	Slightly cloudy
12:42	8.90	1600	2	17.98	> 100.0	1.93	7.19	172	17.4	Clear, No color
12:45	↓	↓	3	17.99	> 100.0	1.51	7.20	175	7.2	↓
12:48	↓	↓	4	17.95	> 100.0	0.0	7.20	182	4.1	↓
12:51	↓	↓	6	17.95	> 100.0	3.49	7.20	183	1.5	↓
12:54	↓	↓	7	17.97	> 100.0	3.40	7.20	183	2.0	↓
12:57	↓	↓	8	17.98	> 100.0	3.32	7.20	184	0.0	↓

Additional Remarks

Trip Blank = PZ-04-21-021314 @ 12:31

Groundwater Sampling Form ERM
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WELL ID PZ-04 **DATE** 2/13/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement
pH test strip (s.u.) 6.0
Cl_2 test strip (mg/L) 0.0
LR Result (mg/L) 0.06
HR Result (mg/L) ______ Dilution ______
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 160 = pH 11
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. ______
Observations (Precipitate, color)

Cr(VI) Analysis
pH of preserved sample: 10

5. Sample Description

Color None
Turbidity 0.0
Solids —
Sample ID/Time PZ-04-01-021314 @12:30

Sheen —
Odor —
Reactivity —

Bottles Filled
___ 250-mL HDPE ($NaAsO_2$)
___ 500-mL HDPE (H_2SO_4)
___ 1-L HDPE, FF (HNO_3)
___ 40-mL VOA (HCl)
___ 250-mL Amber (NH_4Cl)
___ 1-L Amber (unpres)
___ 1-L HDPE (HNO_3)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE (FF unpres 2/3-full)
___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 17.98
pH (s.u.) 7.20
Conductivity (mS/cm) 1.64
DO (mg/L) 3.32
ORP (mV) 184
Turbidity (NTU) 0.0

Meter Type: Horiba
S/N:
Calibration Date: 2/13/14
Dilution Required for Conductivity? yes

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______

EPA Split Samples Y / N (circle)
Analyses ______

Signature ______ Date 2/13/14

Groundwater Sampling Form ERM
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1. Site Information		***2. Description***	
WELL ID	PZ-6	Description (Well Condition, Evidence of Tampering):	Removed Tubing, good condition with well cap
DATE	1/21/14	Total Well Depth	17.68
Begin Sampling Time	10:00	Screen Interval	3.5-13.5
End Sampling Time	11:36	Static Water Depth	10.32 Time 10:11
ERM Samplers	KB, TH	Measuring Point	No side -> marked
EPA Oversight	—	Sample Tubing Intake Depth	14'
Weather	Cloudy, 20s		

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
10:26	10.98	1,200	FW	11.05	83.2	0.0	7.42	256	13.6	Clear, No color
10:31	10.92	600	1.5	10.85	83.2	0.0	7.42	-76	11.4	↓ ↓
10:36	11.05	800	2.5	10.95	83.2	0.0	7.42	-139	8.9	↓ ↓
10:41	11.05	700	3.5	11.04	83.2	0.0	7.41	-218	3.3	↓ ↓
10:46	11.05	700		11.12	83.2	0.0	7.42	-235	1.3	↓ ↓
10:51	↓	↓		11.11	83.2	0.0	7.42	-237	0.4	↓ ↓
10:56	↓	↓		11.12	83.2	0.0	7.42	-238	0.3	↓ ↓
			7.0 GAL							

Additional Remarks

PZ-6-21-013114 = Trip Blank

Groundwater Sampling Form
Page 2

ERM

WELL ID PZ-06 **DATE** 1/31/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. ____

Field Chlorine Measurement
pH test strip (s.u.) 6.5
Cl_2 test strip (mg/L) 0.0
LR Result (mg/L) 0.02
HR Result (mg/L) — Dilution ____
Observations (Yellow color, pink color fades)
No color

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 100
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. ____
Observations (Precipitate, color) WHITE PRECIPITATE

Cr(VI) Analysis
pH of preserved sample: 9.6

5. Sample Description

Color Clear, No color
Turbidity 0.3
Solids None
Sample ID/Time PZ06-01-013114 @11:00

Sheen None
Odor None
Reactivity ____

Bottles Filled
3 40-mL VOA (HCl)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE ($NaAsO_2$)
___ 250-mL Amber (NH_4Cl)
___ 250-mL HDPE (FF unpres 2/3-full)
___ 500-mL HDPE (H_2SO_4)
___ 1-L Amber (unpres)
___ 1-L HDPE (unpres)
___ 1-L HDPE, FF (HNO_3)
___ 1-L HDPE (HNO_3)

6. Water Quality Parameters

Temp (°C) 11.12
pH (s.u.) 7.42
Conductivity (mS/cm) 83.2
DO (mg/L) 0.0
ORP (mV) -238
Turbidity (NTU) 0.3

Meter Type: Horiba
S/N:
Calibration Date: 1/31/14
Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ____

EPA Split Samples Y / N (circle)
Analyses ____

Signature ____ Date 1/31/14

Groundwater Sampling Form ERM
Page 1

1. Site Information

WELL ID PZ-08
DATE 2/5/14
Begin Sampling Time 12:15
End Sampling Time
ERM Samplers KB, GR
EPA Oversight Aaron Baird
Weather Cloudy 20's

2. Description

Description (Well Condition, Evidence of Tampering):

Total Well Depth 17.81
Screen Interval 3.5-13.5
Static Water Depth 5.12 Time 12:20
Measuring Point North Side
Sample Tubing Intake Depth 9

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
12:24	5.16	500	FW	10.63	46.2	2.54	6.53	-26	40.2	Clear, No color, Anaerobic odor
12:29	5.15	500	|	11.98	44.8	0.46	5.89	-15	5.7	↓
12:34	↓	↓	1.5	12.09	44.8	0.0	5.77	-20	1.3	↓
12:37	↓	↓	3.5	12.06	44.5	0.0	5.75	-24	0.4	↓
12:40	↓	↓	4.0	12.09	44.4	0.0	5.74	-25	0.0	↓

Additional Remarks

Groundwater Sampling Form ERM
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WELL ID VZ-08 **DATE** 2/5/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd: ______

Field Chlorine Measurement
pH test strip (s.u.) 6.0
Cl_2 test strip (mg/L) 0.0
LR Result (mg/L) 0.00
HR Result (mg/L) ______ Dilution ______
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 100 = pH 11
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. ______
Observations (Precipitate, color)

Cr(VI) Analysis
pH of preserved sample: 7.0

5. Sample Description

Color Clear
Turbidity 0.0
Solids —
Sample ID/Time VZ-08-01-020514 @ 12:45
Sheen —
Odor Anaerobic
Reactivity —

Bottles Filled
___ 40-mL VOA (HCl)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE ($NaAsO_2$)
___ 250-mL Amber (NH_4Cl)
___ 250-mL HDPE (FF unpres 2/3-full)
___ 500-mL HDPE (H_2SO_4)
___ 1-L Amber (unpres)
___ 1-L HDPE (unpres)
___ 1-L HDPE, FF (HNO_3)
___ 1-L HDPE (HNO_3)

6. Water Quality Parameters

Temp (°C) 17.09
pH (s.u.) 5.74
Conductivity (mS/cm) 44.4
DO (mg/L) 0.0
ORP (mV) -15
Turbidity (NTU) 0.0

Meter Type: Horiba
S/N:
Calibration Date: 2/5/14
Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______
EPA Split Samples Y / N (circle)
Analyses ______

Signature ______ Date 2/5/14

Groundwater Sampling Form
Page 1

1. Site Information

WELL ID PZ-10
DATE 2/4/14
Begin Sampling Time 1320
End Sampling Time
ERM Samplers KB, DE
EPA Oversight —
Weather Cloudy, 20s

2. Description

Description (Well Condition, Evidence of Tampering):

Total Well Depth 17.73
Screen Interval 4-14
Static Water Depth 5.63 Time 1330
Measuring Point N. Side
Sample Tubing Intake Depth 10

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
1334	5.72	1600	FW	11.79	52.0	14.92	6.30	-25	424	Clear, No color, sulfur odor
1339	5.70	1400	2	13.51	51.3	0.0	6.23	-72	24.1	↓
1344	5.70	1400	3.5	13.54	51.3	0.0	6.24	-102	15.5	
1349	↓	↓	5	13.54	52.0	0.0	6.24	-114	3.0	
1352			6	13.58	52.2	0.0	6.25	-120	0.0	
1355			7	13.63	52.2	0.0	6.25	-123	0.0	
1358	↓	↓	8	13.67	52.2	0.0	6.25	-125	0.0	↓

Additional Remarks

Trip Blank - PZ-10-21-020414 @ 14:06

Groundwater Sampling Form
Page 2

ERM

WELL ID PZ-10 DATE 2/4/14

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check Pos / Neg (circle)

# of 5-mg NH_4Cl aliquots reqd. ____

Field Chlorine Measurement

pH test strip (s.u.) ~~0.0~~ 6.0

Cl_2 test strip (mg/L) 0.0

LR Result (mg/L) 0.0

HR Result (mg/L) ____ Dilution ____

Observations (Yellow color, pink color fades)

Cyanide Analysis

pH adjustment req Y N (circle)

drops NaOH to bring pH>12 ____

Initial Cl_2 check Pos / Neg (circle)

# of drops $NaAsO_2$ reqd. 100 = pH 10

Observations (Precipitate, color)

White Precipitate

Cr(VI) Analysis

pH of preserved sample: 7

5. Sample Description

Color Clear

Turbidity 0.0

Solids —

Sample ID/Time PZ-10-01-020414 @ 1405

Sheen —

Odor —

Reactivity —

Bottles Filled

___ 250-mL HDPE ($NaAsO_2$)
___ 500-mL HDPE (H_2SO_4)
___ 1-L HDPE, FF (HNO_3)
___ 40-mL VOA (HCl)
___ 250-mL Amber (NH_4Cl)
___ 1-L Amber (unpres)
___ 1-L HDPE (HNO_3)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE (FF unpres 2/3-full)
___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 13.62

pH (s.u.) 6.24

Conductivity (mS/cm) 57.2

DO (mg/L) 0.0

ORP (mV) -125

Turbidity (NTU) 0.0

Meter Type:

S/N:

Calibration Date:

Dilution Required for Conductivity?

7. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses ____

Signature [signature] Date 2/4/14

Groundwater Sampling Form
Page 1

ERM

1. Site Information		**2. Description**	
WELL ID	PZ-12	Description (Well Condition, Evidence of Tampering):	No lock
DATE	2/4/14		
Begin Sampling Time	12:20		
End Sampling Time	13:15	Total Well Depth	17.59
ERM Samplers	KB, GR	Screen Interval	4-14
EPA Oversight	—	Static Water Depth	6.55 Time 12:24
Weather	Cloudy 20s	Measuring Point	N side
		Sample Tubing Intake Depth	10

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
12:30	6.78	1900	FW	12.75	49.6	6.77	6.93	21	31.0	Clear-No color, sulfur smell
12:35	6.72	1350	2.5	12.84	48.9	0.0	6.06	-26	0.0	
12:40			4	12.75	48.3	0.0	5.96	-42	0.0	
12:45			5	12.76	48.6	0.0	5.92	-50	0.0	
12:48			6.5	12.83	48.5	0.0	5.91	-57	0.0	
12:51			7.0	12.84	47.9	0.0	5.91	-58	0.0	
12:54			7.5	12.85	48.3	0.0	5.91	-58	0.0	

Additional Remarks

Groundwater Sampling Form
Page 2

WELL ID PZ-12 **DATE** 2/4/14

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check Pos / Neg (circle)

# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement

pH test strip (s.u.) 6.0

Cl_2 test strip (mg/L) 0.0

LR Result (mg/L) 0.10

HR Result (mg/L) ______ Dilution ______

Observations (Yellow color, pink color fades)

Cyanide Analysis

pH adjustment req Y / N (circle)

drops NaOH to bring pH>12 100 ± 8

Initial Cl_2 check Pos / Neg (circle)

# of drops $NaAsO_2$ reqd. ______

Observations (Precipitate, color) White Precipitate

Cr(VI) Analysis

pH of preserved sample: 1.0

5. Sample Description

Color Clear

Turbidity 0.0

Solids —

Sample ID/Time PZ-12-01-020414 @ 13:00

Sheen —

Odor —

Reactivity —

Bottles Filled

___ 250-mL HDPE ($NaAsO_2$) ___ 500-mL HDPE (H_2SO_4) ___ 1-L HDPE, FF (HNO_3)

___ 40-mL VOA (HCl) ___ 250-mL Amber (NH_4Cl) ___ 1-L Amber (unpres) ___ 1-L HDPE (HNO_3)

___ 125-mL HDPE [$(NH_4)_2SO_4$] ___ 250-mL HDPE (FF unpres 2/3-full) ___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 12.85

pH (s.u.) 5.91

Conductivity (mS/cm) 48.3

DO (mg/L) 0.0

ORP (mV) -58

Turbidity (NTU) 0.0

Meter Type: Horiba

S/N:

Calibration Date: 2/4/14

Dilution Required for Conductivity? Y / No

7. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 2/4/14

Groundwater Sampling Form
Page 1

1. Site Information

WELL ID PZ-16
DATE 2/3/14
Begin Sampling Time 10:25
End Sampling Time 11:30
ERM Samplers KB, TH
EPA Oversight —
Weather Clear, 20s

2. Description

Description (Well Condition, Evidence of Tampering): Removed hose, lock doesn't work ≈10' from WW
Total Well Depth 17.89
Screen Interval 4-14
Static Water Depth 4.34 Time 10:22
Measuring Point N side
Sample Tubing Intake Depth 10'

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
10:33	4.50	1600	FW	10.82	79.3	0.74	6.71	242	9.6	Clear, No odor
10:38	4.52	1600	2	11.75	76.9	0.0	6.77	-28	1.5	
10:43	4.52	1600	4	11.94	75.2	0.0	6.71	-78	1.5	↓ ↓
10:48	↓	↓	6	12.01	74.6	0.0	6.63	-92	0.4	
10:53			8	12.06	74.5	0.0	6.62	-95	0.0	
10:58			10	12.09	74.4	0.0	6.61	-97	0.2	

Additional Remarks

ERM

WELL ID PZ-16 DATE 2/3/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement
pH test strip (s.u.) 6
Cl_2 test strip (mg/L) 0
LR Result (mg/L) 0.02
HR Result (mg/L) ______ Dilution ____
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 100 = 11.5
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. —
Observations (Precipitate, color)
White Precipitate

Cr(VI) Analysis
pH of preserved sample: 9.0

5. Sample Description

Color Clear, None
Turbidity 0.2
Solids None
Sample ID/Time PZ-16-01-020314 @ 11:00

Sheen —
Odor —
Reactivity —

Bottles Filled
___ 250-mL HDPE ($NaAsO_2$)
___ 500-mL HDPE (H_2SO_4)
___ 1-L HDPE, FF (HNO_3)
___ 40-mL VOA (HCl)
___ 250-mL Amber (NH_4Cl)
___ 1-L Amber (unpres)
___ 1-L HDPE (HNO_3)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE (FF unpres 2/3-full)
___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 12.09
pH (s.u.) 6.61
Conductivity (mS/cm) 74.4
DO (mg/L) 0.0
ORP (mV) -97
Turbidity (NTU) 0.2

Meter Type: Horiba
S/N:
Calibration Date: 2/3/14
Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID PZ-16-11-020314 @ 11:01

EPA Split Samples Y / N (circle)
Analyses ______

Signature ______ Date 2/3/14

Groundwater Sampling Form

Page 1

ERM

1. Site Information

WELL ID PZ-18

DATE 2/3/14

Begin Sampling Time 11:50

End Sampling Time

ERM Samplers KB, TH

EPA Oversight —

Weather Clear, 70s

2. Description

Description (Well Condition, Evidence of Tampering):

Removed Tubing, missing lock

Total Well Depth 19.68

Screen Interval 3.3-13.3

Static Water Depth 5.76 Time 11:54

Measuring Point N side

Sample Tubing Intake Depth 8

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
11:58	7.04	1800	FW	11.53	>100	1.06	6.19	-311	28.4	Clear, No color, Aerobic Odor
12:03	8.18	1400	2.5	11.08	85.7	1.12	7.03	-306	18.3	Cloudy, grayish black, sulfur odor
12:08	8.39	1200	4	12.13	>100	0.79	7.20	-339	48.7	" "
12:13	8.23	1000	5	13.67	>100	1.21	7.81	-362	5.1	" "
12:18	8.28	800	6	13.93	>100	1.10	7.87	-364	6.4	Clear, No color, sulfur odor
12:23	7.99	800	6.5	14.09	>100	1.22	7.84	-372	9.5	↓ ↓
12:28	7.92	800	7.5	14.08	>100	1.15	7.78	-371	10.9	↓ ↓

Additional Remarks

Groundwater Sampling Form
Page 2

ERM

WELL ID PZ-18 **DATE** 2/3/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement
pH test strip (s.u.) 5.5
Cl_2 test strip (mg/L) 0
LR Result (mg/L) 0.00
HR Result (mg/L) ______ Dilution ______
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 50
Initial Cl_2 check Pos Neg (circle)
# of drops $NaAsO_2$ reqd. —
Observations (Precipitate, color)
White precipitate

Cr(VI) Analysis
pH of preserved sample: 9.2

5. Sample Description

Color Clear
Turbidity ______
Solids —
Sample ID/Time PZ-18-01-020314 @ 12:35

Sheen —
Odor Sulfur
Reactivity —

Bottles Filled
___ 40-mL VOA (HCl)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE ($NaAsO_2$)
___ 250-mL Amber (NH_4Cl)
___ 250-mL HDPE (FF unpres 2/3-full)
___ 500-mL HDPE (H_2SO_4)
___ 1-L Amber (unpres)
___ 1-L HDPE (unpres)
___ 1-L HDPE, FF (HNO_3)
___ 1-L HDPE (HNO_3)

6. Water Quality Parameters

Temp (°C) 14.08
pH (s.u.) 7.78
Conductivity (mS/cm) ~~150.00~~ 150.0
DO (mg/L) 1.15
ORP (mV) -371
Turbidity (NTU) 10.9

Meter Type: Horiba
S/N:
Calibration Date: 2/3/14
Dilution Required for Conductivity? Yes

7. QC Samples

MS/MSD Y N (circle)
Field Dup Y N (circle)
Field Dup Sample ID ______

EPA Split Samples Y N (circle)
Analyses ______

Signature ______ Date 2/3/14

Groundwater Sampling Form
Page 1

ERM

1. Site Information		**2. Description**	
WELL ID	PZ-22	Description (Well Condition, Evidence of Tampering):	Remove tubing & bailer, No lock
DATE	2/3/14		
Begin Sampling Time	1410	Total Well Depth	17.82
End Sampling Time	15:20	Screen Interval	3-13
ERM Samplers	KB, TH	Static Water Depth	5.15 Time 14:08
EPA Oversight	—	Measuring Point	N Side
Weather	Clear, 20s	Sample Tubing Intake Depth	8

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
1415	5.25	1800	FW	11.83	>100	5.15	8.07	-128	116	Cloudy, gray
1420	5.22	1800	1.5	13.11	>100	0.76	7.56	-171	20.5	Clear, No color
1425	5.22	1800	3.5	12.99	>100	0.0	7.42	-194	0.0	
1430	5.18	1800	5.0	12.84	>100	0.0	7.31	-225	0.0	
1433	5.17	750	7.0	12.65	>100	0.0	7.28	-236	0.0	
1436			8.0	12.59	>100	0.0	7.24	-245	0.0	
1439										

Additional Remarks

Trip Blank
PZ-22-21-020314 @ 14:41

Groundwater Sampling Form
Page 2

WELL ID PZ-22 DATE 2/3/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. ____

Field Chlorine Measurement
pH test strip (s.u.) 6.0
Cl_2 test strip (mg/L) 0
LR Result (mg/L) 0.11
HR Result (mg/L) ____ Dilution ____
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 100 – pH 11
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. ____
Observations (Precipitate, color)
White precipitate

Cr(VI) Analysis
pH of preserved sample: 10.0

5. Sample Description

Color Clear
Turbidity ____
Solids —
Sample ID/Time PZ-22-01-020314 @ 14:40

Sheen —
Odor —
Reactivity —

Bottles Filled
___ 250-mL HDPE ($NaAsO_2$)
___ 500-mL HDPE (H_2SO_4)
___ 1-L HDPE, FF (HNO_3)
___ 40-mL VOA (HCl)
___ 250-mL Amber (NH_4Cl)
___ 1-L Amber (unpres)
___ 1-L HDPE (HNO_3)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE (FF unpres 2/3-full)
___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 12.59
pH (s.u.) 7.24
Conductivity (mS/cm) 2.53
DO (mg/L) 0.0
ORP (mV) -245
Turbidity (NTU) 0.0

Meter Type: Horiba
S/N:
Calibration Date: 2/3/14
Dilution Required for Conductivity Yes

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ____

EPA Split Samples Y / N (circle)
Analyses ____

Signature ____ Date 2/3/14

Groundwater Sampling Form
Page 1

ERM

1. Site Information

WELL ID PZ-24
DATE 2/7/14
Begin Sampling Time 13:30
End Sampling Time
ERM Samplers PB, TH
EPA Oversight Aaron Baird
Weather Windy 30s

2. Description

Description (Well Condition, Evidence of Tampering):

Total Well Depth 17.71
Screen Interval 3-13
Static Water Depth ~~[illegible]~~ 3.98 Time 13:30
Measuring Point N side
Sample Tubing Intake Depth 5' from bottom

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
13:34	3.96	500	Fw	11.73	89.3	2.13	6.82	-50	110	Cloudy, white
13:38	3.98	↓	0.5	12.29	88.4	0.00	6.49	-55	21.9	Clear, No color
13:41	↓	↓	1.0	12.26	87.7	0.0	6.46	-57	15.9	↓
13:44	↓	↓	1.25	12.31	87.1	0.0	6.42	-60	9.7	↓
13:47	↓	↓	2.0	12.30	87.1	0.0	6.40	-62	8.2	↓
13:50	↓	↓	2.25	12.29	87.3	0.0	6.40	-64	9.4	↓

Additional Remarks

WELL ID PZ-26 **DATE** 2/7/14

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check Pos / Neg (circle)

# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement

pH test strip (s.u.) 6.6

Cl_2 test strip (mg/L) 0.0

LR Result (mg/L) 0.00

HR Result (mg/L) ______ Dilution ______

Observations (Yellow color, pink color fades)

Cyanide Analysis

pH adjustment req Y / N (circle)

drops NaOH to bring pH>12 100 = pH 12

Initial Cl_2 check Pos / Neg (circle)

# of drops $NaAsO_2$ reqd. ______

Observations (Precipitate, color)

Cr(VI) Analysis

pH of preserved sample: 9.0

5. Sample Description

Color ______

Turbidity 9.4

Solids ______

Sample ID/Time PZ-26-01-020714 @ 13:55

Sheen ______

Odor ______

Reactivity ______

Bottles Filled

___ 40-mL VOA (HCl)

___ 125-mL HDPE [$(NH_4)_2SO_4$]

___ 250-mL HDPE ($NaAsO_2$)

___ 250-mL Amber (NH_4Cl)

___ 250-mL HDPE (FF unpres 2/3-full)

___ 500-mL HDPE (H_2SO_4)

___ 1-L Amber (unpres)

___ 1-L HDPE (unpres)

___ 1-L HDPE, FF (HNO_3)

___ 1-L HDPE (HNO_3)

6. Water Quality Parameters

Temp (°C) 12.19

pH (s.u.) 6.40

Conductivity (mS/cm) 87.3

DO (mg/L) 0.0

ORP (mV) -64

Turbidity (NTU) 9.4

Meter Type: Horiba

S/N:

Calibration Date: 2/7/14

Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 2/7/14

 ERM

1. Site Information

WELL ID	PZ-~~03~~26
DATE	2/5/14
Begin Sampling Time	9:50
End Sampling Time	11:15
ERM Samplers	KB, GR
EPA Oversight	
Weather	Pt. Cloudy, 10s

2. Description

Description (Well Condition, Evidence of Tampering):

Total Well Depth	~~17.6~~ 17.59
Screen Interval	[illegible] 3.5-13.5
Static Water Depth	5.33 Time 9:57
Measuring Point	N. Side
Sample Tubing Intake Depth	9

3. Well Purging

Time	Depth to Water	Purge Rate (mL/min)	Purge Vol (gal)	Temp (°C)	Cond (mS/cm)	DO (mg/L)	pH	ORP (MV)	Turb (NTU)	Remarks
10:00	5.35	500	FW	13.43	54.4	2.09	5.98	-22	152	Slightly cloudy, bluish
10:05	5.35	500	0.5	12.99	55.3	0.0	5.77	-43	18.6	Clear, No color
10:10			1.0	12.98	55.3	0.0	5.75	-47	14.1	
10:13			1.5	13.06	55.2	0.0	5.73	-49	7.7	
10:16			2.0	13.05	55.3	0.0	5.73	-49	5.7	
10:19			2.5	13.11	55.3	0.0	5.73	-50	4.5	

Additional Remarks

WELL ID PZ-26 DATE 2/5/14

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement
pH test strip (s.u.) 6.0
Cl_2 test strip (mg/L) 0.0
LR Result (mg/L) 0.00
HR Result (mg/L) ______ Dilution ______
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 ______
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. ______
Observations (Precipitate, color)

Cr(VI) Analysis
pH of preserved sample: 8.0

5. Sample Description

Color —
Turbidity 4.5
Solids —
Sheen —
Odor —
Reactivity —
Sample ID/Time PZ-26-01-020514 @ 10:25

Bottles Filled
___ 250-mL HDPE ($NaAsO_2$)
___ 500-mL HDPE (H_2SO_4)
___ 1-L HDPE, FF (HNO_3)
___ 40-mL VOA (HCl)
___ 250-mL Amber (NH_4Cl)
___ 1-L Amber (unpres)
___ 1-L HDPE (HNO_3)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE (FF unpres 2/3-full)
___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 13.11
pH (s.u.) 5.73
Conductivity (mS/cm) 55.3
DO (mg/L) 0.0
ORP (mV) -50
Turbidity (NTU) 4.5

Meter Type: Horiba
S/N:
Calibration Date: 2/5/14
Dilution Required for Conductivity? No

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______

EPA Split Samples Y / N (circle)
Analyses ______

Signature ______ Date 2/5/14

Appendix D-5
Surface Water Sampling Forms

Surface Water / Wastewater Sampling Form

ERM

1. Site Information

SITE ID: PRI4-008
DATE: 26 NOV 2013
Begin Sampling Time: 1230
End Sampling Time: 1245
ERM Samplers: JW/TH/KB
EPA Oversight: —
Weather: Sunny

3. Location

Lat: 12T0353945
Long: 4532062
GPS Accuracy: ± 10Ft
Location Field Modified? Yes / No (circle) *If Yes, explain in field notes*

2. Description / Notes

Site Type SW / WW (circle)
Description (Location, Flow, Conditions):

Flows to N about 3L/min

PRI4-008-SW01-112613

Water Depth (inches) 3" Meas / Est (circle)
Sampling Method Pump / Dipper (circle)
If Pump: Sample Tubing Intake Depth (in) 1.5"
Tubing Length (feet) 20'
Initial Tubing Purge (L) 5L

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. 0

Field Chlorine Measurement
pH test strip (s.u.) 6.0
Cl_2 test strip (mg/L) 0
LR Result (mg/L) 0.56
HR Result (mg/L) ______ Dilution —
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 ±100 drops 50% NaOH
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. —
Observations (Precipitate, color) Tan to Rust

Cr(VI) Analysis
pH of preserved sample: 10pH

Trip Blank
PRI4-008-SW21-112613 @ 1240

5. Sample Description

Sample ID: PRI4-008-SW01-112613
Color: Rust/Reddish Brown
Turbidity: Extreme
Solids: None visible
Sheen: —
Odor: —
Reactivity: —

Bottles Filled
1 250-mL HDPE ($NaAsO_2$)
1 500-mL HDPE (H_2SO_4)
1 1-L HDPE, FF (HNO_3)
3 40-mL VOA (HCl)
1 250-mL Amber (NH_4Cl)
1 1-L Amber (unpres)
1 1-L HDPE (HNO_3)
1 125-mL HDPE [$(NH_4)_2SO_4$]
1 250-mL HDPE (FF unpres 2/3-full)
3 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 9.84
pH (s.u.) 5.36
Turbidity (NTU) 3250
DO (mg/L) 3.2
ORP (mV) 420

Conductivity (mS/cm) 245
Dilution Required for Conductivity? YES
Measurement Method In-Situ / Container (circle)
Meter Type: Horiba U-53 S/N: ______
Calibration Date: 11/26/13

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID ______

EPA Split Samples Y / N (circle)
Analyses —

Signature [signature] Date 26 NOV 2013

Surface Water / Wastewater Sampling Form ERM

1. Site Information

SITE ID: PR14-013
DATE: 11-25-13
Begin Sampling Time: 1445
End Sampling Time: 1605
ERM Samplers: Lundmark, Utah
EPA Oversight: A. Baird PWT
Weather: Sunny, Calm 40s

sample time = 1500

2. Description / Notes

Site Type SW / WW (circle)
Description (Location, Flow, Conditions):
@ Gypsum outfall
Could not use pump - kept clogging
used dipper. Filtered from
5-gal bucket
Could not field filter - too many solids
Water Depth (inches) >24 Meas / Est (circle)
Sampling Method Pump / Dipper (circle)
If Pump: Sample Tubing Intake Depth (in) ~12
Tubing Length (feet)
Initial Tubing Purge (L)

3. Location

Lat N: 4531510
Long E: 354038
GPS Accuracy: ±16 ft PDOP=1.07
Location Field Modified? Y / N (circle) *If Yes, explain in field notes*

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd.

Field Chlorine Measurement
pH test strip (s.u.) ~6
Cl_2 test strip (mg/L) 0
LR Result (mg/L) 0.66
HR Result (mg/L) — Dilution —
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 100 drops to pH 9
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd.
Observations (Precipitate, color)

Cr(VI) Analysis
pH of preserved sample: 8.5

5. Sample Description

Sample ID: PR14-013-SW01-112513
Color: Rust orange
Turbidity: Extremely High
Solids: Yes - Sand, Gypsum
Sheen: No
Odor:
Reactivity: Yes - some Rx w/HCl possible water was effervescing in dipper

Bottles Filled
1 250-mL HDPE (~~NaAsO2~~) NaOH
3 40-mL VOA (HCl)
1 250-mL Amber (NH_4Cl)
1 125-mL HDPE [$(NH_4)_2SO_4$]
1 250-mL HDPE (~~FF~~ unpres 2/3-full) Not FF
1 500-mL HDPE (H_2SO_4)
9 1-L Amber (unpres)
2 1-L HDPE (unpres)
0 1-L HDPE, FF (HNO_3)
1 1-L HDPE (HNO_3)

6. Water Quality Parameters

Temp (°C): 21.49
pH (s.u.): 5.62 pH
Turbidity (NTU): 3520 NTU (1:10 Dil)
DO (mg/L): 3.25
ORP (mV): 33.6
Conductivity (mS/cm): 371 (1:10)
Dilution Required for Conductivity? yes 1/10
Measurement Method In-Situ / Container (circle)
Meter Type: Horiba S/N:
Calibration Date: 112513

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID
EPA Split Samples Y / N (circle)
Analyses: Same

Signature [signature] Date 11-25-13

Surface Water / Wastewater Sampling Form

1. Site Information

SITE ID: PRI7-001

DATE: 11-20-13

Begin Sampling Time: 1210

End Sampling Time: 1225

ERM Samplers: IU / DD

EPA Oversight: —

Weather: Cloudy 40 - sprinkle Rain

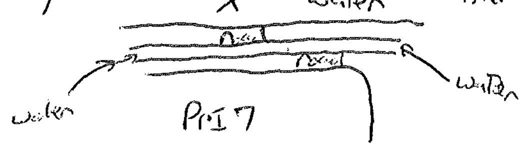
2. Description / Notes

Site Type SW / WW (circle)

Move 300' N of Original Location

Description (Location, Flow, Conditions):

North of PRI 7, ← Location - No 0.2µm filter for Pric water



Water Depth (inches) 5" Meas / Est (circle)

Sampling Method Pump / Dipper (circle)

If Pump: Sample Tubing Intake Depth (in) 2"

Tubing Length (feet) 300'

Initial Tubing Purge (L) 35L

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in field notes*

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check Pos / Neg (circle)

# of 5-mg NH_4Cl aliquots reqd. 0

Field Chlorine Measurement

pH test strip (s.u.) 6.0

Cl_2 test strip (mg/L) 0.0

LR Result (mg/L) 0.07

HR Result (mg/L) ______ Dilution —

Observations (Yellow color, pink color fades)

Cyanide Analysis

pH adjustment req Y / N (circle)

drops NaOH to bring pH>12 10+

Initial Cl_2 check Pos / Neg (circle)

# of drops $NaAsO_2$ reqd. —

Observations (Precipitate, color)

Cr(VI) Analysis

pH of preserved sample: 10.0

5. Sample Description

Sample ID: PRI7-001-~~HA~~SW001-112013

Color: Slight Tan

Turbidity: Slight

Solids: None

Sheen: None

Odor: None

Reactivity: None

Bottles Filled

___ 250-mL HDPE ($NaAsO_2$) ___ 500-mL HDPE (H_2SO_4) ___ 1-L HDPE, FF (HNO_3)

___ 40-mL VOA (HCl) ___ 250-mL Amber (NH_4Cl) ___ 1-L Amber (unpres) ___ 1-L HDPE (HNO_3)

___ 125-mL HDPE [$(NH_4)_2SO_4$] ___ 250-mL HDPE (FF unpres 2/3-full) ___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C): 7.70°C

pH (s.u.): 6.85pH

Turbidity (NTU): 5.2 NTU

DO (mg/L): 5.30

ORP (mV): 286 ORP mV

Conductivity (mS/cm): 217.0

Dilution Required for Conductivity? Yes 1/10

Measurement Method In-Situ / Container (circle)

Meter Type: Horiba S/N: ______

Calibration Date: 11-20-13

7. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [signature] Date 11-20-13

Surface Water / Wastewater Sampling Form

ERM

1. Site Information

SITE ID PRI7-003
DATE 20 NOV 2013
Begin Sampling Time 1345
End Sampling Time 1400
ERM Samplers JU/DD
EPA Oversight — None
Weather Cloudy 40

2. Description / Notes

Site Type SW / WW (circle)
Description (Location, Flow, Conditions):
Flow in seep to S/SE
MgO 0.2μ filter for perchlorate

3. Location

Lat
Long
GPS Accuracy
Location Field Modified? Y / N (circle) *If Yes, explain in field notes*

Water Depth (inches) 3 Meas / Est (circle)
Sampling Method Pump / Dipper (circle)
If Pump: Sample Tubing Intake Depth (in) 1"
Tubing Length (feet) 10 ft
Initial Tubing Purge (L) 3 L

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. Ø
Field Chlorine Measurement
pH test strip (s.u.) 7.0
Cl_2 test strip (mg/L) 0.0
LR Result (mg/L) 0.17
HR Result (mg/L) Dilution Ø
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 100+
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. Ø
Observations (Precipitate, color) -Black/Gray crystals
Cr(VI) Analysis
pH of preserved sample: 9.5 pH

Equip ~~Field~~ Blank PRI7-003-SW22-112013 JU 1400
Trip Blank PRI7-003-SW21-112013 JU 1400

5. Sample Description

Sample ID PRI7-003-SW01-112013
Color Tan/Rust
Turbidity Yes

Solids None
Sheen Present
Odor Iron Sulfide
Reactivity None

Bottles Filled
___ 250-mL HDPE ($NaAsO_2$)
___ 500-mL HDPE (H_2SO_4)
___ 1-L HDPE, FF (HNO_3)
___ 40-mL VOA (HCl)
___ 250-mL Amber (NH_4Cl)
___ 1-L Amber (unpres)
___ 1-L HDPE (HNO_3)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE (FF unpres 2/3-full)
___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 12.57 °C
pH (s.u.) 6.82
Turbidity (NTU) 123
DO (mg/L) 3.20
ORP (mV) -66 ORP mV

Conductivity (mS/cm) 76.9
Dilution Required for Conductivity? No
Measurement Method In-Situ / Container (circle)
Meter Type: Horiba S/N:
Calibration Date: 11/20/13

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID

EPA Split Samples Y / N (circle)
Analyses

Signature [signature] Date 11/20/13

Surface Water / Wastewater Sampling Form

ERM

1. Site Information

SITE ID: PRI7-007-SW01-112113
DATE: 21 Nov 2013
Begin Sampling Time: 1230
End Sampling Time: 1330
ERM Samplers: JY / PD
EPA Oversight: Aaron Baird
Weather: Cloudy, wind 30+ mph, 30°

2. Description / Notes

Site Type: SW / WW (circle)
Description (Location, Flow, Conditions): Installowpond flowing to S/SE, clean

No 0.2 filter for perchlorate

Water Depth (inches): 13" Meas / Est (circle)
Sampling Method: Pump / Dipper (circle)
If Pump: Sample Tubing Intake Depth (in): 6"
Tubing Length (feet): 10'
Initial Tubing Purge (L): 2L

3. Location

Lat:
Long:
GPS Accuracy:
Location Field Modified? Y / N (circle) *If Yes, explain in field notes*

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check: Pos / Neg (circle)
\# of 5-mg NH_4Cl aliquots reqd.: None

Field Chlorine Measurement

pH test strip (s.u.): 6.0
Cl_2 test strip (mg/L): 0.0
LR Result (mg/L): 0.02
HR Result (mg/L): Dilution:

Cyanide Analysis

pH adjustment req: Y / N (circle) 9.5 initial
\# drops NaOH to bring pH>12: 50+ 10.35 final (Horiba)
Initial Cl_2 check: Pos / Neg (circle)
\# of drops $NaAsO_2$ reqd.: None
Observations (Precipitate, color): white, waxy

Cr(VI) Analysis

pH of preserved sample: 8.0

Observations (Yellow color, pink color fades): Trip Blank PRI7-007-SW22-112113 @ 1600
Collect Duplicate PRI7-007-SW21-112113 @ 1500

5. Sample Description

Sample ID: PRI7-007-SW01-112113
Color: Clear
Turbidity: None
Solids: None
Sheen: None
Odor: None (clay bank iron sulfide odor)
Reactivity: None

Bottles Filled

___ 40-mL VOA (HCl)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE ($NaAsO_2$)
___ 250-mL Amber (NH_4Cl)
___ 250-mL HDPE (FF unpres 2/3-full)
___ 500-mL HDPE (H_2SO_4)
___ 1-L Amber (unpres)
___ 1-L HDPE (unpres)
___ 1-L HDPE, FF (HNO_3)
___ 1-L HDPE (HNO_3)

6. Water Quality Parameters

Temp (°C): 12.1 °C
pH (s.u.): 5.45 pH
Turbidity (NTU): 0.1 NTU
DO (mg/L): 1.2 mg/L
ORP (mV): 30 mV
Conductivity (mS/cm): 85.6 mS/cm
Dilution Required for Conductivity?: None
Measurement Method: In-Situ / Container (circle)
Meter Type: Horiba S/N:
Calibration Date: 11-21-13

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID: PRI7-007-SW21-112113 @ 1500
EPA Split Samples Y / N (circle)
Analyses: Same as ERM

Signature: [signature] Date: 11/21/13

Surface Water / Wastewater Sampling Form

ERM

1. Site Information

SITE ID PRI7-013
DATE 22 Nov 2013
Begin Sampling Time 1205
End Sampling Time 1245
ERM Samplers JW/DD
EPA Oversight Aaron Bird
Weather

2. Description / Notes

Site Type SW / WW (circle)
Description (Location, Flow, Conditions):
- Small seep - Flow to East into pri 7
- Conduct field preservation in trailer
- submit 2 - perchlorate samples one 0.45μm & one 0.45μm and 0.2μm.

3. Location

Lat
Long
GPS Accuracy
Location Field Modified? Y / N (circle) *If Yes, explain in field notes*

Water Depth (inches) 4 1/2 Meas / Est (circle)
Sampling Method Pump / Dipper (circle)
If Pump: Sample Tubing Intake Depth (in) 2"
Tubing Length (feet) 20'
Initial Tubing Purge (L) 20L

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. 0

Field Chlorine Measurement
pH test strip (s.u.) 7.0
Cl_2 test strip (mg/L) 0.0
LR Result (mg/L) 0.06
HR Result (mg/L) — Dilution Ø
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle) Initial 9.0 Final 11.5
drops NaOH to bring pH>12 150+ @ 50% Solution
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. Ø
Observations (Precipitate, color) Slightly gray waxy

Cr(VI) Analysis
pH of preserved sample: 8.0

5. Sample Description

Sample ID PRI7-013-SW01-112213
Color Clear
Turbidity None
Solids Some - Black
Sheen None
Odor Trace sulfide
Reactivity None

Bottles Filled
___ 250-mL HDPE ($NaAsO_2$) ___ 500-mL HDPE (H_2SO_4) ___ 1-L HDPE, FF (HNO_3)
___ 40-mL VOA (HCl) ___ 250-mL Amber (NH_4Cl) ___ 1-L Amber (unpres) ___ 1-L HDPE (HNO_3)
___ 125-mL HDPE [$(NH_4)_2SO_4$] ___ 250-mL HDPE (FF unpres 2/3-full) ___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 12.49°C
pH (s.u.) 5.6 pH
Turbidity (NTU) 0.0 NTU
DO (mg/L) 0.70 mg/L
ORP (mV) ~~38~~ -38 mV

Conductivity (mS/cm) 58.1 ms/cm
Dilution Required for Conductivity? None
Measurement Method In-Situ / Container (circle)
Meter Type: Horiba S/N:
Calibration Date: 11-22-13

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID

EPA Split Samples Y / N (circle)
Analyses All plus MS/MSD

Signature [signature] Date 11-22-13

Surface Water / Wastewater Sampling Form

ERM

1. Site Information

SITE ID	PRI7-014
DATE	22-NOV 2013
Begin Sampling Time	0945
End Sampling Time	1025
ERM Samplers	DD/IH
EPA Oversight	Bacon, Brian
Weather	Sunny 40° - High wind

2. Description / Notes

Site Type SW / WW (circle)

Description (Location, Flow, Conditions):

No flow

No filter 0.2 for perchlorate

Water Depth (inches) 2" Meas / Est (circle)

Sampling Method Pump / Dipper (circle)

If Pump: Sample Tubing Intake Depth (in) 1"

Tubing Length (feet) 10 ft

Initial Tubing Purge (L) 3L

3. Location

Lat	
Long	
GPS Accuracy	

Location Field Modified? Y / N (circle) *If Yes, explain in field notes*

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check Pos / Neg (circle)

# of 5-mg NH_4Cl aliquots reqd. Ø

Field Chlorine Measurement

pH test strip (s.u.) 6.0

Cl_2 test strip (mg/L) 0.0

LR Result (mg/L) 0.20

HR Result (mg/L) —

Dilution Ø

Observations (Yellow color, pink color fades)

None

Cyanide Analysis

pH adjustment req Y / N (circle)

drops NaOH to bring pH>12 50

Initial Cl_2 check Pos / Neg (circle)

# of drops $NaAsO_2$ reqd. —

Observations (Precipitate, color) ~~Brown ppt~~

Initial pH ~~12.0~~ final 12.0

Cr(VI) Analysis

pH of preserved sample: 8.0

5. Sample Description

Sample ID	PRI7	Solids	None
Color	tan/rust	Sheen	slight
Turbidity	slight	Odor	Iron Sulfide
		Reactivity	None

Bottles Filled

___ 250-mL HDPE ($NaAsO_2$)
___ 500-mL HDPE (H_2SO_4)
___ 1-L HDPE, FF (HNO_3)
___ 40-mL VOA (HCl)
___ 250-mL Amber (NH_4Cl)
___ 1-L Amber (unpres)
___ 1-L HDPE (HNO_3)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE (FF unpres 2/3-full)
___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C)	5.6 °C	Conductivity (mS/cm)	545
pH (s.u.)	6.25 pH	Dilution Required for Conductivity?	No
Turbidity (NTU)	61.5 NTU	Measurement Method	In-Situ / Container (circle)
DO (mg/L)	4.5 mg/L	Meter Type: Horiba	S/N:
ORP (mV)	-56 mV	Calibration Date:	22-Nov 2013

7. QC Samples

Trip Blank PRI7-011-SW22-112213 @ 1600

MS/MSD Y / N (circle)

EPA Split Samples Y / N (circle)

Field Dup Y / N (circle)

Analyses —

Field Dup Sample ID ______ MS/MSD PRI7-014-SW21-112213 @ 1500

Signature [signature] Date 11-22-13

Surface Water / Wastewater Sampling Form ERM

1. Site Information

SITE ID PRI8-005
DATE 23 Nov 2013
Begin Sampling Time 1120
End Sampling Time 1145
ERM Samplers EU/KL
EPA Oversight Aaron B
Weather Sunny 40°

2. Description / Notes

Site Type SW / WW (circle)
Description (Location, Flow, Conditions):
No flow - large lagoon area
pH = 5.5 per test strip
0.45 μm filter only ClO_4^- (no 0.2 μm)
Water Depth (inches) 1.5' Meas / Est (circle)
Sampling Method Pump / Dipper (circle) EU
If Pump: Sample Tubing Intake Depth (in) ~~6"~~ 9"
Tubing Length (feet) 30'
Initial Tubing Purge (L) Purged 7 minutes @ ~2 L/min

3. Location

Lat
Long
GPS Accuracy
Location Field Modified? Y / N (circle) *If Yes, explain in field notes*

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd.

Field Chlorine Measurement
pH test strip (s.u.) 6.0
Cl_2 test strip (mg/L) 0.0
LR Result (mg/L) 0.0
HR Result (mg/L) — Dilution —
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle) Initial 11.0 Final 12.0
drops NaOH to bring pH>12 30
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. —
Observations (Precipitate, color)

Cr(VI) Analysis
pH of preserved sample: 10pH (wide range)
9.7 pH (Narrow Range pH Paper)

5. Sample Description

Sample ID PRI8-005-SW01-112513
Color lt Yellow tint
Turbidity Cloudy
Solids No
Sheen No
Odor No
Reactivity No

Bottles Filled
1 250-mL HDPE ($NaAsO_2$)
1 500-mL HDPE (H_2SO_4)
1 1-L HDPE, FF (HNO_3)
3 40-mL VOA (HCl)
1 250-mL Amber (NH_4Cl)
8 1-L Amber (unpres)
1 1-L HDPE (HNO_3)
1 125-mL HDPE [$(NH_4)_2SO_4$]
1 250-mL HDPE (FF unpres 2/3-full)
1 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 4.60°C
pH (s.u.) 6.15 su
Turbidity (NTU) 30.1 NTU
DO (mg/L) 7.97 mg/L
ORP (mV) 56.
Conductivity (mS/cm) 65.4 ms/cm
Dilution Required for Conductivity? No
Measurement Method In-Situ / Container (circle)
Meter Type: Horiba S/N:
Calibration Date: 23-NOV 2013

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID NA
Trip Blank = PRI8-005-SW21-112513 @1255
EPA Split Samples Y / N (circle)
Analyses

Signature [signature] Date 11/25/13

Surface Water / Wastewater Sampling Form

ERM

1. Site Information

SITE ID	PRI8-018
DATE	2/12/14
Begin Sampling Time	10:00
End Sampling Time	11:30
ERM Samplers	KS LM
EPA Oversight	Arron Baird
Weather	Rain 30's

2. Description / Notes

Site Type SW / WW (circle)

Description (Location, Flow, Conditions):

~~Collected~~ Trip Blank
PRI8-018-SW21-021214 @ 11:01

Water Depth (inches) 12 Meas / Est (circle)

Sampling Method Pump / Dipper (circle)

If Pump: Sample Tubing Intake Depth (in) 6

Tubing Length (feet) 15

Initial Tubing Purge (L)

3. Location

Lat	4532653.42
Long	353647.15
GPS Accuracy	6.9m PDOP = 3.5

Location Field Modified? Y / N (circle) *If Yes, explain in field notes*

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check Pos / Neg (circle)

# of 5-mg NH_4Cl aliquots reqd.

Field Chlorine Measurement

pH test strip (s.u.)

Cl_2 test strip (mg/L) 0.0

LR Result (mg/L) 0.08

HR Result (mg/L) Dilution

Observations (Yellow color, pink color fades)

Cyanide Analysis

pH adjustment req Y / N (circle)

drops NaOH to bring pH>12 100 = pH 11

Initial Cl_2 check Pos / Neg (circle)

# of drops $NaAsO_2$ reqd.

Observations (Precipitate, color)

Cr(VI) Analysis

pH of preserved sample: 1

5. Sample Description

Sample ID PRI8-018-SW01-021214 @ 11:00

Color Yellow

Turbidity 48.1

Solids —

Sheen —

Odor —

Reactivity —

Bottles Filled

___ 250-mL HDPE ($NaAsO_2$)
___ 500-mL HDPE (H_2SO_4)
___ 1-L HDPE, FF (HNO_3)
___ 40-mL VOA (HCl)
___ 250-mL Amber (NH_4Cl)
___ 1-L Amber (unpres)
___ 1-L HDPE (HNO_3)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE (FF unpres 2/3-full)
___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C)	9.26
pH (s.u.)	0.70
Turbidity (NTU)	48.1
DO (mg/L)	2.96
ORP (mV)	510

Conductivity (mS/cm) 60.1

Dilution Required for Conductivity? No

Measurement Method In-Situ / Container (circle)

Meter Type: Horiba S/N:

Calibration Date: 2/12/14

7. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID

EPA Split Samples Y / N (circle)

Analyses

Signature [signature] Date 2/18/14

Rev 1, Nov 2013

SOP USM-08
US Magnesium RI/FS

..rface Water / Wastewater Sampling Form

ERM

1. Site Information

SITE ID PRI8-019

DATE 2/12/14

Begin Sampling Time 14:00

End Sampling Time 15:20

ERM Samplers L. Mercer / K. Benson

EPA Oversight Aaron Baird

Weather Cloudy, breezy, ~45°F

2. Description / Notes

Site Type SW / WW (circle)

Description (Location, Flow, Conditions):

Water Depth (inches) 12 Meas / Est (circle)

Sampling Method Pump / Dipper (circle)

If Pump: Sample Tubing Intake Depth (in) 6

Tubing Length (feet) 20

Initial Tubing Purge (L) 3 gal

3. Location

Lat 4533279.45

Long 353295.50

GPS Accuracy 0.5m PDOP 1.7

Location Field Modified? Y / N (circle) *If Yes, explain in field notes*

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check Pos / Neg (circle)

\# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement

pH test strip (s.u.) 1.0

Cl_2 test strip (mg/L) 0.0

LR Result (mg/L) 0.10

HR Result (mg/L) ______ Dilution ______

Observations (Yellow color, pink color fades)

Cyanide Analysis

pH adjustment req Y / N (circle)

\# drops NaOH to bring pH>12 100 = pH 11.5

Initial Cl_2 check Pos / Neg (circle)

\# of drops $NaAsO_2$ reqd. ______

Observations (Precipitate, color)

Cr(VI) Analysis

pH of preserved sample: 8.0

5. Sample Description

Sample ID PRI8-019-SW-01-021214 @ 14:45

Color faint yellowish

Turbidity low

Solids —

Sheen —

Odor —

Reactivity —

Bottles Filled

___ 250-mL HDPE ($NaAsO_2$) ___ 500-mL HDPE (H_2SO_4) ___ 1-L HDPE, FF (HNO_3)

___ 40-mL VOA (HCl) ___ 250-mL Amber (NH_4Cl) ___ 1-L Amber (unpres) ___ 1-L HDPE (HNO_3)

___ 125-mL HDPE [$(NH_4)_2SO_4$] ___ 250-mL HDPE (FF unpres 2/3-full) ___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 9.53

pH (s.u.) 1.07

Turbidity (NTU) 8.2

DO (mg/L) 4.36

ORP (mV) 511

Conductivity (mS/cm) 54.2

Dilution Required for Conductivity? No

Measurement Method In-Situ / Container (circle)

Meter Type: Horiba S/N: ______

Calibration Date: 2/12/14

7. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature ______ Date 2/19/14

Surface Water / Wastewater Sampling Form

ERM

1. Site Information

SITE ID PR18 - 020

DATE 2/11/14

Begin Sampling Time 1050

End Sampling Time 1115

ERM Samplers KWL / LM

EPA Oversight AB (PWT)

Weather Partly Cloudy

3. Location

Lat 4532994.50 m N

Long 353783.71 m E

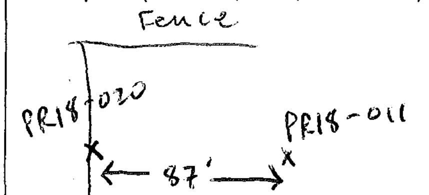
GPS Accuracy ±14 in PDOP 2.03

Location Field Modified? Y / N (circle) *If Yes, explain in field notes*

2. Description / Notes

Site Type SW / WW (circle)

Description (Location, Flow, Conditions):



Water Depth (inches) 4 Meas / Est (circle)

Sampling Method Pump / Dipper (circle)

If Pump: Sample Tubing Intake Depth (in) 1

Tubing Length (feet) 40

Initial Tubing Purge (L) 5

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check Pos / Neg (circle)

# of 5-mg NH_4Cl aliquots reqd. ______

Field Chlorine Measurement

pH test strip (s.u.) 0.5

Cl_2 test strip (mg/L) 0

LR Result (mg/L) 0.12

HR Result (mg/L) — Dilution ______

Observations (Yellow color, pink color fades)

Slight tan color

Cyanide Analysis

pH adjustment req Y / N (circle)

drops NaOH to bring pH>12 100

Initial Cl_2 check Pos / Neg (circle) pH 11.5

# of drops $NaAsO_2$ reqd. ______

Observations (Precipitate, color) White precip, Reddish Brown Color Develops

Cr(VI) Analysis

pH of preserved sample: 1.5

5. Sample Description

Sample ID PR18-020-SW01-021114

Color Lt. Yellow-Green

Turbidity No

Solids No

Sheen No

Odor N/A - Respirator

Reactivity No

Bottles Filled

___ 250-mL HDPE ($NaAsO_2$) ___ 500-mL HDPE (H_2SO_4) ___ 1-L HDPE, FF (HNO_3)

___ 40-mL VOA (HCl) ___ 250-mL Amber (NH_4Cl) ___ 1-L Amber (unpres) ___ 1-L HDPE (HNO_3)

___ 125-mL HDPE [$(NH_4)_2SO_4$] ___ 250-mL HDPE (FF unpres 2/3-full) ___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 9.02

pH (s.u.) 0.44

Turbidity (NTU) 23.8

DO (mg/L) 4.36

ORP (mV) +508

Conductivity (mS/cm) 58.6

Dilution Required for Conductivity? No

Measurement Method In-Situ / Container (circle)

Meter Type: Horiba U52 S/N: SN40NHNC

Calibration Date: 2/11/14

7. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

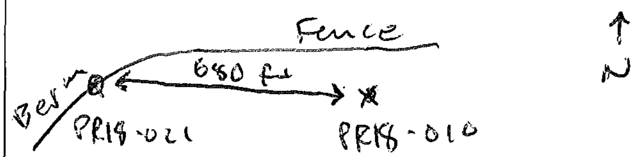
Analyses ______

Signature [signature] Date 2/11/14

Surface Water / Wastewater Sampling Form

ERM

1. Site Information		2. Description / Notes	
SITE ID	PRI8-021	Site Type	SW / WW (circle)
DATE	2/11/14	Description (Location, Flow, Conditions):	
Begin Sampling Time	1215		
End Sampling Time	1235		
ERM Samplers	KL / LM		
EPA Oversight	AB (PWT)		
Weather	Breezy, Partly Cloudy, 40s		



3. Location			
Lat	4533009.50 m N	Water Depth (inches)	3 Meas / Est (circle)
Long	353437.30 m E	Sampling Method	Pump / Dipper (circle)
GPS Accuracy	±20 m PDOP 1.48	If Pump: Sample Tubing Intake Depth (in)	1.5
		Tubing Length (feet)	40
Location Field Modified? Y / N (circle) *If Yes, explain in field notes*		Initial Tubing Purge (L)	5

4. Field Preservation / Field Measurements

HAA Analysis		Cyanide Analysis	
Initial Cl_2 check	Pos / Neg (circle)	pH adjustment req	Y / N (circle)
# of 5-mg NH_4Cl aliquots reqd.		# drops NaOH to bring pH>12	100 to pH 11.5
Field Chlorine Measurement		Initial Cl_2 check	Pos / Neg (circle)
pH test strip (s.u.)	0.5	# of drops $NaAsO_2$ reqd.	—
Cl_2 test strip (mg/L)	0	Observations (Precipitate, color)	Reddish brown ppt initially, then white ppt formation
LR Result (mg/L)	0.11	Cr(VI) Analysis	
HR Result (mg/L)	— Dilution NO	pH of preserved sample:	1.5
Observations (Yellow color, pink color fades)	No		

5. Sample Description

Sample ID	PRI8-021-SW01-021114	Solids	Some floating org. material
Color	Lt Yellow/Green	Sheen	No
Turbidity	No	Odor	N/A (respirator)
		Reactivity	NO

Bottles Filled
___ 250-mL HDPE ($NaAsO_2$) ___ 500-mL HDPE (H_2SO_4) ___ 1-L HDPE, FF (HNO_3)
___ 40-mL VOA (HCl) ___ 250-mL Amber (NH_4Cl) ___ 1-L Amber (unpres) ___ 1-L HDPE (HNO_3)
___ 125-mL HDPE [$(NH_4)_2SO_4$] ___ 250-mL HDPE (FF unpres 2/3-full) ___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C)	11.08	Conductivity (mS/cm)	58.3
pH (s.u.)	0.39	Dilution Required for Conductivity?	No
Turbidity (NTU)	1.5	Measurement Method	In-Situ / Container (circle)
DO (mg/L)	5.66	Meter Type:	Horiba U52 S/N:
ORP (mV)	+513	Calibration Date:	2/11/14

7. QC Samples

MS/MSD	Y / N (circle)	EPA Split Samples	Y / N (circle)
Field Dup	Y / N (circle)	Analyses	
Field Dup Sample ID			

Signature [signature] Date 2/11/14

Surface Water / Wastewater Sampling Form

ERM

1. Site Information

SITE ID	PR14-005
DATE	2-11-14
Begin Sampling Time	1420
End Sampling Time	1530
ERM Samplers	KL / LM
EPA Oversight	AB (PWT)
Weather	Mostly Cloudy, Breezy, 40s

2. Description / Notes

Site Type SW / WW (circle)

Description (Location, Flow, Conditions): sampled from SS basin set in mud. (~3 in deep basin, tube 1 in off bottom) SW in area is ~0.5 in deep

3. Location

Lat	
Long	
GPS Accuracy	

Location Field Modified? Y / N (circle) *If Yes, explain in field notes*

Water Depth (inches) 0.5 Meas / Est (circle)

Sampling Method Pump / Dipper (circle)

If Pump: Sample Tubing Intake Depth (in) ____

Tubing Length (feet) 45

Initial Tubing Purge (L) 4

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check Pos / Neg (circle)

# of 5-mg NH_4Cl aliquots reqd. ____

Field Chlorine Measurement

pH test strip (s.u.)	6
Cl_2 test strip (mg/L)	0
LR Result (mg/L)	0.11
HR Result (mg/L)	—

Dilution —

Observations (Yellow color, pink color fades)

Cyanide Analysis

pH adjustment req Y / N (circle)

drops NaOH to bring pH>12 100 to pH 12

Initial Cl_2 check Pos / Neg (circle)

# of drops $NaAsO_2$ reqd. ND

Observations (Precipitate, color)

Cr(VI) Analysis

pH of preserved sample: 9.5

5. Sample Description

Sample ID	PR14-005-SW01-021114
Color	Gray
Turbidity	Some
Solids	Some
Sheen	No
Odor	None
Reactivity	None

Bottles Filled

___ 250-mL HDPE ($NaAsO_2$) ___ 500-mL HDPE (H_2SO_4) ___ 1-L HDPE, FF (HNO_3)

___ 40-mL VOA (HCl) ___ 250-mL Amber (NH_4Cl) ___ 1-L Amber (unpres) ___ 1-L HDPE (HNO_3)

___ 125-mL HDPE [$(NH_4)_2SO_4$] ___ 250-mL HDPE (FF unpres 2/3-full) ___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C)	11.70
pH (s.u.)	5.98
Turbidity (NTU)	>1000
DO (mg/L)	3.54
ORP (mV)	-57

Conductivity (mS/cm) 69.5

Dilution Required for Conductivity? No

Measurement Method In-Situ / Container (circle)

Meter Type: Horiba U52 S/N: ____

Calibration Date: 2/11/14

7. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

TRIP BLANK PR14-005-SW21-021114 @1600

Field Dup Sample ID ____

EPA Split Samples Y / N (circle)

Analyses All

Signature [signature] Date ____

Rev 1, Nov 2013

SOP USM-08
US Magnesium RI/FS

Surface Water / Wastewater Sampling Form

ERM

1. Site Information

SITE ID PRI 14-006

DATE 20 Nov 2013

Begin Sampling Time 1000

End Sampling Time 1015

ERM Samplers Isaiah Utne

EPA Oversight N/A

Weather Cloudy 40°

2. Description / Notes

Site Type SW / WW (circle)

Description (Location, Flow, Conditions):

in shallow channel - no flow

- No odor fibers bubbles

3. Location

Lat ______

Long ______

GPS Accuracy ______

Location Field Modified? Y / N (circle) *If Yes, explain in field notes*

Water Depth (inches) 2" Meas / Est (circle)

Sampling Method Pump / Dipper (circle)

If Pump: Sample Tubing Intake Depth (in) 1"

Tubing Length (feet) 10'

Initial Tubing Purge (L) 3L

4. Field Preservation / Field Measurements

HAA Analysis

Initial Cl_2 check Pos / Neg (circle)

# of 5-mg NH_4Cl aliquots reqd ~~[illegible]~~ None

Field Chlorine Measurement

pH test strip (s.u.) 6.0

Cl_2 test strip (mg/L) 0.0

LR Result (mg/L) 0.03

HR Result (mg/L) — Dilution —

Observations (Yellow color, pink color fades)

Cyanide Analysis

pH adjustment req Y / N (circle)

drops NaOH to bring pH>12 100+

Initial Cl_2 check Pos / Neg (circle)

# of drops $NaAsO_2$ reqd. —

Observations (Precipitate, color)

Cr(VI) Analysis

pH of preserved sample: 9.5 pH

5. Sample Description

Sample ID PRI014-006

Color Clear

Turbidity Slight

Solids N/A

Sheen N/A

Odor N/A

Reactivity None

Bottles Filled

___ 250-mL HDPE ($NaAsO_2$)
___ 500-mL HDPE (H_2SO_4)
___ 1-L HDPE, FF (HNO_3)
___ 40-mL VOA (HCl)
___ 250-mL Amber (NH_4Cl)
___ 1-L Amber (unpres)
___ 1-L HDPE (HNO_3)
___ 125-mL HDPE [$(NH_4)_2SO_4$]
___ 250-mL HDPE (FF unpres 2/3-full)
___ 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 6.85 °C

pH (s.u.) 7.18 pH

Turbidity (NTU) 1.2 NTU

DO (mg/L) 5.95 mg/L

ORP (mV) 230 RP mV

Conductivity (mS/cm) 195.0

Dilution Required for Conductivity? Yes 1/10

Measurement Method In-Situ / Container (circle)

Meter Type: Horiba S/N: ______

Calibration Date: 20 Nov 2013

7. QC Samples

MS/MSD Y / N (circle)

Field Dup Y / N (circle)

Field Dup Sample ID ______

EPA Split Samples Y / N (circle)

Analyses ______

Signature [illegible signature]

Date 11/20/13

Surface Water / Wastewater Sampling Form

ERM

1. Site Information

SITE ID: PRI14-008
DATE: 19 NOV 2013
Begin Sampling Time: 1453
End Sampling Time: ~~15~~ 1613
ERM Samplers: Isaiah Utne
EPA Oversight: Aaron Bard
Weather:

2. Description / Notes

Site Type SW / WW (circle)
Description (Location, Flow, Conditions):
PRI14 - approx 500 ft North of Road in culvert

no 0.2 μm filter for ClO_4^-
0.45 μm filter used

Water Depth (inches) 4" Meas / Est (circle)
Sampling Method Pump / Dipper (circle)
If Pump: Sample Tubing Intake Depth (in) 2"
Tubing Length (feet)
Initial Tubing Purge (L)

3. Location

Lat
Long
GPS Accuracy
Location Field Modified? Y / N (circle) *If Yes, explain in field notes*

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd.

Field Chlorine Measurement
pH test strip (s.u.)
Cl_2 test strip (mg/L) 0.0
LR Result (mg/L) 0.02
HR Result (mg/L) — Dilution —
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 >200 mL → used bottle w/ pre-filled NaOH only pH ~9
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd.
Observations (Precipitate, color)

Cr(VI) Analysis
pH of preserved sample: < 8

5. Sample Description

Sample ID: PRI14-008-SW01-111913
Color: Clear
Turbidity: 0.0 NTU - None

Solids: None
Sheen: None
Odor: None
Reactivity: None

Bottles Filled
1 250-mL HDPE (~~$NaAsO_2$~~ NaOH)
1 ~~500~~ 250-mL HDPE (H_2SO_4)
1 1-L HDPE, FF (HNO_3)
3 40-mL VOA (HCl)
1 250-mL Amber (NH_4Cl)
8 1-L Amber (unpres)
1 1-L HDPE (HNO_3)
1 125-mL HDPE [$(NH_4)_2SO_4$]
1 250-mL HDPE (FF unpres 2/3-full)
1 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 7.76 °C
pH (s.u.) 6.48 pH
Turbidity (NTU) 0.0 NTU
DO (mg/L) 2.35
ORP (mV) 207 ORPmV

Conductivity (mS/cm) 568
Dilution Required for Conductivity? Yes 10x
Measurement Method In-Situ / Container (circle)
Meter Type: Horiba S/N:
Calibration Date: 19 Nov 2013

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID Trip Blank = PRI14-008-SW21-111913 @ 1730

EPA Split Samples Y / N (circle)
Analyses 1 Same As ERM

Signature [signature] Date 19 Nov 2013

Rev 1, Nov 2013

Surface Water / Wastewater Sampling Form

ERM

1. Site Information

SITE ID PRI14-013
DATE 19 Nov 2013
Begin Sampling Time 1105
End Sampling Time 1230
ERM Samplers FU ~~Arron Bard~~ ISAAC UHrc
EPA Oversight Arron Bard
Weather

2. Description / Notes

Site Type SW / WW (circle)
Description (Location, Flow, Conditions):
Still water
Perchlorate - could not filter through 0.2 um - used 0.45 um only
Water Depth (inches) 2" Meas / Est (circle)
Sampling Method Pump / Dipper (circle)
If Pump: Sample Tubing Intake Depth (in) 1"
Tubing Length (feet) 20'
Initial Tubing Purge (L) 6L

3. Location

~~Lat~~ UTM N 4530975
~~Long~~ E 357020
GPS Accuracy ± 20 ft PDOP 1.06
Location Field Modified? Y / N (circle) *If Yes, explain in field notes*

4. Field Preservation / Field Measurements

HAA Analysis
Initial Cl_2 check Pos / Neg (circle)
# of 5-mg NH_4Cl aliquots reqd. Ø
Field Chlorine Measurement
pH test strip (s.u.) 10.5
Cl_2 test strip (mg/L) 0
LR Result (mg/L) 0.14
HR Result (mg/L) —— Dilution Ø
Observations (Yellow color, pink color fades)

Cyanide Analysis
pH adjustment req Y / N (circle)
drops NaOH to bring pH>12 10
Initial Cl_2 check Pos / Neg (circle)
# of drops $NaAsO_2$ reqd. Ø
Observations (Precipitate, color)
Cr(VI) Analysis
pH of preserved sample: < 8

5. Sample Description

Sample ID PRI14-013-SWØ1-111913
Color Clear
Turbidity None
Solids None
Sheen None
Odor None
Reactivity None

Bottles Filled
1 250-mL HDPE (~~$NaAsO_2$~~ NaOH)
1 ~~500~~ 250-mL HDPE (H_2SO_4)
1 1-L HDPE, FF (HNO_3)
3 40-mL VOA (HCl)
1 250-mL Amber (NH_4Cl)
4 1-L Amber (unpres)
1 1-L HDPE (HNO_3)
1 125-mL HDPE [$(NH_4)_2SO_4$]
1 250-mL HDPE (FF unpres 2/3-full)
1 1-L HDPE (unpres)

6. Water Quality Parameters

Temp (°C) 7.11 °C
pH (s.u.) 6.90
Turbidity (NTU) 0.6 NTU
DO (mg/L) IU ~~12.5~~ 2.30
ORP (mV) 175

Conductivity (mS/cm) IU ~~5.16 mS/cm~~ 516 mS/cm
Dilution Required for Conductivity? Yes 1/10
Measurement Method In-Situ / Container (circle)
Meter Type Horiba U52 S/N:
Calibration Date: 19 Nov 13

7. QC Samples

MS/MSD Y / N (circle)
Field Dup Y / N (circle)
Field Dup Sample ID

EPA Split Samples Y / N (circle)
Analyses Same as Above

Signature [signature] Date 19 Nov 2013

1105

Appendix D-6
Water Level Measurement Forms

Groundwater Level and Staff Gauge Measurements

Technician HAMADA / MERCER Water level indicator model: SOLINST 101 Serial # 53288

MONITORING WELL ID & RANK*		DEPTH TO WATER (ft)	DATE	TIME	COMMENTS
PZ-01	A	13.43	1/27/14	0920	N. EDGE OF CASING
PZ-04	A	8.95	1/27/14	1006	
PZ-06	A	10.53	1/27/14	0933	
MW-18	A	14.13	1/27/14	0957	
MW-20A	A	13.21	1/27/14	0912	N. EDGE OF CASING EAST OF MW20-B
MW-20B	A	14.10	1/27/14	0909	N. EDGE OF CASING WEST OF 20A
PZ-08	B	4.63	1/27/14	~~0904~~ 1054	
PZ-10	B	5.88	1/27/14	1106	
PZ-12	B	6.81	1/27/14	1115	
PZ-16	B	4.92	1/27/14	1151	
PZ-18	B	6.02	1/27/14	1145	
PZ-22	B	5.38	1/27/14	1256	
PZ-26	B	5.48	1/27/14	1100	
MW-13A	B	7.96	1/27/14	1029	EAST WELL OF NESTED PAIR
MW-13B	B	7.81	1/27/14	1028	NO CAP ON WELL. NO BOLT ON CASING
MW-14	B	5.55	1/27/14	1035	
MW-15A	B	6.19	1/27/14	1048	NORTH WELL
MW-15B	B	5.93	1/27/14	1044	NO CAP. SOUTH WELL
MW-16	B	—	1/27/14	1015	UNDER WASTE WATER
MW-17	B	4.49	1/27/14	1313	NO CAP
MW-19A	B	3.31	1/27/14	1307	
MW-19B	B	2.53	1/27/14	1308	
LF-01	C	8.14	1/27/14	1325	
LF-03	C	4.46	1/27/14	1408	
MW-04A	C	7.85	1/27/14	1401	WEST WELL
MW-05A	C	10.60	1/27/14	1342	WEST WELL
MW-06	C	~~4.93~~ TH 9.63	1/27/14	1336	
MW-07	C	10.72	1/27/14	1331	
MW-08A	C	9.91	1/27/14	1348	
MW-08B	C	9.58	1/27/14	1349	
PZ-24	C	4.05	1/27/14	14:13	NO WELL CAP
SG-1		—	1/27/14	0930	S.G. GONE (STOLEN?) ~18" PVC REMAIN
SG-2		1.20	1/27/14	1023	
SG-3		1.44	1/27/14	1100	
SG-4		1.55	1/27/14	1059	
SG-5		1.17	1/27/14	1119	

*A=least contaminated; C=most contaminated

Signature [signature] Date 1/27/14

Groundwater Level and Staff Gauge Measurements

Technician TH / KB Water level indicator model: GEOTECH Serial # 3448

MONITORING WELL ID & RANK*		DEPTH TO WATER (ft)	DATE	TIME	COMMENTS
PZ-01	A	12.84	2/24/14	0925	TD= 21.18 ft. SOFT BOTTOM
PZ-04	A	8.93		1002	
PZ-06	A	10.23		0912	
MW-18	A	13.98		0955	TD= 24.22 ft. SOFT BOTTOM
MW-20A	A	13.10		0944	TD= 20.20 ft HARD BOTTOM
MW-20B	A	14.00		0942	TD= 32.17 ft. HARD BOTTOM
PZ-08	B	4.54		1036	
PZ-10	B	5.74		1044	
PZ-12	B	6.66		1047	
PZ-16	B	4.56		1112	
PZ-18	B	5.43		1105	
PZ-22	B	5.45		1134	
PZ-26	B	5.57		1040	
MW-13A	B	7.59		1013	TD= 11.00 ft. HARD BOTTOM
MW-13B	B	7.53		1014	TD=21.28 ft. SOFT BOTTOM
MW-14	B	5.53		1021	TD=18.79 ft. SOFT BOTTOM
MW-15A	B	6.36		1028	TD= 10.95 ft. HARD BOTTOM
MW-15B	B	6.11		1030	TD= 20.98 ft. SOFT BOTTOM
MW-16	B				SEE FIELD BOOK NO. 03
MW-17	B	4.63		1150	TD= 21.10 ft SOFT BOTTOM
MW-19A	B	3.55		1140	TD= 19.45 ft. SOFT BOTTOM
MW-19B	B	2.74		1142	TD= 35.82 ft. HARD BOTTOM
LF-01	C	8.10		1224	
LF-03	C	4.52		1200	
MW-04A	C	7.73		1241	
MW-05A	C	10.52		1232	
MW-06	C	9.59		1229	
MW-07	C	10.74		1227	
MW-08A	C	9.86		1235	
MW-08B	C	9.56		1236	
PZ-24	C	4.19		1155	NO CAP
SG-1		0.95		0915	
SG-2		1.10		1011	
SG-3		1.29		1041	
SG-4		1.44		1040	
SG-5		1.06		1049	

*A=least contaminated; C=most contaminated

Signature [signature] Date 2/24/14

Groundwater Level and Staff Gauge Measurements

Technician T. HAMADA / K. BENSON Water level indicator model: GEOTECH Serial # 3448

MONITORING WELL ID & RANK*		DEPTH TO WATER (ft)	DATE	TIME	COMMENTS
PZ-01	A	13.08	3/24/14	1137	
PZ-04	A	9.05		1220	
PZ-06	A	10.18		1118	
MW-18	A	14.03		1211	
MW-20A	A	13.27		1203	
MW-20B	A	14.14		1202	
PZ-08	B	4.42		1247	
PZ-10	B	5.99		1300	
PZ-12	B	6.74		1304	
PZ-16	B	4.94		1315	
PZ-18	B	5.04		1320	
PZ-22	B	5.67		1341	
PZ-26	B	6.02		1255	
MW-13A	B	8.79		1229	
MW-13B	B	7.92		1230	
MW-14	B	5.92		1234	
MW-15A	B	6.67		1240	
MW-15B	B	6.40		1239	
MW-16	B				WELL NOT IN WASTE WATER BENT OVER TO SOUTH ~45° → FIXED
MW-17	B	4.77		1350	
MW-19A	B	3.75		1345	
MW-19B	B	2.96		1346	
LF-01	C	8.25		1404	
LF-03	C	4.63		1357	
MW-04A	C	7.83		1421	
MW-05A	C	10.61		1412	
MW-06	C	9.70		1409	
MW-07	C	10.92		1407	
MW-08A	C	9.98		1416	
MW-08B	C	9.66		1415	
PZ-24	C	4.32		1353	
SG-1		1.10		1122	pH = 1.0
SG-2		0.90		1226	
SG-3		1.10		1255	
SG-4		1.26		1254	
SG-5		0.85		1307	

*A=least contaminated; C=most contaminated

Signature [signature]

Date 3/24/14

Groundwater Level and Staff Gauge Measurements

Technician HAMADA, BENSON Water level indicator model: GEOTECH Serial # 3448

MONITORING WELL ID & RANK*		DEPTH TO WATER (ft)	DATE	TIME	COMMENTS
PZ-01	A	13.13	4/25/14	0849	
PZ-04	A	9.11		0919	
PZ-06	A	9.96		0836	
MW-18	A	13.95		0914	
MW-20A	A	13.12		0904	
MW-20B	A	13.99		0903	
PZ-08	B	5.19		0958	
PZ-10	B	6.19		1006	
PZ-12	B	6.90		1008	
PZ-16	B	5.21		1017	
PZ-18	B	5.46		1023	
PZ-22	B	5.72		1041	
PZ-26	B	6.35		1001	
MW-13A	B	8.27		0946	
MW-13B	B	8.18		0947	
MW-14	B	5.88		0950	
MW-15A	B	6.83		0954	
MW-15B	B	6.55		0955	
MW-16	B	2.92		1137	TD = 4.26' BTOC
MW-17	B	4.90		1049	
MW-19A	B	3.86		1046	
MW-19B	B	3.10		1045	
LF-01	C	8.26		1103	
LF-03	C	4.72		1056	
MW-04A	C	7.89		1120	
MW-05A	C	10.71		1111	
MW-06	C	9.73		1108	
MW-07	C	10.92		1106	
MW-08A	C	10.08		1114	
MW-08B	C	9.75		1113	
PZ-24	C	4.44		1052	
SG-1		0.68		0838	
SG-2		0.76		0952	
SG-3		0.96		1002	
SG-4		1.02		1003	
SG-5		0.66		1011	

*A=least contaminated; C=most contaminated

Signature [signature] Date 4/25/14

Groundwater Level and Staff Gauge Measurements

Technician HAMADA / BENSON Water level indicator model: GEOTECH ~~SOLINST~~ TH Serial # 3448

MONITORING WELL ID & RANK*		DEPTH TO WATER (ft)	DATE	TIME	COMMENTS
PZ-01	A	13.09	5/23/14	1003	
PZ-04	A	9.29		1035	
PZ-06	A	10.04		0946	
MW-18	A	13.95		1031	
MW-20A	A	13.28		1014	
MW-20B	A	14.13		1013	
PZ-08	B	5.55		1058	
PZ-10	B	6.35		1105	
PZ-12	B	7.27		1107	
PZ-16	B	5.48		1115	
PZ-18	B	5.92		1121	
PZ-22	B	5.84		1148	
PZ-26	B	6.55		1101	
MW-13A	B	8.55		1044	
MW-13B	B	8.45		1045	
MW-14	B	6.26		1047	
MW-15A	B	6.98		1054	
MW-15B	B	6.70		1053	
MW-16	B	3.15		1240	NOT IN WASTE WATER ~30 ft. FROM WATER'S EDGE
MW-17	B	5.02		1157	
MW-19A	B	3.96		1153	
MW-19B	B	3.26		1152	
LF-01	C	8.34		1142	
LF-03	C	4.82		1203	
MW-04A	C	7.95		1222	
MW-05A	C	10.81		1213	
MW-06	C	9.76		1211	
MW-07	C	10.96		1140	
MW-08A	C	10.18		1217	
MW-08B	C	9.85		1218	
PZ-24	C	4.56		1159	
SG-1		0.38		0949	
SG-2		0.60		1041	
SG-3		0.81		1102	
SG-4		0.97		1100	
SG-5		0.58		1109	

*A=least contaminated; C=most contaminated

Signature [signature] Date 5/23/14

Groundwater Level and Staff Gauge Measurements

Technician HAMADA/RIGARD Water level indicator model: GEOTECH Serial # 3448

MONITORING WELL ID & RANK*		DEPTH TO WATER (ft)	DATE	TIME	COMMENTS
PZ-01	A	13.21	6/13/14	1000	
PZ-04	A	9.36		1019	
PZ-06	A	10.42		0951	
MW-18	A	13.94		1016	
MW-20A	A	13.30		1008	
MW-20B	A	14.13		1007	
PZ-08	B	5.98		1037	
PZ-10	B	6.50		1043	
PZ-12	B	7.60		1046	
PZ-16	B	5.82		1052	
PZ-18	B	6.31		1057	
PZ-22	B	5.95		1120	
PZ-26	B	6.76		1040	
MW-13A	B	8.62		1027	
MW-13B	B	8.53		1026	
MW-14	B	6.77		1029	
MW-15A	B	7.12		1034	
MW-15B	B	6.84		1035	
MW-16	B	3.10		1216	
MW-17	B	~~TT~~ 5.15		1129	
MW-19A	B	~~3.40~~ 4.10		1124	
MW-19B	B	3.40		1125	
LF-01	C	~~11.42~~ TH 8.35		1142	
LF-03	C	4.92		1134	
MW-04A	C	7.60		1159	
MW-05A	C	10.76		1150	
MW-06	C	9.79		1148	
MW-07	C	10.96		1145	
MW-08A	C	10.20		1154	
MW-08B	C	9.86		1155	
PZ-24	C	4.69		1131	
SG-1				0952	DRY, NO WATER IN POND
SG-2		0.40		1024	
SG-3		0.66		1041	
SG-4		0.78		1039	
SG-5		0.40		1048	

*A=least contaminated; C=most contaminated

Signature [signature] Date 6/13/14

Groundwater Level and Staff Gauge Measurements

Technician HAMADA / BENSON Water level indicator model: GEOTECH Serial # 3448

MONITORING WELL ID & RANK*		DEPTH TO WATER (ft)	DATE	TIME	COMMENTS
PZ-01	A	13.50	7/15/14	0853	
PZ-04	A	9.61		0911	
PZ-06	A	10.49		0843	
MW-18	A	13.84		0907	
MW-20A	A	13.34		0859	
MW-20B	A	14.13		0858	
PZ-08	B	6.25		0929	
PZ-10	B	6.64		0935	
PZ-12	B	7.75		0937	
PZ-16	B	6.10		0945	
PZ-18	B	6.54		0950	
PZ-22	B	6.05		1012	
PZ-26	B	6.86		0932	
MW-13A	B	9.26		0919	
MW-13B	B	9.05		0918	
MW-14	B	7.08		0921	
MW-15A	B	7.39		0925	
MW-15B	B	7.09		0926	
MW-16	B	2.73		1100	
MW-17	B	5.24		1019	
MW-19A	B	4.18		1016	
MW-19B	B	3.49		1015	
LF-01	C	8.43		1032	
LF-03	C	4.98		1026	
MW-04A	C	8.01		1047	
MW-05A	C	10.97		1039	
MW-06	C	9.81		1037	
MW-07	C	10.97		1035	
MW-08A	C	10.35		1042	
MW-08B	C	9.96		1043	
PZ-24	C	4.78		1021	
SG-1		NA		0844	NOT IN WATER. PRI 7 DRY
SG-2		0.36		0916	
SG-3		0.59		0933	
SG-4		0.71		0931	
SG-5		0.36		0939	

*A=least contaminated; C=most contaminated

Signature [signature] Date 7/15/14

Groundwater Level and Staff Gauge Measurements

Technician K. Benson, G. Pigard Water level indicator model: ______________ Serial #________

MONITORING WELL ID & RANK*		DEPTH TO WATER (ft)	DATE	TIME	COMMENTS
PZ-01	A	13.64	8/21/14	9:43	
PZ-04	A	9.68		10:00	
PZ-06	A	10.99		9:30	
MW-18	A	14.19		9:55	
MW-20A	A	13.63		9:51	
MW-20B	A	14.40		9:50	
PZ-08	B	5.90		10:27	
PZ-10	B	6.68		10:39	
PZ-12	B	7.83		10:40	
PZ-16	B	6.18		10:50	
PZ-18	B	6.59		11:20	
PZ-22	B	6.00		11:20	
PZ-26	B	6.83		11:20	
MW-13A	B	9.51		10:13	
MW-13B	B	9.26		10:13	
MW-14	B	7.15		10:10	
MW-15A	B	7.51		10:25	
MW-15B	B	7.20		10:25	
MW-16	B	—			Not accessable
MW-17	B	5.19		11:30	
MW-19A	B	4.10		11:30	
MW-19B	B	3.46		11:30	
LF-01	C	8.62		11:40	
LF-03	C	5.01		11:35	
MW-04A	C	8.21		12:00	
MW-05A	C	11.00		11:50	
MW-06	C	9.91		11:45	
MW-07	C	11.09		11:45	
MW-08A	C	10.37		11:55	
MW-08B	C	10.01		11:55	
PZ-24	C	4.74		11:33	
SG-1		0.36		10:42	
SG-2		0.71		10:22	
SG-3		0.60		10:22	
SG-4		0.36		10:10	
SG-5		Dry		9:32	

*A=least contaminated; C=most contaminated

Signature ____________________ Date 8/21

Appendix D-7
Field Logbooks

Location US Magnesium Date 9/23/13

Project / Client 0132320 / US Mag

Phase IA - Recon

10:30 - Arrive on site for recon

Site Personnel - K. Bensen, G. Rigard
Weather - Clear, 60s
- Completed ~~plant~~ safety orientation
checked in with D. Gibby & R. Francom

12:10 - Begin sample location recon @ PRI9-001
13:20 - Finish - Did not relocate, collected sieve sample
13:40 - Begin recon @ PRI9-002
14:10 - Finish PRI9-002 - Did not relocate, collected sieve sample
14:15 - Begin PRI9-003
14:25 - Finish PRI9-003 → no relocation, no sieve sample.
14:30 - Begin PRI9-005, no relo, no sieve
14:35 - Begin PRI9-006, no relo, no sieve
14:50 - Begin PRI9-007, no relo, sieve sample
15:20 - Begin PRI9-004, no relo, sieve sample

15:45 - Off site

Location US Magnesium Date 9/24/13

Project / Client 0132320 | US Mag

Phase IA - Recon

8:20 - Arrive on site for recon
Site Personnel - K. Benson, T. Hamada
Weather - Clear, 60s
- Plant check in.

8:50 - Begin @ PRI9-008, no relo
collected sieve sample.
9:30 - Begin @ PRI9-009, no relo, no sieve
9:45 - Begin @ PRI9-011, no relo, sieve
10:10 - Begin @ PRI9-012, no relo, no sieve
10:20 - Begin @ PRI9-010, no relo, sieve
10:55 - Begin @ PRI9-013, no relo, sieve
11:10 - Begin @ PRI9-014, no relo, no sieve
12:35 - Begin @ PRI10-001, no relo, no sieve
12:50 - PRI10-004, no relo, sieve
13:10 - PRI10-003, no relo, sieve
13:30 PRI10-002, no relo, no sieve
13:40 PRI10-005, no relo, no sieve
13:55 PRI10-006, PRI10-008, PRI10-012
↓ no relo, sieve
PRI10-011, PRI10-014 - no relo, no sieve

15:20 - Off site

Location US Magnesium Date 9/25/13

Project / Client 0132320/US Mag

Phase IA-Recon

8:30 Arrive on site for recon

Site Personnel - K. Benson, T. Hamada

Weather - Cloudy, 50s

9:00 - PRI10-007, no relo, sieve

10:50 - PRI7-007 → 12T 0354647, 4532366

PRI7-003 → 12T 0354566, 4532668

11:30 PRI7-009 → No sample location found

12:20 PRI7-013 → 12T 0355382 4531750

12:30 PRI7-014 → 12T 0355651 4531543

13:10 PRI4-013 → 12T 0354040 4531513

PRI4-008 → 12T 0354706 4531923

PRI1-003 → no relo

PRI1-014

13:50 PRI1-006, PRI1-007, PRI1-008

14:30 PRI1-013

14:40 PRI3-003, PRI3-009 - No surface water

15:00 PRI1-009, PRI1-010, PRI1-011

15:35 - Off site

9/25/13 [initials]

Location US Mag Date 9/26/13

Project / Client 0132320 / USM

Phase ~~I~~A Recon

0800 - Depart SLC

0900 - Arrive USM

ERM: K. Lundmark

T. Hamada

0915 BUMP CHECK Cl_2 MONITOR → OK

Check in w/ David Gibby. Discuss work schedule

0950 Arrive Hill Bros

0955 D. Gibby arrives Hill Bros

1000 Meet Mark Greenburg (Hill Bros) and Jordan (HB)

MW-20 A/B - New pond constructed @ SA locations move wells to the W. Install Bollards, keep road clear

PRI12-006 adjacent to Δ pond, inside HB fence

Other PRI12 locations outside fence (after relocations)

PRI12-003 S of Parking lot

MW-20A/B modified location

0354302

4530669 ± 10 ft

Staked mod locations

1055 stake PRI12-006 No mod, No sieve

Location US Mag Date 9/26/13
Project / Client 0C32320 / USM
Phase 1A Recon

1100 stake PR112-004. No mod.
1110 stake PR112-002. No Mod
1115 stake PR112-003 MOD
Location moved out of
parking lot, to S.
Location = 0354172 ± 10 ft
4530588
1120 Return to PR112-002 to
collect sieve sample
Location = 0354163 ± 10ft
SCR-PR112-002 4530455
1140 Stake PR112-001, no mod
SCR-PR112-001
0354078 ± ~~10~~ 10 ft
4530334
1155 Finish collecting SCR-PR112-001
1200 Sign in @ USM Guard
to work @ Ponds
1220 Arrive PR112-005
Stake PR112-005, no mod
SCR PR112-005 15m SW
0354349 ± 10 ft
4530419
1232 Arrive PR112-007, staked, no mod

Location US Mag Date 9/26/13
Project / Client USM/0C32320
Ph 1A Recon

1240 Arrive PR112-008 staked, no mod
~~SCR-PR100~~ ~20 m W of PR112-008
SCR-PR112-008 0354614 ± 10 ft
4530503
1255 Arrive PR112-014
Staked, no Mod
1305 Arrive PR112-013 Staked, No MOD
SCR-PR112-013 ~20 m S of PR112-013
0354949 ± 10 ft
4530812 Finished 1310
1315 Arrive PR112-012, staked, no mod
SCR-PR112-012 ~20 m S
0355029 ± 10 ft Finish @
4530724 1320
1330 Arrive PR112-010, staked, no mod
Location is within salt piles,
approx 130 ft from nearest soil
Salt has a firm crust but stake
was driven w/o difficulty
1340 Arrive PR112-009, staked no mod
SCR-PR112-009 ~10 m E
0354744 ± 10 ft Finish
4530613 1355
1410 Arrive PR112-11 staked, no mod

Location US Mag Date 9/26/13

Project / Client 0132320 / USM Ph 1A Recon

Location is in salt piles
SCR-PR112-011 ~15 m E
0354537
4530628 ± 10 ft Finish 1420

1440 Arrive PR114-013. No spring is present here, nor are there signs of previous spring discharges. Staked w/no mod
SCR-PR114-013 ~15 SE
0357051
4530913 ± 10 ft

1500 Arrive PR114-012 staked, no mod
SCR-PR114-012 ~13 m NE
0356912
4530667 ± 10 ft

1520 Arrive PR114-011 Staked, no mod

1530 EEM off-site, return to SLC

KWL 9/26/13

Location US Mag Date 9/27/13

Project / Client 0132320 US Mag Phase IA Recon

9:00 - Arrive on site
Site Personnel - K. Bensen, T. Hamada
Weather - Cloudy, 40s
- Checked in with Roger & David

9:15 - Arrive at PRI14

9:20 - Staked PRI14-015 & PRI14-011 with no mod. → 9:55 finish.

10:20 Mark PRI14-010 - no mod

10:35 Mark PRI14-008 no mod, in standing water

10:55 - Collect sieve sample from PRI14-10 - SCR-PRI14-010
12T 0356442
4530569 ± 10'

11:10 Finish

11:20 PRI14-009 No mod
SCR-PRI14-009 12T 0356209
4530717 ± 10'

11:35 Finish

Location
Date
Project / Client

12:40 - PRI14-007 - No mod, no surface water
SCR-PRI14-007 - 12T 0356050
4530467 ±10'
13:05 - Finish

13:36 PRI14-006 - modified - 12T 0355779
±10' 4530659
SCR-PRI14-006
12T 0355765
4530658 ±10'
13:50 - Finished

14:00 - PRI14-005 - Modified to 12T0355540
±10 4530681
14:30 - PRI14-004 - No mod

15:00 - Off site

9/27/13 - [signature]

Location US Mag
Date 9/30/13
Project / Client US Mag 0132326
Phase IA Recon - CR Survey

8:00 - Met with LSD contact, drive to PRI8-001.
Site Personnel - K. Benson, J. Demp
Site Weather - Windy, cloudy, 70s

9:30 - Arrive @ PRI8-001, mark location and begin CR survey.
9:35 - Finish

9:45 - PRI8-002 - no relo
9:53 - PRI8-004
10:00 - PRI8-005
10:15 - PRI8-003
10:50 - PRI15-002
11:25 - PRI15-001
11:50 - PRI15-003
12:25 - PRI16-001
13:40 - PRI16-003-M
moved to 12T 0347361 due to terrain/
4532110 rock face

Location ______ Date ______

Project / Client ______

14:30 - PRI15-005

15:00 PRI15-007-M

15:30 PRI16-008

15:50 PRI16-011

16:10 - off site

9/30/13

Location US Mag Date 10/1/13

Project / Client US Mag 0132820

CR Survey

8:00 - On site for CR survey

Site Personnel - K. Benson, J. Demp (LSD)

Site Weather

H&S Tailgate Meeting

8:10 - PRI15-011

8:40 - PRI 15-014

8:55 - PRI15-013

9:25 - PRI15-012

9:45 - PRI15-010

11:20 - PRI16-014

15:00 - PRI-16-012-M

Modified to RZT 0348790

due to accessibility 4525478

16:10 - off site

Location US Mag Date 10/2/13
Project / Client US Mag 0132320
Phase 1A - CR Survey

7:50 - On site
Site Personnel - K. Benson J. Demp
Weather - Cloudy 50s
8:20 - PRI16-006-M
8:50 - PRI16-007
9:20 - PRI16-009-M
- Modified to 12T 0347541
due to accessibility 4526730
10:20 - PRI16-004-M
11:40 - PRI16-005-M
Modified to 12T 0347013
due to accessibility 4529928

13:20 PRI16-013-M
Modified to 12T 0351626
due to accessibility 4525593

14:30 - Off site

10/2/13

Location US MAGNESIUM Date 10/3/13
Project / Client US MAG 0132320
PHASE 1A - RECON

0800 - ONSITE
SITE PERSONEL - K. BENSON, T. HAMADA
WEATHER - OVERCAST, 40's WINDY
0810 - BUMP TEST Cl MONITOR
0830 - CHECK IN w/ SITE SECURITY
0840 - TAILGATE SAFETY MEETING
0900 - ARRIVE @ PR12-006
SCR-PR12-006 LOCATED ~10m NORTH of
0904 START SAMPLING
0910 DONE SAMPLING NO MOD
UTM: 12T 0354365
4531307 ±10 ft.

0920 - ARRIVE @ PR12-003
SAMPLE LOC ~12m NE of SCR-PR12-003
0922 - START SAMPLING
0928 - DONE SAMPLING NO MOD
UTM: 12T 0354248
4531808 ±10 ft.
0940 - ARRIVE @ PR12-008
SAMPLE LOC - 12m SE of SCR-PR12-008
0941 START SAMPLING
0947 DONE SAMPLING NO MOD
UTM: 12T 0354438 4531348 ±10 ft.

Location US MAGNESIUM Date 10/3/13

Project / Client US MAG 0132320

PHASE 1A - RECON

0954 ARRIVE @ PR12-009
SAMPLE LOC ~ 15m SE OF SCR-PR12-009
0956 START SAMPLING
~~04~~ 1002 DONE SAMPLING NO MOD
UTM: 12T 0354457
4531373 ±10 ft.

1012 ARRIVE @ PR12-011
SAMPLE LOC ~12M EAST OF SCR-PR12-011
1013 START SAMPLING
1020 DONE SAMPLING NO MOD
UTM: 12 T 0354548
4531318 ±10 FT.

1030 ARRIVE @ PR12-012
SAMPLE LOC ~ 10m SOUTH OF SCR-PR12-012
1031 START SAMPLING
1036 DONE SAMPLING NO MOD
UTM: 12T 0354496
4531307 ±10 FT

1047 ARRIVE @ PR12-004
SAMPLE LOC ~10m NORTH OF SCR-PR12-004
1049 START SAMPLING

Location US MAGNESIUM Date 10/3/13

Project / Client US MAG 0132320

PHASE 1A RECON

1055 DONE SAMPLING NO MOD
UTM: 12T 0354302
4531244 ±10 FT.

1100 ARRIVE @ PR12-001
SAMPLE LOC 10m NE OF SCR-PR12-001
1102 START SAMPLING
1110 DONE SAMPLING NO MOD
UTM: 12T 0354182
4531233 ±10 Ft.

1130 ARRIVE @ PR110-010-M MODIFIED
87 FT N OF ORIG. LOC SINKHOLES
UTM: 12 T 0353370
4532578 ±10 FT.
1134 ARRIVE @ SCR-PR110-010-M
~20 m W of PR110-010-M
UTM: 12T 0353357
4532573 ±10 FT
1134 START SAMPLING ORIG. SAMPLE LOC.
1141 DONE SAMPLING MODIFIED TO NORTH

1200 ARRIVE @ PR18-013
NO MOD

Location US MAGNESIUM Date 10/3/13

Project / Client US MAG 0132320

PHASE 1A - RECON

1202 START SAMPLING SCR-PR18-013

1206 DONE SAMPLING NO MOD

UTM: 12T 0353154 ~10m S of PR18-013

4532821 ±10 FT.

1224 MARKED PRI8-008 NO MOD

1226 MARKED/STARTED SAMPLING SCR-PRI8-~~008~~

1231 DONE SAMPLING ~15m N of PR18-008

UTM: 12T 0352973

4533016 ±10 FT

1257 MARKED PRI8-009 NO MOD, NO SIEVE

1313 MARKED PRI8-~~014~~ 006TH NO MOD

1315 STARTED SAMPLING SCR-PRI8-~~014~~ 006TH

1320 DONE SAMPLING ~15m E of PR18-~~014~~ 006TH

UTM: 12T 0353495

4533172 ±10 FT

1350 MARKED PRI8-014 NO MOD

1352 START SAMPLING SCR-PR18-014

1400 DONE SAMPLING ~15m E PR18-014

UTM: 12T 0353488

4532839 ±10 FT

Location US MAGNESIUM Date 10/3/13

Project / Client US MAG 0132320

PHASE 1A - RECON

1421 MARKED PRI8-010 NO MOD NO SIEVE

1425 MARKED PRI8-015 NO MOD NO SIEVE

1431 MARKED PRI8-017-M NO SIEVE

MODIFIED ~180 FT N. of SINK HOLES

UTM: 12T 0353653

4532715 ±10 FT

1452 ARRIVED @ PRI8-007 NO MOD

1454 MARKED/STARTED SAMPLING SCR-PR18-007

1459 DONE SAMPLING ~10m S of PR18-007

UTM: 12 T 0353813

4533154 ±10 FT.

1508 MARKED PR18-011 NO MOD NO SIEVE

1516 ARRIVED @ PRI8-012 NO MOD

1518 MARKED/STARTED SAMPLING SCR-PR18-012

UTM: 12T 0353980 ~10 m NE of PR18-012

4533013 ±10 FT

1520 DONE SAMPLING

1536 ARRIVE @ PR18-016 NO MOD

1538 START SAMPLING SCR-PR18-016 ~15m S of

1541 DONE SAMPLING

UTM: 12T 0353813, 4532822 ±10 FT

Location US Magnesium Date 10/4/13
Project / Client US Mag 0132320
Phase IA - Recon

8:00 - Arrive on site
Site Personnel - K. Benson, T. Hemeda,
B. Smith, K. Lundmark
Site Weather - Windy, 40s
0953 ARRIVE @ PRI13-001 NO MOD
0956 START SAMPLING SCR-PRI13-001
1008 DONE SAMPLING
UTM: 12T 0354948
4533325 ±10
1018 ARRIVE @ PRI13-002 NO MOD
1021 START SAMPLING SCR-PRI13-002
1030 DONE SAMPLING
UTM: 12T 0355183
4533499 ±10
1040 MARKED PRI13-003 NO MOD, NO SIEVE
1049 MARKED PRI13-004 NO MOD, NO SIEVE
1056 MARKED PRI13-005 NO MOD, NO SIEVE

1104 ARRIVE @ PRI13-006
1106 START SAMPLING SCR-PRI13-006
1116 DONE SAMPLING
UTM: 12T 0356059
4533539 ±10

Location US MAGNESIUM Date 10/4/13
Project / Client US MAG 0132320
PHASE IA - RECON

1122 ARRIVE @ PRI13-007 NO MOD
1125 START SAMPLING SCR-PRI13-007
1133 DONE SAMPLING
UTM: 12T 0356291
4533348 ±10
1215 RETURN BACK TO TRUCK
1230 MARKED PRI7-001
1305 ARRIVE @ PRI13-008 NO MOD
1308 START SAMPLING SCR-PRI13-008
1315 DONE SAMPLING
UTM: 12T 0356698
4533337
1325 ARRIVE @ PRI13-009 NO MOD
1327 START SAMPLING SCR-PRI13-009
1334 DONE SAMPLING
UTM: 12T 0356717, 4532927 ±10
1600 - Off Site

10/4/13 B

Location US Mag   Date 10/14/13

Project / Client 0132320 / USM

PH1A Recon

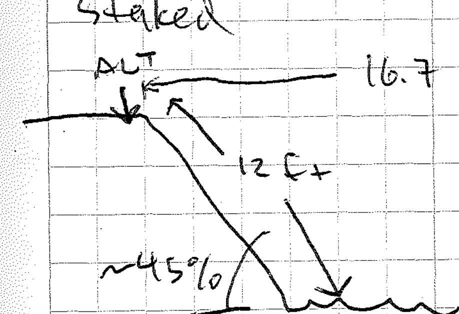
0930 - Arrive USM
K. Lundmark
L. Mercer
Partly Cloudy, 45° F
0940 - Check in w/ D. Gibby
0945 - 1000 Contractor orientation w/ B. McDonald
- Note reqt for each contractor to have Cl_2 monitor
Tasks for 10/14/13 Site Visit
1) Check for ATL pipeline markers
2) PRI 7 Seep Recon
3) PRI 4 SW Recon / MW16
4) ~~RF~~ Loc PRI 8 SB location
5) MW16 Recon
6) Photograph SW Staff Gauge locations
Discuss access, get radio from R. Francom
1055 - Arrive NE Corner PRI 7
H&S Tailgate Meeting
Inspect SW gauge location
Shallow water present ~25 m from high water mark

Location US Mag   Date 10/14/15

Project / Client 0132320 / USM

Phase 1A Recon

pH = 5 per test strip
1115 - Arrive NW corner PRI 6 to inspect staff gauge location
Water present to edge of pond, appears 6 in - 1 ft deep @ shore. Bubbling (from soil matrix (?)) ~~app~~ observed
1130 Arrive PRI 8 - 017
Water is > 1 ft deep @ Berm/Road pH = 1-2 per test strip.
Mark boring location on road as close as possible (16.7 m from SAP location)
N 4532654.45   PDOP 1.79
E 353649.47   63 cm
Staked



Location US Mag Date 10/14/13

Project / Client 0132320 / USM

Ph 1A Recon

1151 Arrive PR17-002 (old inlet)
Wearing snowshoes, attempt to
locate seep area. Water is present,
though <1 inch deep. Walked to
PR17-013, no seep observed
1240 Back to truck, drove
past PR17-014, check for
seep @ NE of E edge PR15
No seeps. Water in 0.5 inches
deep max.
1255 - Depart PR17, lock gates
along Solar Pond Road
1310 - Check for signs of ATI
NPDES pipe ROW. 6-in poly
pipe crosses Skull V. Diversion ~15m
S of PR14-001
1315 - Sign in again @ guard
1335 - Arrive Gyp Pile outfall
PR14-013-M N4531514.53 PDOP 2.44
E354044.48 ±56 cm
Flow is toward NW to PR19
1420 - Arrive PR14-008. Waste
water in pond is ~82 m away
No $CuSO_4$ slurry flow in this

Location US Mag Date 10/14/13

Project / Client 0132320/USM

Phase 1A Recon

area. Stake PR14-008
Coordinates for PR14-008-M
(@ water edge):
N4531922.23 PDOP = 1.92
E354700.49 ±70 cm
1435 Arrive MW-16 area. SAP
location is in standing water
@PR16. Alt loc ID on historic
shoreline "spit" within PR14
MW-16 Alt is ~265 m S
N4532074.03 PDOP = 2.44
E 353916.25 ±82 cm
Gypsum surface is ~2 feet higher
on S than on N side of spit
1500 Recon MW-18 - SAP
location is on Smut Piles. Surface
is soft, uneven. Earthwork
would be reqd. to access w/
drill Rig. MW-18 could be
moved to edge of Smut, due N
of end of ramp (covered) to ATI Hay
24.9 m SW of MW-18
N4530913.88 PDOP: 2.34
E353648.02 ±92 cm
8

Location US Mag Date 10/14/13
Project / Client 0132320/USM
Ph 1A Recon

1520 - Record Reference well w/GPS (control point) Well @ NW bend of W ditch, W of MW4A-4B pair
1534 - Sign out @ guard. Leave radio / Cl2 monitor w/guard for R. Francom

1545 - ERM off site

10/14/13

Location US Mag Date 10/25/13
Project / Client 0132320/USM
Ph 1A Recon

8:00 - Arrive on site for recon and sieve sample collection.

9:00 - Start sampling @
PRI16-001 - 12T 0347292
4534492 ±10

9:11 - Finish

9:38 - PRI16-002 marked and sieve sample collected at
12T 0348576
4533250

9:45 Finish

10:28 - Collected sample from
SCR-PRI16-004-M @
12T 0348571
4530809

10:55 - Finish

10:40 - SCR-PRI16-006-M @
12T 0349851
4529504

Location ______ Date ______

Project / Client ______

10:45 - Finish

11:15 - SCR-PRI16-008 @
12T 0351166
4528115

11:20 - Finish

11:44 - SCR-PRI16-011 @
12T 0352289
4526765

11:50 - Finish

12:15 - SCR-PRI16-013 @

12T 0351631
4525584

12:20 - Finish

13:35 - Marked sample location @ PRI16-010 and collected sieve sample from SCR-PRI16-010 @
12T 0349841
4526797

Location ______ Date ______

Project / Client ______

13:43 - Finish

15:00 - SCR-PRI15-003 @

12T 0351162
4533259

15:10 Finish

15:20 - off site

10/25/13 [initials]

Location: US Mag Date: 10/28/13

Project / Client: USM 0132320
Phase IA Recon

8:00 - Arrive on site for Phase IA recon

Site Personnel - K. Benson, T. Hermoda
Weather - Cloudy, windy 50s

9:20 Begin collecting sample @ SCR-PRI15-002 located @

12T 0352457
4534544

9:25 Finish

9:45 SCR-PRI15-004 @

12T 0353998
4533497

9:50 Finish

10:25 - SCR-PRI15-014 @

12T 0354994
4524173

10:30 - Finish

Location ____ Date ____

Project / Client ____

10:54 - SCR-PRI15-007-M @

12T 0350875
4530622

11:00 - Finish

11:30 - SCR-PRI8-004 @

12T 0353144
4533154

11:34 - Finish

12:11 - SCR-PRI15-009 @
12T 0353813
4529249

12:16 - Finish

12:36 - SCR-PRI15-010 @
12T 0353137
4528090

12:40 - Finish
12:56 - SCR-PRI15-012 @
12T 0353750
4525513

13:06 - Finish
13:30 - Off site

Location US MAG Date 10/30/13

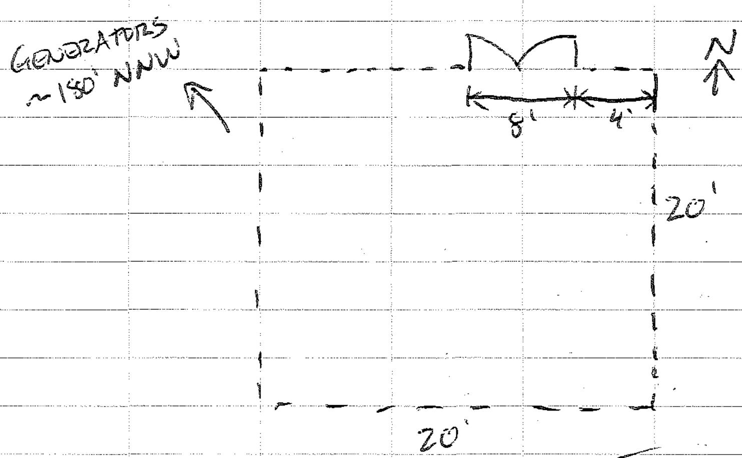
Project / Client USM 0132320

OFF-SITE AIRDMA

1410 ARRIVE ON-SITE
FIELD PERSONNEL: T. HAMADA
WEATHER: OVERCAST, 50's

1430 B. FARMER ARRIVE ONSITE

1505 MARKED OFFSITE DMA LOC
20' x 20' SQUARE
GATE ON N SIDE
↳ 8' WIDE, OPENS OUT, 4' FROM NE CORNER
COORDS: 12T 0354186 4530417
LOCATION S. OF HILL BROS.



TH 10/30/13

Location US Mag Date 11/18/2013

Project / Client 0132320 / US Mag

0845 - On-Site - K. Landmark
I. Utne
D. DeBoers

Meet K. Benson, T. Hamada @ trailer

0900 - R. Francom visits trailer. Discuss schedule, contractor orientation

0920 - A. Baird (PWT) on-site

0930 - Attend contractor H&S training
- USM is requiring all personnel to have Cl_2 monitors
- Bruce McCormick = Instructor
Alarm 0.9 ppm = Don Resp
High Alarm 9.0 ppm = Evacuate Area
RMS 28 01/2013

1030 Discuss sampling schedule w/ A. Baird.
A. Baird depart

1130 - Obtain water (potable) from Auto Shop

1300 - R. Francom informs that Ball Mill (?) will be down

Location US Mag Date 11/18/13

Project / Client 0132320 / US Mag

for repairs this week and there
will be large amts. of acid
discharged to ditches
1415 - Tour PRI 5/6/7/14
Water has diminished
@ PRI 14 since Recon
1545 - off-site

KWL 11/18/13

Location US Mag Date 11/19/13

Project / Client 0132320 / US Mag

0630 - Load Eqpt ERM - SLC
0700 - Depart for USM
0840 - Arrive USM
I. Utue
K. Lundmark
D. DeBoers
K. Benson
T. Hamada
] ERM
A. Baird (PWT) - on-site
~~0810~~ KWL 0820 - R. Francom
arrive, discuss schedule
for boat use @ PRI 14
0900 - Discuss using silicone
tubing @ PRI 14 (waiting
for eqpt to use Tygon)
A. Baird OK's use of silicone
@ PRI 14, KWL to submit
Field mod request
1030 Sampling @ PRI 14-013
Field mod req to move
sample location 197 ft
to N. Approved by A. Baird
1105 = official sample time
PRI14-013-SW01-111913

Location US Mag Date 11/19/13

Project / Client 0132320 / USM

PR114-013-SW01-111913
4530975 N PDOP 1.06
357020 E ± 20 ft
Finish sampling 1230
Return to plant, break for lunch
1400 - Depart for PR114-008
1415 - Arrive PR114-008
Sample location is in open water area 4 to 6 inches deep. 1/4-inch salt crust on bottom of ponded water
1453 = Sample start time
1613 = Sampling finished
1613-1645 Performed preserv. checks for HAA CN⁻
Water is too highly buffered for raising pH to 12 for CN⁻ analysis. Adding ~~nec~~ KWL NaOH sufficient to raise pH to 12 would result in >2 x sample dilution

Provided split samples to

Location US Mag Date 11/19/13

Project / Client 0132320 / USM

PWT @ completion of sampling and informed PWT that water is highly buffered.
PWT did not perform any preservation checks or pH adjustments to their split samples collected 11/19/13 (either PR114-008 or PR114-013)
1710 - Returned boat to USM packaged samples @ trailer
1800 - Off site
1845 - Drop off samples @ FedEx

1910 - Arrive ERM - SLC

KWL 11/19/13

Location US Mary Date 11/25/13
Project / Client 0132320 / USM

0815 - Arrive USM
K. Lundmark
I. Uttle
PWT not @ site - A. Baird
0820 - PWT on site
0825 - Leave message for D. Gibby
re: schedule for 11/25
0900 - Meet D. Gibby to
discuss schedule for 11/25
0900 - Kris Benson (ERM)
Trent Hamada on-site
0945 - Submit Field Mod to
A. Baird for use of dipper
@ PR14-013. Approved by A.B.
1000 - Arrive PR18. Check
SW @ fenceline, pH ~ 1.0
1010 - H&S Tailgate
1015 - Return to plant to
retrieve tubing
1045 - Back @ PR18
pH @ PR18-005 = 5.5 by
pH paper
1120 - 1145 Sample PR18-005 SW

Location US Mary Date 11/25/13
Project / Client 0132320 / USM

Sample intake ~ 8 ft NE of
Stake
1230 - Return to trailer for
lunch
1315 - 1400 - Tour site w/
D. Gibby reviewing access to
existing / new wells
1400 - Depart trailer for PR14
1415 - Arrive PR14-013.
Slurry not flowing from pipe
in bank, but is upwelling
@ channel
1445 - Begin sampling w/
P. pump. Did not work -
Pump became broken.
Slurry clogged tubing.
1500 - Begin sampling w/
Dipper. Filled bucket for
use for filtering
1605 - Finished sampling,
De-mob to trailer
Attempted to filter @
trailer using 1/2 OD silicone/
peristaltic pump & filters

Location US Mag Date 11/25/13
Project / Client 0132320 / USM

immediately clogged, blew out tubing. Filtering gypsum slurry is not possible.
Diss metals collected in unpres. 1-L HDPE. No filtering for ClO_4^- or Cr(VI) either
Discussed schedule for 11/26 w/ A Baird. Plan to attempt sampling @ PR114-005 and PR14-008
1745 - Sign out @ USM

RWL 11/25/13

Location US Mag Date 12/2/13
Project / Client

0800 - Arrive on-site
A Baird (PWT) on-site
0810 - Meet w/ R. Francom
Discuss schedule, Cl2 monitors, Contractor training, Roll-off container
0815 - DPS on-site
0820 - 0900 Contractor orientation

09:25 - Mob to MW-17 and MW-19A + 19B locations; walk area w/ driller

10:09 - Mob back to ERM trailer while drillers unload equipment.

10:25 - Cover H+S for day, plus well construction details

10:40 - DPS mobbing to MW-17 location along w/ ~~ERM~~ PWT ~~+ ERM~~ and ERM.

11:00 - Start hand auger MW-17 to 5' bgs.

Location
Date 12/2/13
Project / Client U.S. Mag

11:15 – after check soil w/ EPA the 10x20 sand DPS brought will not meet the SOP requirements. Talking w/ DPS to see how fast they can get new sand out to site. Will finish logging MW-17 using 2" cores

11:35 → DPS cannot get ahold of their boss to order sand will mob to MW-19 location, get lithology.

11:45 → Rob Howe w/ EPA on site looking at soil cores DPS moving to MW-19 after decon equipment

12:15 – DPS hand auger to 5' bgs @ MW-19 location,

12:25 – DPS decon hand auger. DTW ≈ 10" bgs.

13:20 → Stop drilling MW-19 @ 25' bgs due to flowing sands. added 5 gallons H_2O

Location
Date 12/2/13
Project / Client U.S. Mag

13:20 (continued) – Try and figure out ways around the sand issue to get to depth for lithology

13:40 → mob back to MW-19 location DPS packs up rig to move to ERM trailer yard in case of any snow.

14:15 → @ ERM trailer w/ DPS drop off gas meter

14:25 → sign out of U.S. Mag Mob to ERM office

Location U.S. Mag Date 12-3-13
Project / Client
snowy, 25°F

7:15 - Onsite sign in

7:20 - Take Clean Harbors over to drop rolloff near ERM connex box

7:40 - Clean Harbors offsite. ERM @ trailer calibrate PID. DPS drill crew running late due to poor roads from snow

8:00 - PID calibrated. awaiting DPS

8:15 - DPS onsite. Do HASP and talk about daily activities.

8:45 - Mob to check well location that are accessible.

9:20 → Decide to do MW-18. Drillers are mobing off to get water while before drilling.

Location U.S. Mag Date 12-3-13
Project / Client
overcast, 25°F

10:00 - DPS has water tank @ MW-18 location. Begin hand auger

10:10 - Hand augered to 5' bgs nothing encountered. DPS ready to sample lithology. Snow starts again.

10:40 - lithology ~~varies from~~ JH ~~litholo~~ JH varies from expected. Discuss w/ J. Quiller (ERM) and Rob Howe (EPA rep) about how best to set well

11:30 - EPA + ERM agree on field mod to set well screen @ MW-18 from 12' to 22'.

11:40 → DPS begins drilling to total ~~depth~~ depth of 22.5'

12:00 - TD @ 22.5'. Prepping well - add 15 gallons of H_2O

~~12:05 → Put bottom cap + begin setting well~~

Location U.S. mag Date 12/3/13

Project / Client

12:37 - Sand'n up screen w/ 20x40 sand.
10' - 2" PVC SCH-80 w/ 0.010 slots
3" - bottom cap
10' - ~~PVC~~ 2" PVC - SCH-80 - blank
5 - 20x40 sand bags used

12:45 - Sand @ 11' - begin surging well ~~for~~ 10 mins

12:55 - stop surging and checked sand depth. Sand @ 10' 8"

12:58 add 1.5 bags of ~~1/4~~ JH bentonite chips. Then pull augers

13:10 - Hydrate bentonite chips with 2 buckets of water. Will wait 30 mins for full hydration.

13:30 → Call Jill Q (ERM) about the site mod for using "quikrete" for the top 7' of the well w/ concerns about heat of hydration with PVC. She agrees and asked me to talk to Rob (ERM)

Location U.S. Mag Date 12/~~2~~3 JH/13

Project / Client

13:50 → Rob w/ EPA agrees that we should not use "quikrete" except to seal the top 1-2 ft of the well. Jill is trying to get to ahold of Andrew w/ EPA

14:33 - Set MW-18, ~~[illegible]~~ JH per EPA approval (verbal) using bentonite chips to 1.5' bgs. Hydrated! JH Do ~~field mod~~ Write up field mod ~~14:50 → mix concrete to~~ JH for Aaron w/ PWT to sign tomorrow.
→ 2.5 bags of medium bentonite chips ←

14:45 → DPS reading compeltion & quikrete for compeltion.

15:00 → MW-18 monument set along w/ compeltion. DPS cleaning up site & loading up equipment to move back to ERM trailer parking.

15:30 → Sign out & offsite to SLC office

Location ______ Date 12/4/13

Project / Client U.S. Mag

13:40 - mix portland + pour down auger to w/in 1ft of surface. watching to see if it drops. (1 47lb bag into 5 gallons water)

13:55 → DPS drilling MW-13A

screen 2.5-7.5

14:00 → adding sand to well + taping (used 2 bags)

14:06 → sand 2' bgs. Surging well

14:10 → surged MW-13A. Adding 1ft bentonite chips. Sand still 2.5 ft

~~14:20~~ 14:15 → Chips to 1 → hydrate + wait 30 mins.

DPS decon augers and cleaning up.

14:45 → Add quikrete to top 1'. DPS installing stick-ups for both wells. (1 bags bentonite)

14:55 → Clean up area to mob to MW-14 location

~~15~~ 15:05 → ~~mob to~~ Begin hand auger @ MW-14 location.

15:25 → Begin drilling MW-14 for lithology

Location ______ Date 12/4/13

Project / Client U.S. Mag

15:45 → Reach 20' bgs.

Lossing soil core. Rob (EPA) says we should maybe set 2 wells since lithology is different than described in SAP. ERM will call J Quillen after getting cell service to discuss.

16:00 - Stop for day, mob to ERM trailer. DPS winterized machines for use tomorrow

16:30 → sign out, offsite.

16:35 → Call Jill Q + Kevin L before leaving site. Got voice mail from Rob Howe, but could not understand what he was saying. Message was garbled

16:45 → mob to ERM office

Location U.S. Mag Date 12/5/13

Project / Client

9°, light snow

7:10 → Onsite, talk w/ Dave Gibly about progress working the weekend. He is ok w/ that

7:20 → H&SP meeting w/ DPS.

7:30 → DPS enroute to finish completion on MW-13B. ERM awaiting EPA to sign field mod for MW-14B install

8:00 → PWT (EPA) signs field mod for MW-14B to be screened from 5-15 ft bgs & for MW-14A to ~~be removed from~~ not be installed

8:20 → DPS/ERM begin installing MW-14

8:37 → DPS at 16' bgs. Adding 15 gallons H_2O to combat heaving sands.

8:42 → Begin setting MW-14B
- screen from 5-15'
- blank 5'-+3
- ~~5 1/2 bags of sand~~
→ 5 1/2 bags of 20x40 sand

Location U.S. Mag Date 12-5-13

Project / Client

9:20 - begin surging well

9:30 - ~~start~~ surging done. Sounded 4-

9:35 - Chips to 1' - hydrated. (2 bags of chips)

10:10 → adding quikrete still-up to ~~MW-14~~ MW-14.

10:27 → DPS packing up equipment to move to MW-15 location.

10:40 → Hand auger to 5' bgs

10:52 → Drill MW-15 for litholog

11:25 → MW-15 has a ~~8~~ ~6" (4-4.5') clay layer above 2' of wet ochre (5-7) sand, followed by 2.5' of clay (7-9.5')
Call Jill Q to discuss w/ her. left message & sent a text. EPA wants to do a well from 3'-8' ~~and~~ one from 9'-to 19' ~~EPA OK w/ 20'.~~

11:27 → Jill called back ok w/ 9-19' but wants ~~beyond~~ 2'-to 7'. EPA ok w/ that.
↳ Rob Howe

11:28 → DDS powerwash breaks, fixing it

12:00 → DDS begins drilling MW-15B

Location U.S. Mag Date 12-5-13
Project / Client

12:15 → Begin setting MW-15 B. Add 25 gallons H_2O
SCH-80 0.010 - screen 4'-19' bgs - 2"
SCH-~~80~~ - blank - 2"
4 - 20x40 Sand (bags)
4 - Bentonite bags
13:10 → Sand to 8' bgs. Getting ready to surge
MW-15B
13:18 → Start surging
13:28 → Stop surging. Surge block almost
Stuck in well, but got out.
Sand @ 7' 6"
13:29 → Adding chips.
13:30 → chips to 3' - hydrate and ~~wait~~ wait
30 mins.
14:00 → Drill down to ~~7.25~~ 7.25 ft for plug space on MW-15A
~~Begin setting well~~ Begin setting well
14:15 → Sand to 1.5' Develope
~2 bags of Sand
14:25 → sand at 1.5' ~~chips~~ Add
(2 bags) Bentonite chips to 0.5' & hydrate
14:26 → DPS off to get more water. DPS
Staying on site to clean up.

Location U.S. Mag Date 12-5-13
Project / Client

JD 15:05 ~~13:05~~ DPS back w/ water
JD 15:10 ~~15:20~~ → DPS has added 2 of Portland
to MW-15B
15:30 → ~~Finishing~~ Start MW-15 completions
JD ~~15:40~~ →
15:55 → DPS cleaning up site mob to
~~ERM partly spot~~ ERM
trailer
16:00 → Talk w/ ~~Jacob~~ Hill bros about
drilling ~~on~~ MW-20A & -20B
tomorrow. All hoses no
longer in way.
16:30 → offsite to ERM SLC office

Location U.S Mag Date 12-6-13

Project / Client

7.10 → onsite, sign in, calibrate meters. DPS running late today ~30 mins out.

8.10 → DPS onsite, cover HASP

8:30 → Mob to MW-20 location and mob equipment to location in Hill bros ~~site~~ old property

8.50 → Hand auger MW-20 location to 5' bgs. mostly fine

9.04 → Begin drilling for lithology at MW-20.

9:45 → Drillers call refusal @ 28.5'. ~~Heaving~~ ~~ERM~~/EPA decide to drill & set well MW-20B per SAP. Modify MW-20A screen to 12' to 17' due lithologic differences. ~~ERM~~ using ~~[illegible]~~ Pre-Pack screen to set MW-20B due to flowing/heaving sands.

10:40 → EPA signs field waiver for all of the above as discussed MW-20

Location U.S. Mag Date 12-6-13

Project / Client

11:10 → DPS dumping cuttings, DPS prepped to set well. Added 30 gallons to augers. Augers @ 30' bgs.

11:15 → Talk w/ Rob about info so we are on the same page before he leaves for the day, so all are on the same page.

11:50 → DPS sets MW-20B at 29'. Pulls 10 ft of auger. ~~Sands 26' Adding~~ Sands came in to 26'. Adding filter pack sand starts @ 26'

12:35 → Sand to 17.5' for MW-20B (4-bags sand) Bentonite chips to 13' Surge for 10 mins.

13:00 → Bentonite at 13'. ~~Hydrating~~ Hydrating (3-bags bentonite)

13:30 → Begin mixing & adding portland to MW-20B. (2-bags)

13:45 → Portland to 2'. Last auger had no clay on it. for MW-20B.

Location U.S. Mag
Date 12-6-13
Project / Client

JH

13:46 - Begin drilling MW-20A ~~MW-20B~~ to ~~15~~ 17.5' bgs.

14:05 → At 17.5' bgs. Adding 15 gallons before popping bottom cap for MW-20A. Water helps keep flowing/heaving sands ~~down~~ out of augers when setting the well.

14:13 → MW-20A - sand from 16' to 11' is filter pack material. Sand from 17.5 to 16' is natural sand pack
- 3 bags of sand

14:20 → Start surge
14:31 → end surge
JH
14:35 → Sand @ 11'. Add chips ~~(3~~
14:43 → Chips to 7'4". Hydrate & wait 30 mins. (2-bags chips)
15:20 → Begin adding portland to MW-20A
15:35 → Portland to 2' bgs

Location U.S. Mag
Date 12-6-13
Project / Client

15:45 → Work on setting stick-ups and general.

16:00 → ~~DPS~~ working on ~~completion~~ completion for MW-20A & MW-20B. DPS picking up site

16:40 → DPS packing up for the weekend.

16:55 → Sign out and off site to ERM office

[signature]

Location U.S. mag   Date 12-9-13

Project / Client

-3°F, Clear

7:05 → Onsite, sign-in

7:15 → DPS onsite, cover HASP + cold weather work. DPS defrosting vehicles 24" of new snow on the ground.

7:35 → Mob to MW-19A + B location. Unload equipment. DPS out to get water.

8:20 → DPS mob geoprobe to MW-19 location to attempt to get to TD w/ lithology using lock-up technique.

8:50 → DPS unable to confirm clay layer at MW-19B due to sampler refusal ~~from~~ while using a geoprobe. TD = 25'

8:55 → ERM/EPA discuss SAP mod for MW-19B. SAP mod discussed ~~9:25~~ JH using a pre-pack well 2" SCH-40 PVC w/ a 1.5" 20x40 sand pack w/ 0.010 slots. also noted that augers are 8" diameter. ERM will attempt to confirm clay layer is present by photographing the final auger.

9:15 → EPA (PWD) signed SAP mod

Location U.S. mag   Date 12-9-13

Project / Client

9:20 → DPS begins ~~setting~~ JH drilling MW-19B boring

9:50 → Begin setting MW-19B TD = 33' 5" while DPS setting well ready. Added 3 gallon H2O to bore before setting well

10:04 - After pulling 10' of auger, sand at 31'. Adding sand.

10:30 → Sand to 20'. (2 1/2 bags). ~~JH Adding bentonite chips~~ Surge for 10 min

10:41 → Done surging. Sand at 20'. Adding bentonite chips from 20'.

10:50 → Chips to 15.5'. Hydration occurring. DPS decon augers + making dumpster trip w/ cuttings (3 bags chips)

11:21 → Bentonite @ 15.5', DPS mixing portland + pouring down augers

Location U.S. Mag Date 12-9-13

Project / Client

11:40 → Appears to be a gray CLAY w/ sand at ~28' bgs for MW-19B. Sand is fine grained, wet. Grout to 1' bgs. Letting ~~quicksand~~ grout set up.

11:41 → Begin drilling MW-19A.

11:57 → DPS @ 17.5' bgs. Adding water to borehole (~20 gallons). DPS constructing well.

12:02 → after popping bottom cap, tag sand @ 17', while adding sand.

12:42 → Surge well. Sand @ 6' (5-bags of sand)

12:52 → Stop surge. Tag sand @ 6'. Add bentonite chips.

13:03 → Chips @ 2'. (2 1/2) bags used chips. Hydration time starts now. DPS decon augers and moving to dump cuttings and get more H_2O. DPS has to tow support truck to better ground to get more water

13:40 → DPS mob to MW-17A location.

Location U.S. Mag Date 12-9-13

Project / Client

14:06 - Begin drilling MW-17A

14:19 - Drill MW-17A ~13' from original geoprobe location. Unable to locate due snow on ground/floor. Walked over old push location & kicked in snow to find hole. DPS at 17.5' bgs.

14:21 - Begin setting MW-17A. Add ~20 gallons H_2O. Adding sand. Tag @ 17.5' after popping plug out.

14:53 - Sand at 6' bgs. DPS ready to surge.

15:02 - Start surge

15:12 - end surge. Sand @ 4'. Add more sand.

15:22 → Sand to 5' 9". Add chips.

15:38 → Chips to 2' 6". hydration

16:10 → Begin completion for all wells MW-17A, MW-19A & MW-19B.

16:30 → DPS done w/ completions. Packing to go offsite. DRA got 2-bags 20x40 silica sand + 1 bag bentonite chips

Location U.S. MCJ Date 12-9-13

Project / Client

17:00 → ERM offsite to office. Give Trent all paperwork.

Common Field Data Error Codes

Error codes are used to explain common mistakes and are written above or close to the mistake. Commonly used error codes include:

- RE Recording Error
- CE Calculation Error
- TE Transcription Error
- SE Spelling Error
- CL Changed for Clarity
- DC Original Sample Description Changed After Further Evaluation
- WO Write Over
- NI Not Initialed and Dated at Time of Entry
- OB Not Recorded at the Time of Initial Observation

Note: Error code should be circled, dated, and initialed when recorded.

Hazard Classifications

Class 1 Explosives
Class 2 Gas
Class 3 Flammable Liquid
Class 4 Flammable Solids (Potential spontaneous combustion, or emission of flammable gases when in contact with water)
Class 5 Oxidizing Substances and Organic Peroxides
Class 6 Toxic (poisonous) and infectious substances
Class 7 Radioactive material
Class 8 Corrosives
Class 9 Miscellaneous dangerous goods

Container type abbreviations (for sampling guidelines)

BR - Boston Round • ABR - Amber Boston Round • AJ - Amber Jug • AWM - Amber Wide Mouth • Poly - Polyethylene Bottles • BOD - Bottle • CWM - Clear Wide Mouth

Blank

[signature] Blank

US Magnesium RI/FS

19 Nov 2013, D. deBoer, I. Ultne, P. Cloudy, cool, 45°

0830 Arrive at job trailer

- Discuss tubing modification from Tygon to Silicon for work today with Adron Band for PRI-14.
- Discuss movement of PRI14-013 due to lack of water

0900 - Calibrate Horiba U-5000, SN P20002660001E
P. Cloudy, damp, cool, 49°

- Auto cal for pH (4.0), Conductivity (4.49 mS/cm), Turbidity (0 NTU), and DO
- Manual calibration for ORP (240.0 mV)
- Pine Environmental calibration solutions.
- Probe SN P200026700ID
- 3.98 pH, 4.45 mS/cm, 11.35 mg/L DO
- +240 ORP mV

0950 Arrive at PRI14-013
Move 200ft to North to deeper water

1105 Begin Sampling - EPA collects split samples

1230 - End sampling - PRI14-013-SW01-111913
- Pack up Gear

1300 Leave for trailer

1415 Arrive at PRI14-008 & Begin setup

1453 Sample PRI14-008-SW01-111913 - EPA split sample

1650 Leave Site for trailer

[signature]

20 Nov 2013
0800 Arrive on site JW + DD - P Cloudy 40°
- test new pump - Solinst - works with tygon tubing
0810 - Calibrate Horiba U-52
SN2000266001E
- Auto calibrate 3.94pH on 4.0 solution
4.49mS/cm on 4.49 solution 0NTU on 0NTU sol
- Man calibrate ORP 240mV on 240mV Solution
0930 Arrive @ PRI14-005 - not Enough water to Sample 1/4" Deep
0950 Arrive @ PRI14-006
1000 Start Sampling
1015 Complete Sampling + Pack up
1130 Arrive @ PRI07-001
- Locate to north 300' of original Stake
1210 Start Sampling PRI7-001-SW01-112013
1225 End collection - Pack up + Mob to Next location
1341 Arrive at PRI7-003
1345 Sample PRI7-003-SW01-112013
1430 Leave for trailer
1500 Prepare Equip/~~Field~~/Blank PRI7-003-SW22-112013
@ 1100, Preserve Cyanide w/20 Drops NaOH
Preserve HAA w/5mg NH_4Cl
Prepare trip Blanks PRI7-003-SW21-112013
@ 1100

1640 Leave Site For Fedex
1730 Drop coolers @ Fedex
- TA 841015701033
- Applied Spec 841015701044

J. Davis

21 Nov 2013 30° Cloudy Snow/Rain Windy
0800 Arrive at trailer JW + Dd.
- Calibrate Horiba SN 2000266061I
3.93 pH on 4.0 solution
4.47 mS/cm on 4.49 mS/cm Solution
0.1 NTU on 0.0 ntu solution
10.94 mg/L DO
0830 JW + Dd conduct H+S tailgate
0845 Aaron - PWT USEPA contractor Arrives
0900 Sign into Guard shack
Aaron refused to sign in Safety Sheet
"Because he's representing EPA, I don't have too"
0910 Arrive at PRI 3 to check for surface water.
0920 - No Standing or Running water observed
Aaron verbally concurs no surface water present.
0930 walk to PRI 4-013 No/Low flow to PRI 4-007 - No flow towards East
1000 Arrive at PRI 14-005 not enough water to Sample. Aaron observes Lack of water present.
1030 Arrive at Job trailer. Aaron Leaves to get supplies.
- Waiting on Key to Enter PRI 7 area
1130 Aaron Arrives - Leave for PRI 7
1200 Arrive at PRI 7-007
1230 collect PRI 7-007-SW01-112113
Collect Duplicate Sample PRI 7-007-SW21-112113 @ 1500

Cont - Collect EPA split sample
1330 End Sample time
- Mob back to trailer to fill out Labels
- ERM + PWT field preserve samples in office
- PWT uses ERM's field chemistry parameters for Preservation.
1445 Aaron Leaves site.
Trip Blank PRI 7-007-SW22-112113 @ 1600
1645 Arrive at Fedex - Prep samples
2-coolers to TestAmerica
1-Applied Spec

22 Nov 2013
0800 Arrive onsite JIU + DD
· Begin loading truck Trent
0815 Aaron D arrives - Lonnie M, Kris at trailer already
0830 Calibrate Horiba SN 20002 66001E
- Auto calibrate
3.94 pH on 4.0 solution 4.49 mS/cm on 4.49 solution
0.0 NTU on 0.0 NTU solution
Manual calibrate ORP 240mV on 240mV Solution
0930 Arrive at PRI7-014
0945 Sample PRI7-014-SW01-112213
- collect MS/MSD PRI7014-SW01-112213 @ 1500
1005 End sample time
- Trip Blank PRI7-014-SW22-112213 @ 1600
1130 Arrive at PRI7-013
- EPA wants to collect duplicate & MS/MSD at Location
1205 Start sampling PRI7-013-SW01-112213
1245 End Sampling
- Conduct field preservation in trailer
- Collect 2 perchlorate samples
1 - 0.45μm Filter - PRI7-013-SW01-112213-45
1 - 0.45μm then 0.2μm filter PRI-013-SW01-112213-02

Filter 0.2 By
Syringe → Filter → tubing → silicone tube (via peristaltic pump) → tubing → bottle.
1400 Aaron Leave site
1430 Trent, Lonnie, Kris Leave site
1500 JIU / DD Leave site
1630 Arrive at Fedex
- 3 coolers to TestAmerica
- 1 cooler to applied speciation

25 Nov 2013
0800 Arrive onsite JLU + KL
0820 Calibrate Horiba - S/N 200226 60SIE
- 4.04 pH on 4.0 solution
- 4.50 mS/cm on 4.49 solution
- 0.0 NTU on 0.0 NTU Solution
- 240 mV on 240 mV ORP Solution
0840 Conduct H&S tailgate
1050 Arrive @ PRI 8-005
1120 Sample PRI 8-005-SW01-112513
1500 Setup on PRI 4-013
1800 Leave site KL & JLU for Fedex

26 Nov 2013
0800 Arrive onsite TH, JLU, KB
-Calibrate Horiba
Auto Calibrate
3.93 pH on 4.0 solution. 4.43 mS/cm on 4.49 solution
0.0 NTU on 0.0 NTU solution
240 mV ORP on 240 mV ORP solution
0830 ~~ARm~~ Arrives - Conduct H&S Meeting
0930 Install stainless steel boots at PRI 14-005
1100 Arrive at PRI 4-008
-Attempt to Access Location from southwest of PRI 4-013. Get stuck in mud.
-Attempt Access southeast of PRI 4-013.
1230 Sample PRI 4-008-SW01-112613
- Trip Blank PRI 4-008-SW21-112613 @ 1240
1530 -Leave site A/L

US Mag RI/FS

2 December 2013

D. deBoer, ERM

Task: Well development

Cloudy, cool, SE Wind 45°

0900- Arrive on Site.

0950- Have H&S mtg

1000- Set up @ ~~PZ-2~~ PZ-4

- Auto calibrate Horiba U-52
  SN 2000266001E
  3.96 pH = 4.0 standard
  4.50 ms/cm = 4.49 standard
  0 NTU = 0 standard
  240 mV ORP = 240 standard

1230- Call Jill Q to discuss purge volumes.

1344- Call w/ Kevin L confirms minimum 46 gal.

1345- Complete developing PZ-4, purged ~~60~~ 70 gal.

1423- Set up @ PZ-01

- directly downwind of stack - Cl monitor reading 0.4 ppm.
- PVC casing @ PZ-01 has bend @ ~4' TOC - bladder pump for development will not go past bend.

1510- Set up @ PZ-18

1650- Complete PZ-18: purge 45 gallons

1715- Unload truck, depart Site

12/2/13

US Magnesium RI/FS

3 December 2013

D. deBoer, ERM

Task: Well development

Snow, 28°

0700 - Arrive on Site

0705 - Calibrate Horiba U-52
SN 2000266001E
Auto Calibrate results:
3.92 pH = 4.0 Standard
4.52 mS/cm = 4.49 mS/cm standard
0.1 NTU = 0.0 NTU standard
Manual calibrate:
240 mV ORP = 240 mV Standard

0730 - DPS on Site, have H&S mtg.

0840 - Set up @ PZ-16

0951 - Complete development @ PZ-16, purge 40 gallons.

1020 - Lock stuck @ PZ-12

1035 - Set up @ PZ-10

1147 - Complete development @ PZ-10, purge 40 gallons.

1155 - Lock stuck @ PZ-26

1210 - Set up @ PZ-08

1318 - Complete development @ PZ-08, purge 40 gallons.

1345 - Check in w/ US Mag security

3 December 2013 pg 2
to get bolt cutters from drillers.
1410 - Set up @ PZ-26, cut lock to access well.
1525 - Complete development @ PZ-26, purge 40 gallons.
1600 - Unload truck at job trailer.
1615 - Depart Site.

12/3/13

4 December 2013
D. deBoer, ERM
Task: Well Redevelopment
Clear, cold, 10°
0645 - Arrive on Site
- Calibrate Cl_2 meter w/ 10 ppm cal gas.
- Calibrate Horiba U-52 SN 2000266001E
Auto Calibrate results:
3.96 pH = 4.0 standard.
4.50 mS/cm = 4.49 standard
0.0 NTU = 0.0 standard
Manual calibrate
240 mV ORP = 240 mV Standard.
0700 - Have H&S tailgate mtg.
0715 - Call Roger F. to unlock gate.
0745 - Set up @ PZ-12
0906 - Complete development @ PZ-12, purge 36 gallons. Lock corroded, had to cut off surface completion
0940 - Set up @ PZ-06
1032 - Complete development @ PZ-06, purge 24 gallons.
1130 - Check in w/ US Mag security, dump purge water.

US Magnesium RI/FS

~~03~~ 4 December 2013 pg 2

1145 - Set up @ LF-03, begin Cl_2 monitoring @ 15 min intervals. Winds WNW.

1255 - Complete development @ LF-03, purged 40 gal.

1320 - Set up @ PZ-24

1425 - Complete development @ PZ-24, purged 40 gal.

1445 - Set up @ MW-05A

1555 - Complete development @ MW-05A, purged 40 gal.

1620 - Check out w/ Site security.

1630 - Unload equipment, depart Site.

12/4/13

US Magnesium RI/FS

5 December 2013

D. deBoer, ERM

Task: Well Development

Clear, cold, 7°

0645 - Arrive on Site

- Calibrate Cl_2 meter w/ 10 ppm cal gas and 0 ppm fresh air.
- Calibrate Horiba U-52 S/N 2000266001E

Auto calibrate results:

3.99 = 4.0 pH standard

4.55 = 4.49 mS/cm standard

0.0 = 0.0 NTU Standard

Manual calibrate:

240 = 240 mV Standard.

0700 - Have H&S tailgate mtg.

0745 - Set up @ PZ-22

0850 - Complete development @ PZ-22, purged 40 gallons.

0910 - Set up @ LF-01

1020 - Complete development @ LF-01, purged ~ 40 gallons.

1035 - Set up @ MW-07

1121 - Air compressor stops working.

1140 - Air compressor repaired, resume purging

1209 - Complete development @ MW-07, purged ~ 40 gallons.

US Magnesium RI/FS

5 December 2013 Pg 2

1215 - Begin air monitoring - winds have shifted - blowing plume directly over work area.

1220 - Set up @ mw-06

1319 - Complete development @ mw-06, purged 32 gallons.

1345 - Set up @ MW-04A

1443 - Complete development @ mw-04A, purged 32 gallons.

1500 - Dump purge water tote.

1520 - Check out w/ Site security

1530 - Depart Site.

12/5/13

US Magnesium RI/FS

6 December 2013

D. deBoer, ERM

Task: Redevelopment of Site wells, development of new wells.

Clear, cold, 6°

0645 - Arrive on Site

0650 - Calibrate Cl_2 meter. w 10 ppm cal gas and 0 ppm fresh air.

- Calibrate Horiba U-52

Auto calibrate results:

3.96 pH = 4.0 standard

4.53 mS/cm = 4.49 standard

0.3 NTU = 0.0 standard.

Manual calibrate.

240 mV ORP = 240 standard

0710 - Have H&S tailgate mtg.

0745 - Set up @ MW-08A

- Air compressor for bladder pump won't start

- Put on 1/2 face respirators and begin air monitoring. for Cl_2

0845 - Get air compressor running

1020 - Complete development @ mw-08A, purged 50 gallons.

1030 - Set up @ mw-08B

1150 Complete development @ mw-08B, purged 72 gallons.

6 December 2013 pg 2

1215 - Demob from MW-08 cluster, Discontinue use of 1/2 face respirator.

1220 - Set up @ MW-18

1300 - Discontinue regular air monitoring still wearing Cl_2 monitor.

1535 - Complete development @ MW-18, purged ~ 108 gal.

1550 - Dump purge water

1555 - Check out w/ security

1630 - Depart Site after unloading equipment.

12/6/13

9 December 2013

D. deBoer, ERM

Task: Well Development

Clear, cold, -3°

0645 - Arrive on Site.

0650 - S. Bramley w/ DPS texts, he will be running late, involved in traffic accident.

0700 - Calibrate Cl_2 meter

0.0 ppm = fresh air

10.0 ppm = 10.0 ppm Cl_2 cal gas

- Calibrate Horiba U-52

SN 200026601E

Auto calibrate results:

3.92 = 4.0 pH standard

4.49 = 4.49 mS/cm standard

0.0 = 0.0 NTU standard

Manual calibration

240 = 240 mV standard

0730 - DPS on Site, have H&S mtg.

0800 - Set up @ MW-13 cluster. Compressor and controller freeze up. Put in truck to thaw.

1231 - Complete development @ MW-13B, purged 121 gal.

1235 - Set up @ MW-13A

9 December 2013 pg 2

1354 - Complete development @ MW-13A, purged 14 gal.

1410 - Set up @ MW-15A

1523 - Complete development @ MW-15A, purged 24 gallons.

1545 - Unload equipment, decon all equipment,

1600 - ERM & DPS depart Site.

12/9/13

10 December 2013

D. deBoer, ERM

Task: Well Development

Clear, cold, 1°

0645 - Arrive on Site

- Calibrate Cl_2 meter

0.0 ppm = fresh air

10.0 ppm = 10.0 ppm Cl_2 cal gas

- Calibrate Horiba U-52

S/N 2000266601E

Auto calibrate:

3.96 = 4.0 pH standard

4.49 = 4.49 mS/cm standard

0.1 = 0.0 NTU standard

Manual calibrate:

240 = 240 mV standard

0700 - Have H&S meeting.

0720 - Set up @ MW-15B

1042 - Complete development @ MW-15B, purged 120 gallons.

1055 - DPS dumps purge water tote.

1145 - Set up @ MW-14

1235 - Aaron w/ PWTS on Site.

1250 - Aaron departs

1450 - Complete development @ MW-14, purged 120 gallons.

US Magnesium RI/FS.

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1530 - Decon and unload equipment, depart Site.

12/10/13

US Magnesium RI/FS

11 December 2013

D. deBoer, ERM

Task: Well development

Clear, cold, ≈2°

0645 - Arrive on Site

- Calibrate Cl_2 meter:

0.0 ppm = Fresh air

10.1 ppm = 10.0 ppm Cl_2 gas.

- Calibrate Horiba U-52

SN 20002660 1E

Auto Calibrate:

3.99 = 4.0 pH Standard

4.50 = 4.49 mS/cm standard

0.0 = 0.0 NTU

Manual calibration:

240 = 240 mV standard.

0710 - Have H&S mtg.

0725 - Set up @ MW-20B

- Water lines and controller keep freezing up.

0815 - Begin purging MW-20B

1215 - Complete development @ MW-20B, purged 180 gallons.

1220 - Set up @ MW-20A

1314 - Complete development @ MW-20A, purged 35 gallons.

26

US Magnesium RI/FS

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1330 - Check in w/ security, dump purge water

1400 - Set up @ MW-19A

1555 - Complete development @ MW-19A, purged 70 gallons.

1630 - Dump purge water, check out w/ Site security, decon and unload all equipment, depart Site.

12/11/13

US Mag RI/FS 27

12/16/13

8:20 - Arrive on site for well developement

Site Personnel - K. Bensen

Site Weather - Fog, 4°

- Calibrate Horiba U52

- MW19B - Water is frozen, pushed ice down into water column in order to melt.

10:00 - Set up @ MW-17

11:34 - Complete developement @ MW-17 purged 60 gallons

11:50 - Set up @ MW-19B

14:10 - Complete developement @ MW-19B purged 165 gallons.

14:20 - Dump purge water, check out w/ site security.

15:30 - Off site

12/16/13

12/17/13

0800 ARRIVE ON SITE FOR SURFACE SOIL SAMPLING
SITE PERSONNEL: K. BENSON, G. RIGARD
SITE WEATHER: HEAVY FOG, 8°F
LOAD TRUCK WITH SAMPLING EQUIPMENT.
0910 BEGIN SAMPLING @ PRI10-010
0930 END SAMPLING @ PRI10-010
1030 BEGIN SAMPLING @ PRI10-008
1045 END SAMPLING @ PRI10-008
1050 BEGIN SAMPLING @ PRI10-011
11:00 ~~BEGIN~~ GR ~~SAMP~~ GR END SAMPLING @ PRI10-011
12:50 BEGIN SAMPLING @ PRI8-012
1305 END SAMPLING @ PRI8-012
1320 BEGIN SAMPLING @ PRI8-011
1330 END SAMPLING @ PRI8-011
1415 AT WORK TRAILER TO BEGIN DECON AND PREPARE SAMPLES.
1600 CHECK OUT WITH SITE SECURITY OFF SITE

12/17/13

1/13/14

0910 Arrived on site.
Site Personnel: L Mercer, T Hamada
Site Weather: Sunny, breezy, ~30°F
0915 Conducted safety meeting and loading equipment.
0952 Signed in at gate and mobilized to MW-16.
1000 Parked next to smut piles and mobilized with wagon to MW-16.
1030 Began augering at MW-16.
1110 MW-16 is set. Prepare equipment to mobilize back to truck.
1145 Loaded equipment into truck and mobilized to trailer.
1200 Lunch break and then cleaning equipment (snow shoes, auger, etc.)
1215 Working with Aaron Baird (PWT) on field mod forms.
1300 Mobilize to PRI15-008.
1340 Begin sampling PRI15-008.
1350 End sampling PRI15-008.
1415 Returned to trailer. Decon equipment. Pack cooler and prepare sample.
1510 Depart site. 1/13/14

1/16/~~13~~ 14 US MAG RI/FS 0132320

0830 ARRIVE ON SITE.
PERSONEL: T. HAMADA, K. BENSON
WEATHER: THICK FOG, HIGH 20's

0930 PARK TRUCK NEAR SMUT TO WALK TO MW-16

1000 MW-16 LOCATED IN ~2" WASTE WATER pH ≤1
CALL K. LUNDMARK TO DISCUSS DEVELOPMENT OPTIONS.
ABORT DEVELOPMENT ACTIVITIES AT THIS TIME

1045 ARRIVE AT PRI-8 TO OBSERVE STAFF GAUGE.
ROAD TO GAUGE MUDDY, RUTTED FROM LARGE EQPT. USING ROAD MAKING IMPASSIBLE FOR FIELD TRUCK.

11:00 WALK ~~TO~~ TH ON ROAD TO PRIS -005/6 TO OBSERVE.
WASTE WATER (pH ~1) RISEN IN PRI 8 SINCE DEC, 2013

1200 MOB BACK TO TRAILER

1230 OFF SITE

TH 1/16/14

1/24/14 US MAG RI/FS 0132320

0800 ARRIVE ON SITE
PERSONEL: T. HAMADA, K. BENSON
WEATHER: 3°F, CLEAR, CALM
DPS ALREADY ON-SITE

0807 H & S TAILGATE

0815 ARRIVE AT PZ-01
CHAD W/ DPS CONDUCT PRIVATE UTILITY LOCATE.
CONCRETE PAD NOT BREAKING UP W/ BOBCAT BUCKET. DPS WILL DIG TO LEVEL BELOW WELL CASING (~5') & CUT WELL BELOW CASING.

0910 CONCRETE PAD & CASING REMOVED AS ONE PIECE. BENT PORTION OF WELL REMOVED.

1015 GARRETT RIGARD DELIVERED HORIBA

1035 DPS REPAIRED WELL USING ~8' PVC RISER. FILLED HOLE WITH DIRT. ~3' OF PVC ABOVE GROUND LEVEL.

1040 INSTALL WELL CASING & BOLLARDS.
CALL K. LUNDMARK TO DISCUSS DISPOSAL OF OLD CONCRETE & CASING.

1050 START DEVELOPMENT OF PZ-01
WL ~14' BELOW TOC (SEE WELL DEVELOPMENT FORM)

1/24/14

1150 T. HAMADA MEET W/ D. GIBBY
REGARDING DEBRIS DISPOSAL.
US MAG WILL DISPOSE OF MATERIAL
1220 WELL DEVELOPMENT COMPLETE
~25 GAL. TOTAL PURGED
DUMP PURGEWATER INSIDE
FACILITY. MOB TO TRAILER.
1310 DPS OFF-SITE
1330 INVENTORY TRAILER FOR GW
SAMPLING EQPT./SUPPLIES
1350 RECON AT PRI14-005. WATER IN
POND HAS RISEN SINCE SOIL BORING.
SURFACE WATER AT SAMPLE LOC.
DEEP ENOUGH TO SAMPLE FROM
BOWLS. NOT FROZEN.
1415 OFF SITE.

TH 1/24/14

1/27/14 US MAG PHASE IA RI/FS 0132320
0820 ARRIVE ON SITE
PERSONEL: T. HAMADA, L. MERCER
WEATHER: CLEAR, CALM, 15°F
0840 SIGN IN W/ GUARD
MEET W/ D. GIBBY + R. FRANCOM TO
OPEN GATES
0858 CHECK IN @ HILL BROS. TO MEASURE
MW-20 A + B
START WATER LEVEL MEASUREMENTS (SEE
FIELD SHEET)
1015 OBSERVED MW-16 FROM SHORE.
UNDER ~2" WASTE WATER ~50 ft. INTO
WATER FROM WATERS EDGE
1122 RECON @ PRI7-009
SMALL SEEP. FROZEN. NOT DEEP
ENOUGH TO SAMPLE.
1426 SIGN OUT AT GUARD BLDG.
1440 OFF SITE

TH 1/27/14

1/29/14 USM RI/FS 0132320
0715 Depart SLC
0815 Arrive USM: Kris Benson, Trent Hamada, Kevin Lundmark
Cloudy, 20s
Discard unused Cr(VI) bottles from Nov/Dec 2013 sampling event. Place new bottles (shipped on ice) in refrigerator @ trailer
0830 Tailgate H&S Meeting
FSO = Hamada
-Need more SS sampling forms @ trailer
0845- KWL discuss schedule w/ D. Gibby & R. Francom
0915- Horiba Cal Check
Have 4 X ~~ORP~~ KWL Multi cal
5 X ORP Soln.
Need $NaAsO_2$ soln.
Run through water chem for GW sampling w/ KB, TH
1015 Depart trailer
1025 Arrive PRIZ to look for SG-1; not found. Water present in old Waste Pond to berm.

1045 - Back to USM Plant
Return key to Roger F
Discuss SG-1 & sampling schedule w/ D Gibby
1100 - ERM off-site

KWL 1/29/14

1/31/14 USMAG RI/FS PHA 0132320
0815 ARRIVE ON SITE
PERSONEL: T. HAMADA, K. BENSON
WEATHER: OVERCAST, LOW 30s
0840 L. MERCER, K. LUNDMARK ARRIVE ON SITE
0900 CALIBRATE HORIBA U-52
SN: SNUONHVC
0958 HELD H&S TAILGATE
1000 ARRIVE AT ~~PH~~ TH PZ-6
1100 SAMPLE PZ-06
ID: ~~PZ-06 013114~~ TH PZ-06-01-013114
1136 DONE SAMPLING
1145 MOB TO TRAILER
1300 ARRIVE AT MW20A
K. LUNDMARK L. MERCER @ MW-20B
1340 SAMPLE MW-20A
ID: MW-20A-01-013114
1420 MOB TO TRAILER. PACK COOLERS
1545 DUMP TRASH / PURGE WATER
1415 OFF SITE

TH 1/31/14

2/3/14 ~~USMAG~~ USMAG Ph 1A RI/FS 0132320
0820 ARRIVE ONSITE
PERSONNEL: T. HAMADA, K. BENSON
WEATHER: SUNNY, 25°F
0830 CALIBRATE HORIBA U52
0838 H+S TAILGATE MTG.
0940 ATV DELIVERED
1020 ARRIVE AT PZ-16
~~EDGE~~ OF WASTE WATER (pH=1) ~5FC
NORTH OF PZ-16
1100 SAMPLE PZ-16
ID: PZ-16-01-020314 + DUPE
1148 ARRIVE AT PZ-18
1235 SAMPLE PZ-18
ID: PZ-18-01-020314
1310 MOB TO TRAILER FOR SUPPLIES
1404 ARRIVE AT PZ-22
14:40 - Sample PZ-22
15:30 - Mob to trailer to pack samples
17:10 - Off site to ship samples

2/3/14 KB

USM RI/FS

2/5/14 0132320

0715 Departed ERM SLC.
0815 Arrived at USM. ERM Personnel:
Trent Hamada, Lonnie Mercer.
Weather: partly cloudy, cold (20°F)
0915 Calibrated Horiba, loaded equipment,
and mobilized to MW-14.
935 Setting up for sampling at MW-14.
1125 Finished sampling at MW-14.
Load equipment and move to
MW-15A and MW-15B.
1130 Setting up at MW-15A.
1340 Finished sampling at MW-15A
and MW-15B. Load equipment
and mobilize to trailer.
1400 Lunch break.
1420 Load supplies and mobilized
to MW-17.
1440 Setting up at MW-17.
1540 Finished sampling at MW-17.
Load equipment and mobilize
to trailer.
1730 Packed coolers with K. Branson
and G. Rigard. Departed site
after prepping coolers for shipment.

2/5/14

2/6/14

0900 ARRIVE ON SITE
PERSONEL: T. HAMADA, G. RIGARD
WEATHER: OVERCAST, 17°F
0935 SIGN IN @ GUARD
0945 ARRIVE @ MW-7
1000 START PURGE MW-7
1026 SAMPLE MW-7 500 mL/MIN
BATTERY DIED FILLING 2ND TO LAST BOTTLE
CHANGED BATTERY & RESUMED SAMPLING
@ ~500 mL/MIN
1120 ARRIVE @ MW-6
1135 Cl MONITOR ALARMING >5 ppm
EVACUATED AREA, MOB TO TRAILER
1145 CALLED BRIAN SMITH TO NOTIFY OF
HIGH Cl LEVELS
1220 RE-ENTERED AREA (MW-6)
Cl LEVELS >5 ppm, MOB TO
TRAILER TO DISCUSS W/ K. LUNDMARK
1340 MET W/ K. LUNDMARK + D. ABRONAVIC
ABOUT MW-6. WAIT FOR CHANGE IN CONDITIONS
1400 RECON @ PZ-24. HIGH Cl LEVELS
4.7 MAX. WAIT TO SAMPLE TOMORROW
1415 SIGN OUT AT GUARD MOB TO TRAILER
1515 OFF SITE

TH 2/6/14

2/7/14 US MAG RI/FS 0132320

0830 ARRIVE ON SITE
PERSONEL: T. HAMADA, K. BENSON
WEATHER: CLOUDY, HIGH TEENS
0900 CALIBRATE HORIBA U-52
0915 MEET w/ D. GIBBY ABOUT HIGH Cl LEVELS ON 2/6/14. ACID LINE IN PLANT IS BLOCKED. CURRENTLY DISCHARGING RAW H_2O CONTAINING HCl + Cl_2 TO BCD RESULTING IN HIGH LEVELS IN THE AREA. CAUTIONED TO MONITOR CLOSELY UNTIL PROBLEM IS FIXED.
0943 ARRIVE AT MW-6
1025 SAMPLE MW-6
RESPIRATORS WORN Cl UP TO 2.0 ppm
1120 ARRIVE AT MW-5A
1200 SAMPLE MW-5A
RESPIRATORS WORN Cl UP TO 2.4 ppm
> 2.0 ppm NOT SUSTAINED FOR 1 MIN +
1243 MOB TO TRAILER TO PREP. FOR PZ-24
NEED ATN. TO ACCESS
1315 ARRIVE AT PZ-24
1355 SAMPLE PZ-24
Cl LEVELS >4 ppm WORE RESPIRATORS WHILE SAMPLING
1430 MOB TO TRAILER. DUMP TRASH
1552 OFF SITE

TH 2/7/14

2/11/14 US Mag RI/FS 0132320

0825 Arrive USM: Z. Mercer, K. Lundmark
Mostly cloudy, 30s, Calm
0835 PWT on-site (A. Baird)
Discuss schedule for 2/11 - 2/12
0845 Horiba U-53 calibration
Pine 019490 S/N
Auto Cal: pH, cond, DO, Turb
Manual Cal: ORP
0915 - Depart ERM trailer
0930 - Fill portable eye wash @ Auto Shop
0940 - Locked gate @ PR19, return to USM office to get gate open
1005 - Begin @ PR18-020
1115 = PR18-~~020~~ 020 -SW01-021114 KL sample time
1150 - Mob to PR18-021
1200 - Begin setup @ PR18-021
sample time = 1235
1250 - Return to trailer
1300 - SG-2 (NW) 1.30 approx (wavy)
1315 - 1345 Lunch / Label Bottles
1345 - Mob to PR114 - 005
Flow visible @ PR114 - 005

2/11/14 US Mag RI/FS

PR114-005-SW01-021114

Sample time = 1550

Sample collected @ basins placed in mid Nov 2013. Tubing set 1" above basin bottom

1600 - @ ERM trailer to package samples, complete paperwork

1640 - ERM off site

1730 - Drop coolers @ Fed Ex

1800 - Arrive ERM SLC

2/11/14 KWC

2/13/14

8:30 - Arrive on site

Site Personnel - K. Bensen, G. Rigord

Weather - Pt. Cloudy, 40s

8:45 - Calibrate Horiba U-53 calibration

Pine 019490 S/N

Auto Cal = pH, cond, DO, Turb

Manual Cal: ORP

9:35 - PWT onsite - Aaron Baird

9:40 - Leave trailer and begin set up to sample MW-18

- PWT collects split sample

11:30 - Finish sampling MW-18 and go back to trailer for decon.

12:30 - Leave trailer and begin sampling PZ-04

- PWT collects split from PZ-04

14:30 Finish sampling and return ~~to trailer for~~ to pick up and ship coolers.

15:40 - Off site

2/13/14 COS

3/5/14 US Mag PRI2 Landfill
Geophysical Survey

7:45 - Arrive on site
Weather - Clear, 40s
Site Personnel - K. Benson, C. Maughan
M. Verink, A. Baird
8:30 - Safety Orientation for Geo Strata
8:45 - A. Baird w/ PWT on site
9:00 - Review & Sign ~~ERM HASP~~
9:20 - Begin setup at PRI2-006 (A-A')
9:30 - moved line approximately 10' north of
original location due to topography.
- Total length of line = 275'
12:30 - Finish survey @ PRI2-006
13:15 - Begin setup @ PRI2-014 (C-C')
- ~~Sample locati~~ Survey location changed
due to original location being on the
side of the landfill.
Lonnie Mercer (ERM) arrived on site at 1245.
1345 Kris Benson departed site.
1545 Finished survey at PRI2-014 (C-C').
Removing stakes and loading equipment.
1630 Depart landfill and sign out at guard shack.
1640 Lock up trailer and depart site.

3/5/14

3/6/14 US Mag PRI2 Landfill
Geophysical Survey

0830 Arrived on site.
Weather: Cloudy, windy, 30s - 40s
Site personnel: Lonnie Mercer (ERM)
Chad Maughn, Mike Verkint (GeoStrata)
Aaron Baird (PWT)
0845 Conducted tailgate safety meeting.
0850 Mobilize to landfill.
0915 Setting up at PRI2-009 (D-D').
Moved line approximately southeast
of map location due to topography at
landfill face.
1130 Finished survey at D-D'. Setting
up at PRI2-009 (B-B').
~~13~~ 1530 Finished survey at B-B'. Mobilize
to trailer.
1600 Departed site.

3/6/14

5/7/14

0810 ARRIVE ON SITE
PERSONEL: T. HAMADA, K. BENSON
L. MERCER ALREADY ON SITE
WEATHER: OVERCAST, ON/OFF RAIN, 40s
WIND 5-10 mph
0835 SIGN IN @ GUARD HOUSE
MEET w/ R. FRANCOM (USM)
REGARDING INCIDENT YESTERDAY.
CHEMICAL RXN W/ EPOXY + Cl_2/HCL
CREATED "BURNING" SENSATION IN EYES
OF T. HAMADA (ERM) + A. BAIRD (PWT).
PWT IS FURTHER INVESTIGATING.
0850 SIGN IN @ ATI SECURITY
JASON DEFOREST - ATI ESCORT
AARON BAIRD - PWT OVERSIGHT
T. HAMADA - SOIL SAMPLING ATI
K. BENSON w/ L. MERCER @ USM
LANDFILL
0901 ARRIVE @ PRI11-009
0914 SAMPLE PRI11-009
ID: PRI11-009-SS01-050714
0931 ARRIVE @ PRI11-007
0952 SAMPLE PRI11-007
ID: PRI11-007-SS01-050714
FINES ANALYSIS w/MS/MSD (FINES ONLY)

5/7/14 CONT.

~~0905~~ 1005 TH ARRIVE @ PRI11-008
~~0922~~ 1022 TH SAMPLE PRI11-008
ID: PRI11-008-SS01-050714
SAMPLE WET DUE TO HEAVY RAIN
1058 SAMPLE PRI11-010
ID: PRI11-010-SS01-050714
FINES ANALYSIS ~~(MS/MSD FINES ONLY)~~ TH
1117 ARRIVE @ PRI11-001
1127 SAMPLE PRI11-001
ID: PRI11-001-SS01-050714
1143 ARRIVE @ PRI11-004
1155 SAMPLE PRI11-004
ID: PRI11-004-SS01-050714
FINES ANALYSIS
1215 MOB TO TRAILER TO DECON
OFF SITE AT ATI. REMAINING
SOIL SAMPLES OUTSIDE ATI SECURE
SITE
1315 ARRIVE @ PRI11-006
1328 SAMPLE PRI11-006
ID: PRI11-006-SS01-050714
1343 ARRIVE @ PRI11-002
1353 SAMPLE PRI11-002
ID: PRI11-002-SS01-050714
1403 ARRIVE @ PRI11-005

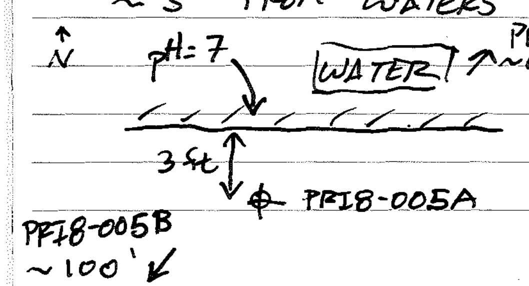
5/7/14 CONT

1416 SAMPLE PRI11-005
FINES ANALYSIS
1505 MARK SOIL SAMPLE LOCS
W/ CATHRINE (PWT)
PRI8-005 A + B
SW OF ORIG. SAMPLE LOC.
A ~200 ft SW OF ORIG. LOC.
B ~350 ft " " " "
1542 RETURN TO LANDFILL
T. HAMADA MOB TO TRAILER
1630 DELIVER PRI11 SPLIT SAMPLES
TO ATI. LEFT W/ SECURITY
GUARD @ FRONT GATE.
1915 OFF SITE

TH
5/7/14

5/8/14

0820 ARRIVE ON SITE
PERSONEL: T. HAMADA, K. BENSON
A. BAIRD (PWT)
WEATHER: CLEAR, LOW 50s, WIND 0-2mph
0850 SIGN IN @ GUARD HOUSE
MOB TO LANDFILL
0858 ARIVE @ PRI2-009
0916 SAMPLE PRI2-009
ID: PRI2-009-SS01-050814
FINES ANALYSIS
0925 ARRIVE @ PRI2-006
0936 SAMPLE PRI2-006
ID: PRI2-006-SS01-050814
0945 ARRIVE @ PRI2-~~002~~ 014 TH
0958 SAMPLE PRI2-014
ID: PRI2-014-SS01-050814
1046 ARRIVE @ PRI 8
1105 ARRIVE @ PRI8-006 A
SAMPLE LOC. ~180 ft SW OF.
ORIGINAL LOC.
~3' FROM WATER'S EDGE



pH IN SAMPLE
HOLE = 7. WATER
1-3" BGS

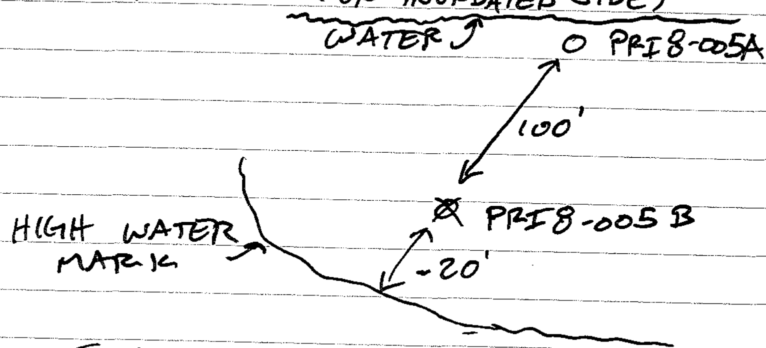
5/8/14 CONT

PRI8-005A COORDINATES:
4533121.57 m N
353311.90 m E

PRI8-005B COORDINATES:
4533081.05 m N
~~353278.54 m E~~ TH 353287.54 m E

1120 SAMPLE PRI8-005A
ID: PRI8-005A-SS01-050814

1211 SAMPLE PRI8-005B
SAMPLE LOC. ~100 ft SW OF PRI8-005B
+ ~20 ft FROM HIGH WATER MARK
IN JAN. 2014 (ON INUNDATED SIDE)



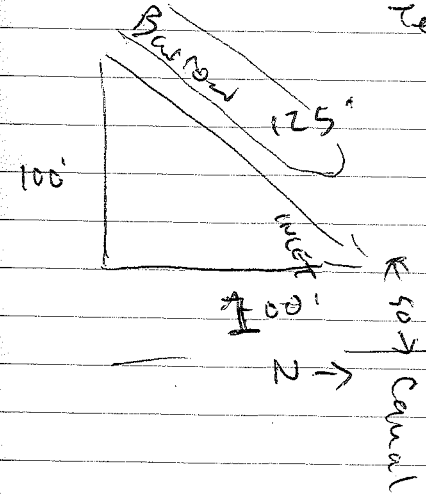
EPA SPLIT @ PRI8-005B

1300 MOB TO TRAILER
DECON + PACK SAMPLES

1610 OFF SITE

TH
5/8/14

6/19/2014 Salt Accumulation Test Pond



K. Wangsgard
D. Abramowicz
K. Lindmark
T. Tripp
D. Gibby

Berm = 3' height
5' width @ top

Pond 1

Discussed/Agreed w/ Ken:
Piezometer in berm
Staff gauges in pond, canal, and barrow ditch
Surveyed markers in pond bottom

11/19/2013 US MAG PHASE 1A

0815 ONSITE

FIELD PERSONEL: T. HAMADA, K. BENSON, K. LUNDMARK,

WEATHER: OVERCAST, HIGH 40s

0910 TAILGATE H&S MTG.

1020 ARRIVE AT PRI16-010

1030 SAMPLED PRI16-010

OVERCAST, CALM, 40s ID: PRI16-010-SS01-111913

1143 ARRIVE AT PRI16-012

1146 SAMPLE PRI16-012

OVERCAST, CALM, 40s ON/OFF SPRINKLES

SAMPLE ID PRI16-012-SS02-111913

1349 ARRIVE AT PRI16-009

1357 SAMPLED PRI16-009

OVERCAST, CALM, 40s

SAMPLE ID: PRI16-009-SS03-111913

1440 SAMPLED PRI16-007

SAMPLE ID PRI16-007-SS04-111913

OVERCAST, CALM, 40s

1513 SAMPLED PRI16-006

OVERCAST, CALM, 40s

SAMPLE ID: PRI16-006-SS05-111913

17:00 OFF SITE

TH

11/20/13

0800 ARRIVE ONSITE

FIELD PERSONEL: T. HAMADA, K. BENSON

WEATHER: OVERCAST, CALM, HIGH 30s

0915 HELD H&S TAILGATE MTG.

0927 SAMPLED PRI16-004

SAMPLE ID: PRI16-004-SS01-112013

OVERCAST, CALM, LOW 40s

1040 SAMPLED PRI16-008

SAMPLE ID: PRI16-008-SS01-112013

CALM, PARTLY CLOUDY, MID 40s

1130 ARRIVE AT BOTTOM OF DRAW OF PRI16-005

1232 SAMPLE PRI16-005

SAMPLE ID: PRI16-005-SS01-112013

CLOUDY, CALM, MID 40s

1325 ARRIVE BACK AT TRUCK

1355 ARRIVE NEAR PRI16-003 PARK TRUCK

1412 ARRIVE AT PRI16-003

1422 SAMPLED PRI16-003

TOOK DUPLICATE SAMPLES

SAMPLE ID: PRI16-003-SS01-112013

DUPE SAMPLE ID: PRI16-003-SS11-112013

OVERCAST, MID 40s.

1530 OFF SITE

11/21/13

0855 PARK TRUCK + HIKE TO
PRI16-~~002~~ TH 11/21/13 014
FIELD PERSONEL: T. HAMADA, K. BENSON
WEATHER: SNOW, WINDY, 30s
0905 SAMPLE PRI16-014
SAMPLE ID: PRI16-014-SS01-112113
SNOW, WINDY, COLD
TOP 1/4" OF SOIL FROZEN.
1030 ARRIVE AT TRAILER
DECON EQUIPMENT
ROADS MUDDY, 4WD SLIDING IN SPOTS
1125 DUMP DECON FLUIDS IN PLANT
~~CHECK~~ TH 11/21/13 SIGN IN WITH SECURITY
1145 LUNCH BREAK
1215 COLLECTED EQUIP. BLANK
SAMPLE ID: PRI16-014-SS21-112113
1335 SIGN OUT AT SECURITY
1345 OFF SITE

TH 11/21/13

11/22/13

0800 ARRIVE ON SITE
FIELD PERSONEL: T. HAMADA, K. BENSON,
L. MERCER; K. BENSON W/ DRILLER (SSC)
WEATHER: SUNNY, WINDY, 30s
0856 ARRIVE AT PRI16-013
0914 SAMPLED PRI16-013
SAMPLE ID: PRI16-013-SS01-112213
ICE + SNOW PRESENT, TOP ~1" SOIL FROZEN
1007 PARK TRUCK NEAR PRI16-002
1028 SAMPLE PRI16-002
SAMPLE ID: PRI16-002-SS01-112213
SUNNY, WINDY, MID 30s
1058 ARRIVE AT PRI16-001
1107 SAMPLE PRI16-001 TOOK MS/MSD
SAMPLE ID: PRI16-001-SS01-112213
SUNNY, SLIGHT BREEZE, HIGH 30's
1159 ARRIVE AT PRI15-005
1204 SAMPLED PRI15-005
SAMPLE ID: PRI15-005-SS01-112213
SUNNY, BREEZY, MID 30's
1239 PARK TRUCK NEAR PRI15-007
1247 ARRIVE AT PRI15-007
1250 SAMPLED PRI15-007
SAMPLE ID: PRI15-007-SS01-112213
SUNNY, BREEZY, MID 30's

11/22/13
1310 ARRIVE AT TRAILER
PACK COOLERS, DECON, EQPT.
1441 OFF SITE

TH
11/22/13

11/23/13
0750 Arrive onsite JIU + DD - weather Sunny 30° Calm
- Conduct H+S tailgate
0845 Arrive at PRI 16-011
~~collect sample~~ - Move on to new location
0905 Arrive @ PRI 15-009
0910 Sample PRI 15-009-SS01-112313
1000 Arrive at PRI 15-001
1005 Sample PRI 15-001-SS01-112313
1023 Arrive @ PRI 15-003
1035 Sample PRI 15-003-SS01-112313
1100 Arrive @ PRI 15-006
1105 Sample PRI 15-006-SS01-112313
1205 Arrive @ PRI 16-11
1208 Sample PRI 16-011-SS01-112313
1230 Arrive @ PRI 15-011
1242 Sample PRI 15-011-SS01-112313
~~13~~ 1500 Leave site JIU/DD

11/24/13
0805 Arrive onsite Trent + Isaiah
- Aaron Baca onsite
0810 Conduct H + S Meeting
0830 Arrive at PRI15-002
0845 Sample PRI15-002-SS01-112413
0908 Arrive at PRI 15-004
0915 Sample PRI 15-004-SS01-112413
~~0945 Arrive @ PRI 15-010~~
0952 Sample PRI 15-010-SS01-112413 - Aaron Leaves
1014 Arrive @ PRI 15-012
~~1020~~ 1020 Sample PRI 15-012-SS01-112413
1040 Arrive @ PRI 15-014
1042 Sample PRI15-014-SS01-112413
1102 Arrive @ PRI15-013
1106 Sample PRI15-013-SS01-112413
- Return to trailer
1300 Leave site All

11/25/13
9:00 - Arrive on site
Site Personnel - K. Benson, T. Hamada
Weather - Clear, calm, 30s
- Conduct H&S tailgate meeting

10:20 - Arrive at PRI14-015
10:37 - Collect sample - PRI14-015-SS01-112513
11:45 - Arrive @ PRI14-014
11:57 - Collected sample - PRI14-014-SS01-112513
13:30 - Arrive @ PRI14-013 (saturated)
13:47 - Collect sample PRI14-013-SS01-112513
collected samples for VOCs analysis
14:30 - Arrive @ PRI14-012
14:40 Collect sample from PRI14-012-SS01-112513
collected DUP → PRI14-012-SS11-112513 @ 14:41

15:35 - Off site

11/25/13 KB

12/2/13
8:30 - Arrive on site for SS sampling
Site Personnel - K. Benson, T. Hamada
Weather - Cloudy, Windy, 40s

9:45 - Arrive @ PRI14-008
10:00 - Collect sample → PRI14-008-SS01-120213 @10:00 → No sieve sample

11:20 - Arrive @ PRI14-011
11:35 - Collect sample → PRI14-011-SS01-120213

12:40 - Arrive @ PRI14-009
12:45 - Collect sample → PRI14-009-SS01-120213

13:10 - Arrive @ PRI14-010
13:20 - Collect sample → PRI14-010-SS01-120213

13:40 - Arrive @ PRI14-001
13:50 - Collect sample → PRI14-001-SS01-120213
Collect DUP → PRI14-001-SS11-120213 @ 13:51

16:10 - Off site

12/2/13 KB

12/3/13
0830 ARRIVE ON SITE
FIELD PERSONEL: K. BENSON, T. HAMADA
WEATHER: SNOWING, WINDY, HIGH 20s

0935 ARRIVE AT PRI14-002
1000 SAMPLE PRI14-002
SAMPLE ID: PRI14-002-SS01-120313
CLOUDY, 20s, ~3" SNOW ON GROUND

1050 ARRIVE AT PRI14-007
1115 SAMPLE PRI14-007
SAMPLE ID: PRI14-007-SS01-120313
SNOWING, 20s SOIL SATURATED

1200 BACK TO TRAILER, MEET W/ EPA (AARON)
LUNCH

1350 ARRIVE AT PRI14-006
1425 SAMPLE PRI14-006 EPA OVERSIGHT (AARON)
SAMPLE ID: PRI14-006-SS01-120313
EPA TOOK SPLIT SAMPLES
SNOWING, 20s SOIL SATURATED
1450 PACK COOLER TO SHIP
1600 OFF SITE

12/3/13 TH

12/4/13

8:00 - Arrive on site for surface soil sampling.

Site Personnel - K. Benson, T. Hamada

Weather - Windy, 10s

9:30 - Arrive @ PRI14-003

9:55 - Sample → PRI14-003-SS01-120413

11:15 Arrive @ PRI14-005

11:30 - Sample collected - PRI14-005-SS01-120413
- Split sample with EPA

11:37 - Collected Equip Blank - PRI14-005-SS21-120413

13:00 - Arrive @ PRI14-004

13:20 - Sample collected PRI14-004-SS01-120413

13:21 - Trip Blank PRI14-004-SS21-120413

14:00-16:30 - Decon equipment

16:30 - Off site

12/4/13

12/5/13

8:50 ONSITE

FIELD PERSONEL: L. MERCER, T. HAMADA

WEATHER: WINDY, OVERCAST, 7°F, SOME SNOW FLURRIES

1025 ARRIVE AT PRI13-014

1040 SAMPLE PRI13-014
CLOUDY, ~~2~~ 30s SNOW (½") PRESENT
ID: PRI~~13~~-01~~4~~-SS01-120513

1100 ARRIVE AT PRI13-013

1115 SAMPLE PRI13-013
ID: PRI13-013-SS01-120513
SUNNY, CALM, 20's

1150 NOT ABLE TO LOCATE STAKE FOR PRI13-012

1234 ARRIVE AT PRI13-011

1250 SAMPLE PRI13-011
ID: PRI13-011-SS01-120513
SUNNY, CALM LOW 20's

1300 ARRIVE AT PRI13-010

~~1355 ARRIVE AT PRI~~ TH 12/5/13

1340 SAMPLE PRI13-010 FIELD DUPE
ID: PRI13-010-SS01-120513
SUNNY, CALM LOW 20s

1415 ARRIVE AT TRAILER, DECON EQPT.

1555 OFFSITE

TH 12/5/13

12/6/13

0815 ARRIVE ON SITE

PERSONEL: L. MERCER, T. HAMADA

WEATHER: SUNNY, SLIGHT BREEZE

0930 ARRIVE AT PRI13-012 STAKE NOT FOUND ON 12/5/13. RE-LOCATED SAMPLE LOCATION W/ TRIMBLE GPS. ~6" SNOW PRESENT.

0945 SAMPLE PRI13-012

ID: PRI13-012-SS01-120613

SUNNY, BREEZE, ~10° SILTY SAND, LT. GRAY

1000 ARRIVE AT PRI13-009

STAKE OUT OF GROUND. RE-LOCATED USING TRIMBLE GPS.

1018 SAMPLE PRI13-009 MS/MSD

ID: PRI13-009-SS01-120613

MOSTLY CLOUDY, BREEZE, SINGLE DIGIT TEMP

SILTY SAND, LT. GRAY, TIRE TRACKS FROM SHRIMPERS VISIBLE ON SNOW/MUD

<1" SNOW ON TOP OF SOIL

1038 ARRIVE AT PRI13-008

1043 SAMPLE PRI13-008

SAMPLE ID: PRI13-008-SS01-120613

MOSTLY CLOUDY, SINGLE DIGIT TEMP, BREEZY

SILTY SAND, SOME GRAVEL, LT. GRAY/BROWNISH

<1" SNOW PRESENT, ATV TRACKS FROM SHRIMPERS ON SURFACE

1110 ARRIVE AT PRI13-003

1234 SAMPLE PRI13-003

SAMPLE ID: PRI13-003-SS01-120613

THICK, STICKY CLAY, GRAY

PARTLY CLOUDY, LOW TEENS TEMP,

~1" SNOW ON SURFACE. FIELD MOD: 6 AUGER SAMPLES COMPILED/HOMOGINIZED FOR EPA/PWT VOLUME.

EPA SPLIT SAMPLE.

1354 SAMPLE PRI13-001

ID: PRI13-001-SS01-120613

OVERCAST, WINDY, LOW TEENS TEMP

1430 ARRIVE AT TRAILER DECON EQPT, PACK COOLER

1600 DUMP DECON WATER IN FACILITY SECONDARY CONTAINMENT

1700 OFF SITE

TH 12/6/13

12-7-13 light snow, 18°, overcast

7:30 — onsite — Jason Hilke + Darren DeBore

8:18 → Arrive at PRI13-007

8:19 → Sample PRI13-007
~1" of snow
ID: PRI-013-SS01-~~1206~~ 120713
clayey silt w/ little sand, grey

8:45 → Finish Sampling. Mob to PRI13-006

8:49 → arrive at PRI13-006
~1" of snow at sample location

8:51 → ID PRI13-007-SS01-120713
Sample PRI13-006
dolth sand w/ trace silt. tan to brown dry.

9:02 → Done sampling. mob to PRI13-005

9:05 → Arrive at PRI13-005

9:06 → Sample PRI13-005
ID: PRI13-005-SS01-120713

9:23 → Done sampling - Mob to PRI13-004

9:27 → arrive at PRI13-~~005~~ 004

9:28 → Sample PRI13 ~~005~~ 004
ID: PRI13-004-SS01-120713

12-7-13

9:44 — Done sampling PRI13-004. Mob to PRI13-005 to take photo.

9:47 → Take photo. Mob to PRI13-002

9:52 → Arrive at PRI13-002.

9:53 → Sample PRI13-002
ID: ~~PRI13-002-SS01~~ JH
PRI13-002-SS01-120713

10:08 — Done sampling. mob to ERM trailer.

10:50 — Arrive at trailer, decon equipment

13:00 → Mob to ERM office

[-10°F, sunny]

12-10-13

0800 ARRIVE ON SITE
PERSONNEL: HAMADA, RIGARD, HILKER
WEATHER: CLEAR, CALM, -6° F
0843 ARRIVE AT PRI12-001
0851 - Go over surface soil sample procedure
9:05 → Begin Sampling PRI12-001
ID = PRI12-001-SS01-120913
9:08 → take photo of PRI12-001 location during sieving.
9:10 → ERM/EPA rep discuss SAP mod for additional volume at PRI12-002.
9:20 → EPA rep/ERM sign sap mod detailing collection of additional volume at PRI12-002. ERM also done sampling PRI12-001

9:30 → ERM mob to PRI12-002 and PRI12-005
9:34 → ERM starts sampling PRI12-002
ID = PRI12-002-SS01-121013
EPA takes split from PRI12-002
ID: PRI12-005-SS01-121013 (MS/MSD)
9:45 → ERM done sampling at PRI12-005. EPA also notifies ERM that →

12-10-13

9:45 (cont) → EPA had enough volume for their samples, so SAP mod can be modified for use at another location.
9:48 → Done sampling PRI12-002.
9:49 → mob to PRI12-003.
9:57 → ERM begins sampling PRI12-003
ID: ~~PRI2~~ PRI12-003-SS01-121013
10:20 → Done sampling PRI12-003.
10:22 → Mob to PRI12-004 and PRI12-006.
10:28 → ERM sampling PRI12-004 and PRI12-006
ID: PRI12-004-SS01-121013
ID PRI12-006-SS01-121013

10:42 → Done sampling PRI12-006 ~~SS~~ JH.
10:49 → Done sampling PRI12-004
10:51 → mob to PRI12-007
10:59 → Begin Sampling PRI12-007
ID: ~~PRI12-007-SS01~~ JH
PRI12-007-SS01-121013
take field duplicate at PRI12-007
ID: PRI12-007-SS11-121013

12-10-13

11:10 - Done sampling PRI12-007 and taking field duplicate

11:12 -> Mob to PRI12-008.
11:19 -> Begin sampling PRI12-008
ID: PRI12-008-SS01-121013
11:20 -> Begin sampling PRI12-009
ID: PRI12-009-SS01-121013

11:29 -> Done sampling PRI12-008
11:33 -> Done sampling PRI12-009
11:42 -> ERM has to resample PRI12-009 due to ~~forgetting~~ to fill fines analysis bottles before dumping homogenized soil from mixing platter.
ID: PRI12-009-SS01-121013

11:53 -> ERM Done sampling PRI12-009.
11:55 -> ERM mobing to sample PRI12-010. EPA taking split at this location as well.

12:01 -> Begin sampling PRI12-10 on salt pile.

12-10-13

12:07 -> Use SAP mod ~~for~~ ~~3^rd~~ 2 additional aliquots at ~~this DV~~ PRI12-010 for EPA split sample.
12:10 -> EPA(PWT) initialized changes
12:20 -> Done sampling PRI12-010. Walk back to truck

12:35 -> Mob back to ERM trailer to decon and pack samples. Stop at PRI12-008 to take photo of sampled location

12:45 -> At ERM trailer. Unloading samples and equipment

13:01 -> Speak w/ Kevin Lundmark about PRI12 sample interval. He states that 0-6" is ok for ~~thi~~ DU PRI12.

13:08 -> Update PWT (Aaron) about ERM ~~re-scheduling~~
~~PRI14 DU~~ -> 0 vo

12-10-13

13:08 (continued) – re-sampling PRI14 locations due to Fedex losing a cooler.

16:00 – ERM offsite to ship samples, make trash run and clean up trailer.

12/11/13

0800 ARRIVE ON SITE
PERSONEL: T. HAMADA, G. RIGARD
WEATHER: SUNNY, SLIGHT BREEZE, -6°F
EPA OVERSIGHT: AARON BAIRD
0900 ARRIVE AT PRI14-005
0944 SAMPLE PRI14-005
ID: PRI14-005-SS01-121113
RE SAMPLE IN WATER, MOVED STAKE
NEED TO MARK w/GPS
~2" FROZEN WATER ON SOIL SURFACE
1000 ARRIVE AT PRI14-006
1020 SAMPLE PRI14-006
ID: PRI14-006-SS01-121113
ENCORE (VOCs) ONLY
EPA MS/MSD SAMPLE FOR VOCs
1.5" ICE ON TOP OF SOIL/SALT CRUST
1038 ARRIVE AT PRI14-007
1102 SAMPLE PRI14-007
ID: PRI14-007-SS01-121113
VOCs ONLY, FIELD DUPE TAKEN
1123 ARRIVE AT PRI14-008
1140 SAMPLE PRI14-008
ID PRI14-008-SS01-121113
VOCs ONLY, ~5" H_2O ABOVE SALT CRUST
SILTY CLAY, GRAY/BLACK

1210 BACK TO TRAILER. UNLOAD
SAMPLES. LUNCH
1300 MEET W/ STAFF GAGUE TEAM +
A. BAIRD
WROTE/SIGNED SAP FIELD MOD
FORM FOR PRI14-005
EXTRA VOL. EPA SPLIT SAMPLE
1337 ARRIVE AT PRI12-011
1358 SAMPLE PRI12-011
ID: PRI12-011-SS01-121113
SALTY SAND
1415 ARRIVE AT TRAILER. PACK COOLERS
DECON EQPT.
1600 OFF SITE

TH 12/11/13

12/12/13
0810 ARRIVE ON SITE
PERSONEL: HAMADA, RIGARD
WEATHER: $-5°F$, THICK FOG UNDER
CLEAR SKIES
0905 ARRIVE AT PRI12-012
0919 SAMPLE PRI12-012
ID: PRI12-012-SS01-121213
SANDY SILT, LIGHT BROWN, ROOTS PRESENT
~3" SNOW ON SURFACE
0930 ARRIVE AT PRI12-013
0944 SAMPLE PRI12-013
ID: PRI12-013-SS01-121213
SANDY SILT, LIGHT BROWN, ORGANIC
MATERIAL (ROOTS) PRESENT, 3-4" SNOW
ON SOIL SURFACE
0953 ARRIVE AT PRI12-014
1006 SAMPLE PRI12-014
ID: PRI12-014-SS01-121213
SANDY SILT, BROWN, ROOTS/OM,
3" SNOW PRESENT ON SURFACE
1023 ARRIVE AT PRI10-001
1042 SAMPLE PRI10-001
ID: PRI10-001-SS01-121213
CLAYEY SAND, GREYISH BROWN, MOIST
3" SNOW ON SURFACE.

12/12/13

1100 ARRIVE AT PRI10-004
STAKE GONE - LOCATED W/ TRIMBLE
1134 SAMPLE PRI10-004
ID: PRI10-004-SS01-121213
SILTY CLAY, GRAY, MOIST
2" SNOW ON SURFACE
1146 ARRIVE AT PRI10-003
1157 SAMPLE PRI10-003
ID: PRI10-003-SS01-121213
SILTY SAND, SOME OM, 3-4" SNOW ON SURFACE, EPA/PVT SPLIT, 7 AUGER ALIQUATS, FIELD MOD REQ. FOR ADDITIONAL VOLUME
1230 BACK AT TRAILER
SWITCH OUT DIRTY EQPT. FOR CLEAN
LUNCH
1326 ARRIVE AT PRI10-002
1417 SAMPLE PRI10-002
ID: PRI10-002-SS01-121213
SILTY CLAY, ~3" SNOW, GRAY, ROOTS/OM
1505 SAMPLE PRI10-013
ID: PRI10-013-SS01-121213
EPA SPLIT SAMPLE
SILTY CLAY TRACE SAND
1525 BACK TO TRAILER - DECON
1730 OFF SITE

TH 12/12/13

12/13/13

0805 ARRIVE ON SITE
PERSONEL: HAMADA, BENSON
WEATHER: OVERCAST, FOG, 10°F
0900 ARRIVE AT PRI10-005
0928 SAMPLE PRI10-005
ID: PRI10-005-SS01-121313
1014 SAMPLE PRI10-006
ID: PRI10-006-SS01-121313
1032 ARRIVE AT PRI10-007
1100 SAMPLE PRI10-007
ID: PRI10-007-SS01-121313
3-4" SNOW ON SURFACE
1146 SAMPLE PRI10-009
ID: PRI10-009-SS01-121313
1200 - Back to trailer → Decon & sample prep
1500 - off site

B 12/13/13

12/16/13 USMG ERM PN 0.32320
0910 - Arrive USM
K. Lundmark, G. Rigaud - ERM
United Rentals, DPS, PWT on-site
0940 - Check @ Brown Palace -
R Francom / D. Gibb, not there
0945 - To ConEx to get pallets
Roll-off (covered) is 10% full
or less w/soil cuttings
0955 - Arrive PRI14-005
H&S Tailgate KWL & GR
Discuss - Vehicle travel
- Sinkholes/Slips/Trips/Falls
- Cold Stress
- Hand Protection
- Respirator Use
Log Location PRI 14-005 using GPS
4530677.97 N ±13 ft
355538.43 E PDOP = 1.13
1020 Record PZ-01 ~~@~~ KWL as reference
4530560.29 N ± 14 ft
354899.79 E PDOP = 1.12
weather Cloudy (Foggy, cold (<20 F)
1030 Meet Kris Benson (ERM)
@ MW-17, Developing well
MW-19B had frozen water
in casing this a.m.

12/16/13 Contd.

Ice was ~1 ft below TOC
1110 @ PRI7-001
4533144.10 N PDOP 1.12
356327.47 E ± 15 ~~45~~ KWL ft
1130 - Staked loc PRI8-017 SB
1214 @ PRI4-008
4532004.55 N PDOP 1.38
353944.20 E ±17 ft
1215 - 1240 Test hole @ ~~PRI4-005~~ MW-16 KWL 1/9/14
~40 FT NE
Gypsum 0 - 20" saturated
Clay 20 - 26"
Water @ approx 12" bgs
pH > 4 per pH paper

1315 - Check in w/SB team @
PRI8-017

1330 - Begin SS sampling PRI10
1345 - Finish processing
PRI10-012 PRI10-014,
return to trailer 1341
1355
Field dup @ PRI10-014 @ 1342

12/16/13

1600 - 1730 Decon; pack samples. Give SS samples to T. Hamada / L. Mercer to ship w/ SB samples

1745 - off - site

KWL 12/16/13

12/17/13

0940 ARRIVE ON SITE

PERSONEL: L. MERCER, T. HAMADA

WEATHER: THICK FOG, FREEZING FOG / SNOW, ~15°F

1100 ARRIVE NEAR PRI8-001

1136 SAMPLE PRI8-001

ID: PRI8-001-SS01-121713

1205 ARRIVE NEAR PRI8-002

1230 SAMPLE PRI8-002

ID: PRI8-002-SS01-121713

1347 SAMPLE PRI 8-003

ID: PRI8-003-SS01-121713

1410 ARRIVE AT TRAILER

DECON, PUT SOIL JARS IN FRIDGE

1600 OFF SITE

TH 12/17/13

US MAG PHASE 1A
12/18/13 PN: 0132320

0830 ON SITE
PERSONEL: K. BENSON, T. HAMADA
WEATHER: THICK FOG, HIGH TEENS
0900 HELD H&S TAILGATE
0950 ARRIVE NEAR PRI8-004
1017 SAMPLE PRI8-004
ID: PRI8-004-SS01-121813
CLAYEY SILT, ~2" SNOW ON SURFACE
1025 RECON PRI8-005. IN WASTE WATER OVERFLOW (ANGEL WING). SURFACE OF WATER FROZEN, pH of ≤1. NOT ABLE TO LOCATE STAKE DUE TO LOW VISIBILITY.
1120 SAMPLED PRI8-008
ID: PRI8-008-SS01-121813
CLAYEY SILT, ~3-4" SNOW ON SURFACE
1249 SAMPLE PRI8-009
ID: PRI8-009-SS01-121813
CLAYEY SILT, MOIST, 3" SNOW ON SURFACE
1316 SAMPLE PRI8-013
ID: PRI8-013-SS01-121813
CLAYEY SILT, 2" SNOW ON SURFACE

1416 SAMPLE PRI8-007
ID: PRI8-007-SS01-121813

RECON PRI8-006
IN WATER pH <1

1445 RECON PRI8-016
ACCESSABLE FROM EAST?
CHECK TOMORROW, POSSIBLE SINK HOLE AREA

1510 BACK TO TRAILER
PACK COOLERS
DECON

1650 OFF SITE

TH 12/18/13

US Mag Phase IA
0132320

12/19/13

9:00 - Arrive on site
Site Personnel - K. Benson, T. Hamada
Weather - Snow, 30s
-H&S Tailgate meeting
-Clean up trailer, empty trash

-12:50 Arrive @ PRI8-016
13:17 - Collected sample from PRI8-016 (fines), split with EPA.

14:30 - Recon PRI8-14, 10, 15

-PRI8-10 is not accessible due to wastewater.
-PRI8-14, 15 are located within acidic mud.

15:50 - Off site

12/19/13

US MAG PHASE IA
0132320

12/20/13

0815 ON SITE
FIELD PERSONNEL: K. BENSON, T. HAMADA
WEATHER: CLEAR, 10°F
0850 H&S TAILGATE MTG.

0957 SAMPLE PRI9-014, FIELD DUPE.
EPA SPLIT SAMPLE

1100 SAMPLE PRI9-013
FINES ANALYSIS, FIELD DUPE.

1120 GET MORE BOTTLES AT TRAILER

1152 SAMPLE PRI9-012 FIELD DUPE.
CLAYEY SILT

1158 BACK TO TRAILER. FILL OUT FIELD MOD FOR EXTRA VOLUME FOR EPA SPLIT & FIELD DUPE @ PRI9-013
PACK COOLERS
DECON
CLEAN UP TRAILER

1515 OFF SITE

TH 12/20/13

US MAG PHASE 1A

1/6/14 0132320

0910 ARRIVE ON SITE

PERSONEL: K. BENSON, T. HAMADA

WEATHER: CLEAR, 10°F

1057 SAMPLE PRI9-011

~1" SNOW ON SURFACE, EPA SPLIT + DUPE

13 GRABS

1124 ARRIVE AT PRI9-002

1204 SAMPLE PRI9-002, EPA SPLIT

9 GRABS FINES ANALYSIS.

1257 ARRIVE AT PRI9-001

1320 SAMPLE PRI9-001, FINES ANALYSIS.

MS/MSD

1357 SAMPLE PRI9-003, DUPE TAKEN

1420 BACK TO TRAILER

LABLE BOTTLES

DECON

1600 OFF SITE

TH 1/6/14

1/7/14 US MAG PH 1A, 0132320

0800 ARRIVE ON SITE

PERSONEL: K. BENSON, T. HAMADA

WEATHER: OVERCAST, 30°F, CALM

0914 SAMPLE PRI9-004 + FIELD DUPE.

~2" SNOW ON SURFACE

0948 SAMPLE PRI9-007 + DUPE

~3-4" SNOW ON SURFACE

~1" SMUT ON TOP OF NATIVE SOIL

SMUT IN HARD CHUNKS, DID NOT

PASS THROUGH SIEVE

1028 SAMPLE PRI9-009 + DUPE

~2" SNOW ON SURFACE

1105 SAMPLE PRI9-006

1125 BACK TO TRAILER: LUNCH &

RESTOCK SAMPLING EQPT. IN

TRUCK

1228 SAMPLE PRI9-005

~4" SNOW ON SURFACE

1301 SAMPLE PRI9-008

~4" SNOW ON SURFACE

1/8/14 US MAG Ph IA 0132320
0850 ARRIVE ON SITE
PERSONEL: K. BENSON, T. HAMADA
WEATHER: SNOWING, 20s
1040 SAMPLE PRI2-003 EPA SPLIT
LOCATED USING GARMIN GPS
LOC. IN TRIMBLE INCORRECT, MARKED
WP ID: pri2-003SAMPLE LOC
2313645.15 FT N -8339693.82 FT E
1126 SAMPLE PRI2-010 EPA SPLIT
~5" SNOW ON SURFACE
1200 BACK TO TRAILER FOR SUPPLIES / EAT
1301 SAMPLE PRI2-011
~3" SNOW / ICE ON SURFACE
SILTY SAND
1335 SAMPLE PRI2-012
~3" SNOW / ICE ON SURFACE
1400 BACK TO TRAILER
DECON
LABLE BOTTLES
TOOK EQUIPMENT BLANK
1632 OFF SITE

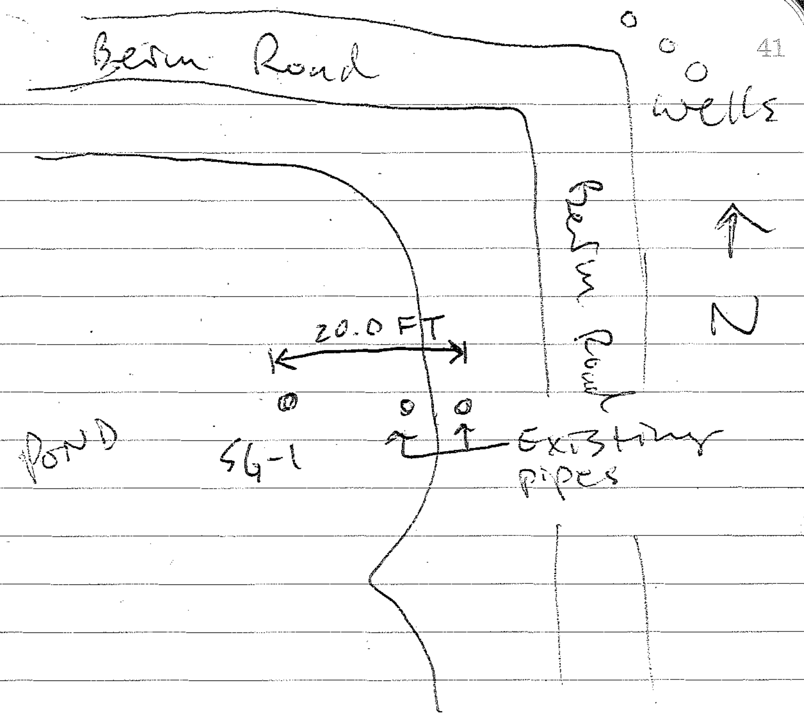
TH 1/8/14

1/9/14 US MAG PHASE IA, 0132320
0810 ARRIVE ONSITE
PERSONEL: K. BENSON, T. HAMADA
WEATHER: OVERCAST, LIGHT SNOW, FOG
HIGH 20's
0900 SIGN IN @ GUARD BUILDING
WAIT TO MEET BLUE STAKES TO
CLEAR FENCE AREA FOR AIR SAMPLING
0930 BLUE STAKES NO SHOW
0940 ARRIVE NEAR PRI2-001
0957 SAMPLE PRI2-001 FINES ANALYSIS
ENGINEERED FILL, SUB-ANGULAR GRAVEL + SILT
1023 SAMPLE PRI2-004, DUPE COLLECTED
~3" SNOW ON SOIL SURFACE
1056 SAMPLE PRI2-008, FINES ANALYSIS
2-3" SNOW ON SURFACE, GYPSUM PRESENT
1119 SAMPLE PRI2-005
3-4" SNOW ON SURFACE, GYPSUM PRESENT
1214 SAMPLE PRI2-013
~2" SNOW ON SURFACE
1235 SAMPLE PRI2-007, SAMPLE LOC. ON TOP
OF IMPORTED SOIL PILE
1306 SAMPLE PRI2-002, SAMPLE LOC. ~~IN~~
ROADWAY. SMUT UNDER ~3" SILT
1330 PACK COOLERS, DECON
1520 DUMP DECON WATER, SIGN OUT
1600 OFF SITE

TH 1/9/14

1/31/14 USM RI/FS ERM0132320

0745 - Depart ERM SLC, purchase ice
0850 - Arrive USM: K. Lundmark
C. Mercer
K. Benson & T. Hamada at site
~25° F, cloudy / foggy
0900 - Meet w/ D. Gibby & R. Francom
to discuss schedule / gate access for
1/31. Discuss survey / sampling @
PR18. USM has completed temporary
earthwork @ PR18 for now.
Contractor will construct permanent
berm spring / early summer 2014
0945 - Retrieve eqpt from ConEx
0950 - Travel to PR13 (sanitary lagoon)
Western Ditch is frozen
No water visible @ PR13
1000 - travel to PR17
1010 - Arrive PR17
H&S Tailgate
Water in PR17 pH = 5.5 per
pH paper
Install SG-1 using auger-tipped
2-in PVC pipe.
See next page for location
sketch



1100 - 1145 observe / Assist GW
sampling @ PZ-06
1200 - Water level @ SG-1 = 0.71 ft
1210 - Return to trailer, break
for lunch
1230 - Calibrate Horiba
U-52, Pine #15799
Calibrated per SOP USM-07
1245 - Arrive Hill Bros, check in
@ office notifying of sampling
1300 - Begin sampling activities
@ MW 20A/B

USM RI/FS
1/31/14 contd. 0132320

1530 - Finish @ MW-20B, return to trailer to pack up samples
1600 - OFF-SITE
1650 - Arrive FedEx
Air bill Nos. 804867396368 = AS
804867396357 = TA
1715 - Arrive ERM SLC

KWL 1/31/14

2/4/14 USM RI/FS ERM0132320
0715 Depart ERM SLC, purchase ice
0820 Arrive USM: L. Mercer, T. Hamada, K. Benson, G. Rigard
~25°F, cloudy
0930 Prepared equipment, calibrated instruments, loaded trucks, and mobilized to wells. Aaron Baird (RWT) arrived this morning but cannot collect split samples until next week. KB and GR will begin at PZ-01. LM and TH will begin at MW-13A.
1000 LM and TH arrived at MW-13A. Preparing to sample.
1015 Begin purging/sampling at MW-13A.
1050 Collected sample at MW-13A.
1200 Begin purging/sampling at ~~MW-14~~ MW-13B.
1225 Collected sample at MW-13B.
1315 Stop for lunch.
1335 Mobilized to MW-14.
~~1?~~ 1350 UTV got stuck in mud while approaching MW-14.
1420 Dug out ~~UT~~ UTV and moved it away from muddy area
1430 Mobilized to trailer to pack coolers.

2/4/14 cont USM RI/FS
0132320

-Sampled PZ-01
13:00-Sampled PZ-12
-Sampled ~~PZ~~-10

16:30-Off site to ship samples

2/4/14

2/5/14 USM RI/FS
· On site for GW sampling
Site Personnel - T. Hamada, L. Mercer, K. Benson, G. Rigard.
Weather, Pt. Cloudy. teens

- Calibrate Horiba Meters
- H&S Tailgate

Sampled the following wells:

PZ-26 - Collected MS/MSD
PZ-08 = EPA Oversight
MW-4A - EPA Oversite

- Package samples
17:20 - Off site

2/5/14

2/12/14 US MAG RI/FS 0132320

0815 ARRIVE ON SITE

PERSONEL: T. HAMADA

WEATHER: OVERCAST, LIGHT RAIN, 39°F

SPOKE W/ BRANDON ANDERSON (ANDERSON ENG, SURVEY COMPANY) SURVEYORS RUNNING AN HOUR LATE.

0910 ANDERSON ENG. (DAVE + RICK) ARRIVE ON SITE. SIGN IN @ GUARD + GO TO SAFTEY ORIENTATION MTG.

1000 WINDSHIELD TOUR OF FACILITY / SURVEY LOCS

1120 ARRIVE NEAR SG1, SURVEYORS SETUP EQUIPMENT

1215 ARRIVE NEAR PZ-~~24~~ 26TH. SETUP EQPT

1220 DON RESPIRATORS. Cl LEVELS 0.7 ppm

1300 ARRIVE BACK AT TRAILER. SURVEYORS SETUP EQPT.

1323 BACK NEAR SG1 TO PICKUP EQPT.

1410 ARRIVE NEAR PZ-26 TO PICKUP EQPT

DON RESPIRATORS. Cl LEVEL 0.6 ppm

1424 START SURVEYING @ MW-15 A/B

SURVEYED MW-15 A/B, MW-14, MW-13 A/B SG-2, SG-3, SG-4

1657 MOB TO TRAILER

1740 SIGN OUT @ GUARD
OFF SITE

TH 2/12/14

2/13/14

0810 ARRIVE ON SITE

PERSONEL: T. HAMADA

WEATHER: PARTLY CLOUDY, 37°F

0820 ANDERSON ENG. ARRIVE ON SITE

0823 H+S TAILGATE MTG.

0828 SIGN IN W/ GUARD

MEET W/ R. FRANCOM TO OPEN GATE TO ACCESS SG-1

0840 CHECK ACCESS W/ HILL BROS. CHEM FOR LATER IN THE DAY

ANDERSON ENG. SETUP BASE STATION @ PZ-1

0858 ARRIVE NEAR PZ-3 + 4

NOT ~~44~~ TH SURVEYED YESTERDAY

0905 DON RESPIRATORS Cl_2 0.5ppm

1018 FINISHED LEVEL LOOP TO SG-5

START MARKING HORIZONTAL LOCS FOR WELLS EAST OF WASTE POND

1030 START HORIZ. MEASUREMENTS FOR ALL WELLS

1126 BACK TO BASE STATION TO ADJUST RADIO ANTENA

1150 ANTENA NOT REACHING MW-20 A+B

1200 SURVEYED MW 17 A+B, MW 17

1307 PICKUP BASE STATION BY PZ-26

2/13/14 CONT.
1318 SETUP BASE STATION NEAR OFFICE TRAILER
1340 SURVEY MW-18
1400 SURVEY MW-20 A+B
1409 SETUP BASE STATION NEAR MW-19 A+B FOR ELEVATIONS OF MW's 17, 19A, 19B
1420 MOB TO TRAILER TO WALK LEVEL LOOP FOR MW-18, 20A, 20B
1525 BACK AT TRAILER. TAKE DOWN BASE STATION. MOB TO MW-19 A+B TO WALK LEVEL LOOP
1408 MOB BACK TO TRAILER. SIGN OUT @ GUARD SHACK
1425 OFF SITE

TH 2/13/14

2/14/14 US MAG RI/FS 0132320
0825 ON SITE
PERSONEL: T. HAMADA, L. MERCER
WEATHER: PARTLY CLOUDY, HIGH-MID 30s STRONG SOUTH WIND
0910 CALIBRATE HORIBA U52 SN: SNUONHVC
0945 ARRIVE @ MW-19A
1000 START PURGING MW-19A EPA SPLIT
1200 MOB BACK TO TRAILER TO RE-SUPPLY + DECON DECATORT
1250 ARRIVE @ MW-19B
1300 Cl_2 LEVELS >0.5 ppm DON RESPIRATORS
1310 SAMPLE MW-19B
1430 MOB TO TRAILER PACK COOLERS
1530 SIGN OUT @ GUARD HOUSE
1545 OFF SITE

TH 2/14/14

2/17/14 US MAG RI FS 0132320

8:30 - On site
Personnel - K. Benson, G. Rigard
Weather - Clear, 30s
8:45 - Calibrate Horiba U52
SN: SNUONHVC
9:00 - Arrive @ LF-01 → EPA Split
10:30 - Mob back to trailer for Decon
11:00 - Arrive @ LF-03, EPA Split
13:00 - Mob back to trailer to pack samples
14:15 - Off site

2/17/14 KB

2/18/14 USM RI/FS 0132320

0700 - Depart ERM SLC
L. Mercer, K. Lundmark
0715 - Purchase ice
0825 - Arrive USM
0835 - Horiba calibration
Probe No. SNUONHVC
0845 - Calibration complete
DI Water (for Eqpt Blank)
19.62°C, pH 5.33, cond 0.027 mS/cm
0900 - CWT on-site
0915 - Begin collecting Eqpt Blank
LF-01-21-021814 @ 0925
0950 - Finish collecting Eqpt Blank
(No VOCs, diss metals, diss CN^-)
1025 - Arrive Gyp Pile. H&S tailgate
1050 - Set up @ MW-8B
1055 - Begin purge @ MW-8B
MW-8B-01-021814 @ 1150 (incl MS)
Field Dup =
MW-8B-11-021814 @ 1151
Cl_2 levels usually 0, up to 2.8 ppm.
1315 - Finish sampling @ MW-8B
1320 - Set up @ MW-8A
Begin purge @ 1335

2/18/14 USM RI/FS 0132320

~~MW-8B~~ KWC

MW-8A-01-021814 @ 1420 (incl. MS)

Field Dup =

MW-8A-01-021814 @ 1421

Cl_2 levels usually 0, up to 1.4

Finish sampling @ 1420

Perform Wet Chem

PWT - off-site

1500 - Sign out @ guard

1500 - 1620 Pack samples @ trailer

MW-8A-21-021814 = Trip Blank, time = 1422

1630 ERM off site

1735 . Drop samples @ FedEx

KWC 2/19/14

2/24/14 US MAG RI/FS 0132320

0815 ARRIVE ON SITE

PERSONEL: T. HAMADA, K. BENSON

WEATHER: OVERCAST, CALM, LOW 40's

0828 HOLD H+S TAILGATE MTG

0845 MEET W/ D. GIBBY TO GET ACCESS THROUGH GATES

0905 ARRIVE AT PZ-06

0924 ARRIVE @ PZ-01

Ht. of PAD: 3.5 in.

Ht of STICKUP: 37.25 in.

Δ STICKUP / TOC: 2.5 IN

0930 INSPECT + TAKE PICTURES OF WOOD STANDS / ENCLOSURE FOR AIR DMA SAMPLERS

0937 ARRIVE @ HILL BROS FACILITY

MW-20A.

Ht of PAD: 4"

STICKUP Ht: 35.5"

Δ STICKUP/TOC: 4.25"

MW-20B

PAD Ht.: 4.5"

STICKUP Ht.: 40.5"

Δ STICKUP/TOC: 4.5"

0954 MW-18

PAD Ht: 4"

STICKUP Ht: 38.5"

Δ STICKUP/TOC 3"

2/24/14 CONT.

1014 MW-13A
PAD Ht.: 3.5"
STICKUP Ht.: 39"
Δ STICKUP/TOC: 3.75"

MW-13B
PAD: 3.5"
STICKUP: 42.25"
Δ STICKUP/TOC: 4.5"

1021 MW-14
PAD Ht.: 3.5"
STICKUP Ht.: 41.0"
Δ STICKUP/TOC: 4.25"

1028 MW-15A
PAD Ht: 3.5"
STICKUP Ht.: 38.75"
Δ STICKUP/TOC: 4.25"

MW-15B
PAD Ht.: 4"
STICKUP Ht.: 34.75"
Δ STICKUP/TOC: 3.25"

1138 MW-19 A&B
WASTE WATER HAS RECEEDED DRAMATICALLY ~150 ft AWAY FROM WELLS

MW-19A
PAD Ht.: 4.0"
STICKUP Ht: 39.0"
Δ STICKUP/TOC: 3.5"

MW-19B
PAD Ht.: 4.0"
STICKUP Ht.: 37.0"
Δ STICKUP/TOC: 3.5"

1150 MW-17
PAD Ht: 4.0"
STICKUP Ht.: 40.25"
Δ STICKUP/TOC: 3.5"

1258 MW-16
IN WASTE WATER ~10 ft. FROM EDGE OF WATER. CASING HAS BEEN BENT ~45° FROM VERTICAL. ~3" STANDING WATER AROUND BASE OF WELL

1320 SIGN OUT @ GUARD HOUSE.
MOB TO TRAILER
ORGANIZE/VACCUME TRAILER

1450 OFF SITE

TH 2/24/14

3/24/14

0820 ARRIVE ON SITE

PERSONEL: T. HAMADA, K. BENSON

WEATHER; CLEAR, 0-2 MPH WIND

40 °F

0845 SIGN IN @ GUARD HOUSE

MEET W/ R. FRANCOM + D. GIBBY TO

GET GATES OPEN

0915 ARRIVE @ PRI-8 TO RECON

SURFACE SOIL SAMPLE LOCS

PRI 8-017 ACCESS PREVIOUSLY MODIFIED

LOC. FROM N. SIDE OF PRI 8

PRI 8-006 ACCESSABLE AS IS

PRI 8-005 MODIFY LOC TO AREA

NEAR SURFACE WATER SAMPLE LOC.

CURRENT LOC IS UNDER ~8" STANDING

WATER, pH = 6.5

PRI 8-010 ACCESSABLE AS IS

PRI 8-014 " "

PRI 8-015 " "

1100 START MONTHLY GW MEASUREMENTS

3/24/14 CONT.

1150 MARK STAGE 2 AIR DMA

LOC. USING TRIMBLE

4530412.95 N

354186.98 E

PDOP = 1.72

ACCURACY = 21 Ft.

1500 SIGN OUT @ GUARD HOUSE

1505 OFF SITE

TH

3/24/14

0132320

3/25/14 US MAG PHASE IA RI/FS

0815 ARRIVE ON SITE

PERSONEL: T. HAMADA, K. BENSON

WEATHER: CLEAR, SE WIND 2-5 mph

35°F

0830 H&S TAILGATE MTG

0835 AARON BAIRD (PWT) ARRIVE ON SITE

0851 MOB TO PRI 8

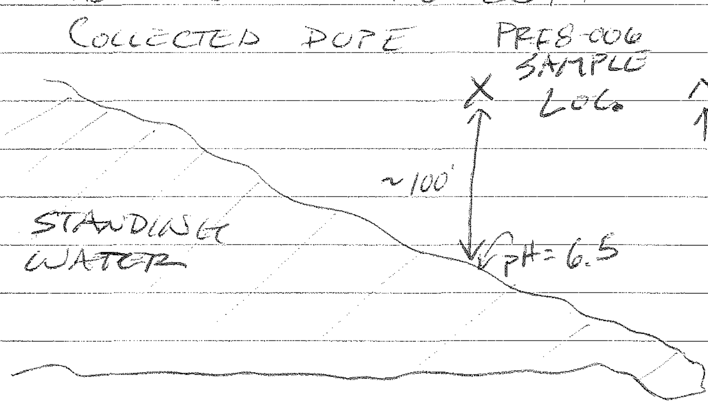
SIGN IN @ GUARD HOUSE

0909 EPA WILL NOT APPROVE MODIFICATION TO MOVE SURFACE SOIL SAMPLE PRI8-005 TO SURFACE WATER LOC. (PRI8-019). EPA WANTS PRI8-005 COLLECTED @ ORIGINAL SAMPLE LOC. BEFORE APRIL 15, 2014. PRI8-005 WILL NOT BE COLLECTED TODAY. MOB TO PRI8-006.

1020 SAMPLE PRI 8-006

ID: PRI8-006-SS01-032514

COLLECTED DUPE



3/25/14 CONT.

1044 ARRIVE NEAR PRI8-015

1146 SAMPLE PRI8-015

ID: PRI8-015-SS01-032514

EPA SPLIT

TOOK VOC SAMPLES. ~1" WATER IN AUGER HOLE (TOT. DEPTH = 6")

pH OF WATER = 7.0

CLAYEY SILT ON TOP 2"

SILTY CLAY 2"-4"

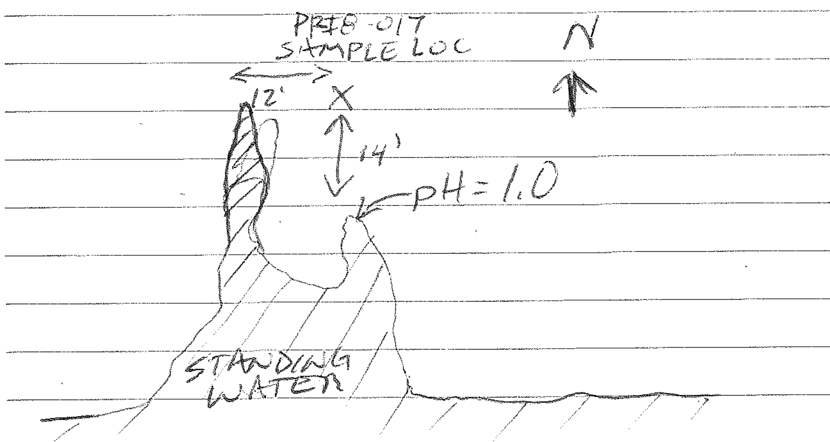
SAMPLE LOC NOT MODIFIED

NO STANDING WATER NEAR SAMPLE LOC.

1330 SAMPLE PRI8-017

ID: PRI8-017-SS01-032514

AUGER HOLE COMPLETELY FILLED WITH WATER (6.5 pH)



3/26/14 CONT.

1030 SAMPLE PRI8-010
ID: PRI8-010-SS01-032614
SAMPLE LOC. NOT MODIFIED
NO STANDING WATER NEAR
SAMPLE LOC.

1045 MOB TO TRAILER
PACK SAMPLES
DECON
TOOK EQPT. BLANK
→ PRI 8-010

1406 OFF SITE

TH
3/26/14

3/31/14

0850 ARRIVE ON SITE
PERSONEL: T. HAMADA, G. RIGARD
WEATHER: CLEAR, SUNNY, LOW 40s

0900 SIGN IN @ ATI SECURITY
ATTEND ATI SAFETY ORIENTATION

0914 MEET W/ SCOTT RYAN (ATI) TO
GO OVER PLANT OPPERATIONS
& DAYS PLANNED ACTIVITY
ATI ESCORT JASON DEFOREST

0928 MOB TO PRI 11-004

0953 SEIVE SAMPLE PRI11-004
ID: SCR-PRI11-004

1009 MOB TO ~~PRI11-003~~ TH PRI11-002

1024 SAMPLE PRI11-002
ID: SCR-PRI11-002

1029 MOB TO PRI11-001

1033 MARK PRI11-001
MOB TO PRI11-007

1056 SAMPLE PRI11-007
ID: SCR-PRI11-007

1100 MOB TO PRI11-008

1105 MARK PRI11-008 SAMPLE LOC

1124 SAMPLE PRI11-010
ID: SCR-PRI11-010

1130 MOB TO PRI11-009

1136 MARK PRI11-009

3/25/14 CONT.

1410 MOB TO TRAILER
SIGN OUT @ GUARD HOUSE
UNLOAD TRUCK, PACK SAMPLES
TO SHIP.

1530 Off SITE

TH
3/25/14

0132320

3/26/14 USMAG STAGE IA RI/FS

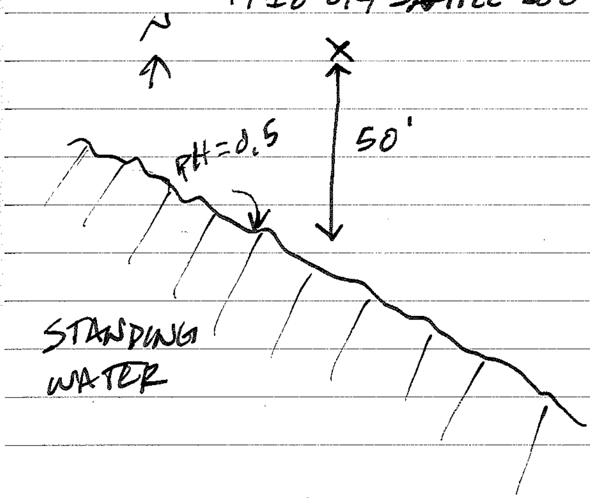
0820 ARRIVE ON SITE
PERSONEL: T. HAMADA, K. BENSON
WEATHER: OVERCAST, WEST WIND
5-10 mph, 43°F

0844 SIGN IN @ GUARD HOUSE
MOB TO PRI 8

0855 ARRIVE @ PRI 8
AARON BAIRD (PWT) ACCOMPANY
ERM AS EPA OVERSIGHT

0925 SAMPLE PRI8-014
ID: PRI8-014-SS01-032614
DUPE TAKEN W/ VOCs + FINES
2" WATER IN BOTTOM OF 6"
AUGER BORING. pH = 6.0

PRI8-014 SAMPLE LOC



3/31/14 CONT.
1150 SAMPLE PRI11-011
ID: SCR-PRI11-011
1228 MOB TO PRI11-012
1235 MARK PRI11-012
MOB TO PRI11-013
1251 SAMPLE PRI11-013
ID: SCR-PRI11-013-
1257 MOB TO PRI11-014
1314 SAMPLE PRI11-014
ID: SCR-PRI11-014
MOB TO PRI11-006
1322 MARK PRI11-006
MOB TO TRAILER TO GET MORE STAKES
SIGN OUT @ ATI SECURITY
1335 SIGN IN @ USMAG SECURITY
MOB TO PRI 11-003
1349 MARK PRI11-003 (US MAG PROPERTY)
SAMPLE LOC IN MIDDLE OF OLD METAL TRUSS STORAGE AREA
1403 SAMPLE PRI11-005 (US MAG PROPERTY)
ID: SCR-PRI11-005
MOB TO RECON PRI 8
1420 VISUALY VERIFY PRI8-00 IS IN WATER
1430 MW-16 UPRIGHT, NOT IN WATER
1436 SIGN OUT, OFF SITE JH 3/31/14

4/25/14
0810 ARRIVE ON SITE
PERSONEL: T. HAMADA, K. BENSON
WEATHER: BROKEN CLOUDS, 60's, WIND 5-10 mph
0835 START MONTHLY WATER LEVEL MEASURMENTS (SEE FIELD DATA SHEET)
0854 STAGE 2 AIR DMA SAMPLE LOC. UTM
12T 0354188
4530414
± 10 FEET
0909 SIGN IN @ SECURITY HOUSE
0925 WEST SIDE OF PRI-10 ACCESSABLE BY TRACK MOUNTED DRILL RIG ON SW CORNER OF BARIUM SULPHATE PILE. LAND DRY, SOLID
0939 PRI8-5 SAMPLE LOC UNDER WATER
WATER LEVEL HAS RISEN SINCE LAST MONTH
1137 MW-16 ~30 ft. FROM EDGE OF WASTE WATER. WATER INSIDE WELL. SEE FIELD DATA SHEET
1200 SIGN OUT @ GUARD HOUSE
OFF SITE

JH
4/25/14

US Mag
5/5/14 Phase IA RI/FS 0132320

1000 Arrive on site.
Personnel: ERM - Kris Benson, Lonnie Mercer
Cascade - Ty Kroll, Johnny Cordova
PWT - Aaron Baird, Catherine LeCours
Weather: partly cloudy, north breeze
65-80°F

1020 Conducted H&S briefing with Cascade. Cascade crew then went to US Mag office for site induction. Catherine also attended site induction.

1115 ERM loaded equipment while Cascade/PWT attended US Mag site induction. Drove into plant to allow Cascade crew to view drilling locations and site access/egress.

1145 Returned to trailer and vehicles and mobilized to PRI10.

1200 Moving drilling rig and equipment to PRI10-008. Ground surface is dry and solid. No need for mats to cross wet, soft ground.

1300 Begin drilling at PRI10-008.

1315 Recovered 10 ft of core. Begin sampling.

Lonnie Mercer

US Mag
5/5/14 Phase IA RI/FS 0132320

1545 Finished sampling at PRI10-008. Mobilize to trailer.

1745 Finished equipment decon and sample shipment preparation. Departed site.
Cascade crew departed at 1700 after filling truck with water and moving trucks to landfill. Cascade had 1-1.5 hrs of standby while ERM prepared samples at PRI10-008.

1845 Shipped samples at FedEx.

Lonnie Mercer

US Mag

5/6/14 Phase IA ~~RI~~ LM 0132320

730 Arrived at site.
Personnel: ERM - Lonnie Mercer,
Kevin Lundmark
Cascade - Ty Kroll, Johnny Cordova
745 Conducted H+S briefing. Loading sampling equipment.
810 Mobilize to landfill.
830 Setting up drilling rig at PRI2-009.
1100 Drilled to 30.5' bgs. ~~Moving rig~~ LM Pulling rods from borehole and backfilling. Kevin, Lonnie, and Catherine (PWT) are sampling soil.
1145 Cascade deconned rods and are waiting while ERM is sampling.
1330 Finished sampling at PRI2-009. Kris Benson and Trent Hamada (ERM) arrived around 1300 to assist with sampling. Kevin and Catherine left landfill before Kris and Trent arrived.
1345 Attempted to find PRI2-014 with ~~GB~~ LM GPS. SAP MOD location is not over ditch. Move to PRI2-006.
1415 Setting up at PRI2-006, but shut down work due to thunderstorm approaching from the southwest.

Lonnie Mercer

US Mag

5/6/14 Phase IA 0132320

1445 Thunder and lightning continue in storm over area. It is now raining. Mobilized to trailer to prep samples.
1530 Rain has stopped. Returned to landfill to discuss with Cascade.
1600 Decided to continue drilling and work at PRI2-006.
1730 Drilled PRI2-006 to 20' bgs and collected 4 samples. Cascade departed and ERM returned to trailer to prepare samples.
1855 Departed site.
1950 Shipped samples at FedEx.

Lonnie Mercer

US Mag

5/7/14 Phase IA RI 0132320

720 Arrived at site.
Personnel: ERM - Connie Mercer, Kris Benson
Cascade - Ty Kroll, Johnny Cordova
PWT - Catherine LeCours
Weather: Cloudy, intermittent rain,
cool - 45-55°F
730 Cascade crew arrived.
745 Conducted daily safety meeting.
PWT arrived. Preparing to leave
for landfill.
830 Mobilized to landfill after loading
sampling equipment. Discussed
with Catherine regarding drilling
at PRI2-006 that occurred yesterday
afternoon. Will need to re-drill upper
20 feet for Catherine to observe
soil cores.
845 Setting to continue drilling at PRI2-006.
Will drill to TD and then step out
to attempt re-drill to 20' bgs at new
boring.
1045 Drilled PRI2-006 to 30' bgs. Stepped
out 5' for re-drilled boring. ERM
is preparing samples while Cascade
is re-drilling.

Connie Mercer

US Mag

5/7/14 Phase IA RI 0132320

1130 On 2nd boring at PRI2-006, met
drilling refusal at 10' bgs. Stepped
out again and hit refusal at same
depth. Discussed with Catherine
and observed recovered core. Will
not make further attempts to drill
at PRI2-006. Mobilize to PRI2-014.
1200 Begin drilling at PRI2-014.
1400 Drilled PRI2-014 to 20' bgs. Still
in waste material, continue drilling.
Cascade pushed 6" casing because
of "clays" swelling in borehole.
1500 Drilled PRI2-014 to 35' bgs.
Native soil at 31' bgs. ERM is
collecting samples while Cascade
is pulling drilling rods.
1600 ERM mobilized to trailer to
decon equipment and prepare
samples. Cascade is preparing
to demob. PWT departed site.
1800 Cascade has departed site while
ERM is preparing samples and
deconning equipment.
1900 ERM departed site.
2000 Shipped 3 coolers at FedEx.

Connie Mercer

5/23/14 US MAG RI/FS

0845 ARRIVE ON SITE

PERSONEL: T. HAMADA, K. BENSON

WEATHER: OVERCAST, HIGH 60s,

NORTH WIND 5-10 mph

0855 H+S TAILGATE MTG.

0906 SIGN IN @ GUARD HOUSE

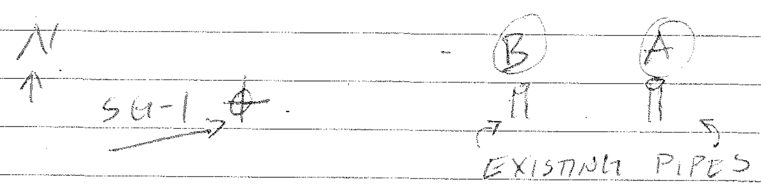
MEET W/ R. FRANCOM TO OPEN GATES. DISCUSS CONCRETE EPOXY ACTIVITIES TODAY. EPOXY BEING LAID DOWN BY STACK. ~150 ft² AREA, SHOULD NOT AFFECT OUR ACTIVITIES SINCE WE WON'T BE NEAR THAT LOC.

0945 START WATER LEVEL MEASUREMENTS

SEE FIELD DATA SHEET

0949 A: 12T 0356534 4533050

B: 12T 0356533 4533050



1020 IDW ROLL-OFF ~1/4 FULL

SEE PHOTOS

5/23/14

1258 DONE TAKING MEASUREMENTS

SIGN OUT @ GUARD HOUSE

1310 off SITE

TH

5/23/14

6/13/14

0850 ARRIVE ON SITE
PERSONEL: T. HAMADA, G. RIGARD
WEATHER: MID 70s, CLEAR,
WIND 10-15 mph
PERFORM RESPIRATOR FIT TEST
FOR G. RIGARD + T. HAMADA

0918 SIGN IN @ SECURITY
MEET W/ DAVID GIBBY REGARDING
EPOXY APPLICATION POSSIBILITY
INSIDE REACTOR BLDG. ADVISED
TO STAY AWAY FROM THAT LOC.
MOB. TO MEASURE WATER LEVELS

1235 DONE MEASURING
SIGN OUT @ GUARD
LOAD UP COOLERS TO SEND
BACK TO LAB

1248 OFF SITE

TH
6/13/14

12-11-13 -6° F, clear

7:30 - onsite, gather supplies to set staff gauges

7:45 → mob to drop off trash. Get call from Keith L. (ERM) about daily tasks.

7/50 → mob back to trailer to let other ERM folks use phone, as theirs doesn't work onsite.

8:10 → mob out to meet Wiley (U.S. Mag) to get dock moved to staff gauge locations. Wiley needs a clevice, so ERM mobs to get it from U.S. Mag storage.

9:00 → Meet Wiley at dock location near ARIZ. Hook up dock using clevice and rigging. ~~Begin m[illegible]~~

9:30 → Begin moving dock to 1st staff location.

12-11-13

10:40 → while moving 20ft dock to staff gauge location, dock broke at connections joining the two 10ft pieces. ERM calls Keith L. about this. Keith says to use the 10' section to install the staff gauges.

10:50 → Begin setting 1st staff gauge

11:42 → Done setting staff guage five (SG-5). DTW ~ 0.9'
Drove 3' into lake subsurface.
Took GPS point & photo.

11:50 - mob to SG-4 location.

12:12 → at SG-4 location. Setting dock in place and installing SG-4.

13:10 → SG-4 installed. Moving dock to SG-3.

13:20 → Installing SG-3.

13:56 → SG-3 Installed. Warm up break.

14:15 → Mob to SG-2.

14:40 → Begin installing SG-2.

15:10 → Done Installing SG-2

12-11-13
15:20 → Install SG-1
15:40 → Done installing SG-1. mob to ERM office, unload
16:05 → Done unloading.
16:15 → off site to ERM office

US Mag
12-16-13 Subsurface Soil
815 Lonnie Mercer and Trent Hamada (ERM) arrived at the site. Ryan Roodbol (DPS) arrived at 0800.
830 Conducted safety meeting.
910 Loaded sampling equipment and mobilized to PRI14-005.
930 Began to access area at PRI14-005 which was down bank from road. Drilling rig had to access area from west, which took about 20 minutes.
1125 Finished drilling and sampling at PRI14-005. Loaded equipment and mobilized to trailer.
1150 Loaded clean sampling equipment and mobilized to PRI08-017.
1215 Setting up to drill PRI8-017.
1400 Finished drilling and sampling at PRI8-017. Mobilize to PRI10.
1430 Walked PRI10 to assess access to boring PRI10-008 with drilling rig. US Mag is working with a track hoe to improve road west of PRI10. Conditions at PRI10 are soft and wet. Wiley (US Mag track hoe operator) indicated that he would not access PRI10 with his track hoe. [signature]

US Mag

12-16-13 Subsurface Soil

1430 Based on ground surface conditions and Wiley's comments, DPS did not feel comfortable driving rig onto PRI10.

1440 Mobilized back to trailer.

1700 Deconed equipment, labelled sample jars, and packed cooler for shipment.

1720 Loaded truck and departed site.

1825 Shipped 1 cooler at FedEx.

2/6/14 USM RI/FS 0132320

0845 - Arrive USM. Cloudy, cool PWT on-site

0900 - 1000 Meet w/ D. Gibby

1030 - Depart trailer

1035 - Check in w/ G. Rigard / T. Hamala @ MW-7. T.H. observed water level @ PR15 to be approaching MW-19 A/B on 2/5

1045 - Encounter locked gate @ Smut Piles; return to Plant to get gate opened.

1120 - Begin survey @ PR18

1215 - PR18-006 is accessible stake labeled PR18-014, corrected stake

1355 - PR18 survey complete

1400 - Read SG @ NW 1.29'

1400 - 1425 Lunch

1425 - Map water in borrow area @ PR110

1445 - Return to trailer

1500 - View MW19A/19B from landfill. Well pads are in water (presumed wastewater) but could be accessed using pallet.

1535 - ERM off site. END 2/6/14 KWC

US Mag

2/12/14 Phase IA RI 0132320

0815 Kris Benson and Lonnie Mercer (ERM) arrived at USM. Preparing equipment for surface water sampling.

0930 Calibrated Horiba U52. Conducted safety meeting. Mobilized to PRI8-018.

1000 Begin sampling at PRI8-018.

1130 End sampling at PRI8-018. Windy, rainy weather slowed sampling activities. Mobilize to trailer for decon of splitter.

1230 Finished lunch and splitter decon. Mobe to PRI8-019.

1300 Parked truck near MW-13 well pair and mobilized to PRI8-019 with UTV. PRI8-019 ~~is~~ accessed across brushy area with no roads.

1330 Began to set up at PRI8-019 in area at NW side of angel wing. Moved sample location to SE.

1400 Begin sampling at PRI8-019 at location on N side of pond.

1520 End sampling at PRI8-019. Ground at PRI8-019 is very muddy.

Lonnie Mercer

USMag

2/12/14 Phase IA RI 0132320

1545 Mobilized truck and ~~UTW~~ UTV to trailer.

1745 Packed coolers, unloaded equipment at trailer, and departed site.

1830 Shipped coolers at FedEx and returned to ERM SLC.

Lonnie Mercer

3/6/14 US MAG RI/FS 0132320

0835 ON-SITE
PERSONEL: T. HAMADA
ANDERSON ENG. CO.
WEATHER: OVERCAST, LOW 40s,
N WIND
0845 SIGN IN @ GUARD HOUSE
MOB TO E. SIDE OF WASTE POND.
SETUP @ BASE STATION LOC TO
RE-SURVEY STAFF GAUGE #5
(SOUTH END OF WASTE POND)
1002 SURVEYING COMPLETE
ANDERSON ENG. CHECKING DATA BEFORE
MOBING BACK TO SLC
1018 MOB TO TRAILER
1040 SIGN OUT @ GUARD HOUSE
OFF ~~SIGHT~~ TH SITE.

TH 3/6/14

3/12/14

0900 ARRIVE ON SITE
PERSONEL: T. HAMADA, G. RIGARD
DPS (DUSTY) ON SITE
WEATHER: CLEAR, HIGH 30s, BREEZY
0915 H+S TAILGATE MTG.
0920 ARRIVE AT STAGE 2 DMA LOC
DPS SETUP GENERATOR ~200'
FROM SAMPLE LOC.
ERM SETUP SAMPLE EQPT, STANDS,
SHELTERS, SCAFFOLD, ETC. PER
STAGE 2 AIR DMA TECH. MEMO.
1400 OFF SITE

TH
3/12/14

3/13/14

0745 ARRIVE ON SITE
PERSONEL: T. HAMADA
WEATHER: CLEAR, CALM, 27°F
0750 B. STORY ARRIVE ON SITE
0800 DOUG HERLOCKER (TETRATECH/EPA OVERSIGHT) ARRIVE ON SITE
0905 MOB TO SAMPLE LOC. START GENERATOR, HI-VOLS
1240 CALL K. LUNDMARK REGARDING H.A. SPM CHEM CASSETTE EXPIRATION DATES
HCl & HI LEVEL Cl_2 CASSETTES PAST EXPIRATION DATES
1311 LAUNCH BM-25 UNITS
1430 FINISH CALIBRATIONS ON BM-25's
1440 CONTACT K. LUNDMARK & B. FARMER REGARDING SPM ISSUE. B. FARMER WILL CONTACT EPA REP. TO DISCUSS REMEDY
1514 LAUNCH SPM-4 LOW LEVEL Cl_2
1526 LAUNCH SPM-3 HI LEVEL Cl_2
1540 MOB TO TRAILER
1630 off SITE

TH 3/13/14

3/14/14

0710 ARRIVE ON SITE
PERSONEL: T. HAMADA
WEATHER: CLEAR, 34°F
0715 DOUG HERLOCKER ARRIVE ON SITE
0720 BRIAN STORY ARRIVE ON-SITE
ASSEMBLE SAMPLE MEDIA, SUMMA CANS, ETC.

TO-15
SUMMA #1
CAN SN: AC00164
FLOW CONT.: LFC00052

SUMMA #2
CAN SN: AC00584
FLOW CONT.: LFC00024

BURLINGTON PUF/XAD CARTRIDGES STILL HAVE SHIFTING RESIN
ONE UNSPIKED CARTRIDGE NOT USEABLE

0920 H&S TAILGATE MTG
0930 MOB TO SAMPLE LOC

3/14/14 CONT.

0935 EXPOSE FB SAMPLES
2 PUFS
2 HI-VOL 8X12 FILTERS
1 TO-17 TUBE

1000 START TO-17 TUBES
~~1045~~ TH SKC-1 SKC-2 SEE FIELD SHEETS

1028 START TO-15 SUMMA CANS

1045 CALIBRATE BM-25s
BOTH PASSED

1115 RESPONSE VERIFICATION ON SPMs
BOTH Cl_2 PASS
HCl SPMs NOT YET RUNNING
WILL START ON MONDAY

1130 MOB TO TRAILER
RECOVER FIELD BLANKS + PACK TO BE SHIPPED MON.

1330 WALK THROUGH CAL PROCEDURES FOR HI-VOLS W/ B. STORY

1525 OFF SITE

TH 3/14/14

3/15/14

0950 ARRIVE ON SITE
PERSONEL: T. HAMADA
EPA OVERSIGHT: DOUG HERZKKER
WEATHER: CLEAR, 44°F, STRONG NORTH WIND

1000 H&S TAILGATE MTG

1010 CHECK HI-VOLS
FLOW CHECK TO-17
CHECK TO-15 FLOW CONTROLERS
CALIBRATE BM-25s
VERIFY SPMs
ALL SAMPLERS IN GOOD CONDITION + FUNCTIONING WELL

1135 MOB TO TRAILER

1150 OFF-SITE

TH 3/15/14

3/16/14

0955 ARRIVE ON SITE
PERSONEL: T. HAMADA
EPA OVERSIGHT: DOUG HERLOCKER
WEATHER: CLEAR, CALM, 45°F
1010 H&S TAILGATE
1020 MOB TO SAMPLE LOC
FLOW CHECKS ON HI VOLS, TO-15, TO-17. EVERYTHING IS RUNNING PROPERLY.
CALIBRATE BM-25s
BACKGROUND HCl DETECTED BY EPA MONITOR (~0.5ppm) DURING CAL. ZERO AIR RESPONSE FOR HCl ELEVATED DUE TO BACKGROUND LEVELS.
SYSTEM VERIFICATION OF HIGH & LOW LEVEL Cl_2 PASSED.
1125 MOB TO TRAILER
PREP TRAILER TO RECOVER SAMPLES ON 3/17/14
1135 DOUG HERLOCKER OFF SITE
1200 ERM OFF SITE

TH 3/16/14

3/17/14

0815 ARRIVE ON SITE
PERSONEL: T. HAMADA
WEATHER: OVERCAST, STRONG WEST WIND, 48°F
0900 BOB FARMER ON SITE
0905 DOUG HERLOCKER ON SITE
0924 H&S TAILGATE MTG.
0950 MOB TO SAMPLE LOC.
1000 GENERATORS STOPPED
POSSIBLY OUT OF FUEL?
TALK W/ DAVID GIBBY TO HAVE FACILITY ADD FUEL TO GENERATOR
1010 RECOVER MEDIA FOR
TO-17 STILL RUNNING ON BATTERY
TO-15
CALIBRATE BM-25s
1050 US MAG DELIVER FUEL TO GENERATOR. START HI-VOLS @ 1100 ON THE DOT.

ELAPSED TIME METER

SAMPLER	3/16	3/17	DIFFERENCE
PM_{10}	208.09	229.64	21.55 HR.
TSP	203.77	225.32	21.55 HR.
PUF-1	207.15	228.63	21.48 HR.
PUF-2	209.29	230.81	21.52 HR.

3/17/14 CONT

MODIFIED SAMPLE RECOVERY TIMES
FOR HI-VOL SAMPLERS:

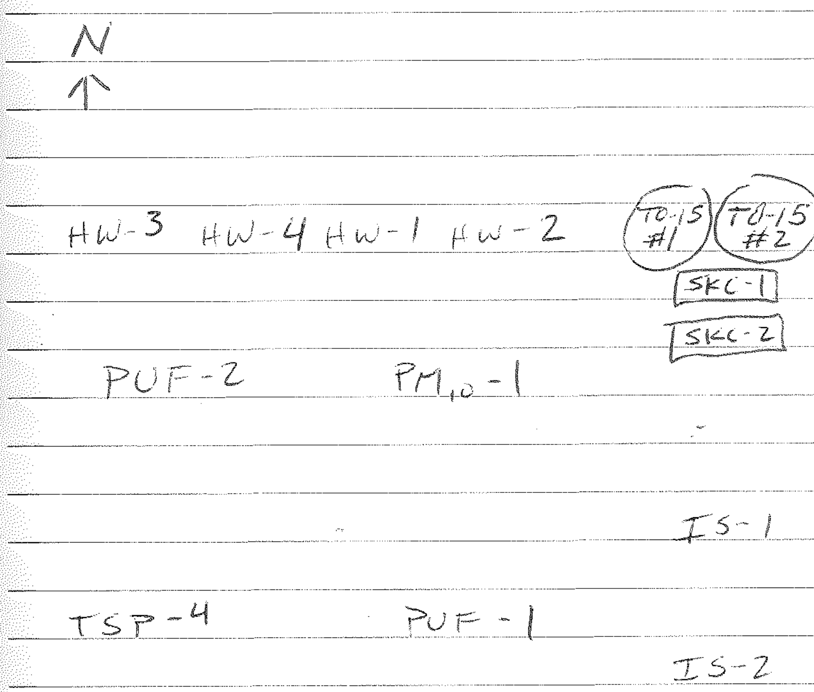
PM_{10} 13:15
TSP 13:28
PUF-1 13:31
PUF-2 13:29

1315 K. BENSON ARRIVE ON SITE
TO DELIVER SPM HCl CASSETTES
1320 INSTALL CASSETTES ON HW-1 +
HW-2
LAUNCH DATA LOGGERS
1345 MOB TO SAMPLE LOC TO RECOVER
SAMPLE MEDIA.
DEPLOYED HW-1 + HW-2
RECOVERED HI-VOL SAMPLE MEDIA
CONDUCTED POST FLOW AUDITS
~~150~~ TH EXPOSED TO-15 FIELD BLANK
1500 MOB TO TRAILER TO RECOVER, PACK
SAMPLE MEDIA FROM HI-VOLS.
1645 off SITE

TH 3/17/14

3/17/14 CONT

SAMPLE LOC. LAYOUT



TH 3/17/14

3/18/14

0900 ARRIVE ON SITE
PERSONEL: T. HAMADA
WEATHER: CLEAR, SLIGHT NE WIND
MID 30's
CLEAN UP AIR DMA MATERIALS
0950 MOB TO OFF SITE DMA LOC
TO CAL BM-25s SYST. VERIFY SAMs
1029 ALL MONITORS PASSED
MOB TO TRAILER
PACK COOLERS TO SHIP TO
LABS TODAY
1150 LOAD UP TRUCK
1200 off SITE
MOB TO SLC TO SHIP SAMPLES
VIA FED EX

TH 3/18/14

3/19/14

0915 ARRIVE ON SITE
PERSONEL: T. HAMADA
WEATHER: CLEAR, SOUTH WIND
5-10 mph, 34°F
0935 MOB TO STAGE 2 AIR DMA
TO CAL/SYSTEM ~~V~~ERIFICATIO of
Cl_2/HCl SAMPLERS
1010 ARRIVE BACK AT TRAILER
1025 off SITE

TH 3/19/14

3/20/14

0930 ARRIVE ON SITE
PERSONEL: T. HAMADA
WEATHER: CLEAR, CALM, 43°F
0940 MOB TO STAGE 2 AIR DMA
SAMPLE LOC.
1011 ARRIVE BACK @ TRAILER
ALL Cl_2 / HCl MONITORS
PASS CAL & VERIFICATIONS
1030 off SITE

TH
3/20/14

3/21/14

1320 ARRIVE ON SITE
PERSONEL: T. HAMADA
WEATHER: SOME CLOUDS, NORTH
WIND 0-2MPH, 44°F
1326 MOB TO STAGE 2 AIR DMA
SAMPLE LOC.
1420 TAKE BM-25s off LINE
1443 TAKE SPMs off LINE
1500 DPS ON SITE TO DE MOB GENERATOR
1505 MOB TO TRAILER
PUT AWAY ELECTRICAL EQPT.
TAKE ~~CATH~~ MONITORS TO SLC
TO DOWNLOAD DATA
1530 OFF SITE

TH
3/21/14

USM RI/FS 0132320

5-6-14

0745 - Arrive USM
K. Lundmark
K. Benson
Cascade & L. Mercer (BRM)
on-site.
Sunny, Breezy, 50s
0750 - PWT on-site
0800 - Arrive ATI
Guard = Chris
H&S Rep = Wes
0830 - Meet w/ Scott Ryan (ATI)
0900 - Back @ USM
0915 - Meet w/ D. Gibby, R. Francom
re: schedule & access
0930 - Arrive PRIZ. Drilling
@ location PRIZ-009

Samples	0.5-2	SB01
Collected	10-12	SB02
@ PRIZ-009	12-14	~~SB04~~ SB05
	28.5-30.5	SB03
	14-18	SB06
	18-~~20~~21 KWL	SB07
	KWL 21 ~~20~~-23	SB08
	26-28	SB04

5/6/14 contd.

1300 - K. Lundmark & C. LeCours (PWT)
Site Tour
- View MW19A/19B & PR15 from landfill
- View MW-16 from proposed Alt location on beach deposit. standing water present in the vicinity of MW-16
- View PRI-8, travel "new" road along fence to SE corner of ~~Barrow~~ Area (sometimes called Angel Wing), observe standing water in Barrow Area
- Walk to / observe PRI 6 / PRI 4 interface near DMA-SED/W-PRI6
- Walk to PRI7 Inlet area
- Return to landfill, drilling stopped due to lightning.
A. Baird (PWT) joins tour
- Walk to PRI14-005
- View GSL Intake / P-0
1540 Return to BRM trailer.
PWT off-site
1545 KWL off-site

KWL 5/6/14

Appendix E
Borehole Logs and Monitoring
Well Completion Diagrams

ERM
7272 East Indian School Road, Suite 100
Scottsdale, AZ 85251
Phone: (480) 998-2401
Fax: (480) 998-2106

LOG OF SOIL BORING: PRI2-006

Project Number: 0132320
Project Name: US Magnesium
Client Name: US Magnesium
Location: Rowley, UT
Contractor: Cascade Drilling
Drilling Method: Sonic
Logged By: L.Mercer

Date Started: 5/6/2014
Date Completed: 5/7/2014
Total Depth: 30 feet
Borehole Diameter: 4"
Water Level: 27 feet bgs
Notes: Following drilling, borehole was backfilled with hydrated bentonite chips.

Depth (ft)	USCS Code	Field Screening (ppm)	Soil Description and Observations
0–1	ML	PID = 0.9	SANDY SILT: trace clay and gravel, brownish red, soft, moist (gypsum cap).
1–2	GW	PID = 2.6	SANDY GRAVEL: gray, fine to coarse gravel, moist (landfill waste).
2–6	CL	PID = 4.3; PID = 5.7; PID = 14.3	CLAYEY SILT: some gravel, brownish red to dark gray with white nodes (salt), low plasticity, firm, moist (landfill waste). @ 5' grades to dark brown; large cobble.
6–10	CL	PID = 2.6	CLAYEY SILT: minor gravel, dark gray matrix with white nodes (salt), appears like smut waste, moist (landfill waste).
10–11			Little recovery, wood, and metal debris
11–24	GM	PID = 6.2; PID = 11.5; PID = 11.7; PID = 30.2; PID = 15.6	SILTY GRAVEL: dark reddish brown, fine to coarse gravel, subrounded, copper wires, paper debris, moist (landfill waste). @ 13' metal shard (1/2" thick) @ 17' metal debris (2" thick) @ 19' wood debris, tar paper, plastic, cobbles. **No sample from 17' to 20' due to coarse debris.**
24–26	CL	PID = 9.7; PID = 15.8; PID = 31.6	CLAYEY SILT: minor gravel, dark gray matrix with white nodes (salt), appears to be smut waste, moist (landfill waste).
26–27	GC	PID = 4.9	CLAYEY GRAVEL: dark brown, wet.
27–29	SC	PID = 2.1; PID = 1.6	Poor recovery, no sample. CLAYEY SAND: some silt, gray, medium to coarse oolitic sand, saturated (native soil).
29–30	CH	PID = 1.3	SILTY CLAY: gray with orange-brown mottling, very stiff, high plasticity, moist (native soil).

Total Depth - 30 feet bgs

WELL DIAGRAM

Bentonite Chips (1/4", hydrated)

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Fax: (480) 998-2106

LOG OF SOIL BORING: PRI2-009

Project Number: 0132320
Project Name: US Magnesium
Client Name: US Magnesium
Location: Rowley, UT
Contractor: Cascade Drilling
Drilling Method: Sonic
Logged By: L.Mercer

Date Started: 5/6/2014
Date Completed: 5/6/2014
Total Depth: 30.5 feet
Borehole Diameter: 4"
Water Level: 28 feet bgs
Notes: Following drilling, borehole was backfilled with hydrated bentonite chips.

Depth (ft)	USCS Code	Field Screening (ppm)	Soil Description and Observations
0	ML	PID = 0	SANDY SILT: trace clay, trace gravel, brownish red, soft, moist (gypsum cap).
	GW		GRAVEL: black, fine to coarse gravel, metal debris, moist (landfill waste).
			No Recovery
5			
10	SW-SM	PID = 9.6 PID = 20.6 PID = 15.7 PID = 9.4 PID = 20.8 PID = 22	GRAVELLY SAND: some silt, brown with white nodes (salt) and trace black coloring, fine to coarse gravel and sand, paper debris, wood debris, metal debris, plastic debris, moist (landfill waste). @ 13.5' Six-inch layer of white salt.
15		PID = 14.6 PID = 21.2 PID = 24.6 PID = 1.2 PID = 14.7	@ 18' used absorbent towels.
20			@ 20' metal debris (1/2" metal), wood debris, concrete debris. No Recovery
	SW-SM	PID = 4.7 PID = 9.6	GRAVELLY SAND: Same as above @ 23' Coarse material, no sample collected from 23-26'.
25		PID = 0.5 PID = 5.4	@ 26' Wood debris, brick debris
	CH	PID = 6.7 PID = 0.9 PID = 4.6	@ 28' black staining, saturated. SILTY CLAY: light gray with yellow-orange mottling, very stiff, high plasticity, roots, moist to wet (native soil).
30			Total Depth - 30.5 feet bgs
35			

WELL DIAGRAM

Bentonite Chips (1/4", hydrated)

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LOG OF SOIL BORING: PRI2-014

Project Number: 0132320
Project Name: US Magnesium
Client Name: US Magnesium
Location: Rowley, UT
Contractor: Cascade Drilling
Drilling Method: Sonic
Logged By: L.Mercer

Date Started: 5/7/2014
Date Completed: 5/7/2014
Total Depth: 35 feet
Borehole Diameter: 6"
Water Level: 30 feet bgs
Notes: Following drilling, borehole was backfilled with hydrated bentonite chips. PID was not working during drilling at PRI2-014.

Depth (ft)	Graphic Log	USCS Code	Sample Interval	Field Screening (ppm)	Soil Description and Observations	WELL DIAGRAM
0–3		ML			SANDY SILT (ML): trace clay and gravel, brownish red, moist (gypsum cap). @ 2' grades to some gravel.	Bentontie Chips (1/4", hydrated)
3–20		SW			SALT WASTE: granular with coarse sand and gravel-sized grains, pinkish orange to white to dark reddish brown, angular pieces, appears to soften and swell when wet (landfill waste). @ 18' grades to wet.	
20–22					No Recovery	
22–30		SW			SALT WASTE: Same as above	
30–31		CH			SILTY CLAY (CH): trace gravel, some sand, gray with brownish red staining, high plasticity, firm, wet to saturated (landfill waste).	
31–33		CH			SILTY CLAY (CH): brownish red, high plasticity, very stiff, moist (native soil). @ 32.5' grades to gray	
33–35		CL			SANDY CLAY (CL): light gray, coarse oolitic sand, low plasticity, saturated (native soil).	
35					Total Depth - 35 feet bgs	

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LOG OF SOIL BORING: PRI8-017

Project Number: 0132320
Project Name: US Magnesium
Client Name: US Magnesium
Location: Rowley, UT
Contractor: DPS
Drilling Method: Direct Push
Logged By: L. Mercer

Date Started: 12/16/2013
Date Completed: 12/16/2013
Total Depth: 12 feet
Borehole Diameter: 2.25"
Water Level: 6.0 feet bgs
Notes: Following drilling, borehole was backfilled with hydrated bentonite chips.

Depth (ft)	Graphic Log	USCS Code	Sample Interval	Field Screening (ppm)	Soil Description and Observations	WELL DIAGRAM
		SM			(SM) SILTY SAND: brown, coarse sand, few gravel, fill material, oolitic sand, dry.	
		GM			(GM) GRAVELLY SILT: brown, few sand, dry.	
5		ML			(ML) SILTY SAND: white to gray, coarse grained sand, dry, oolitic sand, few gravel.	
		CH			(CH) SILTY CLAY: gray, high plasticity, few coarse grained sands, saturated. Grades to dark gray.	Bentonite Chips (1/4", hydrated)
10		ML			(ML) SILTY SAND: white to gray, coarse grained sand, saturated, little gravel.	
15					Total Depth - 12 feet bgs	
20						
25						
30						
35						

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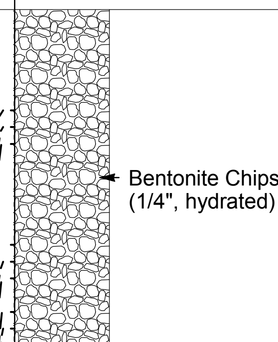
LOG OF SOIL BORING: PRI10-008

Project Number: 0132320	Date Started: 5/5/2014
Project Name: US Magnesium	Date Completed: 5/5/2014
Client Name: US Magnesium	Total Depth: 10 feet
Location: Rowley, UT	Borehole Diameter: 6"
Contractor: Cascade Drilling	Water Level: 2.5 feet bgs
Drilling Method: Sonic	Notes: Following drilling, borehole was backfilled with hydrated bentonite chips.
Logged By: L.Mercer	

Depth (ft)	Graphic Log	USCS Code	Sample Interval	Field Screening (ppm)	Soil Description and Observations
		CL			SILTY CLAY (CL): trace sand, dark brown with trace dark gray coloring, medium plasticity, firm, roots, moist (cap).
		▽		PID = 0	@ 2.5' groundwater
		GW			GRAVEL (GW): trace sand, light gray, gravel is fine to coarse angular, loose, saturated (waste).
5		CH		PID = 0	SILTY CLAY (CH): some sand, gray, high plasticity, saturated (waste).
		GW		PID = 0	GRAVEL (GW): trace sand, light gray, gravel is fine to coarse, angular, very loose to loose, saturated (waste).
		SM			SILTY SAND (SM): trace clay, dark gray, medium to coarse sand, rounded oolitic sand, loose, wet (waste).
		CL		PID = 0	CLAYEY SILT (CL): trace sand, brown, roots, moist (waste).
		ML			SANDY SILT (ML): trace clay, dark gray with white nodes, appears to be waste with similar appearance to smut, saturated (waste).
		CL			SILTY CLAY (CL): gray, stiff, roots, wet (native soil).
10		GW		PID = 0	GRAVEL (GW): trace sand, light gray, gravel is fine, angular, loose, saturated (native soil).
15					Total Depth - 10 feet bgs
20					
25					
30					
35					

WELL DIAGRAM



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LOG OF SOIL BORING: PRI14-005

Project Number: 0132320	Date Started: 12/16/2013
Project Name: US Magnesium	Date Completed: 12/16/2013
Client Name: US Magnesium	Total Depth: 6 feet
Location: Rowley, UT	Borehole Diameter: 2.25"
Contractor: DPS	Water Level: 0.5 feet bgs
Drilling Method: Direct Push	Notes: Following drilling, borehole was backfilled with hydrated bentonite chips.
Logged By: L. Mercer	

Depth (ft)	Graphic Log	USCS Code	Sample Interval	Field Screening (ppm)	Soil Description and Observations	WELL DIAGRAM
		ML			(ML) SILTY SAND: brown, coarse grained sand, few gravel, fill material, oolitic sand, dry.	Bentonite Chips (1/4", hydrated)
		CH			(CH) CLAYEY SILT: gray, saturated, few sand and gravel (caliche?).	
		SM			(SM) SILTY SAND: white to gray, coarse grained sand, saturated, few gravel (caliche?), trace clay.	
5		SP			(SP) POORLY GRADED SAND WITH GRAVEL: white to gray, coarse grained sand, saturated, trace silt and clay.	
					Total Depth - 6 feet bgs	
10						
15						
20						
25						
30						
35						

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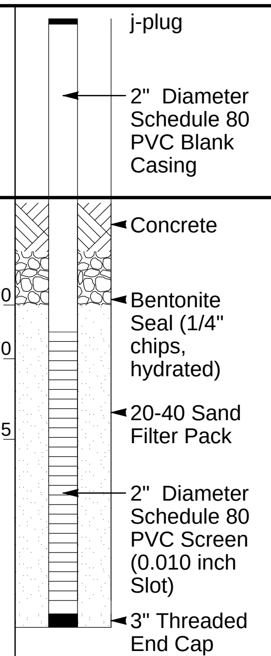
MW-13A

CLIENT US Magnesium
PROJECT NAME US Magnesium
PROJECT NUMBER 0132320
PROJECT LOCATION Rowley, UT
DATE STARTED 12/4/13 **COMPLETED** 12/4/13
TOC ELEVATION 4221.96 ft **HOLE SIZE** 8"
DRILLING CONTRACTOR DPS
GROUND WATER LEVELS:
DRILLING METHOD Geopropbe/Hollow Stem Auger
▽ **AT TIME OF DRILLING** 5.00 ft bgs
LOGGED BY J. Hilker **CHECKED BY** L. Mercer
▼ **AFTER DRILLING** 5.21 ft bgs on 12/9/13
NOTES Soil descriptions were logged from MW-13B borehole. Stick up height =3.23 ft. Top 5' was hand augered.

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	Soil Description and Observations	Elevation
0		SP		(SP) POORLY GRADED SAND WITH GRAVEL AND TRACE FINES: sand is fine to very fine grained (~65%), gravel is subangular (~30%), trace fines, tan, dry, with roots (~5%).	
2.0		SP		(SP) POORLY GRADED SAND WITH TRACE ORGANICS AND TRACE GRAVEL: sand (~90%), organics (~5%), gravel is tan with roots, dry (~5%).	4220.0
3.0				@ VOID - from 3' to 4.5'	4219.0
4.5		CL		▽▼ (CL) CLAY WITH TRACE SAND: clay (~95%), sand is fine grained, gray, wet (~5%).	4217.5
9.5		SP		(SP) POORLY GRADED SAND WITH TRACE FINES: sand is fine to medium grained, subangular, oolitic (~95%), trace fines (~5%), white, weak cementation.	4212.5
12.0		SM		(SM) SILTY SAND WITH LITTLE GRAVEL: sand is fine to coarse grained, subangular (~50%), silt is brown, non-plastic (~40%), gravel is fine, subangular (~10%).	4210.0
13.5		SM		(SM) SILTY SAND: sand is fine grained, subangular (~60%), silt is non-plastic, mottled grayish-brown, wet (~40%).	4208.5
14.0		SP		(SP) POORLY GRADED SAND: sand is fine grained, subangular (~60%), silt is non-plastic, grayish-brown, wet (~40%). Moderate cementation, white, fine to medium.	4208.0
14.5		SP-SM		(SP-SM) POORLY GRADED SAND WITH FEW SILT: sand is fine to medium grained (~90%), silt is non-plastic, gray to dark gray, wet, organic (lake) odor (~10%).	4207.5
20.0					4202.0

Depth scale: 0, 5, 10, 15, 20



Bottom of borehole at 20.0 feet.

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Telephone: (480)-998-2401
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MW-13B

CLIENT US Magnesium

PROJECT NAME US Magnesium

PROJECT NUMBER 0132320

PROJECT LOCATION Rowley, UT

DATE STARTED 12/4/13 **COMPLETED** 12/4/13

TOC ELEVATION 4221.88 ft **HOLE SIZE** 8"

DRILLING CONTRACTOR DPS

GROUND WATER LEVELS:

DRILLING METHOD Geopropbe/Hollow Stem Auger

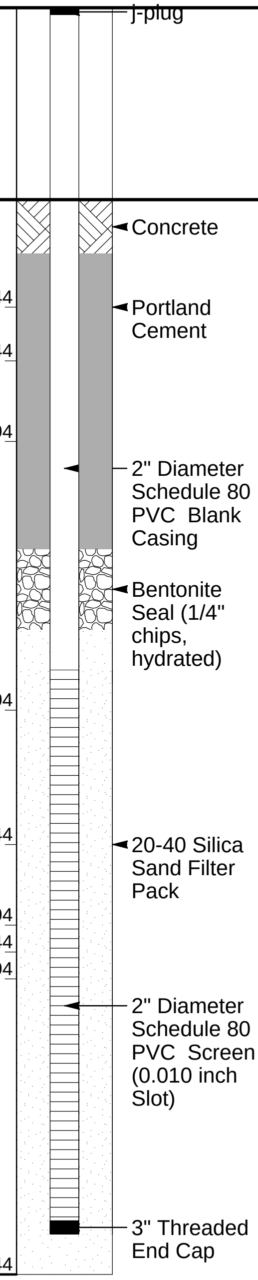
AT TIME OF DRILLING 5.00 ft bgs

LOGGED BY J. Hilker **CHECKED BY** L. Mercer

AFTER DRILLING 4.72 ft bgs on 12/9/13

NOTES Stick up height = 3.44 ft. Top 5' was hand augered

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	Depth	Soil Description and Observations	Elevation
0		SP			(SP) POORLY GRADED SAND WITH GRAVEL AND TRACE FINES: sand is fine to very fine grained (~65%), gravel is subangular (~30%), fines are tan, dry, with roots (~5%).	
		SP		2.0	(SP) POORLY GRADED SAND WITH TRACE ORGANICS AND TRACE GRAVEL: sand (~90%), organics (~5%), gravel (~5%), tan, roots, dry.	4216.44
				3.0	@ VOID - from 3' to 4.5'	4215.44
5		CL		4.5	(CL) CLAY WITH TRACE SAND: clay (~95%), sand is fine grained, gray, wet (~5%) .	4213.94
10		SP		9.5	(SP) POORLY GRADED SAND WITH TRACE FINES: sand is fine to medium grained, subangular, oolitic (~95%), fines are white with weak cementation (~5%).	4208.94
		SM		12.0	(SM) SILTY SAND WITH LITTLE GRAVEL: sand is fine to coarse grained and subangular (~50%), silt is brown and non-plastic (~40%), gravel is fine and subangular (~10%).	4206.44
		SM		13.5	(SM) SILTY SAND: sand is fine grained and subangular (~60%), silt is non-plastic, mottled grayish-brown, wet (~40%).	4204.94
		SP		14.0	(SP) POORLY GRADED SAND: sand is fine grained, subangular (~60%), silt is non-plastic, grayish-brown (~40%), wet, moderate cementation, white, fine to medium.	4204.44
15		SP-SM		14.5	(SP-SM) POORLY GRADED SAND WITH FEW SILT: sand is fine to medium grained (~90%), silt is non-plastic, gray to dark gray, wet, organic odor (lake) (~10%).	4203.94
20				20.0		4198.44



Bottom of borehole at 20.0 feet.

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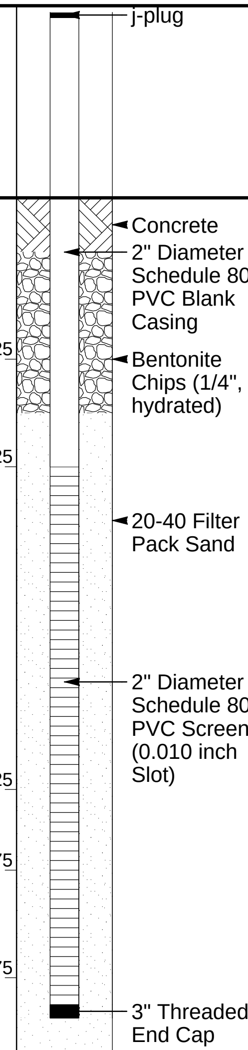
MW-14

CLIENT US Magnesium
PROJECT NAME US Magnesium
PROJECT NUMBER 0132320
PROJECT LOCATION Rowley, UT
DATE STARTED 12/5/13 **COMPLETED** 12/5/13
TOC ELEVATION 4219.6 ft **HOLE SIZE** 8"
DRILLING CONTRACTOR DPS
GROUND WATER LEVELS:
DRILLING METHOD Geopropbe/Hollow Stem Auger
AT TIME OF DRILLING 4.00 ft bgs
LOGGED BY J. Hilker **CHECKED BY** L. Mercer
AFTER DRILLING 2.49 ft bgs on 12/10/13
NOTES Stick up height = 3.35 ft. Top 5' was hand augered

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	Soil Description and Observations	Elevation
0–3.0		SP		(SP) POORLY GRADED SAND: sand is oolitic, fine to medium grained, subangular (~95%), trace gravel is fine, subangular, brown, damp (~5%) .	4213.25
3.0–5.0		CL		(CL) CLAY: clay (~100%) is grayish to grayish brown, damp to wet, low plasticity.	4211.25
5.0–11.0		SP		(SP) POORLY GRADED SAND: sand (~100%) is oolitic, fine to medium, weak to moderate cementation, wet, brown.	4205.25
11.0–12.5		SC-SM		(SC-SM) CLAYEY SILT: Silt (~50%), clay (~35%), sand (~10%) is medium to coarse grained, trace gravel (~5%). Mottled brown to gray. Wet, non-plastic, organic (lake) odor.	4203.75
12.5–14.5		ML		(ML) SILT WITH SAND: silt (~60%) with sand (~40%) is fine to very fine grained, gray, wet, non-plastic, organic odor, few cemented, nodulars.	4201.75
14.5–20.0		SP-SM		(SP-SM) SAND WITH SILT: sand is fine to very fine grained (~90%) with silt (~10%), gray to dark gray, organic odor, wet.	4196.25

Bottom of borehole at 20.0 feet.



GENERAL BH / TP / WELL - GINT STD US.GDT - 8/25/14 12:31 - F:\ERM FILES\AZ\PROJECTS FY12\0132320 - US MAGNESIUM - CONFIDENTIAL\FIELD EVENTS\PHASE 1A RIFIELD FORMS\EDITED BORING LOGS - GINT\US MAG BORING LOGS.GPJ

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MW-15A

CLIENT US Magnesium
PROJECT NAME US Magnesium
PROJECT NUMBER 0132320
PROJECT LOCATION Rowley, UT
DATE STARTED 12/5/13 **COMPLETED** 12/5/13
TOC ELEVATION 4220.98 ft **HOLE SIZE** 8"
DRILLING CONTRACTOR DPS
GROUND WATER LEVELS:
DRILLING METHOD Geopropbe/Hollow Stem Auger
AT TIME OF DRILLING 5.00 ft bgs
LOGGED BY J. Hilker **CHECKED BY** L. Mercer
AFTER DRILLING 3.77 ft bgs on 12/9/13
NOTES Soil descriptions were logged from MW-15B borehole. Stick up height = 3.17 ft. Top 5' was hand augered

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	Soil Description and Observations	Elevation
0.0–5.0		SP		(SP) POORLY GRADED SAND: sand is fine to medium grained(~100%), oolitic, tan with trace roots, some weak cementation.	4212.81
5.0–5.5		CL		(CL) LEAN CLAY: clay (~95%) with trace fine sand (~5%), gray, few iron stains, damp.	4212.31
5.5–7.0		SP		(SP) POORLY GRADED SAND: sand is fine to medium grained (~95%), ooltic, tan, some weak cementation, trace fines (~5%). damp.	4210.81
7.0–9.5		CL		(CL) LEAN CLAY: (~95%) clay, gray, (~5%) trace fine sand, few iron stains, damp.	4208.31
9.5–11.8		SP		(SP) POORLY GRADED SAND: Oolitic, weak cementation, sand is fine to medium grained with trace fines, wet, white to gray, few iron stains.	4206.31
11.8–12.5		ML		(ML) SILT WITH CLAY AND SAND: silt (~40%) with clay (~30%), fine sand (~25%) and trace gravel (~5%). black to gray, organic (lake) odor, wet.	4205.31
12.5–13.0		SP		(SP) POORLY GRADED SAND: oolitic sand (~100%), weak cementation.	4204.81
13.0–14.5		SM		(SM) SILTY SAND: silt is non-plastic (~40%) sand is fine to very fine grained (~60%), gray, weak cementation, wet.	4203.31
14.5–20.0		SP-SM		(SP-SM) POORLY GRADED SAND WITH SILT: sand is fine to very fine grained (~90%), with silt (~10%), gray to dark gray, wet, silt is non-plastic, organic (lake) odor.	4197.81

Bottom of borehole at 20.0 feet.

Well construction:
- j-plug
- 2" Diameter Schedule 80 PVC Blank Casing
- Concrete
- Bentonite Seal (1/4" chips, hydrated)
- 20-40 Silica Sand Filter Pack
- 2" Diameter Schedule 80 PVC Screen (0.010 inch slot)
- 3" Threaded End cap

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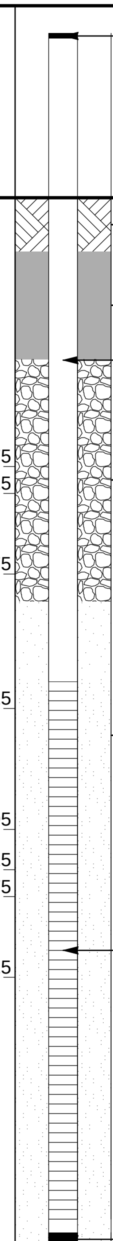
MW-15B

CLIENT US Magnesium
PROJECT NAME US Magnesium
PROJECT NUMBER 0132320
PROJECT LOCATION Rowley, UT
DATE STARTED 12/5/13 **COMPLETED** 12/5/13
TOC ELEVATION 4220.71 ft **HOLE SIZE** 8"
DRILLING CONTRACTOR DPS
GROUND WATER LEVELS:
DRILLING METHOD Geopropbe/Hollow Stem Auger
▽ **AT TIME OF DRILLING** 5.00 ft bgs
LOGGED BY J. Hilker **CHECKED BY** L. Mercer
▼ **AFTER DRILLING** 3.76 ft bgs on 12/10/13
NOTES Stick up height = 2.96 ft. Top 5' was hand augered

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	Soil Description and Observations	Elevation
0		SP		(SP) POORLY GRADED SAND: sand is fine to medium grained (~95%), oolitic, tan with trace roots (~5%), some weak cementation.	
5.0		CL		(CL) LEAN CLAY: clay (~95%) with trace fine sand (~5%), gray, few iron stains, damp.	4212.75
5.5		SP		(SP) POORLY GRADED SAND: sand is fine to medium grained (~100%), ooltic, tan, some weak cementation, trace fines. damp.	4212.25
7.0		CL		(CL) LEAN CLAY. (~95%) clay, gray, (~5%) trace fine sand, few iron stains, damp.	4210.75
9.5		SP		(SP) POORLY GRADED SAND: sand fine to medium grained (~95%), trace (~5%) fines, ooltic, white to gray, few iron stains, wet.	4208.25
11.8		ML		(ML) SILT WITH CLAY AND SAND: silt (~40%) with clay (~30%), fine sand (~25%) and trace gravel (~5%). black to gray, organic (lake) odor, wet.	4205.95
12.5		SP		(SP) POORLY GRADED SAND: oolitic sand (~100%), weak cementation.	4205.25
13.0		SM		(SM) SILTY SAND: silt is non-plastic (~40%) sand is fine to very fine grained (~60%), gray, weak cementation, wet.	4204.75
14.5		SP-SM		(SP-SM) POORLY GRADED SAND WITH SILT: sand is fine to very fine grained (~90%), silt is non-plastic(~10%), gray to dark gray, wet, organic (lake) odor.	4203.25
20.0					4197.75



Bottom of borehole at 20.0 feet.

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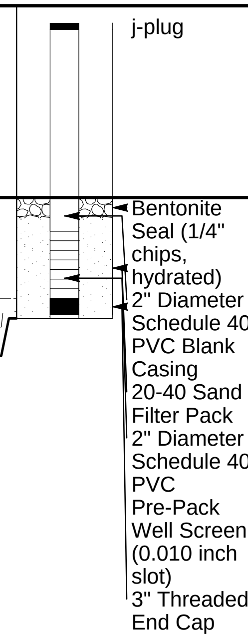
MW-16

CLIENT US Magnesium
PROJECT NAME US Magnesium
PROJECT NUMBER 0132320
PROJECT LOCATION Rowley, UT
DATE STARTED 1/13/14 **COMPLETED** 1/13/14
TOC ELEVATION **HOLE SIZE** 6"
DRILLING CONTRACTOR ERM
GROUND WATER LEVELS:
DRILLING METHOD Hand Auger
AT TIME OF DRILLING 0.83 ft
LOGGED BY L. Mercer **CHECKED BY** J. Hilker
AFTER DRILLING ---
NOTES Stick up height = 2.5 ft. Groundwater flowing into borehole during hand augering.

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		Soil Description and Observations
0		CH			(CH) HIGH PLASTICITY CLAY: reddish brown, high plasticity, very soft, wet. (gypsum waste)
		CH		1.5	(CH) SANDY CLAY: gray, firm, wet.
		CH		1.7	(CH) SILTY CLAY: gray stiff, wet.
				1.8	Bottom of borehole at 1.8 feet.



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MW-17

CLIENT US Magnesium
PROJECT NAME US Magnesium
PROJECT NUMBER 0132320
PROJECT LOCATION Rowley, UT
DATE STARTED 12/2/13 **COMPLETED** 12/9/13
TOC ELEVATION 4219.78 ft **HOLE SIZE** 8"
DRILLING CONTRACTOR DPS
GROUND WATER LEVELS:
DRILLING METHOD Geopropbe/Hollow Stem Auger
AT TIME OF DRILLING 2.00 ft bgs
LOGGED BY J. Hilker **CHECKED BY** L. Mercer
AFTER DRILLING 1.48 ft bgs on 12/16/13
NOTES Stick up height = 3.40 ft. Top 5' was hand augered

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	Soil Description and Observations	Elevation	Well Diagram
0						j-plug
0–2.0		SC-SM		(SC-SM) SILTY SAND WITH CLAY: Sand is fine to medium grained (~70%), damp to wet, yellow to reddish brown. Silt (~20%) and clay (~10%) are low plasticity to non-plastic.		Concrete
2.0					4214.38	2" Diamater Schedule 80 PVC Blank Casing
2.0–8.0		CH		(CH) CLAY: clay (~95%) with trace fine sand (~5%), some organics with roots, black staining, high plasticity.		Bentonite Seal (1/4" chips, hydrated)
8.0					4208.38	20-40 Silica Sand Filter Pack
8.0–13.0		SP		(SP) POORLY GRADED SAND: sand is fine to medium grained, oolitic, white to gray, wet, subangular. @9.5' - 10% fines, some cementation		
13.0					4203.38	
13.0–15.0		SM		(SM) SILTY SAND: sand is fine to medium grained (~70%), silt is non-plastic (~20%) and few gravels (~10%). Light gray to brown, wet.		2" Diamater Schedule 80 PVC Screen (0.010 inch slot)
15.0					4201.38	
15.0–18.0		SP-SM		(SP-SM) POORLY GRADED SAND WITH SILT: sand is fine to very fine grained (~90%) with silt (~10%). Gray, wet. @ 16' flowing sands.		3" Threaded End Cap
18.0					4198.38	

Bottom of borehole at 18.0 feet.

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MW-18

CLIENT US Magnesium

PROJECT NAME US Magnesium

PROJECT NUMBER 0132320

PROJECT LOCATION Rowley, UT

DATE STARTED 12/3/13 **COMPLETED** 12/3/13

TOC ELEVATION 4229.29 ft **HOLE SIZE** 8"

DRILLING CONTRACTOR DPS

GROUND WATER LEVELS:

DRILLING METHOD Geopropbe/Hollow Stem Auger

▽ **AT TIME OF DRILLING** 9.00 ft bgs

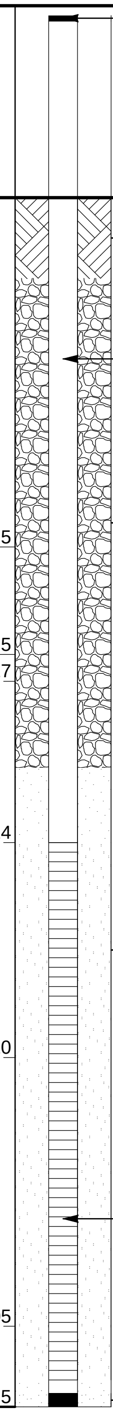
LOGGED BY J. Hilker **CHECKED BY** L. Mercer

▼ **AFTER DRILLING** 11.15 ft bgs on 12/6/13

NOTES Stick up height = 3.29 ft. Top 5' was hand augered

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	Soil Description and Observations	Elevation
0		SP-SM		(SP-SM) SAND WITH SILT AND CLAY: sand is fine grained (~90%), silt (~5%), and clay is low plasticity (~5%), brown, damp (fill).	
6.5				@ 6 to 6.5 ft - oolitic sand seam, sand is fine to medium.	4219.5
8.5				@ 8' oolitic sand seam.	4217.5
9.0		CL		▽ (CL) LEAN CLAY: brownish gray to brown, wet. ▼	4217
12.0		SP		(SP) POORLY GRADED SAND: sand is fine to medium grained, subangular and wet (~95%), trace fines (~5%), oolitic, white to tan.	4214
16.0		SP-SM		(SP-SM) SAND WITH SILT: sand is fine to very fine grained (~90%), silt is non-plastic, wet, black to gray (~10%).	4210
21.0		SM		(SM) SILTY SAND WITH CLAY: sand is fine to very fine grained, damp to wet with musty odor (~70%), silt is gray with dark greenish gray (~20%), and clay (~10%), weak cementation. @21.5 - damp	4205
22.5					4203.5

Bottom of borehole at 22.5 feet.



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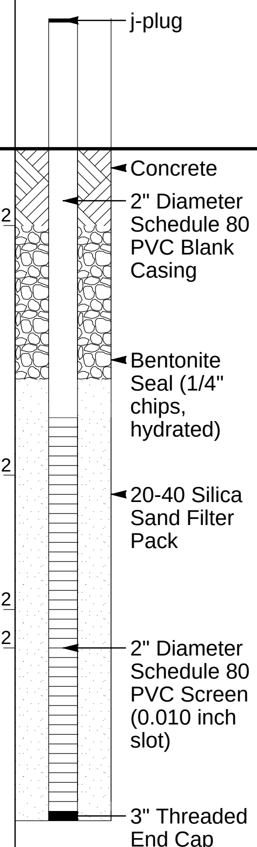
MW-19A

CLIENT US Magnesium
PROJECT NAME US Magnesium
PROJECT NUMBER 0132320
PROJECT LOCATION Rowley, UT
DATE STARTED 12/3/13 **COMPLETED** 12/9/13
TOC ELEVATION 4218.51 ft **HOLE SIZE** 8"
DRILLING CONTRACTOR DPS
GROUND WATER LEVELS:
DRILLING METHOD Geopropbe/Hollow Stem Auger
▽ **AT TIME OF DRILLING** 9.00 ft bgs
LOGGED BY J. Hilker **CHECKED BY** L. Mercer
▼ **AFTER DRILLING** 0.61 ft bgs on 12/11/13
NOTES Soil descripitons were logged from MW-19B. Top 5' was hand augered. Bottom 8 ft was logged via cuttings. Stick up height = 3.29 ft.

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	Soil Description and Observations	Bottom depth (ft)	Elevation
0		SC-SM	▼ (SC-SM) SILTY SAND WITH CLAY:	2.0	4213.22
		CH	(CH) CLAY: Gray with roots, organic staining (black), high plasticity.	8.5	4206.72
		SP	▽ (SP) POORLY GRADED SAND: oolitic sand, fine to medium grained, subangular. gray/white, wet. @9-9.5 - dark gray to black @9.5 - resume gray/white	12.0	4203.22
		SM	(SM) SILTY SAND WITH FEW GRAVEL: sand is fine to very fine (~70%), silt (~20%), gravel is fine grained, subangular(~10%). Silty sand, brown to gray.	13.0	4202.22
		SP-SM	(SP-SM) POORLY GRADED SAND WITH SILT: sand is fine to very fine (~90%), silt is wet, gray and non-plastic (~10%).	28.0	4187.22
			CLAY WITH SAND: clay is gray (~95%) and sand is fine grained and wet (~5%).	33.5	4181.72

Depth scale: 5, 10, 15, 20, 25, 30



Bottom of borehole at 33.5 feet.

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MW-19B

CLIENT US Magnesium | **PROJECT NAME** US Magnesium
PROJECT NUMBER 0132320 | **PROJECT LOCATION** Rowley, UT
DATE STARTED 12/3/13 **COMPLETED** 12/9/13 | **TOC ELEVATION** 4218.35 ft **HOLE SIZE** 8"
DRILLING CONTRACTOR DPS | **GROUND WATER LEVELS:**
DRILLING METHOD Geopropbe/Hollow Stem Auger | **AT TIME OF DRILLING** 0.83 ft bgs
LOGGED BY J. Hilker **CHECKED BY** L. Mercer | **AFTER DRILLING** 3.00 ft bgs on 12/16/13
NOTES Stick up height = 3.12 ft. Top 5' was hand augered. Bottom 8 ft was logged via cuttings.

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	Soil Description and Observations	Elevation	Well Construction
0 – 2.0		SC-SM		(SC-SM) SILTY SAND WITH CLAY:	4213.23	j-plug; Concrete
2.0 – 8.5		CH		(CH) CLAY: gray with roots, organic staining (black), high plasticity.	4206.73	Portland Grout
8.5 – 12.0		SP		(SP) POORLY GRADED SAND. oolitic sand, fine to medium grained, subangular, gray/white, wet. @9-9.5 - dark gray to black @9.5 - resume gray/white	4203.23	2" Diameter Schedule 40 PVC Blank Casing
12.0 – 13.0		SM		(SM) SILTY SAND WITH FEW GRAVEL: sand is fine to very fine (~70%), silt (20%), gravel is fine grained, subangular (~10%). Silty sand, brown to gray.	4202.23	
13.0 – 28.0		SP-SM		(SP-SM) POORLY GRADED SAND WITH SILT: sand is fine to very fine (~90%), silt is non-plastic (~10%), gray, wet. @19' - sand heaving into sampler per driller. Adding water to help slow this problem. @22' - sand heaving into sampler per driller. Adding water to help slow this problem. @25' - Stop drilling on 12/3/13 due to heavings sands. Remainder of boring was logged by cuttings during well installation on 12/9/13.	4187.23	Bentonite Seal (1/4" chips, hydrated); 20-40 Silica Sand Filter Pack
28.0 – 33.5				CLAY WITH SAND: clay is gray (~95%) and sand is fine grained, wet (~5%).	4181.73	2" Diameter Schedule 40 PVC Pre-Pack Screen (0.010 inch slot); 3" Threaded End Cap

Bottom of borehole at 33.5 feet.

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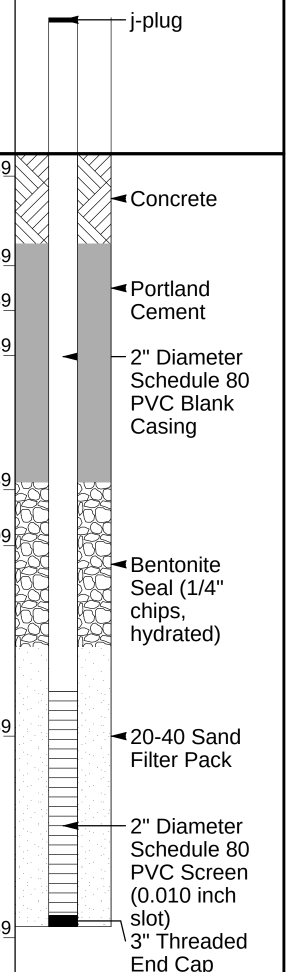
MW-20A

CLIENT US Magnesium
PROJECT NAME US Magnesium
PROJECT NUMBER 0132320
PROJECT LOCATION Rowley, UT
DATE STARTED 12/6/13 **COMPLETED** 12/6/13
TOC ELEVATION 4227.83 ft **HOLE SIZE** 8"
DRILLING CONTRACTOR DPS
GROUND WATER LEVELS:
DRILLING METHOD Geopropbe/Hollow Stem Auger
AT TIME OF DRILLING 8.50 ft bgs
LOGGED BY J. Hilker **CHECKED BY** L. Mercer
AFTER DRILLING 10.84 ft bgs on 12/11/13
NOTES Soil descriptions were logged from MW-20B borehole. Top 5' was hand augered. Bottom 2.5 ft was logged via cuttings. Stick up height = 2.94 ft.

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	Soil Description and Observations	Elevation
0.5		GP	(GP) GRAVEL (Fill): fine, subrounded, frozen.	4224.39
2.5		ML	(ML) SANDY SILT (Fill): silt (~60%), sand is fine to very fine (~40%), brown, damp.	4222.39
3.5		SP	(SP) POORLY GRADED SAND: sand is fine grained, subrounded, ooltic, tan to brown, weak cementation (~100%).	4221.39
4.5		SP	(SP) POORLY GRADED SAND: sand is fine to very fine grained, tan to light brown, damp (~95%).	4220.39
7.5		SP	(SP) POORLY GRADED SAND: sand is fine grained, subrounded, ooltic, tan to brown, weak cementation (~100%).	4217.39
8.8		SP	(SP) POORLY GRADED SAND: sand is fine to very fine grained, tan to light brown, damp (~95%).	4216.09
13.0		CL	(CL) CLAY: clay (~100%), low to medium plasticity, mottled, gray to tan to brown, wet, iron stains.	4211.89
17.5		SP	(SP) POORLY GRADED SAND: sand is medium to fine grained (~95%) with trace fines (~5%), ooltic, white to gray, weak cementation, wet.	4207.39
30.0		SP-SM	(SP-SM) SAND WITH FEW SILT: sand is fine to very fine grained (~90%) with few silt (~10%), black to dark gray, wet, non-plastic.	4194.89



Bottom of borehole at 30.0 feet.

GENERAL BH / TP / WELL - GINT STD US.GDT - 8/25/14 12:31 - F:\ERM FILES\AZ\PROJECTS FY12\0132320 - US MAGNESIUM - CONFIDENTIAL\FIELD EVENTS\PHASE 1A RIFIELD FORMS\EDITED BORING LOGS - GINT\US MAG BORING LOGS.GPJ

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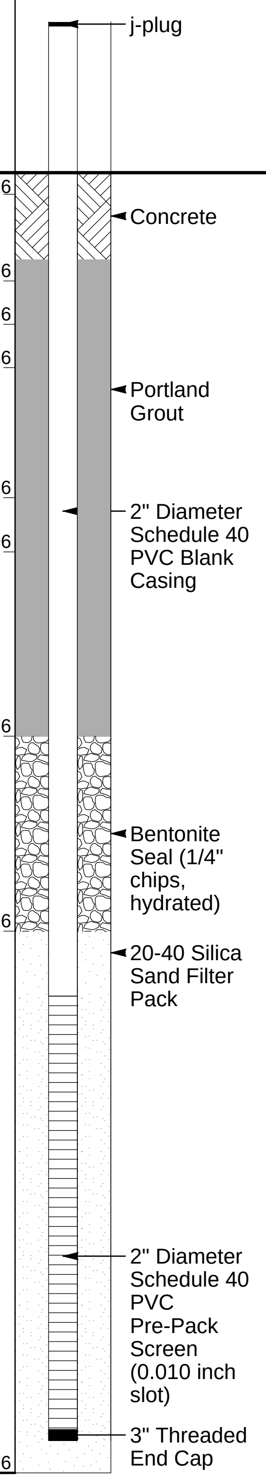
MW-20B

CLIENT US Magnesium
PROJECT NAME US Magnesium
PROJECT NUMBER 0132320
PROJECT LOCATION Rowley, UT
DATE STARTED 12/6/13 **COMPLETED** 12/6/13
TOC ELEVATION 4228.14 ft **HOLE SIZE** 8"
DRILLING CONTRACTOR DPS
GROUND WATER LEVELS:
DRILLING METHOD Geopropbe/Hollow Stem Auger
∇ **AT TIME OF DRILLING** 8.50 ft bgs
LOGGED BY J. Hilker **CHECKED BY** L. Mercer
▼ **AFTER DRILLING** 10.03 ft bgs on 12/11/13
NOTES Stick up height = 3.38 ft. Top 5' was hand augered. Bottom 2.5 ft was logged via cuttings.

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	Soil Description and Observations	Elevation (ft)
0–0.5		GP		(GP) GRAVEL(Fill): Fine, subrounded, frozen.	4224.26
0.5–2.5		ML		(ML) SANDY SILT (Fill): Silt (~60%), sand (~40%) is fine to very fine, brown, damp.	4222.26
2.5–3.5		SP		(SP) POORLY GRADED SAND: sand is fine grained, subrounded, ooltic, tan to brown, weak cementation (~100%).	4221.26
3.5–4.5		SP		(SP) POORLY GRADED SAND: Sand is fine to very fine grained, tan to light brown, damp (~95%).	4220.26
4.5–7.5		SP		(SP) POORLY GRADED SAND: sand is fine grained, subrounded, ooltic, tan to brown, weak cementation (~100%) .	4217.26
7.5–8.8		SP		∇ (SP) POORLY GRADED SAND: sand is fine to very fine grained, tan to light brown, damp (95%).	4215.96
8.8–13.0		CL		▼ (CL) CLAY: clay is low to medium plasticity, mottled, gray to tan to brown, wet, iron stains (~100%).	4211.76
13.0–17.5		SP		(SP) POORLY GRADED SAND: sand is medium to fine grained (~95%) with trace fines (~5%), ooltic, white to gray, weak cementation, wet.	4207.26
17.5–30.0		SP-SM		(SP-SM) SAND WITH SILT: sand is fine to very fine grained (~90%) with silt is non-plastic (~10%), black to dark gray, wet.	4194.76

Bottom of borehole at 30.0 feet.

Well construction diagram:



Appendix F
Surveyor Report

U. S. Magnesium 2/12 & 2/13/14 Monitoring Well Survey
by Anderson Engineering Co., Inc.
U. S. State Plane NAD 83, Utah North Zone (U. S. Survey Feet)
Vertical Datum is NAVD88 (U. S. Survey Feet)

Number	Northing	Easting	Casing Elevation
MW-13A	3502285.8	1299536.5	4221.96
MW-13B	3502282.1	1299530.8	4221.88
MW-14	3501828.7	1300080.8	4219.60
MW-15A	3500449.4	1301086.5	4220.98
MW-15B	3500446.9	1301090.6	4220.71
MW-17	3497588.9	1301575.6	4219.78
MW-18	3495643.5	1298292.3	4229.29
MW-19A	3497079.0	1301901.8	4218.51
MW-19B	3497076.2	1301903.8	4218.35
MW-20A	3494847.2	1300446.4	4227.83
MW-20B	3494847.7	1300440.0	4228.14
PZ-01	3494512.0	1302405.9	4224.94
SG-1			4205.53*
SG-2			4214.34*
SG-3			4214.13*
SG-4			4214.00*
SG-5			4214.35*

REGISTERED LAND SURVEYOR
RICHARD K. TATE
3/10/14
334552
STATE OF UTAH

* Staff gauge (SG) elevations recorded to the "zero" mark.

Appendix G
Laboratory Reports

(On CD)

Appendix H
Data Validation Reports

(On CD)

Appendix I
Phase 1A Analytical Results
Summary Tables

Table I-1
Analytical Results for Solids Samples - PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

Analyte	Unit	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2
Location ID		PRI2-001	PRI2-001	PRI2-002	PRI2-003	PRI2-004	PRI2-005	PRI2-006	PRI2-006	PRI2-006	PRI2-006	PRI2-006	PRI2-006
Sample Date		09-Jan-14	09-Jan-14	09-Jan-14	08-Jan-14	09-Jan-14	09-Jan-14	06-May-14	06-May-14	06-May-14	06-May-14	07-May-14	07-May-14
Sample Type		FINE	N	N	N	N	N	N	N	N	N	N	N
Depth		0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0.5 - 2 FEET	2 - 5 FEET	5 - 10 FEET	11 - 17 FEET	20 - 22 FEET	22 - 24 FEET
Sample ID		PRI2-001-SS01-010914 FINES	PRI2-001-SS01-010914	PRI2-002-SS01-010914	PRI2-003-SS01-010814	PRI2-004-SS01-010914	PRI2-005-SS01-010914	PRI2-006-SB01-0.5-050614	PRI2-006-SB02-2-050614	PRI2-006-SB03-5-050614	PRI2-006-SB04-11-050614	PRI2-006-SB05-20-050714	PRI2-006-SB06-22-050714
01-Dioxins and Furans													
2,3,7,8-TCDD	pg/g	*< 0.067 U*	*< 0.22 U*	0.95 J	*< 2.4 U*	*< 5.9 U*	*< 16 UQ*	*< 1.5 U*	3.1 J	*< 1.8 U*	3.1 J	*< 0.84 U*	1.6
1,2,3,7,8-PeCDD	pg/g	*< 0.14 U*	*< 0.48 U*	3.8 J	*< 16 U*	*< 14 U*	97	6.7 J	19 J	11 J	*< 11 U*	5.7 J	*< 4.9 UQ*
1,2,3,4,7,8-HxCDD	pg/g	*< 0.23 U*	*< 0.18 U*	*< 4.2 U*	*< 16 UQ*	34 J	*< 110 UQ*	*< 6.4 UQ*	*< 26 UQ*	15 J	17 J	*< 6.7 UQ*	*< 6.9 UQ*
1,2,3,6,7,8-HxCDD	pg/g	*< 0.54 UQ*	*< 0.17 U*	25	61	92	310	*< 16 UQ*	75	71	48 J	*< 17 UQ*	26
1,2,3,7,8,9-HxCDD	pg/g	0.58 J	*< 0.16 U*	25	*< 71 UQ*	100	430	23 J	86	*< 71 UQ*	56 J	28 J	22
1,2,3,4,6,7,8-HpCDD	pg/g	2.8 J	*< 0.21 U*	160	350	490	2,000	130	500	540	340	150	170
OCDD	pg/g	13	2.3 J	700	990	1,700 J	6,300	540	1,600	1,500	1,100	*< 420 UQ*	600
2,3,7,8-TCDF	pg/g	*< 1.5 UQ*	0.71 J	42	420	380	2,400	100	460	85	320	130	130
1,2,3,7,8-PeCDF	pg/g	5.5	1.7 J	93	1,200	1,200	6,900 J-	380	980	370	1,000	440	410
2,3,4,7,8-PeCDF	pg/g	3.2 J	*< 0.40 U*	58	880	810	4,500 J-	190	610	230	760	340	320
1,2,3,4,7,8-HxCDF	pg/g	20	4.2 J	310	5,700	5,600	32,000 J	1,100	3,000	1,400	4,000	1,600	1,300
1,2,3,6,7,8-HxCDF	pg/g	13	2.5 J	170	3,200	3,000	18,000	720	1,400	770	2,200	1,000	790
1,2,3,7,8,9-HxCDF	pg/g	*< 1.7 UQ*	*< 0.53 U*	35	510	590	3,400 J-	84	210	91	310	130	92
2,3,4,6,7,8-HxCDF	pg/g	4.1 J	*< 0.49 U*	42	800	710	4,200 J-	180	390	210	930	420	310
1,2,3,4,6,7,8-HpCDF	pg/g	110	21	1,200	24,000 J	21,000	120,000	5,300	11,000 J	7,200	18,000	10,000	7,500
1,2,3,4,7,8,9-HpCDF	pg/g	28	6.2	460	8,100	8,700	43,000	1,900	4,500 J	3,200	6,000	2,900	2,500
OCDF	pg/g	470	110	7,800 J	150,000 J	170,000 J	980,000 J	31,000	100,000 J	41,000	200,000 J	58,000 J	67,000 J
Calculated TEQ (ND=0), Mammalian	pg/g	6.4	1.1	110	1,800	1,700	9,800	380	990	490	1,500	610	510
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	6.9	1.6	120	1,800	1,700	9,900	380	1,000	490	1,500	630	530
Calculated TEQ (ND=0), Avian	pg/g	230	44	3,000	65,000	96,000	520,000	13,000	54,000	6,400	110,000	54,000	27,000
Calculated TEQ (ND=1/2 DL), Avian	pg/g	230	45	3,000	65,000	96,000	520,000	13,000	54,000	6,500	110,000	54,000	27,000
02-PCBs													
PCB-81	pg/g	*< 0.48 U*	*< 0.16 UQ*	96	320	170	*< 510 UQ*	*< 14 U*	*< 250 U*	44	*< 500 UQ*	200	200
PCB-77	pg/g	*< 3.6 UQ*	0.80 J	1,700	940	540	1,900	130	1,400	150	1,700	580	590
PCB-105	pg/g	16	2.8	3,800 J	5,100	5,000	11,000	680	39,000 J	980	14,000	4,400	4,600
PCB-114	pg/g	1.4 J	*< 0.24 UQ*	270	600	520	2,900	62	2,300	140	1,800	*< 300 U*	630
PCB-118	pg/g	20	3.5	5,900 J	6,500	5,900	15,000	1,100	61,000 J	1,600	28,000	7,000	7,600
PCB-123	pg/g	1.4 J	0.22 J	180	430	340	1,500	47	1,600	70	*< 1,000 U*	420	450
PCB-126	pg/g	*< 1.9 UQ*	*< 0.28 UQ*	*< 77 U*	630	290	1,700	*< 62 U*	*< 1,000 U*	83	1,200	*< 390 U*	*< 340 U*
PCB-156 & 157	pg/g	7.8	1.4 J	550	2,900	2,000	8,700	430	12,000	550	7,300	2,100	2,200
PCB-167	pg/g	4.2	0.86 J	250	2,200	1,500	8,000	240	3,300	380	4,800	1,500	1,400
PCB-169	pg/g	*< 0.79 U*	0.16 J	*< 16 U*	340	*< 120 U*	*< 1,200 U*	*< 29 U*	*< 220 U*	*< 44 UQ*	710	240	210
PCB-189	pg/g	5.7	1.2 J	130	1,900	1,100	9,400	220	1,700	510	4,700	1,500	1,600
Monochlorobiphenyls, Total	pg/g	4.9 J	2.0 J	590	66 J	52 J	*< 110 U*	45 J	2,900	100 J	950 J	190 J	370 J
Dichlorobiphenyls, Total	pg/g	48 J	4.3 J	45,000	1,400 J	830 J	5,200 J	180 J	10,000	750 J	12,000	2,300	5,100
Trichlorobiphenyls, Total	pg/g	97 J	8.2 J	150,000	3,300	2,300 J	18,000	770 J	25,000	3,000	32,000	8,100	16,000
Tetrachlorobiphenyls, Total	pg/g	120 J	12 J	150,000	14,000	14,000	46,000	2,400	100,000	7,300	77,000	22,000	30,000
Pentachlorobiphenyls, Total	pg/g	130 J	20 J	46,000	45,000	42,000	120,000	8,600	300,000	12,000	180,000	48,000	54,000
Hexachlorobiphenyls, Total	pg/g	96 J	20 J	12,000	44,000	34,000	150,000	11,000	160,000	9,500	140,000	42,000	40,000
Heptachlorobiphenyls, Total	pg/g	140 J	25 J	6,300	53,000	32,000	220,000	7,300	45,000	10,000	120,000	42,000	44,000
Octachlorobiphenyls, Total	pg/g	250	51 J	7,600	94,000	56,000	330,000	9,500	57,000	17,000	150,000	62,000	60,000
Nonachlorobiphenyls, Total	pg/g	680	140 J	17,000	200,000	110,000	720,000	20,000	110,000	34,000	300,000	120,000	110,000
Decachlorobiphenyl (PCB-209)	pg/g	4,200 J	890	160,000 J	1,400,000 J	670,000 J	8,900,000 J	160,000 J	490,000 J	210,000 J	780,000 J	480,000 J	440,000 J
Total PCBs	pg/g	5,800	1,200	590,000	1,900,000	960,000	11,000,000	220,000	1,300,000	300,000	1,800,000	820,000	800,000
03- Metals													
Total Aluminum	mg/kg	820	270	5,100	1,900	4,500	3,700	4,900	5,000	4,000	2,900	3,800	2,200
Total Antimony	mg/kg	1.3 J-	0.67	0.57	0.43	0.79 J	0.99	*< 0.33 UJ*	0.87 J-	1.4 J-	0.52 J-	0.24 J-	0.42 J-
Total Arsenic	mg/kg	7.2	3.0	3.7	5.5	7.3	12	5.1	5.7	11	4.8	3.9	3.9
Total Barium	mg/kg	320	130	650	190	190	300	120	250	270	140	170	160
Total Beryllium	mg/kg	0.14 J	0.087 J	0.43	0.087 J	0.20	0.19 J	0.25	0.21 J	0.28 J-	0.082 J-	0.16 J	0.085 J
Total Cadmium	mg/kg	*< 0.098 U*	*< 0.11 U*	0.44	*< 0.060 U*	0.24	*< 0.13 U*	0.25	0.42	0.21 J	0.19 J	0.19 J	0.18 J
Total Calcium	mg/kg	340,000	370,000	94,000	290,000	140,000	150,000	150,000 J	110,000 J	63,000	120,000	160,000	130,000
Total Chromium	mg/kg	2.2	0.86	51	14	31	34	37	38	72	34	19	17
Total Cobalt	mg/kg	1.4	0.56	8.1	0.97	2.1	2.4	2.9	3.6	4.8	2.6	1.9 J-	1.7 J-
Total Copper	mg/kg	9.4	1.2	68	19	120	29	49	240	120 J-	270 J-	64	89
Total Iron	mg/kg	2,300	1,300	18,000	7,900	17,000	38,000	12,000 J	31,000 J	38,000	27,000	10,000	7,300
Total Lead	mg/kg	2.8 J	1.1 J	29	7.0 J	12 J	13 J	12	26	22 J-	11 J-	9.7 J-	29 J-
Total Magnesium	mg/kg	2,300	2,100 J-	76,000 J-	10,000 J-	13,000 J-	18,000 J-	24,000 J	100,000 J	45,000	33,000	43,000	36,000
Total Manganese	mg/kg	300	220	370	56	150	130	180	180	140	150	120 J	92 J
Total Mercury	mg/kg	0.014 J	*< 0.027 U*	*< 0.012 U*	*< 0.01 U*	*< 0.02 U*	*< 0.021 U*	0.029 J	0.64	0.042 J	0.043	*< 0.023 U*	0.076
Total Molybdenum	mg/kg	0.85	0.48	11	3.2	16	5.4	5.9	18	20	4.3	5.3 J-	9.5 J-
Total Nickel	mg/kg	8.9	3.5	59	4.5	16	9.8	32	45	62 J-	25 J-	13 J-	11 J-
Total Potassium	mg/kg	240 J	*< 130 UJ*	4,600 J-	1,900 J-	1,600 J-	3,100 J-	2,400 J	8,700 J	9,300	11,000	22,000	25,000

Table I-1
Analytical Results for Solids Samples - PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**
	Location ID	**PRI2-006**	**PRI2-006**	**PRI2-006**	**PRI2-007**	**PRI2-008**	**PRI2-008**	**PRI2-009**	**PRI2-009**	**PRI2-009**	**PRI2-009**	**PRI2-009**	**PRI2-009**
	Sample Date	**07-May-14**	**07-May-14**	**08-May-14**	**09-Jan-14**	**09-Jan-14**	**09-Jan-14**	**06-May-14**	**06-May-14**	**06-May-14**	**06-May-14**	**06-May-14**	**06-May-14**
	Sample Type	**N**	**N**	**N**	**N**	**FINE**	**N**	**N**	**N**	**N**	**N**	**N**	**N**
	Depth	**24 - 26 FEET**	**27 - 29 FEET**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0.5 - 2 FEET**	**10 - 12 FEET**	**12 - 14 FEET**	**14 - 18 FEET**	**18 - 20 FEET**	**21 - 23 FEET**
	Sample ID	**PRI2-006-SB07-24-050714**	**PRI2-006-SB08-27-050714**	**PRI2-006-SS01-050814**	**PRI2-007-SS01-010914**	**PRI2-008-SS01-010914 FINES**	**PRI2-008-SS01-010914**	**PRI2-009-SB01-0.5-050614**	**PRI2-009-SB02-10-050614**	**PRI2-009-SB05-12-050614**	**PRI2-009-SB06-14-050614**	**PRI2-009-SB07-18-050614**	**PRI2-009-SB08-21-050614**
Analyte	**Unit**												
01-Dioxins and Furans													
2,3,7,8-TCDD	pg/g	*< 0.61 UQ*	*< 0.22 UQ*	4.6 J	*< 0.44 UQ*	*< 6.4 UQ*	*< 2.7 U*	4.1 J	*< 0.57 UQ*	*< 1.7 UQ*	*< 1.3 U*	*< 1.9 U*	*< 1.6 U*
1,2,3,7,8-PeCDD	pg/g	*< 2.2 UQ*	*< 0.54 U*	16 J	2.2 J	43 J	*< 16 UQ*	16 J	5.5	21 J	12 J	*< 15 UQ*	6.2 J
1,2,3,4,7,8-HxCDD	pg/g	3.6 J	*< 1.8 U*	24 J	2.4 J	33 J	*< 21 UQ*	17 J	6.0	16 J	*< 7.5 UQ*	*< 13 UQ*	6.4 J
1,2,3,6,7,8-HxCDD	pg/g	12	*< 3 UQ*	59	8.1	100	75	55 J	18	43 J	26 J	39 J	*< 18 UQ*
1,2,3,7,8,9-HxCDD	pg/g	12	2.7 J	82	9.0	140	99	64	21	49 J	34 J	43 J	23 J
1,2,3,4,6,7,8-HpCDD	pg/g	89	75	410	57	650	400	360	96	210	140	160	120
OCDD	pg/g	370	710	1,100	270	1,800	1,200	980	370	790	630	1,400	770
2,3,7,8-TCDF	pg/g	43	10	180	46	510	340	240	150	1,200	460	410	120
1,2,3,7,8-PeCDF	pg/g	140	23	1,300	110	2,500	1,600	1,100	340	1,500	690	710	270
2,3,4,7,8-PeCDF	pg/g	110	16	640	59	1,300	940	620	180	810	350	360	140
1,2,3,4,7,8-HxCDF	pg/g	460	72	5,100	370	11,000	7,200	4,400	800	2,000	1,300	1,300	660
1,2,3,6,7,8-HxCDF	pg/g	270	41	2,800	210	6,700	4,100	2,400	450	1,200	800	810	390
1,2,3,7,8,9-HxCDF	pg/g	42 J	5.6 J	420	31	980	620	290	73	200	140	130	55
2,3,4,6,7,8-HxCDF	pg/g	100	15	580	44	1,300	850	490	98	270	180	210	95
1,2,3,4,6,7,8-HpCDF	pg/g	2,900	300	24,000 J	1,700	47,000 J	30,000 J	18,000	3,400	9,400	6,100	7,100	3,600
1,2,3,4,7,8,9-HpCDF	pg/g	1,000	120	8,900	550	18,000	12,000	7,200	1,500	4,000	2,700	2,700	1,400
OCDF	pg/g	16,000	2,700	260,000 J	20,000	310,000 J	200,000 J	180,000 J	31,000	93,000 J	61,000 J	210,000 J	84,000 J
Calculated TEQ (ND=0), Mammalian	pg/g	180	26	1,600	130	3,300	2,100	1,400	290	990	550	590	270
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	190	28	1,600	130	3,400	2,200	1,400	290	990	550	600	270
Calculated TEQ (ND=0), Avian	pg/g	13,000	1,900	59,000	2,400	120,000	78,000	40,000	30,000	69,000	42,000	49,000	25,000
Calculated TEQ (ND=1/2 DL), Avian	pg/g	13,000	1,900	59,000	2,400	120,000	78,000	40,000	30,000	69,000	42,000	49,000	25,000
02-PCBs													
PCB-81	pg/g	51	*< 8.4 U*	*< 55 U*	8.9	*< 110 U*	*< 73 U*	*< 80 U*	*< 11 U*	*< 85 UQ*	*< 32 UQ*	29	*< 16 U*
PCB-77	pg/g	200	42	*< 59 U*	59	840	540	*< 84 U*	83	340	140	140	96
PCB-105	pg/g	1,800	280	210 J	270	11,000	6,900	*< 200 UQ*	700	4,100	1,400	1,100	1,100
PCB-114	pg/g	220	27	91 J	22	790	530	*< 120 UQ*	73	380	150	120	94
PCB-118	pg/g	3,300	460	310	400	17,000	11,000	*< 440 UQ*	1,200	6,600	2,300	2,000	2,200
PCB-123	pg/g	130	17 J	90 J	20	550	280	*< 77 U*	37	210	*< 60 UQ*	64	57
PCB-126	pg/g	*< 140 U*	*< 23 U*	*< 74 U*	22	*< 340 U*	*< 340 U*	110 J	*< 46 U*	170	78	72	*< 52 U*
PCB-156 & 157	pg/g	830	120	430 J	130	3,700	2,400	*< 490 UQ*	260	1,300	480	460	390
PCB-167	pg/g	440	58	580	75	3,300	1,200	460	140	520	280	230	180
PCB-169	pg/g	64	*< 9.8 U*	*< 90 U*	9.7	*< 220 U*	*< 180 U*	*< 110 U*	*< 18 U*	*< 50 U*	*< 25 U*	*< 29 UQ*	*< 18 U*
PCB-189	pg/g	450	*< 45 UQ*	930	63	1,500	1,100	740	140	430	*< 220 UQ*	220	140
Monochlorobiphenyls, Total	pg/g	170 J	41 J	*< 14 U*	13 J	83 J	*< 7.2 U*	*< 17 U*	92 J	110 J	150 J	320 J	260 J
Dichlorobiphenyls, Total	pg/g	1,600 J	120 J	*< 490 U*	130 J	*< 200 U*	250 J	*< 310 U*	390 J	1,500 J	490 J	820 J	540 J
Trichlorobiphenyls, Total	pg/g	5,900	560 J	46 J	380	2,500 J	1,600 J	470 J	1,200 J	7,000	2,000 J	3,000	1,400 J
Tetrachlorobiphenyls, Total	pg/g	10,000	1,300 J	500 J	1,000	22,000 J	16,000	1,800 J	3,700	16,000	6,400	6,100	6,200
Pentachlorobiphenyls, Total	pg/g	21,000	3,100	2,700 J	2,600	84,000	54,000	4,800 J	7,200	33,000	14,000	11,000	13,000
Hexachlorobiphenyls, Total	pg/g	15,000	2,400 J	6,400 J	2,200	*< 60,000 UQ*	39,000	7,000 J	4,800	19,000	8,300	8,200	6,900
Heptachlorobiphenyls, Total	pg/g	13,000	1,600 J	14,000 J	2,100	*< 44,000 UQ*	30,000	13,000 J	3,700	13,000	7,100	7,100	4,400
Octachlorobiphenyls, Total	pg/g	17,000	2,000 J	28,000	4,000	92,000	51,000	24,000	5,900	21,000	12,000	13,000	6,000
Nonachlorobiphenyls, Total	pg/g	34,000	4,000	69,000	11,000	200,000	110,000	53,000	14,000	46,000	26,000	31,000	15,000
Decachlorobiphenyl (PCB-209)	pg/g	180,000 J	51,000 J	730,000 J	120,000 J	1,800,000 J	1,100,000 J	510,000 J	230,000 J	440,000 J	300,000 J	710,000 J	450,000 J
Total PCBs	pg/g	300,000	66,000	850,000	150,000	2,300,000	1,400,000	620,000	270,000	600,000	380,000	790,000	510,000
03- Metals													
Total Aluminum	mg/kg	2,000	5,700	800	2,200	3,500	2,600	1,300	2,600	3,500	3,100	9,400	3,500
Total Antimony	mg/kg	*< 0.26 UJ*	0.43 J-	1.0 J-	0.88	0.92 J-	0.55	*< 0.23 UJ*	0.45 J-	0.46 J-	0.70 J-	0.61 J-	0.74 J-
Total Arsenic	mg/kg	1.1	8.2	9.9	7.6	9.8	7.2	5.7	3.7	4.2	5.7	5.5	5.4
Total Barium	mg/kg	120	270	210	190	230	240	300	120	140	210	130	200
Total Beryllium	mg/kg	0.061 J	0.20	0.081 J-	0.19	0.18 J	0.14	0.10 J	0.12 J	0.16 J	0.16 J	0.27	0.20 J
Total Cadmium	mg/kg	*< 0.13 U*	0.20	*< 0.11 U*	*< 0.086 U*	0.11 J	0.078 J	*< 0.11 U*	0.21	0.26	0.23	0.59	0.23
Total Calcium	mg/kg	71,000	70,000	310,000	260,000	180,000	190,000	280,000 J	150,000 J	140,000 J	180,000 J	77,000 J	170,000 J
Total Chromium	mg/kg	19	7.5	3.5	6.8	24	14	4.1	43	11	34	34	58
Total Cobalt	mg/kg	3.5 J-	2.1 J-	1.0	1.6	1.6	1.3	0.74	1.4	1.4	1.8	2.4	2.1
Total Copper	mg/kg	59	17	2.6 J-	34	87	33	7.7	31	34	28	130	70
Total Iron	mg/kg	39,000	8,100	13,000	4,900	17,000	8,600	8,800 J	8,400 J	9,300 J	8,400 J	19,000 J	13,000 J
Total Lead	mg/kg	25 J-	11 J-	2.7 J-	8.5 J	11 J	9.2 J	4.6	8.0	11	9.1	14	10
Total Magnesium	mg/kg	110,000	26,000	11,000	14,000 J-	13,000	13,000 J-	12,000 J	21,000 J	31,000 J	17,000 J	46,000 J	20,000 J
Total Manganese	mg/kg	190 J	130 J	140	150	92	69	70	100	110	140	160	150
Total Mercury	mg/kg	*< 0.035 U*	*< 0.021 U*	*< 0.010 U*	*< 0.02 U*	0.016 J	*< 0.0099 U*	0.018 J	0.013 J	*< 0.011 U*	0.013 J	0.019 J	0.017 J
Total Molybdenum	mg/kg	1.6 J-	0.41 J-	1.2	2.0	5.7	3.5	2.3	4.6	3.0	4.9	15	5.8
Total Nickel	mg/kg	59 J-	7.0 J-	4.3 J-	7.0	7.0	7.2	3.8	15	8.9	45	24	29
Total Potassium	mg/kg	27,000	7,500	690	870 J-	1,800	1,100 J-	1,500 J	2,600 J	3,900 J	2,800 J	3,500 J	3,400 J

Table I-1
Analytical Results for Solids Samples - PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2
	Location ID	**PRI2-009**	**PRI2-009**	**PRI2-009**	**PRI2-009**	**PRI2-010**	**PRI2-011**	**PRI2-011**	**PRI2-012**	**PRI2-012**	**PRI2-013**	**PRI2-014**
	Sample Date	**06-May-14**	**06-May-14**	**08-May-14**	**08-May-14**	**08-Jan-14**	**08-Jan-14**	**08-Jan-14**	**08-Jan-14**	**08-Jan-14**	**09-Jan-14**	**07-May-14**
	Sample Type	**N**	**N**	**FINE**	**N**	**N**	**FINE**	**N**	**FINE**	**N**	**N**	**N**
	Depth	**26 - 28 FEET**	**28.5 - 30.5 FEET**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0.5 - 2 FEET**
	Sample ID	**PRI2-009-SB04-26-050614**	**PRI2-009-SB03-28.5-050614**	**PRI2-009-SS01-050814 FINES**	**PRI2-009-SS01-050814**	**PRI2-010-SS01-010814**	**PRI2-011-SS01-010814 FINES**	**PRI2-011-SS01-010814**	**PRI2-012-SS01-010814 FINES**	**PRI2-012-SS01-010814**	**PRI2-013-SS01-010914**	**PRI2-014-SB01-0.5-050714**
Analyte	**Unit**											
01-Dioxins and Furans												
2,3,7,8-TCDD	pg/g	*< 1.8 U*	2.0	*< 1.5 UQ*	*< 1.6 U*	*< 3.2 U*	*< 1.5 UQ*	*< 2.5 U*	*< 6.9 UQ*	*< 3.3 U*	*< 0.15 U*	*< 2.1 U*
1,2,3,7,8-PeCDD	pg/g	13 J	12	9.8 J	8.5 J	20 J	7.1 J	*< 7.6 U*	37 J	34 J	0.84 J	12 J
1,2,3,4,7,8-HxCDD	pg/g	*< 8.8 UQ*	12	13 J	8.5 J	13 J	*< 7 UQ*	*< 6.1 UQ*	39 J	28 J	0.76 J	13 J
1,2,3,6,7,8-HxCDD	pg/g	39 J	38	27 J	22 J	45 J	22 J	*< 16 UQ*	110	83	*< 3.1 UQ*	43 J
1,2,3,7,8,9-HxCDD	pg/g	40 J	63	40 J	28 J	59 J	24 J	23 J	160	130	*< 3.5 UQ*	61
1,2,3,4,6,7,8-HpCDD	pg/g	210	200	240	230	260	140	110	640	460	7.9	290
OCDD	pg/g	2,000	610	1,500	1,200	700	520	400	1,300	1,200	10 J	800
2,3,7,8-TCDF	pg/g	340	170	150	120	180	77	65	440	380	5.9	150
1,2,3,7,8-PeCDF	pg/g	570	730	700	580	880	320	260	2,100	1,800	22	970
2,3,4,7,8-PeCDF	pg/g	290	440	380	300	510	170	150	1,100	1,000	12	470
1,2,3,4,7,8-HxCDF	pg/g	1,300	2,500	2,100	2,100	3,800	1,100	1,100	8,100	7,900	*< 72 UQ*	3,500
1,2,3,6,7,8-HxCDF	pg/g	800	1,400	1,400	1,200	2,200	730	670	5,400	4,700	*< 42 UQ*	2,400
1,2,3,7,8,9-HxCDF	pg/g	130	250	240	160	360	120	120	820	880	7.4	300
2,3,4,6,7,8-HxCDF	pg/g	260	330	250	370	370	150	110	970	770	*< 7.7 UQ*	570
1,2,3,4,6,7,8-HpCDF	pg/g	6,800	12,000	10,000	9,100	16,000	6,000	5,000	42,000	33,000 J	340	20,000
1,2,3,4,7,8,9-HpCDF	pg/g	2,500	4,800	4,100	3,200	6,200	2,000	1,700	15,000	13,000	130	7,800
OCDF	pg/g	250,000 J	87,000	77,000 J	66,000 J	110,000 J	37,000	33,000	300,000	250,000 J	1,500	150,000 J
Calculated TEQ (ND=0), Mammalian	pg/g	580	850	730	660	1,200	390	350	2,700	2,400	12	1,200
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	580	850	740	670	1,200	390	350	2,700	2,400	19	1,200
Calculated TEQ (ND=0), Avian	pg/g	31,000	40,000	89,000	100,000	48,000	34,000	25,000	130,000	100,000	980	110,000
Calculated TEQ (ND=1/2 DL), Avian	pg/g	31,000	40,000	89,000	100,000	48,000	34,000	25,000	130,000	100,000	980	110,000
02-PCBs												
PCB-81	pg/g	*< 28 UQ*	*< 73 UQ*	*< 47 U*	*< 44 U*	59	56	32	91	*< 49 UQ*	1.7 J	21 J
PCB-77	pg/g	160	170	*< 49 U*	*< 45 U*	520	300	200	250	170	9.1	64
PCB-105	pg/g	1,100	380	620	420	970	1,100	790	520	570	20	300
PCB-114	pg/g	130	190	120 J	78 J	120	110	80	280	230	3.6	100
PCB-118	pg/g	2,300	480	990	730	1,100	1,800	1,300	930	650	23	410
PCB-123	pg/g	58	96	*< 72 UQ*	*< 57 U*	100	76	56	170	130	2.6	46
PCB-126	pg/g	*< 73 U*	100	*< 72 U*	*< 66 U*	83	92	52	230	150	4.0	62
PCB-156 & 157	pg/g	450	550	460	300 J	410	540	390	940	800	15	370
PCB-167	pg/g	260	570	340	330	470	300	250	1,000	740	13	380
PCB-169	pg/g	*< 26 U*	75	*< 70 U*	*< 63 U*	*< 39 U*	42	*< 26 U*	*< 110 U*	*< 130 U*	*< 1.9 UQ*	*< 48 U*
PCB-189	pg/g	210	780	430	460	280	380	200	1,600	890	13	630
Monochlorobiphenyls, Total	pg/g	330 J	71 J	*< 16 U*	*< 18 U*	18 J	95 J	87 J	110 J	53 J	6.5 J	21 J
Dichlorobiphenyls, Total	pg/g	1,100 J	750 J	*< 560 U*	*< 280 U*	1,900 J	2,900 J	2,300	1,900 J	1,100 J	33 J	140 J
Trichlorobiphenyls, Total	pg/g	2,700	2,000 J	550 J	390 J	8,000	11,000	8,100	2,200 J	1,400 J	97 J	900 J
Tetrachlorobiphenyls, Total	pg/g	8,200	5,100	2,100 J	2,100 J	14,000	13,000	9,300	5,700	4,400	180 J	1,900 J
Pentachlorobiphenyls, Total	pg/g	14,000	8,700	5,600 J	4,800 J	9,600	12,000	8,800	10,000	8,200	230 J	3,700
Hexachlorobiphenyls, Total	pg/g	9,200	12,000	6,500 J	5,200 J	7,700	12,000	9,600	14,000	12,000	270	5,700
Heptachlorobiphenyls, Total	pg/g	7,000	16,000	9,100 J	8,400 J	9,500	16,000	11,000	30,000	23,000	370	13,000
Octachlorobiphenyls, Total	pg/g	11,000	26,000	16,000 J	13,000 J	25,000	15,000	12,000	54,000	47,000	780	22,000
Nonachlorobiphenyls, Total	pg/g	26,000	51,000	35,000	29,000	58,000	31,000	27,000	130,000	210,000	1,900	50,000
Decachlorobiphenyl (PCB-209)	pg/g	690,000 J	400,000 J	430,000 J	390,000 J	630,000 J	300,000 J	260,000 J	1,700,000 J	1,600,000 J	19,000 J	590,000 J
Total PCBs	pg/g	770,000	520,000	510,000	450,000	760,000	410,000	340,000	1,900,000	1,800,000	23,000	690,000
03- Metals												
Total Aluminum	mg/kg	4,100	16,000	1,400	1,100	1,900	5,100	3,300	1,900	1,400	5,200	910
Total Antimony	mg/kg	0.87 J-	0.86 J-	0.48 J-	0.62 J-	0.43 J	1.0 J-	0.84	0.91 J-	0.64	0.23 J	1.5 J-
Total Arsenic	mg/kg	6.1	23	5.7	6.1	6.0	7.3	6.6	10	7.7	5.2	13
Total Barium	mg/kg	150	330	220	190	290	210	190	260	250	180	180
Total Beryllium	mg/kg	0.21 J	0.83	0.090 J	0.10 J-	0.19 J	0.45	0.31	0.13 J	0.11 J	0.24	0.14 J
Total Cadmium	mg/kg	0.24	0.31	*< 0.11 U*	*< 0.11 U*	*< 0.12 U*	0.20	0.17 J	*< 0.11 U*	*< 0.079 U*	0.11 J	*< 0.11 U*
Total Calcium	mg/kg	130,000 J	76,000 J	260,000	270,000	240,000	130,000	170,000	250,000	240,000	190,000	320,000
Total Chromium	mg/kg	33	26	5.0 J-	6.9	5.5	12	7.7	8.2	6.5	6.3	12
Total Cobalt	mg/kg	2.9	6.3	0.89	1.0	1.2	2.5	1.9	1.3	0.99	1.9	1.2 J-
Total Copper	mg/kg	330	20	26	11 J-	50	43	25	26	13	5.3	11
Total Iron	mg/kg	13,000 J	22,000 J	7,900	6,300	12,000	9,100	7,300	18,000	12,000	5,400	15,000
Total Lead	mg/kg	15	14	6.0	5.6 J-	6.5 J	12 J	11 J	4.5 J	3.9 J	5.2 J	3.7 J-
Total Magnesium	mg/kg	25,000 J	20,000 J	8,700	7,700	9,900 J-	16,000	14,000 J-	12,000	8,500 J-	14,000 J-	10,000
Total Manganese	mg/kg	210	360	87	130	89	180	160	92	130	130	170 J
Total Mercury	mg/kg	0.020 J	0.013 J	0.021 J	0.025 J+	*< 0.026 U*	0.013 J	*< 0.0090 U*	*< 0.0094 U*	*< 0.01 U*	*< 0.010 U*	*< 0.010 U*
Total Molybdenum	mg/kg	9.7	3.7	2.1	3.5	2.3	3.2	3.2	4.4	3.1	0.69	4.0 J-
Total Nickel	mg/kg	29	20	4.7	13 J-	5.9	12	7.5	8.5	6.6	5.1	16 J-
Total Potassium	mg/kg	4,100 J	7,200 J	930	810	800 J-	2,700	2,000 J-	1,600	1,200 J-	7,700 J-	1,200

Table I-1
Analytical Results for Solids Samples - PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2
	Location ID	PRI2-014	PRI2-014	PRI2-014	PRI2-014	PRI2-014	PRI2-014	PRI2-014
	Sample Date	07-May-14	07-May-14	07-May-14	07-May-14	07-May-14	07-May-14	08-May-14
	Sample Type	N	N	N	N	N	N	N
	Depth	3 - 10 FEET	10 - 20 FEET	22 - 27 FEET	27 - 30 FEET	30 - 31 FEET	31 - 33 FEET	0 - 6 in
	Sample ID	PRI2-014-SB02-3-050714	PRI2-014-SB03-10-050714	PRI2-014-SB04-22-050714	PRI2-014-SB05-27-050714	PRI2-014-SB06-30-050714	PRI2-014-SB07-31-050714	PRI2-014-SS01-050814
Analyte	**Unit**							
01-Dioxins and Furans								
2,3,7,8-TCDD	pg/g	*< 0.097 U*	*< 0.070 U*	*< 0.2 UQ*	*< 0.89 UQ*	*< 7.4 U*	*< 34 U*	*< 1.4 U*
1,2,3,7,8-PeCDD	pg/g	*< 0.29 U*	1.8 J	*< 0.88 UQ*	7.7	*< 30 U*	*< 170 U*	9.4 J
1,2,3,4,7,8-HxCDD	pg/g	3.3 J	1.9 J	1.5 J	8.1	*< 35 UQ*	*< 130 U*	11 J
1,2,3,6,7,8-HxCDD	pg/g	32	22	11	24	*< 75 UQ*	*< 93 U*	28 J
1,2,3,7,8,9-HxCDD	pg/g	49	34	17	42	*< 130 UQ*	*< 270 UQ*	42 J
1,2,3,4,6,7,8-HpCDD	pg/g	150	100	58	130	500	*< 960 UQ*	200
OCDD	pg/g	230	140	85	340	1,600	*< 1,700 UQ*	560
2,3,7,8-TCDF	pg/g	12	4.0	8.4	160	850	1,500	97
1,2,3,7,8-PeCDF	pg/g	47	21	31	530	2,300	4,500	570
2,3,4,7,8-PeCDF	pg/g	28	13	24	460	1,600	3,400	280
1,2,3,4,7,8-HxCDF	pg/g	150	74	94	1,700	9,000	17,000	2,100
1,2,3,6,7,8-HxCDF	pg/g	90	46	61	1,100	4,100	8,200	1,200
1,2,3,7,8,9-HxCDF	pg/g	13	7.2	9.9	130	520	1,100	160
2,3,4,6,7,8-HxCDF	pg/g	26	12	26	380	1,500	3,000	270
1,2,3,4,6,7,8-HpCDF	pg/g	690	370	550	9,800	36,000 J	79,000	11,000
1,2,3,4,7,8,9-HpCDF	pg/g	*< 270 UQ*	140	190	3,300	14,000	27,000	3,800
OCDF	pg/g	4,100	2,400	3,600	81,000 J	370,000 J	520,000	110,000 J
Calculated TEQ (ND=0), Mammalian	pg/g	58	33	40	730	2,900	5,800	680
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	59	33	42	730	2,900	6,000	690
Calculated TEQ (ND=0), Avian	pg/g	3,100	500	1,500	14,000	530,000	990,000	26,000
Calculated TEQ (ND=1/2 DL), Avian	pg/g	3,100	500	1,500	14,000	530,000	990,000	26,000
02-PCBs								
PCB-81	pg/g	2.2 J	0.61 J	9.6 J	240	980	2,300	*< 45 U*
PCB-77	pg/g	*< 7 UQ*	3.8	28	610	2,000	4,800	*< 52 U*
PCB-105	pg/g	31	13	*< 49 UQ*	880	3,400	7,400	330
PCB-114	pg/g	7.2	2.0 J	25	580	2,200	4,900	*< 38 U*
PCB-118	pg/g	45	21	75	1,600	6,300	14,000	430
PCB-123	pg/g	4.0	0.95 J	*< 14 UQ*	340	1,500	3,000	*< 38 U*
PCB-126	pg/g	5.5	*< 1.8 UQ*	*< 18 U*	450	1,400	3,200	*< 50 U*
PCB-156 & 157	pg/g	24	9.6	75	1,800	6,900	15,000	190 J
PCB-167	pg/g	20	7.5	61	1,400	6,600	14,000	170 J
PCB-169	pg/g	3.8	1.1 J	*< 10 UQ*	330	*< 680 U*	2,300	*< 53 U*
PCB-189	pg/g	26	*< 8.7 UQ*	81	2,200	8,500	19,000	310
Monochlorobiphenyls, Total	pg/g	4.0 J	2.9 J	*< 1.9 U*	58 J	1,600 J	2,900	*< 14 U*
Dichlorobiphenyls, Total	pg/g	20 J	9.8 J	*< 53 U*	3,800	16,000	44,000	*< 440 U*
Trichlorobiphenyls, Total	pg/g	83 J	33 J	290 J	11,000	42,000	94,000	2,800 J
Tetrachlorobiphenyls, Total	pg/g	220 J	94 J	620 J	16,000	64,000	130,000	3,500 J
Pentachlorobiphenyls, Total	pg/g	370	140 J	1,000 J	26,000	110,000	220,000	2,500 J
Hexachlorobiphenyls, Total	pg/g	390	140 J	1,300 J	32,000	130,000	280,000	3,000 J
Heptachlorobiphenyls, Total	pg/g	510	190 J	1,700 J	49,000	200,000	410,000	6,200 J
Octachlorobiphenyls, Total	pg/g	970	370	2,800	71,000	290,000	560,000	12,000 J
Nonachlorobiphenyls, Total	pg/g	2,300	920	6,400	140,000	560,000	1,200,000	32,000
Decachlorobiphenyl (PCB-209)	pg/g	21,000 J	10,000 J	41,000 J	600,000 J	3,400,000 J	5,100,000 J	350,000 J
Total PCBs	pg/g	26,000	12,000	55,000	870,000	4,800,000	7,900,000	410,000
03- Metals								
Total Aluminum	mg/kg	380	160	420	1,200	3,000	6,700	1,700
Total Antimony	mg/kg	0.74 J-	0.38 J-	*< 0.21 UJ*	*< 0.25 UJ*	0.46 J-	0.42 J-	0.76 J-
Total Arsenic	mg/kg	11	4.6	3.5	4.1	9.5	12	6.8
Total Barium	mg/kg	23	5.8	16	47	150	160	160
Total Beryllium	mg/kg	*< 0.025 U*	*< 0.025 U*	*< 0.021 U*	0.037 J	0.12 J	0.29	0.25 J-
Total Cadmium	mg/kg	*< 0.12 U*	*< 0.12 U*	*< 0.11 U*	*< 0.13 U*	*< 0.075 U*	0.089 J	*< 0.10 U*
Total Calcium	mg/kg	19,000	6,100	10,000	58,000	130,000	160,000	260,000
Total Chromium	mg/kg	1.1	0.53	0.66	3.6	18	25	7.5
Total Cobalt	mg/kg	0.17 J-	*< 0.15 UJ*	0.15 J-	0.44 J-	1.1 J-	2.2 J-	1.4
Total Copper	mg/kg	1.5	0.31 J	0.55	1.7	5.5	8.0	12 J-
Total Iron	mg/kg	1,700	990	750	5,100	19,000	23,000	11,000
Total Lead	mg/kg	1.9 J-	1.2 J-	0.91 J-	2.8 J-	5.0 J-	7.0 J-	4.3 J-
Total Magnesium	mg/kg	65,000	95,000	64,000	65,000	43,000	27,000	9,300
Total Manganese	mg/kg	12 J	4.9 J	11 J	33 J	59 J	100 J	210
Total Mercury	mg/kg	*< 0.011 U*	*< 0.011 U*	*< 0.0091 U*	*< 0.013 U*	*< 0.019 U*	*< 0.026 U*	0.024 J+
Total Molybdenum	mg/kg	3.3 J-	1.3 J-	3.4 J-	4.3 J-	11 J-	14 J-	4.0
Total Nickel	mg/kg	0.61 J-	0.26 J-	0.41 J-	1.3 J-	3.6 J-	7.2 J-	10 J-
Total Potassium	mg/kg	140,000	120,000	80,000	78,000	22,000	7,900	1,000

Table I-1
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Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

Analyte	Location Group	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2
	Location ID	PRI2-001	PRI2-001	PRI2-002	PRI2-003	PRI2-004	PRI2-005	PRI2-006	PRI2-006	PRI2-006	PRI2-006	PRI2-006	PRI2-006
	Sample Date	09-Jan-14	09-Jan-14	09-Jan-14	08-Jan-14	09-Jan-14	09-Jan-14	06-May-14	06-May-14	06-May-14	06-May-14	07-May-14	07-May-14
	Sample Type	FINE	N	N	N	N	N	N	N	N	N	N	N
	Depth	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0.5 - 2 FEET	2 - 5 FEET	5 - 10 FEET	11 - 17 FEET	20 - 22 FEET	22 - 24 FEET
	Sample ID	PRI2-001-SS01-010914 FINES	PRI2-001-SS01-010914	PRI2-002-SS01-010914	PRI2-003-SS01-010814	PRI2-004-SS01-010914	PRI2-005-SS01-010914	PRI2-006-SB01-0.5-050614	PRI2-006-SB02-2-050614	PRI2-006-SB03-5-050614	PRI2-006-SB04-11-050614	PRI2-006-SB05-20-050714	PRI2-006-SB06-22-050714
	Unit												
Total Selenium	mg/kg	< 0.20 U	< 0.22 UJ	< 0.26 UJ	< 0.12 UJ	0.16 J-	0.28 J-	< 0.21 UJ	< 0.26 UJ	< 0.23 UJ	< 0.22 UJ	< 0.23 U	< 0.23 U
Total Silver	mg/kg	< 0.059 U	< 0.065 U	< 0.078 U	< 0.036 U	< 0.038 U	< 0.079 U	< 0.063 U	0.16 J	< 0.070 U	< 0.065 U	< 0.070 U	< 0.070 U
Total Sodium	mg/kg	68 J	63 J-	4,100 J-	4,400 J-	1,700 J-	3,500 J-	1,400	13,000	69,000	13,000	30,000	35,000
Total Thallium	mg/kg	0.24	< 0.11 U	< 0.13 U	< 0.060 U	< 0.063 U	< 0.13 U	< 0.10 U	< 0.13 U	< 0.12 U	< 0.11 U	< 0.12 U	< 0.12 U
Total Vanadium	mg/kg	4.8	2.3	15	11	17	41	14	26	39 J-	15 J-	10	8.0
Total Zinc	mg/kg	7.5	8.2	80	19	56 J	57	45	84	190 J-	55 J-	110 J-	52 J-
05-SVOCs													
1,1'-Biphenyl	µg/kg	< 160 U	< 170 U	< 220 U	< 1,600 U	< 1,700 U	< 1,600 U	< 180 U	< 220 U	< 190 U	< 190 U	< 200 UJ	< 190 UJ
1,2,4,5-Tetrachlorobenzene	µg/kg	< 26 U	< 27 U	< 35 U	< 250 U	< 270 U	< 250 U	< 28 U	< 35 U	< 30 U	33 J	< 31 UJ	< 31 UJ
2,3,4,6-Tetrachlorophenol	µg/kg	< 81 UJ	< 87 U	< 110 U	< 770 U	< 850 U	< 800 U	< 88 U	< 110 U	< 96 UJ	< 95 UJ	< 98 UJ	< 97 UJ
2,4,5-Trichlorophenol	µg/kg	< 82 UJ	< 88 U	< 110 U	< 780 U	< 860 U	< 810 U	< 89 U	< 110 U	< 97 UJ	< 96 UJ	< 99 UJ	< 98 UJ
2,4,6-Trichlorophenol	µg/kg	< 83 UJ	< 89 U	< 110 U	< 790 U	< 870 U	< 820 U	< 90 U	< 110 U	< 98 UJ	< 97 UJ	< 100 UJ	< 99 UJ
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	< 4.4 UJ	< 4.6 U	< 6.0 U	< 42 U	< 46 U	< 43 U	< 4.7 U	< 5.9 U	< 5.1 UJ	< 5.1 UJ	< 5.3 UJ	< 5.2 UJ
2,2-Oxybis(1-chloropropane)	µg/kg	< 78 UJ	< 83 U	< 110 U	< 750 U	< 820 U	< 770 U	< 84 UJ	< 110 UJ	< 92 UJ	< 92 UJ	< 95 UJ	< 93 UJ
2,4-Dichlorophenol	µg/kg	< 88 UJ	< 94 U	< 120 U	< 840 U	< 930 U	< 870 U	< 95 U	< 120 U	< 100 UJ	< 100 UJ	< 110 UJ	< 100 UJ
2,4-Dimethylphenol	µg/kg	< 170 UJ	< 180 U	< 230 U	< 1,600 U	< 1,700 U	< 1,600 UJ	< 180 U	< 220 U	< 190 UJ	< 190 UJ	< 200 UJ	< 200 UJ
2,4-Dinitrophenol	µg/kg	< 210 UJ	< 230 U	< 290 U	< 2,000 U	< 2,200 U	< 2,100 U	< 230 U	< 290 U	< 250 UJ	< 250 UJ	< 260 UJ	< 250 UJ
2,4-Dinitrotoluene	µg/kg	< 88 U	< 94 U	< 120 U	< 840 U	< 930 U	< 870 U	< 95 U	< 120 U	< 100 U	< 100 U	< 110 UJ	< 100 UJ
2,6-Dinitrotoluene	µg/kg	< 98 U	< 100 U	< 130 U	< 930 U	< 1,000 U	< 970 U	< 110 U	< 130 U	< 120 U	< 110 U	< 120 UJ	< 120 UJ
2-Chloronaphthalene	µg/kg	< 80 U	< 86 U	< 110 U	< 760 U	< 840 U	< 790 U	< 87 U	< 110 U	< 94 U	< 94 U	< 97 UJ	< 96 UJ
2-Chlorophenol	µg/kg	< 87 UJ	< 93 U	< 120 U	< 830 U	< 920 U	< 860 U	< 94 U	< 120 U	< 100 UJ	< 100 UJ	< 110 UJ	< 100 UJ
2-Methylphenol	µg/kg	< 58 UJ	< 61 U	< 79 U	< 550 U	< 600 U	< 570 U	< 62 U	< 77 U	< 68 UJ	< 67 UJ	< 69 UJ	< 68 UJ
2-Nitroaniline	µg/kg	< 83 U	< 89 U	< 110 U	< 790 U	< 870 U	< 820 U	< 90 U	< 110 U	< 98 U	< 97 U	< 100 UJ	< 99 UJ
2-Nitrophenol	µg/kg	< 81 UJ	< 87 U	< 110 U	< 770 U	< 850 U	< 800 U	< 88 U	< 110 U	< 96 UJ	< 95 UJ	< 98 UJ	< 97 UJ
3,3'-Dichlorobenzidine	µg/kg	< 93 UJ	< 99 U	< 130 U	< 890 U	< 980 U	< 920 U	< 100 UJ	< 130 UJ	< 110 UJ	< 110 UJ	< 110 UJ	< 110 UJ
3-Nitroaniline	µg/kg	< 170 UJ	< 180 U	< 230 U	< 1,600 U	< 1,700 U	< 1,600 UJ	< 180 UJ	< 220 UJ	< 190 UJ	< 190 UJ	< 200 UJ	< 200 UJ
4,6-Dinitro-2-methylphenol	µg/kg	< 80 UJ	< 86 U	< 110 U	< 760 U	< 840 U	< 790 U	< 87 U	< 110 U	< 94 UJ	< 94 UJ	< 97 UJ	< 96 UJ
4-Bromophenyl-phenylether	µg/kg	< 84 U	< 90 U	< 120 U	< 800 U	< 880 U	< 830 U	< 91 U	< 110 U	< 99 U	< 99 U	< 100 UJ	< 100 UJ
4-Chloro-3-methylphenol	µg/kg	< 91 UJ	< 97 U	< 130 U	< 870 U	< 960 U	< 900 U	< 98 U	< 120 U	< 110 UJ	< 110 UJ	< 110 UJ	< 110 UJ
4-Chloroaniline	µg/kg	< 58 UJ	< 61 UJ	< 79 UJ	< 550 UJ	< 600 UJ	< 570 UJ	< 62 UJ	< 77 UJ	< 68 UJ	< 67 UJ	< 69 UJ	< 68 UJ
4-Chlorophenyl-phenylether	µg/kg	< 92 U	< 98 U	< 130 U	< 880 U	< 970 U	< 910 U	< 99 U	< 120 U	< 110 UJ	< 110 UJ	< 110 UJ	< 110 UJ
3 & 4 Methylphenol	µg/kg	< 330 UJ	< 350 U	< 450 U	< 3,100 U	< 3,400 U	< 3,200 U	< 350 U	< 440 U	< 380 UJ	< 380 UJ	< 390 UJ	< 390 UJ
4-Nitroaniline	µg/kg	< 87 U	< 93 U	< 120 U	< 830 U	< 920 U	< 860 U	< 94 U	< 120 U	< 100 U	< 100 U	< 110 UJ	< 100 UJ
4-Nitrophenol	µg/kg	< 280 UJ	< 300 U	< 380 U	< 2,600 U	< 2,900 U	< 2,700 U	< 300 U	< 370 U	< 330 UJ	< 320 UJ	< 340 UJ	< 330 UJ
Acetophenone	µg/kg	56 J	< 26 U	< 34 U	< 240 U	< 260 U	< 250 U	< 27 U	< 33 U	< 36 UJ	< 110 UJ	< 360 UJ	410 J-
Benzaldehyde	µg/kg	< 160 U	< 170 U	< 220 U	< 1,600 U	< 1,700 U	< 1,600 U	< 180 U	< 220 U	< 190 U	320 J	520 J-	1,500 J-
Benzylbutylphthalate	µg/kg	< 94 U	< 100 U	< 130 U	< 900 U	< 990 U	< 930 U	< 100 U	< 130 U	< 110 U	210 J	< 110 UJ	< 110 UJ
Bis(2-chloroethoxy)methane	µg/kg	< 87 U	< 93 U	< 120 U	< 830 U	< 920 U	< 860 U	< 94 U	< 120 U	< 100 U	< 100 U	< 110 UJ	< 100 UJ
bis(2-Chloroethyl) ether	µg/kg	< 80 U	< 86 U	< 110 U	< 760 U	< 840 U	< 790 U	< 87 U	< 110 U	< 94 U	< 94 U	< 97 UJ	< 96 UJ
Bis(2-ethylhexyl)phthalate	µg/kg	< 97 U	< 100 U	< 130 U	< 930 U	< 1,000 U	< 960 U	< 100 U	430 J	200 J	810	330 J-	420 J-
Carbazole	µg/kg	< 94 U	< 100 U	< 130 U	< 900 U	< 990 U	< 930 U	< 100 UJ	< 130 UJ	< 110 UJ	< 110 UJ	< 110 UJ	< 110 UJ
Dibenzofuran	µg/kg	< 85 U	< 91 U	< 120 U	< 810 U	< 890 U	< 840 U	< 92 U	< 110 U	< 100 UJ	< 100 UJ	< 100 UJ	110 J-
Diethyl phthalate	µg/kg	< 89 U	< 95 U	< 120 U	< 850 U	< 940 U	< 880 U	< 96 U	< 120 U	< 100 U	< 100 U	4,100 J-	1,200 J-
Dimethylphthalate	µg/kg	< 86 U	< 92 U	< 120 U	< 820 U	< 910 U	< 850 U	< 93 U	< 120 U	< 100 U	< 100 U	< 100 UJ	< 100 UJ
Di-n-butylphthalate	µg/kg	< 96 U	< 100 U	< 130 U	< 920 U	< 1,000 U	< 950 U	< 100 U	< 130 U	< 110 U	< 110 U	< 120 UJ	< 110 UJ
Di-n-octylphthalate	µg/kg	< 96 U	< 100 U	< 130 U	< 920 U	< 1,000 U	< 950 U	< 100 U	< 130 U	< 110 U	< 110 U	< 120 UJ	< 110 UJ
Hexachlorobenzene	µg/kg	< 88 U	< 94 U	260 J	6,200	9,300	50,000	1,200	5,200	460	11,000	5,300 J-	2,600 J-
Hexachlorobenzene (SIM Screen)	µg/kg	22 J	4.2 J	260	5,600					570			
Hexachlorobutadiene	µg/kg	< 81 U	< 87 U	< 110 U	< 770 U	< 850 U	< 800 U	< 88 U	< 110 U	< 96 U	< 95 U	< 98 UJ	< 97 UJ
Hexachlorobutadiene (SIM Screen)	µg/kg	< 3.7 U	< 3.9 U	< 5.0 U	< 35 U	< 38 U	< 36 U	< 4.0 U	31	< 4.3 U	< 4.3 U	< 4.4 UJ	< 4.4 UJ
Hexachlorocyclopentadiene	µg/kg	< 62 U	< 66 U	< 84 U	< 590 U	< 650 U	< 610 U	< 66 UJ	< 83 UJ	< 72 UJ	< 72 UJ	< 74 UJ	< 73 UJ
Hexachloroethane	µg/kg	< 80 U	< 86 U	< 110 U	< 760 U	< 840 U	< 790 U	< 87 U	< 110 U	< 94 U	< 94 U	< 97 UJ	< 96 UJ
Isophorone	µg/kg	< 92 U	< 98 U	< 130 U	< 880 U	< 970 U	< 910 U	< 99 U	< 120 U	< 110 UJ	< 110 UJ	480 J-	160 J-
Nitrobenzene	µg/kg	< 76 U	< 80 U	< 100 U	< 720 U	< 790 U	< 750 U	< 81 U	< 100 U	< 89 U	< 88 U	< 91 UJ	< 90 UJ
N-Nitrosodimethylamine	µg/kg	< 95 U	< 100 U	< 130 U	< 910 U	< 1,000 U	< 940 U	< 100 U	< 130 U	< 110 UJ	< 110 UJ	< 110 UJ	< 110 UJ
n-Nitrosodimethylamine (SIM Screen)	µg/kg	< 95 U	< 100 U	< 130 U	< 910 U	< 1,000 U	< 940 U	< 100 U	< 130 U	< 110 UJ	< 110 UJ	< 110 UJ	< 110 UJ
N-Nitroso-di-n-propylamine	µg/kg	< 83 U	< 89 U	< 110 U	< 790 U	< 870 U	< 820 U	< 90 U	< 110 U	< 98 U	< 97 U	< 100 UJ	< 99 UJ
N-Nitrosodiphenylamine	µg/kg	< 85 U	< 91 U	< 120 U	< 810 U	< 890 U	< 840 U	< 92 U	< 110 U	< 100 U	< 100 U	< 100 UJ	< 100 UJ
Pentachlorophenol	µg/kg	< 51 UJ	< 54 U	< 69 U	< 480 U	< 530 U	< 500 U	< 54 U	< 68 U	< 59 UJ	< 59 UJ	270 J-	< 60 UJ
Pentachlorophenol (SIM Screen)	µg/kg	< 24 UJ	< 25 U	< 33 U	< 230 U	< 250 U	460 J	< 26 U	< 32 U	< 56 UJ	< 66 UJ	33 J	54 J-
Phenol	µg/kg	< 82 UJ	< 88 U	< 110 U	< 780 U	< 860 U	< 810 U	< 89 U	< 110 U	< 97 UJ	< 96 UJ	120 J-	< 98 UJ

Table I-1
Analytical Results for Solids Samples - PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2
	Location ID	PRI2-006	PRI2-006	PRI2-006	PRI2-007	PRI2-008	PRI2-008	PRI2-009	PRI2-009	PRI2-009	PRI2-009	PRI2-009	PRI2-009
	Sample Date	07-May-14	07-May-14	08-May-14	09-Jan-14	09-Jan-14	09-Jan-14	06-May-14	06-May-14	06-May-14	06-May-14	06-May-14	06-May-14
	Sample Type	N	N	N	N	FINE	N	N	N	N	N	N	N
	Depth	24 - 26 FEET	27 - 29 FEET	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0.5 - 2 FEET	10 - 12 FEET	12 - 14 FEET	14 - 18 FEET	18 - 20 FEET	21 - 23 FEET
	Sample ID	PRI2-006-SB07-24-050714	PRI2-006-SB08-27-050714	PRI2-006-SS01-050814	PRI2-007-SS01-010914	PRI2-008-SS01-010914 FINES	PRI2-008-SS01-010914	PRI2-009-SB01-0.5-050614	PRI2-009-SB02-10-050614	PRI2-009-SB05-12-050614	PRI2-009-SB06-14-050614	PRI2-009-SB07-18-050614	PRI2-009-SB08-21-050614
Analyte	**Unit**												
Total Selenium	mg/kg	< 0.26 U	< 0.13 U	< 0.22 UJ	< 0.17 UJ	0.30 J	0.17 J-	< 0.23 UJ	< 0.21 UJ	< 0.23 UJ	< 0.21 UJ	< 0.22 UJ	< 0.21 UJ
Total Silver	mg/kg	0.86	0.084 J	< 0.066 U	< 0.051 U	< 0.067 U	< 0.041 U	< 0.068 U	0.075 J	0.12 J	< 0.063 U	0.11 J	< 0.063 U
Total Sodium	mg/kg	46,000	7,300	2,400	1,100 J-	2,100	2,300 J-	4,700	3,800	4,400	5,100	10,000	5,700
Total Thallium	mg/kg	< 0.13 U	< 0.066 U	< 0.11 U	< 0.086 U	< 0.11 U	< 0.068 U	< 0.11 U	< 0.11 U	< 0.12 U	< 0.11 U	< 0.11 U	< 0.10 U
Total Vanadium	mg/kg	26	12	17 J-	9.1	30	17	15	14	13	14	25	17
Total Zinc	mg/kg	24 J-	41 J-	6.9 J-	48	38	22	12	43	41	54	63	60
05-SVOCs													
1,1'-Biphenyl	µg/kg	< 210 UJ	< 210 UJ	< 1,900 U	< 190 UJ	< 1,800 U	< 1,900 U	< 190 U	< 170 U	< 200 U	< 180 U	< 180 U	< 180 U
1,2,4,5-Tetrachlorobenzene	µg/kg	< 33 UJ	< 32 UJ	< 300 U	< 29 UJ	< 290 U	< 300 U	< 30 U	< 27 U	< 31 U	< 28 U	< 28 U	< 29 U
2,3,4,6-Tetrachlorophenol	µg/kg	< 100 UJ	< 100 UJ	< 940 UJ	< 92 UJ	< 920 U	< 940 U	< 95 U	< 87 U	< 97 U	< 88 U	< 89 U	< 91 U
2,4,5-Trichlorophenol	µg/kg	< 110 UJ	< 100 UJ	< 950 UJ	< 93 UJ	< 930 UJ	< 950 U	< 96 U	< 88 U	< 98 U	< 89 U	< 90 U	< 92 U
2,4,6-Trichlorophenol	µg/kg	< 110 UJ	< 100 UJ	< 960 UJ	< 94 UJ	< 940 U	< 960 U	< 97 U	< 89 U	< 99 U	< 91 U	< 91 U	< 93 U
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	< 5.6 UJ	< 5.5 UJ	< 50 UJ	< 4.9 UJ	< 49 U	< 50 U	< 5.1 U	< 4.7 U	< 5.2 U	< 4.7 UJ	< 4.8 UJ	< 4.9 U
2,2-Oxybis(1-chloropropane)	µg/kg	< 100 UJ	< 99 UJ	< 900 UJ	< 89 UJ	< 880 UJ	< 910 U	< 92 UJ	< 84 UJ	< 93 UJ	< 85 UJ	< 85 UJ	< 87 UJ
2,4-Dichlorophenol	µg/kg	< 110 UJ	< 110 UJ	< 1,000 UJ	< 100 UJ	< 990 U	< 1,000 U	< 100 U	< 94 U	< 110 U	< 96 U	< 96 U	< 98 U
2,4-Dimethylphenol	µg/kg	< 210 UJ	< 210 UJ	< 1,900 UJ	< 190 UJ	< 1,900 UJ	< 1,900 U	< 190 U	< 180 U	< 200 U	< 180 U	< 180 U	< 180 U
2,4-Dinitrophenol	µg/kg	< 270 UJ	< 270 UJ	< 2,400 UJ	< 240 UJ	< 2,400 U	< 2,500 U	< 250 U	< 230 U	< 250 U	< 230 U	< 230 U	< 240 U
2,4-Dinitrotoluene	µg/kg	< 110 UJ	< 110 UJ	< 1,000 U	< 100 UJ	< 990 U	< 1,000 U	< 100 U	< 94 U	< 110 U	< 96 U	< 96 U	< 98 U
2,6-Dinitrotoluene	µg/kg	< 130 UJ	< 120 UJ	< 1,100 U	< 110 UJ	< 1,100 U	< 1,100 U	< 110 U	< 100 U	< 120 U	< 110 U	< 110 U	< 110 U
2-Chloronaphthalene	µg/kg	< 100 UJ	< 100 UJ	< 920 U	< 91 UJ	< 910 U	< 930 U	< 94 U	< 86 U	< 96 U	< 87 U	< 87 U	< 89 U
2-Chlorophenol	µg/kg	< 110 UJ	< 110 UJ	< 1,000 UJ	< 99 UJ	< 980 U	< 1,000 U	< 100 U	< 93 U	< 100 U	< 95 U	< 95 U	< 97 U
2-Methylphenol	µg/kg	< 74 UJ	< 72 UJ	< 660 UJ	< 65 UJ	< 650 U	< 670 U	< 67 U	< 61 U	< 69 U	< 62 U	< 63 U	< 64 U
2-Nitroaniline	µg/kg	< 110 UJ	< 100 UJ	< 960 U	< 94 UJ	< 940 U	< 960 U	< 97 U	< 89 U	< 99 U	< 91 U	< 91 U	< 93 U
2-Nitrophenol	µg/kg	< 100 UJ	< 100 UJ	< 940 UJ	< 92 UJ	< 920 U	< 940 U	< 95 U	< 87 U	< 97 U	< 88 U	< 89 U	< 91 U
3,3'-Dichlorobenzidine	µg/kg	< 120 UJ	< 120 UJ	< 1,100 UJ	< 110 UJ	< 1,100 U	< 1,100 U	< 110 UJ	< 99 UJ	< 110 UJ	< 100 UJ	< 100 UJ	< 100 UJ
3-Nitroaniline	µg/kg	< 210 UJ	< 210 UJ	< 1,900 UJ	< 190 UJ	< 1,900 U	< 1,900 U	< 190 UJ	< 180 UJ	< 200 UJ	< 180 UJ	< 180 UJ	< 180 UJ
4,6-Dinitro-2-methylphenol	µg/kg	< 100 UJ	< 100 UJ	< 920 UJ	< 91 UJ	< 910 U	< 930 U	< 94 U	< 86 U	< 96 U	< 87 U	< 87 U	< 89 U
4-Bromophenyl-phenylether	µg/kg	< 110 UJ	< 110 UJ	< 970 U	< 96 UJ	< 950 U	< 970 U	< 99 U	< 90 U	< 100 U	< 92 U	< 92 U	< 94 U
4-Chloro-3-methylphenol	µg/kg	< 120 UJ	< 110 UJ	< 1,000 UJ	< 100 UJ	< 1,000 U	< 1,100 U	< 110 U	< 97 U	< 110 U	< 99 U	< 99 U	< 100 U
4-Chloroaniline	µg/kg	< 74 UJ	< 72 UJ	< 660 UJ	< 65 UJ	< 650 UJ	< 670 UJ	< 67 UJ	< 61 UJ	< 69 UJ	< 62 UJ	< 63 UJ	< 64 UJ
4-Chlorophenyl-phenylether	µg/kg	< 120 UJ	< 120 UJ	< 1,100 UJ	< 100 UJ	< 1,000 U	< 1,100 U	< 110 U	< 98 U	< 110 U	< 100 U	< 100 U	< 100 U
3 & 4 Methylphenol	µg/kg	< 420 UJ	< 410 UJ	< 3,800 UJ	< 370 UJ	< 3,700 U	< 3,800 U	< 380 U	< 350 U	< 390 U	< 360 U	< 360 U	< 360 U
4-Nitroaniline	µg/kg	< 110 UJ	< 110 UJ	< 1,000 U	< 99 UJ	< 980 U	< 1,000 U	< 100 U	< 93 U	< 100 U	< 95 U	< 95 U	< 97 U
4-Nitrophenol	µg/kg	< 360 UJ	< 350 UJ	< 3,200 UJ	< 310 UJ	< 3,100 U	< 3,200 U	< 320 U	< 300 U	< 330 U	< 300 U	< 300 U	< 310 U
Acetophenone	µg/kg	490 J-	< 51 UJ	< 290 UJ	< 28 UJ	< 280 U	< 290 U	< 29 U	270 J	48 J	230 J	140 J	570
Benzaldehyde	µg/kg	2,700 J-	< 210 UJ	< 1,900 U	< 190 UJ	< 1,800 U	< 1,900 U	< 190 U	< 170 U	< 200 U	< 180 U	200 J	< 180 U
Benzylbutylphthalate	µg/kg	< 120 UJ	< 120 UJ	< 1,100 U	< 110 UJ	< 1,100 U	< 1,100 U	< 110 U	< 100 U	< 110 U	< 100 U	< 100 U	< 100 U
Bis(2-chloroethoxy)methane	µg/kg	< 110 UJ	< 110 UJ	< 1,000 U	< 99 UJ	< 980 U	< 1,000 U	< 100 U	< 93 U	< 100 U	< 95 U	< 95 U	< 97 U
bis(2-Chloroethyl) ether	µg/kg	< 100 UJ	< 100 UJ	< 920 U	< 91 UJ	< 910 U	< 930 U	< 94 U	< 86 U	< 96 U	< 87 U	< 87 U	< 89 U
Bis(2-ethylhexyl)phthalate	µg/kg	490 J-	190 J-	< 1,100 U	< 110 UJ	< 1,100 U	< 1,100 U	170 J	300 J	1,000	380	580	510
Carbazole	µg/kg	< 120 UJ	< 120 UJ	< 1,100 UJ	< 110 UJ	< 1,100 U	< 1,100 U	< 110 UJ	< 100 UJ	< 110 UJ	< 100 UJ	< 100 UJ	< 100 UJ
Dibenzofuran	µg/kg	160 J-	< 110 UJ	< 980 UJ	< 97 UJ	< 960 U	< 990 U	< 100 U	< 91 U	< 100 U	< 93 U	< 93 U	< 95 U
Diethyl phthalate	µg/kg	1,800 J-	< 110 UJ	< 1,000 U	< 100 UJ	< 1,000 U	< 1,000 U	< 100 U	< 95 U	< 110 U	< 97 U	< 97 U	150 J
Dimethylphthalate	µg/kg	< 110 UJ	< 110 UJ	< 990 U	< 98 UJ	< 970 U	< 1,000 U	< 100 U	< 92 U	< 100 U	< 94 U	< 94 U	< 96 U
Di-n-butylphthalate	µg/kg	< 120 UJ	< 120 UJ	< 1,100 U	< 110 UJ	< 1,100 U	< 1,100 U	< 110 U	< 100 U	< 110 U	< 100 U	550	< 110 U
Di-n-octylphthalate	µg/kg	< 120 UJ	< 120 UJ	< 1,100 U	< 110 UJ	< 1,100 U	< 1,100 U	< 110 U	< 100 U	< 110 U	< 100 U	< 100 U	< 110 U
Hexachlorobenzene	µg/kg	1,300 J-	180 J-	5,700	220 J-	12,000	7,500	3,800	2,900	6,600 J	4,100	4,800	2,500
Hexachlorobenzene (SIM Screen)	µg/kg		140 J-	5,100	210 J-		6,900						
Hexachlorobutadiene	µg/kg	< 100 UJ	< 100 UJ	< 940 U	< 92 UJ	< 920 U	< 940 U	< 95 U	< 87 U	< 97 U	< 88 U	< 89 U	< 91 U
Hexachlorobutadiene (SIM Screen)	µg/kg	< 4.7 UJ	< 4.6 UJ	< 42 U	< 4.2 UJ	< 41 U	< 42 U	< 4.3 U	< 3.9 U	4.5 J	< 4.0 U	< 4.0 UJ	< 4.1 U
Hexachlorocyclopentadiene	µg/kg	< 79 UJ	< 77 UJ	< 710 UJ	< 70 UJ	< 690 U	< 710 U	< 72 UJ	< 66 UJ	< 73 UJ	< 67 UJ	< 67 UJ	< 68 UJ
Hexachloroethane	µg/kg	< 100 UJ	< 100 UJ	< 920 U	< 91 UJ	< 910 U	< 930 U	< 94 U	< 86 U	< 96 U	< 87 U	100 J	< 89 U
Isophorone	µg/kg	160 J-	< 120 UJ	< 1,100 UJ	< 100 UJ	< 1,000 U	< 1,100 U	< 110 U	< 98 U	< 110 U	< 100 U	< 100 U	< 100 U
Nitrobenzene	µg/kg	< 96 UJ	< 95 UJ	< 870 U	< 85 UJ	< 850 U	< 870 U	< 88 U	< 80 U	< 90 U	< 82 U	< 82 U	< 84 U
N-Nitrosodimethylamine	µg/kg	< 120 UJ	< 120 UJ	< 1,100 UJ	< 110 UJ	< 1,100 U	< 1,100 U	< 110 U	< 100 U	< 110 U	< 100 U	< 100 U	< 110 U
n-Nitrosodimethylamine (SIM Screen)	µg/kg	< 120 UJ	< 120 UJ	< 1,100 U	< 110 UJ	< 1,100 U	< 1,100 U	< 110 U	< 100 U	< 110 U	< 100 U	< 100 UJ	< 110 U
N-Nitroso-di-n-propylamine	µg/kg	< 110 UJ	< 100 UJ	< 960 U	< 94 UJ	< 940 U	< 960 U	< 97 U	< 89 U	< 99 U	< 91 U	< 91 U	< 93 U
N-Nitrosodiphenylamine	µg/kg	< 110 UJ	< 110 UJ	< 980 U	< 97 UJ	< 960 U	< 990 U	< 100 U	< 91 U	< 100 U	< 93 U	< 93 U	< 95 U
Pentachlorophenol	µg/kg	< 65 UJ	< 64 UJ	< 580 UJ	< 57 UJ	< 570 U	< 580 U	< 59 U	< 54 U	< 60 U	< 55 U	< 55 U	< 56 U
Pentachlorophenol (SIM Screen)	µg/kg	52 J-	42 J-	< 270 UJ	< 27 UJ	< 270 U	< 280 U	< 28 U	< 25 U	< 28 U	< 26 UJ	< 26 UJ	< 27 U
Phenol	µg/kg	< 110 UJ	< 100 UJ	< 950 UJ	< 93 UJ	< 930 U	< 950 U	< 96 U	< 88 U	< 98 U	< 89 U	< 90 U	< 92 U

Table I-1
Analytical Results for Solids Samples - PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2
	Location ID	**PRI2-009**	**PRI2-009**	**PRI2-009**	**PRI2-009**	**PRI2-010**	**PRI2-011**	**PRI2-011**	**PRI2-012**	**PRI2-012**	**PRI2-013**	**PRI2-014**
	Sample Date	**06-May-14**	**06-May-14**	**08-May-14**	**08-May-14**	**08-Jan-14**	**08-Jan-14**	**08-Jan-14**	**08-Jan-14**	**08-Jan-14**	**09-Jan-14**	**07-May-14**
	Sample Type	**N**	**N**	**FINE**	**N**	**N**	**FINE**	**N**	**FINE**	**N**	**N**	**N**
	Depth	**26 - 28 FEET**	**28.5 - 30.5 FEET**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0.5 - 2 FEET**
	Sample ID	**PRI2-009-SB04-26-050614**	**PRI2-009-SB03-28.5-050614**	**PRI2-009-SS01-050814 FINES**	**PRI2-009-SS01-050814**	**PRI2-010-SS01-010814**	**PRI2-011-SS01-010814 FINES**	**PRI2-011-SS01-010814**	**PRI2-012-SS01-010814 FINES**	**PRI2-012-SS01-010814**	**PRI2-013-SS01-010914**	**PRI2-014-SB01-0.5-050714**
Analyte	**Unit**											
Total Selenium	mg/kg	*< 0.22 UJ*	0.30 J-	*< 0.22 U*	*< 0.22 UJ*	*< 0.25 UJ*	*< 0.20 U*	*< 0.23 UJ*	*< 0.22 U*	*< 0.16 UJ*	*< 0.13 UJ*	*< 0.23 U*
Total Silver	mg/kg	0.075 J	*< 0.082 U*	*< 0.065 U*	*< 0.067 U*	*< 0.075 U*	*< 0.061 U*	*< 0.068 U*	*< 0.065 U*	*< 0.047 U*	*< 0.039 U*	*< 0.069 U*
Total Sodium	mg/kg	5,100	3,400	2,700	2,800	2,400 J-	2,000	1,900 J-	2,400	1,900 J-	4,400 J-	1,800
Total Thallium	mg/kg	*< 0.11 U*	*< 0.14 U*	*< 0.11 U*	*< 0.11 U*	*< 0.12 U*	*< 0.10 U*	*< 0.11 U*	*< 0.11 U*	*< 0.079 U*	*< 0.065 U*	*< 0.11 U*
Total Vanadium	mg/kg	23	43	15	13 J-	22	16	11	33	26	12	16
Total Zinc	mg/kg	130	63	100 J-	19 J-	22	52	45	17	13	16	31 J-
05-SVOCs												
1,1'-Biphenyl	µg/kg	*< 190 U*	*< 230 U*	*< 170 U*	*< 1,800 U*	*< 1,600 U*	*< 1,400 U*	*< 1,500 U*	*< 1,600 U*	*< 1,900 U*	*< 200 U*	*< 1,900 UJ*
1,2,4,5-Tetrachlorobenzene	µg/kg	*< 30 U*	*< 37 U*	*< 27 U*	*< 290 U*	*< 250 U*	*< 210 U*	*< 230 U*	*< 250 U*	*< 300 U*	*< 31 U*	*< 300 UJ*
2,3,4,6-Tetrachlorophenol	µg/kg	*< 96 U*	*< 120 U*	*< 85 U*	*< 910 UJ*	*< 780 U*	*< 680 UJ*	*< 730 U*	*< 780 U*	*< 960 U*	*< 98 U*	*< 940 UJ*
2,4,5-Trichlorophenol	µg/kg	*< 97 U*	*< 120 U*	*< 86 U*	*< 920 UJ*	*< 790 U*	*< 680 UJ*	*< 730 U*	*< 790 U*	*< 970 U*	*< 99 U*	*< 950 UJ*
2,4,6-Trichlorophenol	µg/kg	*< 98 U*	*< 120 U*	*< 87 U*	*< 930 UJ*	*< 800 U*	*< 690 UJ*	*< 740 U*	*< 800 U*	*< 980 U*	*< 100 U*	*< 960 UJ*
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	*< 5.2 UJ*	*< 6.3 U*	*< 4.6 U*	*< 49 UJ*	*< 42 U*	*< 36 UJ*	*< 39 U*	*< 42 U*	*< 51 U*	*< 5.3 U*	*< 50 UJ*
2,2-Oxybis(1-chloropropane)	µg/kg	*< 93 UJ*	*< 110 UJ*	*< 82 U*	*< 870 UJ*	*< 750 U*	*< 650 UJ*	*< 700 U*	*< 750 UJ*	*< 920 U*	*< 94 U*	*< 900 UJ*
2,4-Dichlorophenol	µg/kg	*< 100 U*	*< 130 U*	*< 93 U*	*< 980 UJ*	*< 850 U*	*< 730 UJ*	*< 790 U*	*< 840 U*	*< 1,000 U*	*< 110 U*	*< 1,000 UJ*
2,4-Dimethylphenol	µg/kg	*< 200 U*	*< 240 U*	*< 170 U*	*< 1,800 UJ*	*< 1,600 U*	*< 1,400 UJ*	*< 1,500 U*	*< 1,600 UJ*	*< 2,000 U*	*< 200 U*	*< 1,900 UJ*
2,4-Dinitrophenol	µg/kg	*< 250 U*	*< 300 U*	*< 220 U*	*< 2,400 UJ*	*< 2,000 U*	*< 1,800 UJ*	*< 1,900 U*	*< 2,000 U*	*< 2,500 U*	*< 260 U*	*< 2,500 UJ*
2,4-Dinitrotoluene	µg/kg	*< 100 U*	*< 130 U*	*< 93 U*	*< 980 U*	*< 850 U*	*< 730 U*	*< 790 U*	*< 840 U*	*< 1,000 U*	*< 110 U*	*< 1,000 UJ*
2,6-Dinitrotoluene	µg/kg	*< 120 U*	*< 140 U*	*< 100 U*	*< 1,100 U*	*< 950 U*	*< 820 U*	*< 880 U*	*< 940 U*	*< 1,200 U*	*< 120 U*	*< 1,100 UJ*
2-Chloronaphthalene	µg/kg	*< 95 U*	*< 120 U*	*< 84 U*	*< 890 U*	*< 770 U*	*< 670 U*	*< 720 U*	*< 770 U*	*< 950 U*	*< 97 U*	*< 930 UJ*
2-Chlorophenol	µg/kg	*< 100 U*	*< 130 U*	*< 92 U*	*< 970 UJ*	*< 840 U*	*< 730 UJ*	*< 780 U*	*< 830 U*	*< 1,000 U*	*< 110 U*	*< 1,000 UJ*
2-Methylphenol	µg/kg	*< 68 U*	*< 83 U*	*< 60 U*	*< 640 UJ*	*< 550 U*	*< 480 UJ*	*< 510 U*	*< 550 U*	*< 680 U*	*< 69 U*	*< 660 UJ*
2-Nitroaniline	µg/kg	*< 98 U*	*< 120 U*	*< 87 U*	*< 930 U*	*< 800 U*	*< 690 U*	*< 740 U*	*< 800 U*	*< 980 U*	*< 100 U*	*< 960 UJ*
2-Nitrophenol	µg/kg	*< 96 U*	*< 120 U*	*< 85 U*	*< 910 UJ*	*< 780 U*	*< 680 UJ*	*< 730 U*	*< 780 U*	*< 960 U*	*< 98 U*	*< 940 UJ*
3,3'-Dichlorobenzidine	µg/kg	*< 110 UJ*	*< 130 UJ*	*< 98 U*	*< 1,000 UJ*	*< 900 U*	*< 780 UJ*	*< 830 U*	*< 890 UJ*	*< 1,100 U*	*< 110 U*	*< 1,100 UJ*
3-Nitroaniline	µg/kg	*< 200 UJ*	*< 240 UJ*	*< 170 U*	*< 1,800 UJ*	*< 1,600 U*	*< 1,400 UJ*	*< 1,500 U*	*< 1,600 UJ*	*< 2,000 U*	*< 200 U*	*< 1,900 UJ*
4,6-Dinitro-2-methylphenol	µg/kg	*< 95 U*	*< 120 U*	*< 84 U*	*< 890 UJ*	*< 770 U*	*< 670 UJ*	*< 720 U*	*< 770 U*	*< 950 U*	*< 97 U*	*< 930 UJ*
4-Bromophenyl-phenylether	µg/kg	*< 100 U*	*< 120 U*	*< 88 U*	*< 940 U*	*< 810 U*	*< 700 U*	*< 750 U*	*< 810 U*	*< 990 U*	*< 100 U*	*< 970 UJ*
4-Chloro-3-methylphenol	µg/kg	*< 110 U*	*< 130 U*	*< 96 U*	*< 1,000 UJ*	*< 880 U*	*< 760 UJ*	*< 810 U*	*< 870 U*	*< 1,100 U*	*< 110 U*	*< 1,100 UJ*
4-Chloroaniline	µg/kg	*< 68 UJ*	*< 83 UJ*	*< 60 U*	*< 640 UJ*	*< 550 UJ*	*< 480 UJ*	*< 510 UJ*	*< 550 UJ*	*< 680 UJ*	*< 69 UJ*	*< 660 UJ*
4-Chlorophenyl-phenylether	µg/kg	*< 110 U*	*< 130 U*	*< 97 U*	*< 1,000 UJ*	*< 890 U*	*< 770 U*	*< 820 U*	*< 880 U*	*< 1,100 U*	*< 110 U*	*< 1,100 UJ*
3 & 4 Methylphenol	µg/kg	*< 390 U*	*< 470 U*	*< 340 U*	*< 3,600 UJ*	*< 3,200 U*	*< 2,700 UJ*	*< 2,900 U*	*< 3,100 U*	*< 3,900 U*	*< 390 U*	*< 3,800 UJ*
4-Nitroaniline	µg/kg	*< 100 U*	*< 130 U*	*< 92 U*	*< 970 U*	*< 840 U*	*< 730 U*	*< 780 U*	*< 830 U*	*< 1,000 U*	*< 110 U*	*< 1,000 UJ*
4-Nitrophenol	µg/kg	*< 330 U*	*< 400 U*	*< 290 U*	*< 3,100 UJ*	*< 2,700 U*	*< 2,300 UJ*	*< 2,500 U*	*< 2,700 U*	*< 3,300 U*	*< 330 U*	*< 3,200 UJ*
Acetophenone	µg/kg	240 J	*< 36 U*	120 J	*< 280 UJ*	*< 240 U*	440 J	*< 220 U*	450 J	*< 290 U*	*< 30 U*	*< 290 UJ*
Benzaldehyde	µg/kg	*< 190 U*	*< 230 U*	1,600	*< 1,800 U*	*< 1,600 U*	*< 1,400 U*	*< 1,500 U*	*< 1,600 U*	*< 1,900 U*	*< 200 U*	*< 1,900 UJ*
Benzylbutylphthalate	µg/kg	*< 110 U*	*< 140 U*	*< 99 U*	*< 1,000 U*	*< 910 U*	*< 780 U*	*< 840 U*	*< 900 U*	*< 1,100 U*	310 J	*< 1,100 UJ*
Bis(2-chloroethoxy)methane	µg/kg	*< 100 U*	*< 130 U*	*< 92 U*	*< 970 U*	*< 840 U*	*< 730 U*	*< 780 U*	*< 830 U*	*< 1,000 U*	*< 110 U*	*< 1,000 UJ*
bis(2-Chloroethyl) ether	µg/kg	*< 95 U*	*< 120 U*	*< 84 U*	*< 890 U*	*< 770 U*	*< 670 U*	*< 720 U*	*< 770 U*	*< 950 U*	*< 97 U*	*< 930 UJ*
Bis(2-ethylhexyl)phthalate	µg/kg	510	200 J	*< 110 U*	*< 1,100 U*	*< 940 U*	*< 810 U*	*< 870 U*	*< 930 U*	*< 1,100 U*	*< 120 U*	*< 1,100 UJ*
Carbazole	µg/kg	*< 110 UJ*	*< 140 UJ*	*< 99 U*	*< 1,000 UJ*	*< 910 U*	*< 780 U*	*< 840 U*	*< 900 U*	*< 1,100 U*	*< 110 U*	*< 1,100 UJ*
Dibenzofuran	µg/kg	*< 100 U*	*< 120 U*	*< 90 U*	*< 950 UJ*	*< 820 U*	*< 710 U*	*< 760 U*	*< 820 U*	*< 1,000 U*	*< 100 U*	*< 980 UJ*
Diethyl phthalate	µg/kg	*< 110 U*	*< 130 U*	*< 94 U*	*< 990 U*	*< 860 U*	*< 740 U*	*< 800 U*	*< 850 U*	*< 1,100 U*	*< 110 U*	*< 1,000 UJ*
Dimethylphthalate	µg/kg	*< 100 U*	*< 120 U*	*< 91 U*	*< 960 U*	*< 830 U*	*< 720 U*	*< 770 U*	*< 820 U*	*< 1,000 U*	*< 100 U*	*< 1,000 UJ*
Di-n-butylphthalate	µg/kg	110 J	*< 140 U*	*< 100 U*	*< 1,100 U*	*< 930 U*	*< 800 U*	*< 860 U*	*< 920 U*	*< 1,100 U*	*< 120 U*	*< 1,100 UJ*
Di-n-octylphthalate	µg/kg	*< 110 U*	*< 140 U*	*< 100 U*	*< 1,100 U*	*< 930 U*	*< 800 U*	*< 860 U*	*< 920 U*	*< 1,100 U*	*< 120 U*	*< 1,100 UJ*
Hexachlorobenzene	µg/kg	3,000	3,900	8,800	10,000	4,600	3,300	2,400 J	13,000	10,000	*< 110 U*	11,000 J-
Hexachlorobenzene (SIM Screen)	µg/kg			7,400		4,300	2,900 J	2,200			95	
Hexachlorobutadiene	µg/kg	*< 96 U*	*< 120 U*	*< 85 U*	*< 910 U*	*< 780 U*	*< 680 U*	*< 730 U*	*< 780 U*	*< 960 U*	*< 98 U*	*< 940 UJ*
Hexachlorobutadiene (SIM Screen)	µg/kg	*< 4.3 U*	*< 5.3 U*	*< 3.9 U*	*< 41 U*	*< 35 U*	*< 31 U*	*< 33 U*	*< 35 U*	*< 43 U*	*< 4.4 U*	*< 42 UJ*
Hexachlorocyclopentadiene	µg/kg	*< 73 UJ*	*< 88 UJ*	*< 65 U*	*< 690 UJ*	*< 590 U*	*< 510 U*	*< 550 U*	*< 590 U*	*< 730 U*	*< 74 U*	*< 710 UJ*
Hexachloroethane	µg/kg	*< 95 U*	*< 120 U*	690	*< 890 U*	*< 770 U*	*< 670 U*	*< 720 U*	*< 770 U*	*< 950 U*	*< 97 U*	*< 930 UJ*
Isophorone	µg/kg	*< 110 U*	*< 130 U*	*< 97 U*	*< 1,000 UJ*	*< 890 U*	*< 770 U*	*< 820 U*	*< 880 U*	*< 1,100 U*	*< 110 U*	*< 1,100 UJ*
Nitrobenzene	µg/kg	*< 89 U*	*< 110 U*	*< 79 U*	*< 840 U*	*< 730 U*	*< 630 U*	*< 670 U*	*< 720 U*	*< 890 U*	*< 91 U*	*< 870 UJ*
N-Nitrosodimethylamine	µg/kg	*< 110 U*	*< 140 U*	*< 100 U*	*< 1,100 UJ*	*< 920 U*	*< 790 U*	*< 850 U*	*< 910 U*	*< 1,100 U*	*< 110 U*	*< 1,100 UJ*
n-Nitrosodimethylamine (SIM Screen)	µg/kg	*< 110 U*	*< 140 U*	*< 100 UJ*	*< 1,100 U*	*< 920 U*	*< 790 U*	*< 850 U*	*< 910 U*	*< 1,100 U*	*< 110 U*	*< 1,100 UJ*
N-Nitroso-di-n-propylamine	µg/kg	*< 98 U*	*< 120 U*	*< 87 U*	*< 930 U*	*< 800 U*	*< 690 U*	*< 740 U*	*< 800 U*	*< 980 U*	*< 100 U*	*< 960 UJ*
N-Nitrosodiphenylamine	µg/kg	*< 100 U*	*< 120 U*	*< 90 U*	*< 950 U*	*< 820 U*	*< 710 U*	*< 760 U*	*< 820 U*	*< 1,000 U*	*< 100 U*	*< 980 UJ*
Pentachlorophenol	µg/kg	*< 60 U*	*< 73 U*	220 J	*< 560 UJ*	*< 490 U*	*< 420 UJ*	*< 450 U*	*< 480 U*	*< 600 U*	*< 61 U*	*< 580 UJ*
Pentachlorophenol (SIM Screen)	µg/kg	*< 28 UJ*	*< 34 U*	63 J	*< 390 UJ*	*< 230 U*	*< 200 UJ*	*< 210 U*	*< 230 U*	*< 280 U*	*< 29 U*	60 J-
Phenol	µg/kg	*< 97 U*	*< 120 U*	*< 86 U*	*< 920 UJ*	*< 790 U*	*< 680 UJ*	*< 730 U*	*< 790 U*	*< 970 U*	*< 99 U*	*< 950 UJ*

Table I-1
Analytical Results for Solids Samples - PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2
	Location ID	**PRI2-014**	**PRI2-014**	**PRI2-014**	**PRI2-014**	**PRI2-014**	**PRI2-014**	**PRI2-014**
	Sample Date	**07-May-14**	**07-May-14**	**07-May-14**	**07-May-14**	**07-May-14**	**07-May-14**	**08-May-14**
	Sample Type	**N**	**N**	**N**	**N**	**N**	**N**	**N**
	Depth	**3 - 10 FEET**	**10 - 20 FEET**	**22 - 27 FEET**	**27 - 30 FEET**	**30 - 31 FEET**	**31 - 33 FEET**	**0 - 6 in**
	Sample ID	**PRI2-014-SB02-3-050714**	**PRI2-014-SB03-10-050714**	**PRI2-014-SB04-22-050714**	**PRI2-014-SB05-27-050714**	**PRI2-014-SB06-30-050714**	**PRI2-014-SB07-31-050714**	**PRI2-014-SS01-050814**
Analyte	**Unit**							
Total Selenium	mg/kg	*< 0.25 U*	*< 0.25 U*	*< 0.21 U*	*< 0.25 U*	0.16 J	0.28 J	*< 0.21 UJ*
Total Silver	mg/kg	*< 0.074 U*	*< 0.074 U*	*< 0.063 U*	*< 0.076 U*	*< 0.045 U*	*< 0.053 U*	*< 0.063 U*
Total Sodium	mg/kg	62,000	49,000	64,000	60,000	14,000	5,200	1,100
Total Thallium	mg/kg	*< 0.12 U*	*< 0.12 U*	*< 0.11 U*	*< 0.13 U*	*< 0.075 U*	*< 0.088 U*	*< 0.10 U*
Total Vanadium	mg/kg	2.0 J	*< 0.74 U*	1.0 J	4.8	30	38	15 J-
Total Zinc	mg/kg	2.5 J-	*< 1.5 UJ*	5.8 J-	66 J-	13 J-	24 J-	19 J-
05-SVOCs								
1,1'-Biphenyl	µg/kg	*< 200 UJ*	*< 210 UJ*	*< 170 UJ*	*< 210 UJ*	*< 2,300 UJ*	*< 2,500 UJ*	*< 1,800 U*
1,2,4,5-Tetrachlorobenzene	µg/kg	*< 31 UJ*	*< 33 UJ*	*< 26 UJ*	*< 33 UJ*	*< 360 UJ*	960 J-	*< 280 U*
2,3,4,6-Tetrachlorophenol	µg/kg	*< 97 UJ*	*< 110 UJ*	*< 83 UJ*	*< 100 UJ*	*< 1,100 UJ*	*< 1,200 UJ*	*< 890 UJ*
2,4,5-Trichlorophenol	µg/kg	*< 98 UJ*	*< 110 UJ*	*< 84 UJ*	*< 110 UJ*	*< 1,200 UJ*	*< 1,200 UJ*	*< 900 UJ*
2,4,6-Trichlorophenol	µg/kg	*< 99 UJ*	*< 110 UJ*	*< 85 UJ*	*< 110 UJ*	*< 1,200 UJ*	*< 1,300 UJ*	*< 920 U*
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	*< 5.2 UJ*	*< 5.7 UJ*	*< 4.5 UJ*	*< 5.6 UJ*	*< 61 UJ*	*< 66 UJ*	*< 48 U*
2,2-Oxybis(1-chloropropane)	µg/kg	*< 93 UJ*	*< 100 UJ*	*< 80 UJ*	*< 100 UJ*	*< 1,100 UJ*	*< 1,200 UJ*	*< 860 UJ*
2,4-Dichlorophenol	µg/kg	*< 110 UJ*	*< 110 UJ*	*< 90 UJ*	*< 110 UJ*	*< 1,200 UJ*	*< 1,300 UJ*	*< 970 UJ*
2,4-Dimethylphenol	µg/kg	*< 200 UJ*	*< 210 UJ*	*< 170 UJ*	*< 210 UJ*	*< 2,300 UJ*	*< 2,500 UJ*	*< 1,800 UJ*
2,4-Dinitrophenol	µg/kg	*< 250 UJ*	*< 270 UJ*	*< 220 UJ*	*< 270 UJ*	*< 3,000 UJ*	*< 3,200 UJ*	*< 2,300 U*
2,4-Dinitrotoluene	µg/kg	*< 110 UJ*	*< 110 UJ*	*< 90 UJ*	*< 110 UJ*	*< 1,200 UJ*	*< 1,300 UJ*	*< 970 U*
2,6-Dinitrotoluene	µg/kg	*< 120 UJ*	*< 130 UJ*	*< 100 UJ*	*< 130 UJ*	*< 1,400 UJ*	*< 1,500 UJ*	*< 1,100 U*
2-Chloronaphthalene	µg/kg	*< 96 UJ*	*< 100 UJ*	*< 82 UJ*	*< 100 UJ*	*< 1,100 UJ*	*< 1,200 UJ*	*< 880 U*
2-Chlorophenol	µg/kg	*< 100 UJ*	*< 110 UJ*	*< 89 UJ*	*< 110 UJ*	*< 1,200 UJ*	*< 1,300 UJ*	*< 960 U*
2-Methylphenol	µg/kg	*< 69 UJ*	*< 74 UJ*	*< 59 UJ*	*< 74 UJ*	*< 800 UJ*	*< 870 UJ*	*< 630 UJ*
2-Nitroaniline	µg/kg	*< 99 UJ*	*< 110 UJ*	*< 85 UJ*	*< 110 UJ*	*< 1,200 UJ*	*< 1,300 UJ*	*< 920 U*
2-Nitrophenol	µg/kg	*< 97 UJ*	*< 110 UJ*	*< 83 UJ*	*< 100 UJ*	*< 1,100 UJ*	*< 1,200 UJ*	*< 890 U*
3,3'-Dichlorobenzidine	µg/kg	*< 110 UJ*	*< 120 UJ*	*< 95 UJ*	*< 120 UJ*	*< 1,300 UJ*	*< 1,400 UJ*	*< 1,000 UJ*
3-Nitroaniline	µg/kg	*< 200 UJ*	*< 210 UJ*	*< 170 UJ*	*< 210 UJ*	*< 2,300 UJ*	*< 2,500 UJ*	*< 1,800 UJ*
4,6-Dinitro-2-methylphenol	µg/kg	*< 96 UJ*	*< 100 UJ*	*< 82 UJ*	*< 100 UJ*	*< 1,100 UJ*	*< 1,200 UJ*	*< 880 U*
4-Bromophenyl-phenylether	µg/kg	*< 100 UJ*	*< 110 UJ*	*< 86 UJ*	*< 110 UJ*	*< 1,200 UJ*	*< 1,300 UJ*	*< 930 U*
4-Chloro-3-methylphenol	µg/kg	*< 110 UJ*	*< 120 UJ*	*< 93 UJ*	*< 120 UJ*	*< 1,300 UJ*	*< 1,400 UJ*	*< 1,000 UJ*
4-Chloroaniline	µg/kg	*< 69 UJ*	*< 74 UJ*	*< 59 UJ*	*< 74 UJ*	*< 800 UJ*	*< 870 UJ*	*< 630 UJ*
4-Chlorophenyl-phenylether	µg/kg	*< 110 UJ*	*< 120 UJ*	*< 94 UJ*	*< 120 UJ*	*< 1,300 UJ*	*< 1,400 UJ*	*< 1,000 UJ*
3 & 4 Methylphenol	µg/kg	*< 390 UJ*	*< 420 UJ*	*< 330 UJ*	*< 420 UJ*	*< 4,600 UJ*	*< 4,900 UJ*	*< 3,600 U*
4-Nitroaniline	µg/kg	*< 100 UJ*	*< 110 UJ*	*< 89 UJ*	*< 110 UJ*	*< 1,200 UJ*	*< 1,300 UJ*	*< 960 U*
4-Nitrophenol	µg/kg	*< 330 UJ*	*< 360 UJ*	*< 280 UJ*	*< 350 UJ*	*< 3,900 UJ*	*< 4,200 UJ*	*< 3,100 U*
Acetophenone	µg/kg	*< 30 UJ*	*< 32 UJ*	*< 25 UJ*	*< 32 UJ*	*< 350 UJ*	*< 370 UJ*	*< 270 UJ*
Benzaldehyde	µg/kg	*< 200 UJ*	*< 210 UJ*	*< 170 UJ*	*< 210 UJ*	*< 2,300 UJ*	*< 2,500 UJ*	*< 1,800 U*
Benzylbutylphthalate	µg/kg	*< 110 UJ*	*< 120 UJ*	*< 96 UJ*	*< 120 UJ*	*< 1,300 UJ*	*< 1,400 UJ*	*< 1,000 U*
Bis(2-chloroethoxy)methane	µg/kg	*< 100 UJ*	*< 110 UJ*	*< 89 UJ*	*< 110 UJ*	*< 1,200 UJ*	*< 1,300 UJ*	*< 960 U*
bis(2-Chloroethyl) ether	µg/kg	*< 96 UJ*	*< 100 UJ*	*< 82 UJ*	*< 100 UJ*	*< 1,100 UJ*	*< 1,200 UJ*	*< 880 U*
Bis(2-ethylhexyl)phthalate	µg/kg	130 J-	*< 130 UJ*	*< 99 UJ*	*< 120 UJ*	*< 1,400 UJ*	*< 1,500 UJ*	1,100 J
Carbazole	µg/kg	*< 110 UJ*	*< 120 UJ*	*< 96 UJ*	*< 120 UJ*	*< 1,300 UJ*	*< 1,400 UJ*	*< 1,000 UJ*
Dibenzofuran	µg/kg	*< 100 UJ*	*< 110 UJ*	*< 87 UJ*	*< 110 UJ*	*< 1,200 UJ*	*< 1,300 UJ*	*< 940 UJ*
Diethyl phthalate	µg/kg	*< 110 UJ*	*< 120 UJ*	*< 91 UJ*	*< 110 UJ*	*< 1,200 UJ*	*< 1,300 UJ*	*< 980 U*
Dimethylphthalate	µg/kg	*< 100 UJ*	*< 110 UJ*	*< 88 UJ*	*< 110 UJ*	*< 1,200 UJ*	*< 1,300 UJ*	*< 950 U*
Di-n-butylphthalate	µg/kg	*< 110 UJ*	*< 120 UJ*	*< 98 UJ*	*< 120 UJ*	*< 1,300 UJ*	*< 1,400 UJ*	*< 1,100 U*
Di-n-octylphthalate	µg/kg	*< 110 UJ*	*< 120 UJ*	*< 98 UJ*	*< 120 UJ*	*< 1,300 UJ*	*< 1,400 UJ*	*< 1,100 U*
Hexachlorobenzene	µg/kg	300 J-	*< 110 UJ*	140 J-	1,300 J-	52,000 J-	98,000	2,500 J
Hexachlorobenzene (SIM Screen)	µg/kg	260 J-	46 J-	130 J-				2,200
Hexachlorobutadiene	µg/kg	*< 97 UJ*	*< 110 UJ*	*< 83 UJ*	*< 100 UJ*	*< 1,100 UJ*	*< 1,200 UJ*	*< 890 U*
Hexachlorobutadiene (SIM Screen)	µg/kg	*< 4.4 UJ*	*< 4.8 UJ*	*< 3.7 UJ*	*< 4.7 UJ*	100 J-	440 J-	*< 40 U*
Hexachlorocyclopentadiene	µg/kg	*< 73 UJ*	*< 80 UJ*	*< 63 UJ*	*< 79 UJ*	*< 860 UJ*	*< 930 UJ*	*< 680 UJ*
Hexachloroethane	µg/kg	*< 96 UJ*	*< 100 UJ*	*< 82 UJ*	*< 100 UJ*	*< 1,100 UJ*	*< 1,200 UJ*	*< 880 U*
Isophorone	µg/kg	*< 110 UJ*	*< 120 UJ*	*< 94 UJ*	*< 120 UJ*	*< 1,300 UJ*	*< 1,400 UJ*	*< 1,000 UJ*
Nitrobenzene	µg/kg	*< 90 UJ*	*< 98 UJ*	*< 77 UJ*	*< 96 UJ*	*< 1,100 UJ*	*< 1,100 UJ*	*< 830 U*
N-Nitrosodimethylamine	µg/kg	*< 110 UJ*	*< 120 UJ*	*< 97 UJ*	*< 120 UJ*	*< 1,300 UJ*	*< 1,400 UJ*	*< 1,000 UJ*
n-Nitrosodimethylamine (SIM Screen)	µg/kg	*< 110 UJ*	*< 120 UJ*	*< 97 UJ*	*< 120 UJ*	*< 1,300 UJ*	*< 1,400 UJ*	*< 1,000 U*
N-Nitroso-di-n-propylamine	µg/kg	*< 99 UJ*	*< 110 UJ*	*< 85 UJ*	*< 110 UJ*	*< 1,200 UJ*	*< 1,300 UJ*	*< 920 U*
N-Nitrosodiphenylamine	µg/kg	*< 100 UJ*	*< 110 UJ*	*< 87 UJ*	*< 110 UJ*	*< 1,200 UJ*	*< 1,300 UJ*	*< 940 U*
Pentachlorophenol	µg/kg	*< 60 UJ*	*< 65 UJ*	*< 52 UJ*	*< 65 UJ*	*< 710 UJ*	*< 760 UJ*	*< 560 UJ*
Pentachlorophenol (SIM Screen)	µg/kg	*< 28 UJ*	*< 31 UJ*	34 J-	*< 30 UJ*	*< 330 UJ*	*< 360 UJ*	*< 260 UJ*
Phenol	µg/kg	*< 98 UJ*	*< 110 UJ*	*< 84 UJ*	*< 110 UJ*	*< 1,200 UJ*	*< 1,200 UJ*	*< 900 UJ*

Table I-1
Analytical Results for Solids Samples - PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2
	Location ID	PRI2-001	PRI2-001	PRI2-002	PRI2-003	PRI2-004	PRI2-005	PRI2-006	PRI2-006	PRI2-006	PRI2-006	PRI2-006	PRI2-006
	Sample Date	09-Jan-14	09-Jan-14	09-Jan-14	08-Jan-14	09-Jan-14	09-Jan-14	06-May-14	06-May-14	06-May-14	06-May-14	07-May-14	07-May-14
	Sample Type	FINE	N	N	N	N	N	N	N	N	N	N	N
	Depth	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0.5 - 2 FEET	2 - 5 FEET	5 - 10 FEET	11 - 17 FEET	20 - 22 FEET	22 - 24 FEET
	Sample ID	PRI2-001-SS01-010914 FINES	PRI2-001-SS01-010914	PRI2-002-SS01-010914	PRI2-003-SS01-010814	PRI2-004-SS01-010914	PRI2-005-SS01-010914	PRI2-006-SB01-0.5-050614	PRI2-006-SB02-2-050614	PRI2-006-SB03-5-050614	PRI2-006-SB04-11-050614	PRI2-006-SB05-20-050714	PRI2-006-SB06-22-050714
Analyte	**Unit**												
06-PAHs by SIM													
2-Methylnaphthalene	µg/kg	3.4 J	1.2 J	19	0.75 J	4.1 J	2.4 J	2.3 J	33	4.8 J	160	34	75
Acenaphthene	µg/kg	< 0.50 U	< 0.49 U	4.0 J	< 0.53 U	< 0.55 U	< 0.66 U	< 0.95 U	< 1.3 U	< 0.56 U	13 J	6.3	61
Acenaphthylene	µg/kg	< 0.35 U	< 0.34 U	< 0.48 U	< 0.37 U	< 0.39 U	< 0.46 U	< 0.66 U	< 0.90 U	< 0.40 U	< 2.0 U	2.7 J	19
Anthracene	µg/kg	0.63 J	< 0.41 U	0.64 J	< 0.45 U	0.77 J	< 0.55 U	< 0.79 U	< 1.1 U	< 0.47 U	< 2.4 U	4.9 J	84 J+
Benzo(a)anthracene	µg/kg	0.45 J	< 0.31 U	2.5 J	0.82 J	3.2 J	< 0.42 U	5.5 J	1.4 J	0.58 J	< 1.9 U	7.5	150
Benzo(a)pyrene	µg/kg	< 0.42 U	< 0.41 U	2.5 J	0.81 J	3.5 J	< 0.56 U	4.0 J	3.0 J	0.58 J	< 2.5 U	4.5 J	89
Benzo(b)fluoranthene	µg/kg	< 0.54 U	< 0.52 U	2.6 J	1.2 J	5.7 J	< 0.71 U	6.5 J	1.9 J	0.66 J	< 3.1 U	6.8	140
Benzo(g,h,i)perylene	µg/kg	< 1.1 U	< 1.0 U	2.0 J	< 1.1 U	3.0 J	< 1.4 U	3.5 J	< 2.7 U	< 1.2 U	< 6.1 U	3.5 J	38
Benzo(k)fluoranthene	µg/kg	< 0.81 U	< 0.79 U	< 1.1 U	< 0.86 U	3.7 J	< 1.1 U	2.2 J	20	< 0.91 U	< 4.7 U	4.8 J	100
Chrysene	µg/kg	0.87 J	< 0.36 U	5.6 J	2.4 J	12	2.0 J	15	4.7 J	1.3 J	< 2.1 U	9.2	180
Dibenzo(a,h)anthracene	µg/kg	< 1.3 U	< 1.2 U	< 1.8 U	< 1.4 U	< 1.4 U	< 1.7 U	< 2.4 U	< 3.3 U	< 1.4 U	< 7.4 U	< 1.5 U	12 J
Fluoranthene	µg/kg	1.8 J	0.44 J	3.1 J	1.2 J	12	1.8 J	2.6 J	5.2 J	1.3 J	6.3 J	34	670
Fluorene	µg/kg	0.92 J	< 0.51 U	3.3 J	< 0.55 U	< 0.57 U	< 0.69 U	< 0.99 U	3.4 J	0.68 J	15 J	7.3	44
Indeno(1,2,3-cd)pyrene	µg/kg	< 0.51 U	< 0.50 U	0.77 J	< 0.54 U	2.3 J	< 0.67 U	2.5 J	< 1.3 U	< 0.58 U	< 2.9 U	4.5 J	53
Naphthalene	µg/kg	2.3 J	1.1 J	3.9 J	0.75 J	2.2 J	1.7 J	1.0 J	17	4.3 J	150	26	54
Phenanthrene	µg/kg	4.0 J	< 1.3 U	9.7	< 1.5 U	11	5.5 J	< 4.7 U	30	5.5 J	130	73	930
Pyrene	µg/kg	3.0 J	0.81 J	3.8 J	1.9 J	14	1.6 J	6.0 J	5.9 J	1.5 J	8.6 J	25	470
Low Molecular Weight PAH (ND=0)	µg/kg	11	2.3	41	1.5	18	9.6	3.3	83	15	470	150	1,300
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	12	3.8	41	3.2	19	11	7.3	85	16	470	150	1,300
High Molecular Weight PAH (ND=0)	µg/kg	6.1	1.3	23	8.3	59	5.4	48	42	5.9	15	100	1,900
High Molecular Weight PAH (ND=1/2DL)	µg/kg	8.5	3.8	24	10	60	8.7	49	46	8.0	30	100	1,900
07-VOCs													
1,4-Dioxane	µg/kg							< 46 UJ	< 51 UJ	< 46 UJ	< 63 UJ	< 54 UJ	< 54 UJ
1,1-Dichloroethane	µg/kg							< 0.34 U	< 0.38 U	< 0.34 U	< 0.46 U	< 0.40 U	< 0.40 U
1,1-Dichloroethene	µg/kg							< 0.31 U	< 0.34 U	< 0.31 U	< 0.42 U	< 0.36 U	< 0.36 U
1,2-Dibromo-3-chloropropane	µg/kg							< 1.0 U	< 1.2 U	< 1.0 U	< 1.4 U	< 1.2 U	< 1.2 U
1,2-Dibromoethane	µg/kg							< 0.32 U	< 0.35 U	< 0.32 U	< 0.43 U	< 0.37 U	< 0.38 U
1,2-Dichlorobenzene	µg/kg							< 0.76 U	< 0.84 U	< 0.76 U	< 1.0 U	< 0.88 U	< 0.89 U
1,2-Dichloroethane	µg/kg							< 0.86 U	< 0.96 U	< 0.86 U	< 1.2 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	µg/kg							< 1.1 U	< 1.2 U	< 1.1 U	< 1.4 U	< 1.2 U	< 1.2 U
trans-1,2-Dichloroethene	µg/kg							< 0.45 U	< 0.50 U	< 0.45 U	< 0.61 U	< 0.52 U	< 0.53 U
1,2-Dichloropropane	µg/kg							< 0.71 U	< 0.79 U	< 0.71 U	< 0.96 U	< 0.83 U	< 0.83 U
1,3-Dichlorobenzene	µg/kg							< 0.35 U	< 0.39 U	< 0.35 U	< 0.48 U	< 0.41 U	< 0.42 U
cis-1,3-Dichloropropene	µg/kg							< 0.76 U	< 0.84 U	< 0.76 U	< 1.0 U	< 0.88 U	< 0.89 U
trans-1,3-Dichloropropene	µg/kg							< 0.89 U	< 0.98 U	< 0.89 U	< 1.2 U	< 1.0 U	< 1.0 U
1,4-Dichlorobenzene	µg/kg							< 0.92 U	< 1.0 U	< 0.92 U	< 1.3 U	< 1.1 U	< 1.1 U
1,1,1-Trichloroethane	µg/kg							< 0.43 U	2.5 J	< 0.43 U	2.1 J	< 0.50 U	2.7 J
1,1,2-Trichloroethane	µg/kg							< 0.52 U	< 0.58 U	< 0.52 U	< 0.71 U	< 0.61 U	< 0.61 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	µg/kg							< 0.98 U	< 1.1 U	< 0.98 U	< 1.3 U	< 1.1 U	< 1.2 U
1,2,3-Trichlorobenzene	µg/kg							< 0.89 U	< 0.98 U	< 0.89 U	1.7 J	< 1.0 U	1.1 J
1,2,4-Trichlorobenzene	µg/kg							< 0.89 U	< 0.98 U	< 0.89 U	< 1.2 U	1.3 J	1.6 J
1,1,2,2-Tetrachloroethane	µg/kg							< 0.80 U	< 0.89 U	< 0.80 U	< 1.1 U	< 0.94 U	< 0.95 U
2-Butanone	µg/kg							< 1.7 U	6.0 J	18	32	190	82
2-Hexanone	µg/kg							< 0.87 U	< 0.97 U	6.5 J	18	45	21
4-Methyl-2-pentanone	µg/kg							< 1.1 U	< 1.2 U	8.9 J	< 1.5 U	53	39
Acetone	µg/kg							< 6.1 UJ	26 J+	94 J+	96 J+	400	410 J
Benzene	µg/kg							< 0.31 U	< 0.34 U	3.0 J	6.8 J	0.43 J	2.9 J
Bromochloromethane	µg/kg							< 1.1 U	< 1.2 U	< 1.1 U	< 1.5 U	< 1.3 U	< 1.3 U
Bromodichloromethane	µg/kg							< 0.63 U	< 0.70 U	< 0.63 U	< 0.85 U	< 0.73 U	< 0.74 U
Bromoform	µg/kg							< 0.47 U	< 0.52 U	< 0.47 U	< 0.64 U	< 0.55 U	< 0.56 U
Bromomethane	µg/kg							< 1.0 U	< 1.1 U	< 1.0 U	< 1.4 U	< 1.2 U	< 1.2 U
Carbon disulfide	µg/kg							< 0.58 U	< 2 U	< 0.58 U	< 0.98 U	< 2.6 U	< 5.2 U
Carbon tetrachloride	µg/kg							< 0.63 U	< 0.70 U	< 0.63 U	< 0.85 U	< 0.73 U	< 0.74 U
Chlorobenzene	µg/kg							< 0.34 U	< 0.38 U	< 0.34 U	< 0.46 U	< 0.40 U	< 0.40 U
Cyclohexane	µg/kg							< 3.1 U	< 3.5 U	< 3.1 U	< 4.2 U	< 3.6 U	< 3.7 U
Dibromochloromethane	µg/kg							< 0.25 U	< 0.28 U	< 0.25 U	< 0.34 U	< 0.29 U	< 0.29 U
Chloroethane	µg/kg							< 0.53 U	< 0.59 U	< 0.53 U	< 0.72 U	< 0.62 U	< 0.63 U
Chloroform	µg/kg							< 0.31 U	0.63 J	< 0.31 U	2.2 J	1.5 J	2.5 J
Chloromethane	µg/kg							< 0.59 U	< 0.66 U	2.0 J	21	1.5 J	15
Dichlorodifluoromethane (Freon-12)	µg/kg							< 1.1 U	< 1.2 U	< 1.1 U	< 1.4 U	< 1.2 U	< 1.2 U
Ethyl benzene	µg/kg							< 0.40 U	0.54 J	1.5 J	2.3 J	1.3 J	1.9 J
Isopropylbenzene	µg/kg							< 0.61 U	< 0.68 U	< 0.61 U	< 0.83 U	< 0.72 U	< 0.72 U
Methyl tertbutyl ether (MTBE)	µg/kg							< 0.71 U	< 0.79 U	< 0.71 U	< 0.96 U	< 0.83 U	< 0.83 U
Dichloromethane (Methylene chloride)	µg/kg							< 0.99 U	< 1.1 U	1.0 J	5.6 J	1.8 J	2.8 J
Styrene	µg/kg							< 0.37 U	< 0.41 U	< 0.37 U	< 0.50 U	1.8 J	2.3 J
Tetrachloroethene	µg/kg							< 0.72 U	2.1 J	1.8 J	2.4 J	1.5 J	2.4 J
Toluene	µg/kg							< 0.72 U	1.4 J	6.4	9.8	2.6 J	12
Trichloroethene	µg/kg							< 0.71 U	< 0.79 U	< 0.71 U	1.0 J	< 0.83 U	< 0.83 U
Trichlorofluoromethane (Freon-11)	µg/kg							< 0.40 U	< 0.45 U	< 0.40 U	< 0.54 U	< 0.47 U	< 0.47 U

Table I-1
Analytical Results for Solids Samples - PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2
	Location ID	PRI2-006	PRI2-006	PRI2-006	PRI2-007	PRI2-008	PRI2-008	PRI2-009	PRI2-009	PRI2-009	PRI2-009	PRI2-009	PRI2-009
	Sample Date	07-May-14	07-May-14	08-May-14	09-Jan-14	09-Jan-14	09-Jan-14	06-May-14	06-May-14	06-May-14	06-May-14	06-May-14	06-May-14
	Sample Type	N	N	N	N	FINE	N	N	N	N	N	N	N
	Depth	24 - 26 FEET	27 - 29 FEET	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0.5 - 2 FEET	10 - 12 FEET	12 - 14 FEET	14 - 18 FEET	18 - 20 FEET	21 - 23 FEET
	Sample ID	PRI2-006-SB07-24-050714	PRI2-006-SB08-27-050714	PRI2-006-SS01-050814	PRI2-007-SS01-010914	PRI2-008-SS01-010914 FINES	PRI2-008-SS01-010914	PRI2-009-SB01-0.5-050614	PRI2-009-SB02-10-050614	PRI2-009-SB05-12-050614	PRI2-009-SB06-14-050614	PRI2-009-SB07-18-050614	PRI2-009-SB08-21-050614
Analyte	Unit												
06-PAHs by SIM													
2-Methylnaphthalene	µg/kg	46	2.9 J	*< 0.53 U*	5.2 J	1.7 J	*< 0.56 U*	2.8 J	38	14	30	93	39
Acenaphthene	µg/kg	45	1.2 J	*< 0.58 U*	*< 0.54 U*	*< 0.54 U*	*< 0.61 U*	*< 0.58 U*	*< 0.50 U*	*< 0.57 U*	*< 1.1 U*	*< 1.1 U*	*< 0.99 U*
Acenaphthylene	µg/kg	22	*< 0.42 U*	*< 0.40 U*	*< 0.38 U*	*< 0.38 U*	*< 0.43 U*	*< 0.41 U*	*< 0.35 U*	*< 0.40 U*	*< 0.78 U*	2.8 J	*< 0.69 U*
Anthracene	µg/kg	70 J+	1.7 J	*< 0.48 U*	1.7 J	0.72 J	*< 0.51 U*	1.7 J	2.8 J	2.1 J	4.1 J+	5.1 J+	5.6 J+
Benzo(a)anthracene	µg/kg	120	2.6 J	*< 0.37 U*	5.0 J	1.6 J	*< 0.39 U*	6.4	4.0 J	1.3 J	7.0 J	16	19
Benzo(a)pyrene	µg/kg	76	1.6 J	*< 0.49 U*	3.3 J	1.5 J	*< 0.52 U*	3.6 J	2.9 J	2.0 J	4.3 J	9.4 J	11
Benzo(b)fluoranthene	µg/kg	130	2.1 J	*< 0.62 U*	6.7	3.1 J	*< 0.65 U*	5.6 J	5.0 J	2.9 J	6.3 J	18	21
Benzo(g,h,i)perylene	µg/kg	34	*< 1.3 U*	*< 1.2 U*	2.9 J	1.4 J	*< 1.3 U*	2.1 J	1.5 J	*< 1.2 U*	3.6 J	4.9 J	5.8 J
Benzo(k)fluoranthene	µg/kg	87	1.5 J	*< 0.93 U*	3.0 J	1.0 J	*< 0.98 U*	2.1 J	1.6 J	1.1 J	3.5 J	10 J	10 J
Chrysene	µg/kg	140	3.3 J	*< 0.43 U*	13	4.3 J	1.1 J	18	9.1	5.5 J	17	21	29
Dibenzo(a,h)anthracene	µg/kg	11 J	*< 1.5 U*	*< 1.5 U*	1.5 J	*< 1.4 U*	*< 1.6 U*	1.5 J	*< 1.3 U*	*< 1.5 U*	2.8 J	4.1 J	*< 2.5 U*
Fluoranthene	µg/kg	520	12	*< 0.36 U*	14	3.8 J	1.3 J	5.1 J	10	5.4 J	23	51	59
Fluorene	µg/kg	30	1.2 J	*< 0.60 U*	*< 0.56 U*	0.60 J	*< 0.63 U*	*< 0.60 U*	4.2 J	1.9 J	5.2 J	6.5 J	4.8 J
Indeno(1,2,3-cd)pyrene	µg/kg	47	0.89 J	*< 0.59 U*	1.8 J	1.5 J	*< 0.62 U*	1.4 J	1.5 J	*< 0.58 U*	3.4 J	5.2 J	5.2 J
Naphthalene	µg/kg	33	1.9 J	0.39 J	2.8 J	1.2 J	*< 0.40 U*	3.1 J	19	3.5 J	14	36	16
Phenanthrene	µg/kg	740	21	0.61 J	11	4.0 J	*< 1.4 U*	6.8	40	30	83	110	77
Pyrene	µg/kg	350	8.0	*< 0.43 U*	13	4.7 J	1.5 J	14	13	7.2	25	45	49
Low Molecular Weight PAH (ND=0)	µg/kg	990	30	1.0	21	8.2	*< 1.4 U*	14	100	52	140	250	140
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	990	30	2.3	21	8.7	*< 2.3 U*	15	100	52	140	250	140
High Molecular Weight PAH (ND=0)	µg/kg	1,500	32	*< 1.5 U*	64	23	3.9	60	49	25	96	180	210
High Molecular Weight PAH (ND=1/2DL)	µg/kg	1,500	33	*< 3.5 U*	64	24	6.9	60	49	27	96	180	210
07-VOCs													
1,4-Dioxane	µg/kg	*< 100 UJ*	*< 44 UJ*					*< 45 UJ*	*< 44 UJ*	*< 64 UJ*	*< 46 UJ*	*< 38 UJ*	*< 44 UJ*
1,1-Dichloroethane	µg/kg	*< 0.76 U*	0.97 J					*< 0.34 U*	*< 0.33 U*	*< 0.48 U*	*< 0.34 U*	*< 0.28 U*	*< 0.33 U*
1,1-Dichloroethene	µg/kg	*< 0.68 U*	*< 0.30 U*					*< 0.30 U*	*< 0.29 U*	*< 0.43 U*	*< 0.31 U*	*< 0.25 U*	*< 0.29 U*
1,2-Dibromo-3-chloropropane	µg/kg	*< 2.3 U*	*< 1.0 U*					*< 1.0 U*	*< 1.0 U*	*< 1.4 U*	*< 1.0 U*	*< 0.86 U*	*< 0.99 U*
1,2-Dibromoethane	µg/kg	*< 0.71 U*	*< 0.31 U*					*< 0.31 U*	*< 0.31 U*	*< 0.44 U*	*< 0.32 U*	*< 0.26 U*	*< 0.30 U*
1,2-Dichlorobenzene	µg/kg	*< 1.7 U*	*< 0.73 U*					*< 0.74 U*	*< 0.73 U*	*< 1.1 U*	*< 0.76 U*	*< 0.62 U*	*< 0.72 U*
1,2-Dichloroethane	µg/kg	*< 1.9 U*	*< 0.83 U*					*< 0.85 U*	*< 0.83 U*	*< 1.2 U*	*< 0.86 U*	*< 0.71 U*	*< 0.82 U*
cis-1,2-Dichloroethene	µg/kg	*< 2.3 U*	*< 1.0 U*					*< 1.0 U*	*< 1.0 U*	*< 1.5 U*	*< 1.1 U*	*< 0.87 U*	*< 1.0 U*
trans-1,2-Dichloroethene	µg/kg	*< 0.99 U*	*< 0.43 U*					*< 0.44 U*	*< 0.43 U*	*< 0.62 U*	*< 0.45 U*	*< 0.37 U*	*< 0.43 U*
1,2-Dichloropropane	µg/kg	*< 1.6 U*	*< 0.68 U*					*< 0.69 U*	*< 0.68 U*	*< 0.99 U*	*< 0.71 U*	*< 0.58 U*	*< 0.68 U*
1,3-Dichlorobenzene	µg/kg	*< 0.78 U*	*< 0.34 U*					*< 0.35 U*	*< 0.34 U*	*< 0.49 U*	*< 0.36 U*	*< 0.29 U*	*< 0.34 U*
cis-1,3-Dichloropropene	µg/kg	*< 1.7 U*	*< 0.73 U*					*< 0.74 U*	*< 0.73 U*	*< 1.1 U*	*< 0.76 U*	*< 0.62 U*	*< 0.72 U*
trans-1,3-Dichloropropene	µg/kg	*< 2.0 U*	*< 0.85 U*					*< 0.87 U*	*< 0.85 U*	*< 1.2 U*	*< 0.89 U*	*< 0.73 U*	*< 0.85 U*
1,4-Dichlorobenzene	µg/kg	*< 2.0 U*	*< 0.89 U*					*< 0.90 U*	*< 0.88 U*	*< 1.3 U*	*< 0.92 U*	*< 0.76 U*	*< 0.88 U*
1,1,1-Trichloroethane	µg/kg	*< 0.94 U*	*< 0.41 U*					*< 0.42 U*	*< 0.41 U*	*< 0.59 U*	1.5 J	*< 0.35 U*	*< 0.41 U*
1,1,2-Trichloroethane	µg/kg	*< 1.2 U*	*< 0.50 U*					*< 0.51 U*	*< 0.50 U*	*< 0.72 U*	*< 0.52 U*	*< 0.43 U*	*< 0.50 U*
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	µg/kg	*< 2.2 U*	*< 0.95 U*					*< 0.96 U*	*< 0.94 U*	*< 1.4 U*	*< 0.98 U*	*< 0.81 U*	*< 0.94 U*
1,2,3-Trichlorobenzene	µg/kg	*< 2.0 U*	*< 0.85 U*					*< 0.87 U*	*< 0.85 U*	*< 1.2 U*	*< 0.89 U*	*< 0.73 U*	*< 0.85 U*
1,2,4-Trichlorobenzene	µg/kg	*< 2.0 U*	*< 0.85 U*					*< 0.87 U*	*< 0.85 U*	*< 1.2 U*	*< 0.89 U*	*< 0.73 U*	*< 0.85 U*
1,1,2,2-Tetrachloroethane	µg/kg	*< 1.8 U*	*< 0.77 U*					*< 0.79 U*	*< 0.77 U*	*< 1.1 U*	*< 0.80 U*	*< 0.66 U*	*< 0.77 U*
2-Butanone	µg/kg	42	28					*< 1.6 U*	9.1 J	8.0 J	12	14	8.1 J
2-Hexanone	µg/kg	12 J	2.8 J					*< 0.86 U*	6.6 J	4.1 J	5.1 J	6.1 J	5.1 J
4-Methyl-2-pentanone	µg/kg	6.0 J	23					*< 1.1 U*	7.5 J	3.4 J	7.2 J	5.3 J	5.3 J
Acetone	µg/kg	250	100					*< 2 UJ*	27 J+	51 J+	47 J+	80 J+	39 J+
Benzene	µg/kg	1.6 J	*< 0.30 U*					*< 0.30 U*	*< 0.29 U*	*< 0.43 U*	*< 0.31 U*	*< 0.25 U*	*< 0.29 U*
Bromochloromethane	µg/kg	*< 2.5 U*	*< 1.1 U*					*< 1.1 U*	*< 1.1 U*	*< 1.5 U*	*< 1.1 U*	*< 0.91 U*	*< 1.1 U*
Bromodichloromethane	µg/kg	*< 1.4 U*	*< 0.60 U*					*< 0.61 U*	*< 0.60 U*	*< 0.87 U*	*< 0.63 U*	*< 0.52 U*	*< 0.60 U*
Bromoform	µg/kg	*< 1.0 U*	*< 0.46 U*					*< 0.46 U*	*< 0.45 U*	*< 0.66 U*	*< 0.47 U*	*< 0.39 U*	*< 0.45 U*
Bromomethane	µg/kg	*< 2.2 U*	*< 0.98 U*					*< 1.0 U*	*< 0.98 U*	*< 1.4 U*	*< 1.0 U*	*< 0.84 U*	*< 0.97 U*
Carbon disulfide	µg/kg	*< 12 U*	20					*< 0.57 U*	*< 1.1 U*	*< 0.80 U*	*< 0.86 U*	*< 0.59 U*	*< 0.97 U*
Carbon tetrachloride	µg/kg	*< 1.4 U*	*< 0.60 U*					*< 0.61 U*	*< 0.60 U*	*< 0.87 U*	*< 0.63 U*	*< 0.52 U*	*< 0.60 U*
Chlorobenzene	µg/kg	*< 0.76 U*	*< 0.33 U*					*< 0.34 U*	*< 0.33 U*	*< 0.48 U*	*< 0.34 U*	*< 0.28 U*	*< 0.33 U*
Cyclohexane	µg/kg	*< 6.9 U*	*< 3.0 U*					*< 3.0 U*	*< 3.0 U*	*< 4.3 U*	*< 3.1 U*	*< 2.6 U*	*< 3.0 U*
Dibromochloromethane	µg/kg	*< 0.55 U*	*< 0.24 U*					*< 0.24 U*	*< 0.24 U*	*< 0.34 U*	*< 0.25 U*	*< 0.20 U*	*< 0.24 U*
Chloroethane	µg/kg	*< 1.2 U*	*< 0.51 U*					*< 0.52 U*	*< 0.51 U*	*< 0.74 U*	*< 0.53 U*	*< 0.44 U*	*< 0.51 U*
Chloroform	µg/kg	*< 0.68 U*	*< 0.30 U*					*< 0.30 U*	1.0 J	*< 0.43 U*	1.2 J	1.8 J	1.6 J
Chloromethane	µg/kg	7.6 J	*< 0.57 U*					*< 0.58 U*	0.60 J	*< 0.82 U*	1.6 J	1.5 J	1.3 J
Dichlorodifluoromethane (Freon-12)	µg/kg	*< 2.3 U*	*< 1.0 U*					*< 1.0 U*	*< 1.0 U*	*< 1.5 U*	*< 1.1 U*	*< 0.87 U*	*< 1.0 U*
Ethyl benzene	µg/kg	1.7 J	*< 0.39 U*					*< 0.39 U*	1.6 J	*< 0.56 U*	1.1 J	0.84 J	1.5 J
Isopropylbenzene	µg/kg	*< 1.4 U*	*< 0.59 U*					*< 0.60 U*	5.2 J	*< 0.85 U*	2.6 J	*< 0.51 U*	3.0 J
Methyl tertbutyl ether (MTBE)	µg/kg	*< 1.6 U*	*< 0.68 U*					*< 0.69 U*	*< 0.68 U*	*< 0.99 U*	*< 0.71 U*	*< 0.58 U*	*< 0.68 U*
Dichloromethane (Methylene chloride)	µg/kg	*< 2.2 U*	*< 0.96 U*					*< 0.97 U*	*< 0.95 U*	*< 1.4 U*	*< 0.99 U*	*< 0.82 U*	*< 0.95 U*
Styrene	µg/kg	*< 0.81 U*	*< 0.35 U*					*< 0.36 U*	2.3 J	*< 0.51 U*	0.98 J	*< 0.30 U*	1.5 J
Tetrachloroethene	µg/kg	*< 1.6 U*	1.6 J					*< 0.71 U*	*< 0.69 U*	*< 1.0 U*	*< 0.72 U*	*< 0.59 U*	*< 0.69 U*
Toluene	µg/kg	6.8 J	*< 0.70 U*					*< 0.71 U*	3.5 J	*< 1.0 U*	1.8 J	1.8 J	2.3 J
Trichloroethene	µg/kg	*< 1.6 U*	*< 0.68 U*					*< 0.69 U*	*< 0.68 U*	*< 0.99 U*	*< 0.71 U*	*< 0.58 U*	*< 0.68 U*
Trichlorofluoromethane (Freon-11)	µg/kg	*< 0.89 U*	*< 0.39 U*					*< 0.39 U*	*< 0.39 U*	*< 0.56 U*	*< 0.40 U*	*< 0.33 U*	*< 0.38 U*

Table I-1
Analytical Results for Solids Samples - PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**
	Location ID	**PRI2-009**	**PRI2-009**	**PRI2-009**	**PRI2-009**	**PRI2-010**	**PRI2-011**	**PRI2-011**	**PRI2-012**	**PRI2-012**	**PRI2-013**	**PRI2-014**
	Sample Date	**06-May-14**	**06-May-14**	**08-May-14**	**08-May-14**	**08-Jan-14**	**08-Jan-14**	**08-Jan-14**	**08-Jan-14**	**08-Jan-14**	**09-Jan-14**	**07-May-14**
	Sample Type	**N**	**N**	**FINE**	**N**	**N**	**FINE**	**N**	**FINE**	**N**	**N**	**N**
	Depth	**26 - 28 FEET**	**28.5 - 30.5 FEET**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0.5 - 2 FEET**
	Sample ID	**PRI2-009-SB04-26-050614**	**PRI2-009-SB03-28.5-050614**	**PRI2-009-SS01-050814 FINES**	**PRI2-009-SS01-050814**	**PRI2-010-SS01-010814**	**PRI2-011-SS01-010814 FINES**	**PRI2-011-SS01-010814**	**PRI2-012-SS01-010814 FINES**	**PRI2-012-SS01-010814**	**PRI2-013-SS01-010914**	**PRI2-014-SB01-0.5-050714**
Analyte	**Unit**											
06-PAHs by SIM												
2-Methylnaphthalene	µg/kg	23	8.6	17 J	11 J	1.6 J	6.5	1.8 J	2.7 J	1.5 J	0.62 J	2.2 J
Acenaphthene	µg/kg	< 0.51 U	< 0.68 U	2.8 J	4.3 J	< 0.55 U	5.9	2.3 J	< 0.51 U	< 0.61 U	< 0.55 U	< 0.53 U
Acenaphthylene	µg/kg	< 0.36 U	< 0.47 U	1.8 J	< 1.8 U	< 0.38 U	< 0.32 U	< 0.35 U	< 0.36 U	< 0.43 U	< 0.38 U	< 0.37 U
Anthracene	µg/kg	3.0 J	< 0.57 U	14 J	7.0 J	0.52 J	2.3 J	0.65 J	0.43 J	< 0.51 U	< 0.46 U	< 0.44 U
Benzo(a)anthracene	µg/kg	13	< 0.44 U	35	19 J	0.76 J	3.5 J	0.81 J	1.8 J	0.80 J	< 0.35 U	0.62 J
Benzo(a)pyrene	µg/kg	12	< 0.57 U	20 J	9.2 J	< 0.47 U	2.0 J	0.49 J	1.8 J	0.72 J	< 0.47 U	0.46 J
Benzo(b)fluoranthene	µg/kg	18	< 0.73 U	61 J	47 J	0.91 J	4.3 J	0.83 J	1.7 J	< 0.66 U	< 0.59 U	0.64 J
Benzo(g,h,i)perylene	µg/kg	4.6 J	< 1.4 U	19 J	18 J	< 1.2 U	2.4 J	< 1.1 U	1.9 J	< 1.3 U	< 1.2 U	< 1.1 U
Benzo(k)fluoranthene	µg/kg	10	< 1.1 U	25 J	20 J	< 0.89 U	1.5 J	< 0.82 U	< 0.83 U	< 0.99 U	< 0.89 U	< 0.85 U
Chrysene	µg/kg	18	0.97 J	110	62	2.3 J	8.7	1.7 J	2.6 J	1.4 J	0.57 J	0.98 J
Dibenzo(a,h)anthracene	µg/kg	1.5 J	< 1.7 U	14 J	13 J	< 1.4 U	< 1.2 U	< 1.3 U	1.8 J	< 1.6 U	< 1.4 U	< 1.3 U
Fluoranthene	µg/kg	36	0.94 J	63	36	3.1 J	19	4.4 J	1.3 J	0.73 J	< 0.34 U	1.3 J
Fluorene	µg/kg	2.5 J	1.3 J	4.0 J	< 2.7 U	< 0.57 U	3.7 J	1.1 J	< 0.54 U	< 0.64 U	< 0.57 U	< 0.55 U
Indeno(1,2,3-cd)pyrene	µg/kg	5.4 J	< 0.69 U	12 J	12 J	< 0.56 U	1.2 J	< 0.51 U	1.4 J	< 0.62 U	< 0.56 U	< 0.54 U
Naphthalene	µg/kg	11	2.8 J	24 J	14 J	2.4 J	3.2 J	1.2 J	2.0 J	1.1 J	< 0.36 U	1.1 J
Phenanthrene	µg/kg	44	< 2.6 U	42	25 J	< 3.8 U	43	13	3.6 J	< 2.3 U	< 2.2 U	3.0 J
Pyrene	µg/kg	33	2.6 J	110	74	2.8 J	15	3.5 J	2.1 J	1.1 J	4.0 J	2.2 J
Low Molecular Weight PAH (ND=0)	µg/kg	84	13	110	61	4.5	65	20	8.7	2.6	0.62	6.3
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	84	15	110	64	7.2	65	20	9.4	4.8	2.9	7.2
High Molecular Weight PAH (ND=0)	µg/kg	150	4.5	470	310	9.9	58	12	16	4.8	4.6	6.2
High Molecular Weight PAH (ND=1/2DL)	µg/kg	150	7.8	470	310	12	58	14	17	7.3	7.5	8.1
07-VOCs												
1,4-Dioxane	µg/kg	< 64 UJ	< 64 UJ									< 47 UJ
1,1-Dichloroethane	µg/kg	< 0.47 U	2.7 J									< 0.35 U
1,1-Dichloroethene	µg/kg	< 0.42 U	1.7 J									< 0.32 U
1,2-Dibromo-3-chloropropane	µg/kg	< 1.4 U	< 1.4 U									< 1.1 U
1,2-Dibromoethane	µg/kg	< 0.44 U	< 0.44 U									< 0.33 U
1,2-Dichlorobenzene	µg/kg	< 1.0 U	< 1.0 U									< 0.78 U
1,2-Dichloroethane	µg/kg	< 1.2 U	< 1.2 U									< 0.89 U
cis-1,2-Dichloroethene	µg/kg	< 1.4 U	< 1.5 U									< 1.1 U
trans-1,2-Dichloroethene	µg/kg	< 0.62 U	< 0.62 U									< 0.46 U
1,2-Dichloropropane	µg/kg	< 0.98 U	< 0.98 U									< 0.73 U
1,3-Dichlorobenzene	µg/kg	< 0.49 U	< 0.49 U									< 0.37 U
cis-1,3-Dichloropropene	µg/kg	< 1.0 U	< 1.0 U									< 0.78 U
trans-1,3-Dichloropropene	µg/kg	< 1.2 U	< 1.2 U									< 0.91 U
1,4-Dichlorobenzene	µg/kg	< 1.3 U	< 1.3 U									< 0.95 U
1,1,1-Trichloroethane	µg/kg	< 0.59 U	< 0.59 U									< 0.44 U
1,1,2-Trichloroethane	µg/kg	< 0.72 U	< 0.72 U									< 0.54 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	µg/kg	< 1.4 U	< 1.4 U									< 1.0 U
1,2,3-Trichlorobenzene	µg/kg	< 1.2 U	< 1.2 U									< 0.91 U
1,2,4-Trichlorobenzene	µg/kg	< 1.2 U	3.0 J									< 0.91 U
1,1,2,2-Tetrachloroethane	µg/kg	< 1.1 U	< 1.1 U									< 0.83 U
2-Butanone	µg/kg	11 J	11 J									< 1.7 U
2-Hexanone	µg/kg	2.9 J	< 1.2 U									< 0.90 U
4-Methyl-2-pentanone	µg/kg	7.8 J	< 1.5 U									< 1.1 U
Acetone	µg/kg	72 J+	49 J+									< 6.3 U
Benzene	µg/kg	< 0.42 U	< 0.43 U									< 0.32 U
Bromochloromethane	µg/kg	< 1.5 U	< 1.5 U									< 1.1 U
Bromodichloromethane	µg/kg	< 0.86 U	< 0.87 U									< 0.64 U
Bromoform	µg/kg	< 0.65 U	< 0.65 U									< 0.49 U
Bromomethane	µg/kg	< 1.4 U	< 1.4 U									< 1.0 U
Carbon disulfide	µg/kg	< 0.80 U	< 1.5 U									< 0.60 U
Carbon tetrachloride	µg/kg	< 0.86 U	< 0.87 U									< 0.64 U
Chlorobenzene	µg/kg	< 0.47 U	< 0.47 U									< 0.35 U
Cyclohexane	µg/kg	< 4.3 U	< 4.3 U									< 3.2 U
Dibromochloromethane	µg/kg	< 0.34 U	< 0.34 U									< 0.26 U
Chloroethane	µg/kg	0.92 J	< 0.74 U									< 0.55 U
Chloroform	µg/kg	3.2 J	0.83 J									< 0.32 U
Chloromethane	µg/kg	2.5 J	< 0.82 U									< 0.61 U
Dichlorodifluoromethane (Freon-12)	µg/kg	< 1.4 U	< 1.5 U									< 1.1 U
Ethyl benzene	µg/kg	1.1 J	< 0.56 U									< 0.41 U
Isopropylbenzene	µg/kg	1.6 J	< 0.85 U									< 0.63 U
Methyl tertbutyl ether (MTBE)	µg/kg	< 0.98 U	< 0.98 U									< 0.73 U
Dichloromethane (Methylene chloride)	µg/kg	< 1.4 U	< 1.4 U									< 1.0 U
Styrene	µg/kg	< 0.51 U	< 0.51 U									< 0.38 U
Tetrachloroethene	µg/kg	< 0.99 U	1.8 J									< 0.74 U
Toluene	µg/kg	3.8 J	< 1.0 U									< 0.74 U
Trichloroethene	µg/kg	< 0.98 U	2.2 J									< 0.73 U
Trichlorofluoromethane (Freon-11)	µg/kg	< 0.55 U	< 0.56 U									< 0.41 U

Table I-1
Analytical Results for Solids Samples - PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2
	Location ID	PRI2-014	PRI2-014	PRI2-014	PRI2-014	PRI2-014	PRI2-014	PRI2-014
	Sample Date	07-May-14	07-May-14	07-May-14	07-May-14	07-May-14	07-May-14	08-May-14
	Sample Type	N	N	N	N	N	N	N
	Depth	3 - 10 FEET	10 - 20 FEET	22 - 27 FEET	27 - 30 FEET	30 - 31 FEET	31 - 33 FEET	0 - 6 in
	Sample ID	PRI2-014-SB02-3-050714	PRI2-014-SB03-10-050714	PRI2-014-SB04-22-050714	PRI2-014-SB05-27-050714	PRI2-014-SB06-30-050714	PRI2-014-SB07-31-050714	PRI2-014-SS01-050814
Analyte	**Unit**							
06-PAHs by SIM								
2-Methylnaphthalene	µg/kg	0.95 J	4.2 J	22	12	24	73	2.8 J
Acenaphthene	µg/kg	*< 0.58 U*	1.5 J	2.5 J	1.6 J	*< 0.64 U*	*< 0.78 U*	*< 0.53 U*
Acenaphthylene	µg/kg	*< 0.41 U*	*< 0.45 U*	*< 0.36 U*	*< 0.44 U*	*< 0.45 U*	*< 0.54 U*	*< 0.37 U*
Anthracene	µg/kg	1.1 J	*< 0.54 U*	*< 0.43 U*	*< 0.53 U*	*< 0.54 U*	0.68 J	0.58 J
Benzo(a)anthracene	µg/kg	0.39 J	*< 0.41 U*	*< 0.33 U*	*< 0.40 U*	*< 0.41 U*	*< 0.50 U*	1.1 J
Benzo(a)pyrene	µg/kg	*< 0.50 U*	*< 0.54 U*	*< 0.44 U*	*< 0.53 U*	*< 0.54 U*	*< 0.66 U*	0.98 J
Benzo(b)fluoranthene	µg/kg	*< 0.63 U*	0.79 J	*< 0.55 U*	*< 0.67 U*	*< 0.68 U*	*< 0.83 U*	1.3 J
Benzo(g,h,i)perylene	µg/kg	*< 1.2 U*	*< 1.4 U*	*< 1.1 U*	*< 1.3 U*	*< 1.4 U*	*< 1.7 U*	1.2 J
Benzo(k)fluoranthene	µg/kg	*< 0.94 U*	*< 1.0 U*	*< 0.83 U*	*< 1.0 U*	*< 1.0 U*	*< 1.3 U*	*< 0.85 U*
Chrysene	µg/kg	0.94 J	0.60 J	*< 0.38 U*	*< 0.46 U*	*< 0.47 U*	0.76 J	2.8 J
Dibenzo(a,h)anthracene	µg/kg	*< 1.5 U*	*< 1.6 U*	*< 1.3 U*	*< 1.6 U*	1.9 J	5.0 J	*< 1.3 U*
Fluoranthene	µg/kg	1.5 J	0.83 J	*< 0.32 U*	*< 0.39 U*	*< 0.40 U*	1.3 J	3.1 J
Fluorene	µg/kg	1.6 J	1.4 J	1.6 J	0.98 J	3.3 J	5.6 J	0.63 J
Indeno(1,2,3-cd)pyrene	µg/kg	*< 0.59 U*	*< 0.65 U*	*< 0.53 U*	*< 0.64 U*	*< 0.65 U*	*< 0.79 U*	0.59 J
Naphthalene	µg/kg	*< 0.38 U*	0.82 J	4.9 J	3.5 J	7.5	20	1.8 J
Phenanthrene	µg/kg	26	10	3.9 J	2.1 J	7.1	9.4	4.5 J
Pyrene	µg/kg	3.3 J	1.3 J	0.55 J	*< 0.47 U*	0.55 J	0.72 J	3.5 J
Low Molecular Weight PAH (ND=0)	µg/kg	30	18	35	20	42	110	10
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	30	18	35	21	43	110	11
High Molecular Weight PAH (ND=0)	µg/kg	6.1	3.5	0.55	*< 1.6 U*	2.5	7.8	15
High Molecular Weight PAH (ND=1/2DL)	µg/kg	8.8	6.3	3.4	*< 3.7 U*	5.2	11	16
07-VOCs								
1,4-Dioxane	µg/kg	*< 64 UJ*	*< 55 UJ*	*< 49 UJ*	*< 51 UJ*	*< 61 UJ*	*< 63 UJ*	
1,1-Dichloroethane	µg/kg	*< 0.47 U*	*< 0.41 U*	*< 0.36 U*	*< 0.38 U*	*< 0.46 U*	*< 0.47 U*	
1,1-Dichloroethene	µg/kg	*< 0.42 U*	*< 0.36 U*	*< 0.33 U*	*< 0.34 U*	*< 0.41 U*	*< 0.42 U*	
1,2-Dibromo-3-chloropropane	µg/kg	*< 1.4 U*	*< 1.2 U*	*< 1.1 U*	*< 1.2 U*	*< 1.4 U*	*< 1.4 U*	
1,2-Dibromoethane	µg/kg	*< 0.44 U*	*< 0.38 U*	*< 0.34 U*	*< 0.36 U*	*< 0.43 U*	*< 0.44 U*	
1,2-Dichlorobenzene	µg/kg	*< 1.0 U*	*< 0.90 U*	*< 0.80 U*	*< 0.84 U*	*< 1.0 U*	*< 1.0 U*	
1,2-Dichloroethane	µg/kg	*< 1.2 U*	*< 1.0 U*	*< 0.92 U*	*< 0.96 U*	*< 1.1 U*	*< 1.2 U*	
cis-1,2-Dichloroethene	µg/kg	*< 1.5 U*	*< 1.2 U*	*< 1.1 U*	*< 1.2 U*	*< 1.4 U*	2.7 J	
trans-1,2-Dichloroethene	µg/kg	*< 0.62 U*	*< 0.53 U*	*< 0.48 U*	*< 0.50 U*	*< 0.60 U*	*< 0.62 U*	
1,2-Dichloropropane	µg/kg	*< 0.98 U*	*< 0.84 U*	*< 0.75 U*	*< 0.79 U*	*< 0.94 U*	*< 0.98 U*	
1,3-Dichlorobenzene	µg/kg	*< 0.49 U*	*< 0.42 U*	*< 0.38 U*	*< 0.40 U*	*< 0.47 U*	*< 0.49 U*	
cis-1,3-Dichloropropene	µg/kg	*< 1.0 U*	*< 0.90 U*	*< 0.80 U*	*< 0.84 U*	*< 1.0 U*	*< 1.0 U*	
trans-1,3-Dichloropropene	µg/kg	*< 1.2 U*	*< 1.1 U*	*< 0.94 U*	*< 0.99 U*	*< 1.2 U*	*< 1.2 U*	
1,4-Dichlorobenzene	µg/kg	*< 1.3 U*	*< 1.1 U*	*< 0.98 U*	*< 1.0 U*	*< 1.2 U*	*< 1.3 U*	
1,1,1-Trichloroethane	µg/kg	*< 0.59 U*	*< 0.50 U*	*< 0.45 U*	*< 0.48 U*	*< 0.57 U*	*< 0.59 U*	
1,1,2-Trichloroethane	µg/kg	*< 0.72 U*	*< 0.62 U*	*< 0.55 U*	*< 0.58 U*	*< 0.69 U*	*< 0.72 U*	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	µg/kg	*< 1.4 U*	*< 1.2 U*	*< 1.0 U*	*< 1.1 U*	*< 1.3 U*	*< 1.3 U*	
1,2,3-Trichlorobenzene	µg/kg	*< 1.2 U*	*< 1.1 U*	*< 0.94 U*	*< 0.99 U*	4.1 J	6.2 J	
1,2,4-Trichlorobenzene	µg/kg	*< 1.2 U*	*< 1.1 U*	*< 0.94 U*	*< 0.99 U*	12	19	
1,1,2,2-Tetrachloroethane	µg/kg	*< 1.1 U*	*< 0.95 U*	*< 0.85 U*	*< 0.90 U*	*< 1.1 U*	*< 1.1 U*	
2-Butanone	µg/kg	*< 2.3 U*	11 J	32	4.9 J	18	18	
2-Hexanone	µg/kg	*< 1.2 U*	1.2 J	2.5 J	*< 0.98 U*	*< 1.2 U*	*< 1.2 U*	
4-Methyl-2-pentanone	µg/kg	*< 1.5 U*	*< 1.3 U*	3.0 J	*< 1.2 U*	1.6 J	1.8 J	
Acetone	µg/kg	*< 9.8 U*	49	180	42	140	100	
Benzene	µg/kg	*< 0.42 U*	*< 0.36 U*	1.3 J	*< 0.34 U*	*< 0.41 U*	*< 0.42 U*	
Bromochloromethane	µg/kg	*< 1.5 U*	*< 1.3 U*	*< 1.2 U*	*< 1.2 U*	*< 1.5 U*	*< 1.5 U*	
Bromodichloromethane	µg/kg	*< 0.87 U*	*< 0.74 U*	*< 0.67 U*	*< 0.70 U*	*< 0.83 U*	*< 0.86 U*	
Bromoform	µg/kg	*< 0.65 U*	*< 0.56 U*	*< 0.50 U*	*< 0.53 U*	0.84 J	*< 0.65 U*	
Bromomethane	µg/kg	*< 1.4 U*	*< 1.2 U*	*< 1.1 U*	*< 1.1 U*	*< 1.4 U*	*< 1.4 U*	
Carbon disulfide	µg/kg	*< 0.80 U*	*< 0.69 U*	*< 0.62 U*	*< 0.65 U*	*< 0.77 U*	*< 4 U*	
Carbon tetrachloride	µg/kg	*< 0.87 U*	*< 0.74 U*	*< 0.67 U*	*< 0.70 U*	*< 0.83 U*	*< 0.86 U*	
Chlorobenzene	µg/kg	*< 0.47 U*	*< 0.41 U*	*< 0.36 U*	*< 0.38 U*	*< 0.46 U*	*< 0.47 U*	
Cyclohexane	µg/kg	*< 4.3 U*	*< 3.7 U*	*< 3.3 U*	*< 3.5 U*	*< 4.1 U*	*< 4.3 U*	
Dibromochloromethane	µg/kg	*< 0.34 U*	*< 0.29 U*	*< 0.26 U*	*< 0.28 U*	0.36 J	*< 0.34 U*	
Chloroethane	µg/kg	*< 0.74 U*	*< 0.63 U*	*< 0.56 U*	*< 0.59 U*	*< 0.71 U*	*< 0.73 U*	
Chloroform	µg/kg	*< 0.42 U*	*< 0.36 U*	0.35 J	*< 0.34 U*	1.0 J	0.62 J	
Chloromethane	µg/kg	*< 0.82 U*	0.88 J	*< 0.63 U*	*< 0.66 U*	*< 0.79 U*	*< 0.81 U*	
Dichlorodifluoromethane (Freon-12)	µg/kg	*< 1.5 U*	*< 1.2 U*	*< 1.1 U*	*< 1.2 U*	*< 1.4 U*	*< 1.4 U*	
Ethyl benzene	µg/kg	*< 0.56 U*	*< 0.48 U*	*< 0.43 U*	*< 0.45 U*	*< 0.54 U*	*< 0.55 U*	
Isopropylbenzene	µg/kg	*< 0.85 U*	*< 0.73 U*	*< 0.65 U*	*< 0.69 U*	0.87 J	*< 0.85 U*	
Methyl tertbutyl ether (MTBE)	µg/kg	*< 0.98 U*	*< 0.84 U*	*< 0.75 U*	*< 0.79 U*	*< 0.94 U*	*< 0.98 U*	
Dichloromethane (Methylene chloride)	µg/kg	*< 1.4 U*	*< 1.2 U*	*< 1.1 U*	*< 1.1 U*	1.8 J	*< 1.4 U*	
Styrene	µg/kg	*< 0.51 U*	*< 0.43 U*	*< 0.39 U*	*< 0.41 U*	*< 0.49 U*	*< 0.50 U*	
Tetrachloroethene	µg/kg	*< 1.0 U*	*< 0.85 U*	*< 0.77 U*	*< 0.81 U*	5.5 J	3.1 J	
Toluene	µg/kg	*< 1.0 U*	*< 0.85 U*	1.1 J	*< 0.81 U*	*< 0.96 U*	*< 0.99 U*	
Trichloroethene	µg/kg	*< 0.98 U*	0.92 J	*< 0.75 U*	*< 0.79 U*	*< 0.94 U*	2.5 J	
Trichlorofluoromethane (Freon-11)	µg/kg	*< 0.56 U*	*< 0.48 U*	*< 0.43 U*	*< 0.45 U*	*< 0.54 U*	*< 0.55 U*	

Table I-1
Analytical Results for Solids Samples - PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2
	Location ID	**PRI2-001**	**PRI2-001**	**PRI2-002**	**PRI2-003**	**PRI2-004**	**PRI2-005**	**PRI2-006**	**PRI2-006**	**PRI2-006**	**PRI2-006**	**PRI2-006**	**PRI2-006**
	Sample Date	**09-Jan-14**	**09-Jan-14**	**09-Jan-14**	**08-Jan-14**	**09-Jan-14**	**09-Jan-14**	**06-May-14**	**06-May-14**	**06-May-14**	**06-May-14**	**07-May-14**	**07-May-14**
	Sample Type	**FINE**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0.5 - 2 FEET**	**2 - 5 FEET**	**5 - 10 FEET**	**11 - 17 FEET**	**20 - 22 FEET**	**22 - 24 FEET**
	Sample ID	**PRI2-001-SS01-010914 FINES**	**PRI2-001-SS01-010914**	**PRI2-002-SS01-010914**	**PRI2-003-SS01-010814**	**PRI2-004-SS01-010914**	**PRI2-005-SS01-010914**	**PRI2-006-SB01-0.5-050614**	**PRI2-006-SB02-2-050614**	**PRI2-006-SB03-5-050614**	**PRI2-006-SB04-11-050614**	**PRI2-006-SB05-20-050714**	**PRI2-006-SB06-22-050714**
Analyte	**Unit**												
Vinyl chloride	µg/kg							*< 0.43 U*	*< 0.47 U*	*< 0.43 U*	*< 0.58 U*	*< 0.50 U*	1.3 J
o-Xylene	µg/kg							*< 0.39 U*	1.9 J	3.5 J	4.8 J	2.7 J	3.6 J
m,p Xylenes	µg/kg							*< 0.96 U*	2.6 J	5.5 J	7.7 J	5.3 J	6.9 J
08-General Chemistry Parameters for Solids													
Perchlorate	µg/kg		*< 21 U*	*< 54 U*	*< 24 U*	*< 25 U*	65 3.2 J-	*< 21 U*	*< 26 U*	*< 120 U*	*< 110 U*	*< 93 UJ*	*< 120 UJ*
Total Organic Carbon	g/kg		27	23	4.7	17	12	8.7	28	17	110	6.0	80
pH	pH units		9.04	9.72	7.89	7.97	7.44	9.09	9.70	9.43	9.36	9.23	8.74
Cyanide, Total	mg/kg		*< 0.21 U*	0.27 J	*< 0.24 U*	*< 0.26 U*	*< 0.27 U*	*< 0.21 U*	*< 0.27 U*	*< 0.23 U*	*< 0.23 U*	*< 0.24 U*	*< 0.24 U*

Table I-1
Analytical Results for Solids Samples - PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2
	Location ID	**PRI2-006**	**PRI2-006**	**PRI2-006**	**PRI2-007**	**PRI2-008**	**PRI2-008**	**PRI2-009**	**PRI2-009**	**PRI2-009**	**PRI2-009**	**PRI2-009**	**PRI2-009**
	Sample Date	**07-May-14**	**07-May-14**	**08-May-14**	**09-Jan-14**	**09-Jan-14**	**09-Jan-14**	**06-May-14**	**06-May-14**	**06-May-14**	**06-May-14**	**06-May-14**	**06-May-14**
	Sample Type	**N**	**N**	**N**	**N**	**FINE**	**N**	**N**	**N**	**N**	**N**	**N**	**N**
	Depth	**24 - 26 FEET**	**27 - 29 FEET**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0.5 - 2 FEET**	**10 - 12 FEET**	**12 - 14 FEET**	**14 - 18 FEET**	**18 - 20 FEET**	**21 - 23 FEET**
	Sample ID	**PRI2-006-SB07-24-050714**	**PRI2-006-SB08-27-050714**	**PRI2-006-SS01-050814**	**PRI2-007-SS01-010914**	**PRI2-008-SS01-010914 FINES**	**PRI2-008-SS01-010914**	**PRI2-009-SB01-0.5-050614**	**PRI2-009-SB02-10-050614**	**PRI2-009-SB05-12-050614**	**PRI2-009-SB06-14-050614**	**PRI2-009-SB07-18-050614**	**PRI2-009-SB08-21-050614**
Analyte	**Unit**												
Vinyl chloride	µg/kg	*< 0.94 U*	*< 0.41 U*					*< 0.42 U*	*< 0.41 U*	*< 0.59 U*	*< 0.43 U*	*< 0.35 U*	*< 0.41 U*
o-Xylene	µg/kg	1.2 J	*< 0.38 U*					*< 0.38 U*	2.1 J	1.7 J	2.7 J	4.1 J	2.2 J
m,p Xylenes	µg/kg	2.8 J	*< 0.92 U*					*< 0.94 U*	2.7 J	1.7 J	2.8 J	5.0	4.3 J
08-General Chemistry Parameters for Solids													
Perchlorate	µg/kg	*< 250 UJ*	*< 24 UJ*	*< 23 U*	*< 22 U*		*< 25 U*	*< 22 U*	*< 21 U*	*< 24 U*	*< 22 U*	*< 22 U*	*< 21 U*
Total Organic Carbon	g/kg	18	3.9 J	5.1	29		6.7	10	120	51	48	52	58
pH	pH units	8.83	8.78	7.41	8.27		7.84	8.24	9.81	9.66	10.0	9.22	9.94
Cyanide, Total	mg/kg	*< 0.27 U*	*< 0.25 U*	*< 0.23 U*	*< 0.22 U*		0.47 J	*< 0.23 U*	*< 0.22 U*	*< 0.26 U*	*< 0.22 U*	*< 0.23 U*	*< 0.22 U*

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Analytical Results for Solids Samples - PRI-2 Landfill
Phase 1A Data Report for PRI Areas 2 and 8-17
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	Location Group	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**	**PRI-2**
	Location ID	**PRI2-009**	**PRI2-009**	**PRI2-009**	**PRI2-009**	**PRI2-010**	**PRI2-011**	**PRI2-011**	**PRI2-012**	**PRI2-012**	**PRI2-013**	**PRI2-014**
	Sample Date	**06-May-14**	**06-May-14**	**08-May-14**	**08-May-14**	**08-Jan-14**	**08-Jan-14**	**08-Jan-14**	**08-Jan-14**	**08-Jan-14**	**09-Jan-14**	**07-May-14**
	Sample Type	**N**	**N**	**FINE**	**N**	**N**	**FINE**	**N**	**FINE**	**N**	**N**	**N**
	Depth	**26 - 28 FEET**	**28.5 - 30.5 FEET**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0.5 - 2 FEET**
	Sample ID	**PRI2-009-SB04-26-050614**	**PRI2-009-SB03-28.5-050614**	**PRI2-009-SS01-050814 FINES**	**PRI2-009-SS01-050814**	**PRI2-010-SS01-010814**	**PRI2-011-SS01-010814 FINES**	**PRI2-011-SS01-010814**	**PRI2-012-SS01-010814 FINES**	**PRI2-012-SS01-010814**	**PRI2-013-SS01-010914**	**PRI2-014-SB01-0.5-050714**
Analyte	**Unit**											
Vinyl chloride	µg/kg	*< 0.59 U*	*< 0.59 U*									*< 0.44 U*
o-Xylene	µg/kg	3.3 J	1.5 J									*< 0.40 U*
m,p Xylenes	µg/kg	4.5 J	*< 1.3 U*									*< 0.99 U*
08-General Chemistry Parameters for Solids												
Perchlorate	µg/kg	*< 23 U*	*< 28 U*		*< 22 U*	*< 24 U*		*< 22 U*		*< 26 U*	*< 24 U*	*< 23 UJ*
Total Organic Carbon	g/kg	91	4.5		43	89		4.3		*< 1.7 U*	*< 1.7 U*	2.4 J
pH	pH units	9.71	7.84		7.59	7.97		8.25		7.74	8.45	8.01
Cyanide, Total	mg/kg	*< 0.24 U*	*< 0.30 U*		*< 0.22 U*	*< 0.25 U*		*< 0.22 U*		*< 0.26 U*	*< 0.24 U*	*< 0.23 U*

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Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2	PRI-2
	Location ID	PRI2-014	PRI2-014	PRI2-014	PRI2-014	PRI2-014	PRI2-014	PRI2-014
	Sample Date	07-May-14	07-May-14	07-May-14	07-May-14	07-May-14	07-May-14	08-May-14
	Sample Type	N	N	N	N	N	N	N
	Depth	3 - 10 FEET	10 - 20 FEET	22 - 27 FEET	27 - 30 FEET	30 - 31 FEET	31 - 33 FEET	0 - 6 in
	Sample ID	PRI2-014-SB02-3-050714	PRI2-014-SB03-10-050714	PRI2-014-SB04-22-050714	PRI2-014-SB05-27-050714	PRI2-014-SB06-30-050714	PRI2-014-SB07-31-050714	PRI2-014-SS01-050814
Analyte	**Unit**							
Vinyl chloride	µg/kg	*< 0.59 U*	*< 0.50 U*	*< 0.45 U*	*< 0.48 U*	*< 0.57 U*	*< 0.59 U*	
o-Xylene	µg/kg	*< 0.54 U*	0.58 J	0.53 J	*< 0.44 U*	2.6 J	1.2 J	
m,p Xylenes	µg/kg	*< 1.3 U*	*< 1.1 U*	1.2 J	*< 1.1 U*	2.3 J	2.1 J	
08-General Chemistry Parameters for Solids								
Perchlorate	µg/kg	*< 240 UJ*	*< 250 UJ*	*< 210 UJ*	*< 250 UJ*	*< 110 UJ*	*< 60 UJ*	*< 22 U*
Total Organic Carbon	g/kg	2.3 J	*< 1.7 U*	*< 1.7 U*	2.1 J	3.4 J	2.4 J	33
pH	pH units	8.29	8.18	8.16	7.34	7.73	7.81	7.70
Cyanide, Total	mg/kg	*< 0.24 U*	*< 0.26 U*	*< 0.21 U*	*< 0.25 U*	*< 0.30 U*	*< 0.30 U*	*< 0.22 U*

Notes:
< = Compound not detected. Reportable detection limit shown.
µg/kg = micrograms per kilogram
Empty cells = Not analyzed
FD = Field Duplicate Sample
FINE = Fines Portion (Sieved) of Normal Sample
g/kg = grams per kilogram
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
in = inches
mg/kg = milligrams per kilogram
N = Normal Environmental Sample
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pg/g = picogram per gram (1 pg/g = 0.001 µg/kg)
pH units = pH units
SIM = Selected ion monitoring
SVOC = Semi-volatile organic compound
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence
VOC = Volatile organic compound

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample
J+ = The result is an estimated quantity, biased high. The associated numerical value is the approximate concentration of the analyte in the sample
J- = The result is an estimated quantity, biased low. The associated numerical value is the approximate concentration of the analyte in the sample
U = Compound was analyzed for, but not detected. The associated numerical value is the reporting limit
UJ = The nondetected analyte was qualified as estimated at the sample quantitation limit. The reported sample quantitation limit is approximate and may be inaccurate or imprecise.
UQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration

Table I-2
Analytical Results for Solids Samples -
PRI-8 Northwest Ponded Waste Lagoon Overflow
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

Location Group		PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8
Location ID		PRI8-001	PRI8-002	PRI8-003	PRI8-004	PRI8-005A	PRI8-005B	PRI8-006	PRI8-006	PRI8-007	PRI8-007	PRI8-008	PRI8-009	PRI8-011	PRI8-012	PRI8-012	PRI8-013
Sample Date		17-Dec-13	17-Dec-13	17-Dec-13	18-Dec-13	08-May-14	08-May-14	25-Mar-14	25-Mar-14	18-Dec-13	18-Dec-13	18-Dec-13	18-Dec-13	17-Dec-13	17-Dec-13	17-Dec-13	18-Dec-13
Sample Type		N	N	N	N	N	N	FINE	N	FINE	N	N	N	N	FINE	N	N
Depth		0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in
Sample ID		PRI8-001-SS01-121713	PRI8-002-SS01-121713	PRI8-003-SS01-121713	PRI8-004-SS01-121813	PRI8-005A-SS01-050814	PRI8-005B-SS01-050814	PRI8-006-SS01-032514 FINES	PRI8-006-SS01-032514	PRI8-007-SS01-121813 FINES	PRI8-007-SS01-121813	PRI8-008-SS01-121813	PRI8-009-SS01-121813	PRI8-011-SS01-121713	PRI8-012-SS01-121713 FINES	PRI8-012-SS01-121713	PRI8-013-SS01-121813
Analyte	**Unit**																
01-Dioxins and Furans																	
2,3,7,8-TCDD	pg/g	< 0.049 U	< 0.030 U	< 0.031 U	< 0.030 U	< 0.037 U	< 0.16 UQ	< 0.075 U	< 0.072 U	< 0.092 UQ	< 0.026 U	< 0.037 U	< 0.052 U	< 0.028 U	< 0.1 UQ	< 0.027 U	< 0.045 U
1,2,3,7,8-PeCDD	pg/g	< 0.10 UJ	< 0.050 U	< 0.057 U	< 0.047 U	0.12 J	0.12 J	< 0.19 U	0.15 J	0.16 J	< 0.09 UQ	< 0.074 U	< 0.097 UJ	< 0.048 U	0.53 J	< 0.15 UQ	< 0.094 U
1,2,3,4,7,8-HxCDD	pg/g	< 0.079 U	< 0.041 U	< 0.056 U	< 0.043 U	< 0.090 U	< 0.091 U	< 0.23 U	< 0.097 U	0.16 J	< 0.1 UQ	0.11 J	< 0.12 U	< 0.038 U	< 0.41 UQ	< 0.058 U	< 0.078 U
1,2,3,6,7,8-HxCDD	pg/g	< 0.10 U	< 0.059 U	< 0.040 U	< 0.030 U	< 0.070 U	< 0.071 U	0.23 J	< 0.075 U	0.46 J	0.22 J	0.17 J	< 0.085 U	< 0.12 UQ	1.4 J	0.39 J	< 0.055 U
1,2,3,7,8,9-HxCDD	pg/g	< 0.097 U	< 0.068 U	< 0.041 U	< 0.058 U	< 0.067 U	< 0.068 U	< 0.16 U	< 0.17 UQ	< 0.5 UQ	< 0.21 UQ	< 0.16 UQ	< 0.088 U	< 0.10 U	1.8 J	0.47 J	< 0.057 U
1,2,3,4,6,7,8-HpCDD	pg/g	0.84 J	< 0.97 UQ	< 0.39 UQ	0.75 J	< 0.77 U	< 0.82 UQ	1.3 J	1.6 J	3.6 J	1.6 J	1.1 J	< 0.54 UQ	< 0.57 UQ	11	3.1 J	0.81 J
OCDD	pg/g	3.5 J	8.4 J	2.2 J	3.0 J	< 2.2 UQ	< 2.8 UQ	< 6.4 U	4.4 J	18	13	4.2 J	3.8 J	2.9 J	45	12	3.4 J
2,3,7,8-TCDF	pg/g	< 0.45 U	< 0.26 U	0.62 J	< 0.35 U	1.1 J	1.2	10	11	2.4	1.2	< 0.36 U	0.51 J	0.85 J	16	4.6	< 0.38 U
1,2,3,7,8-PeCDF	pg/g	0.61 J	< 0.24 UQ	0.45 J	< 0.34 UQ	< 0.61 UQ	1.1 J	3.1 J	4.7 J	5.5	3.5 J	< 0.42 UQ	< 0.54 UQ	1.4 J	31	9.2	0.51 J
2,3,4,7,8-PeCDF	pg/g	< 0.33 U	< 0.19 U	< 0.25 U	< 0.26 U	< 0.38 UQ	0.52 J	1.5 J	2.4 J	3.0 J	2.0 J	< 0.29 U	< 0.36 U	0.92 J	16	5.1 J	< 0.22 U
1,2,3,4,7,8-HxCDF	pg/g	< 1.9 U	< 1.1 U	< 1.7 U	< 1.4 U	2.3 J	2.7 J	5.3	8.8	24	11	< 1.4 U	< 1.4 U	< 5.3 U	120	36	< 1.4 UQ
1,2,3,6,7,8-HxCDF	pg/g	1.5 J	< 0.73 UQ	< 1 UQ	1.2 J	1.0 J	1.9 J	3.9 J	6.0 J	19	10	1.3 J	1.5 J	4.6 J	94	26	1.4 J
1,2,3,7,8,9-HxCDF	pg/g	< 0.13 U	< 0.061 U	0.096 J	< 0.064 U	< 0.35 UQ	< 0.16 UQ	0.69 J	0.94 J	1.1 J	< 0.32 UQ	< 0.090 U	< 0.10 U	0.25 J	8.0	1.8 J	< 0.076 U
2,3,4,6,7,8-HxCDF	pg/g	0.90 J	0.45 J	0.59 J	0.60 J	< 0.78 UQ	1.1 J	1.2 J	1.6 J	9.5	5.2 J	0.68 J	0.72 J	2.4 J	33	12	0.83 J
1,2,3,4,6,7,8-HpCDF	pg/g	< 14 U	< 9.4 U	< 13 U	< 12 U	8.4	17	40	49	250	110	< 12 U	< 9.3 U	52	1,000	270	< 10 U
1,2,3,4,7,8,9-HpCDF	pg/g	< 1.3 UQ	< 0.69 UQ	1.7 J	1.3 J	1.9 J	2.7 J	11	12	31	13	1.6 J	1.4 J	5.5	170	40	1.4 J
OCDF	pg/g	140	100	160	140	77	170	490	770	1,400	1,000	150	85 J	290	7,400 J	2,100	160
Calculated TEQ (ND=0), Mammalian	pg/g	0.31	0.078	0.21	0.25	0.69	1.2	3.3	4.7	10	5.1	0.31	0.31	1.8	48	14	0.31
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	0.66	0.33	0.51	0.50	0.86	1.4	3.6	4.8	10	5.2	0.59	0.60	2.1	48	14	0.58
Calculated TEQ (ND=0), Avian	pg/g	0.32	0.19	28	0.35	1.7	2.8	150	230	320	39	0.41	0.90	28	360	310	0.44
Calculated TEQ (ND=1/2 DL), Avian	pg/g	14	14	28	14	17	17	150	230	320	39	14	15	29	360	310	14
02-PCBs																	
PCB-81	pg/g	< 0.18 U	< 0.13 U	< 0.19 U	< 0.12 U	< 0.39 U	< 0.50 U	< 0.71 U	< 0.52 U	< 0.46 U	< 0.11 U	< 0.17 U	< 0.22 U	< 0.10 U	0.73 J	< 0.52 U	< 0.16 U
PCB-77	pg/g	< 1.1 UQ	1.3 J	< 0.56 UQ	1.4 J	< 0.41 U	0.99 J	< 0.73 U	< 0.53 U	2.8	1.4 J	1.7 J	1.4 J	0.82 J	5.0	2.3	1.3 J
PCB-105	pg/g	1.5 J	1.5 J	< 0.68 U	1.2 J	0.80 J	1.1 J	1.4 J	1.5 J	9.8	2.2 J	< 1.8 UQ	2.1 J	1.2 J	9.7	2.5	2.7
PCB-114	pg/g	< 0.14 U	< 0.099 U	< 0.17 U	< 0.099 U	< 0.31 U	< 0.42 U	< 0.85 U	< 0.65 U	< 0.8 UQ	< 0.17 U	< 0.12 U	< 0.25 U	< 0.11 UQ	1.2 J	0.49 J	< 0.17 U
PCB-118	pg/g	3.8	3.3	1.7 J	2.8	1.4 J	2.6	3.4	3.1	20	4.2	4.7	4.8	2.4	17	3.3	4.9
PCB-123	pg/g	< 0.14 U	0.11 J	< 0.17 U	0.11 J	< 0.31 U	< 0.43 U	< 0.85 U	< 0.64 U	< 0.61 U	0.24 J	< 0.17 UQ	< 0.26 U	< 0.13 UQ	< 0.94 UQ	< 0.38 U	< 0.17 U
PCB-126	pg/g	< 0.15 U	< 0.10 U	< 0.17 U	< 0.17 UQ	< 0.37 U	< 0.48 U	< 1.0 U	< 0.74 U	< 0.74 U	0.64 J	< 0.27 UQ	< 0.26 U	0.36 J	2.4	1.1 J	< 0.19 U
PCB-156 & 157	pg/g	0.68 J	0.60 J	< 0.4 UQ	0.65 J	0.39 J	0.50 J	< 0.85 UQ	1.3 J	4.5	1.7 J	0.98 J	1.2 J	0.86 J	7.9	2.8 J	1.0 J
PCB-167	pg/g	< 0.3 UQ	0.31 J	< 0.19 UQ	< 0.33 UQ	< 0.19 U	0.31 J	< 0.64 UQ	1.0 J	2.2	1.3 J	0.58 J	< 0.58 UQ	0.58 J	5.0	2.1	0.46 J
PCB-169	pg/g	< 0.092 U	< 0.050 U	< 0.064 U	0.16 J	< 0.22 U	< 0.31 U	< 0.24 U	< 0.3 U	< 0.35 U	0.49 J	0.24 J	< 0.11 U	< 0.23 UQ	2.2	0.72 J	< 0.095 U
PCB-189	pg/g	< 0.13 U	0.26 J	0.16 J	< 0.19 UQ	< 1 UQ	< 0.36 U	< 0.41 UQ	< 0.78 UQ	2.9	1.2 J	0.44 J	< 0.32 UQ	0.68 J	8.4	< 3.1 UQ	< 0.3 UQ
Monochlorobiphenyls, Total	pg/g	1.8 J	15 J	5.7 J	8.6 J	2.5 J	2.4 J	4.1 J	6.6 J	17 J	8.4 J	2.2 J	13 J	6.6 J	25 J	2.9 J	2.3 J
Dichlorobiphenyls, Total	pg/g	11 J	12 J	21 J	11 J	10 J	28 J	150 J	210 J	70 J	15 J	16 J	11 J	8.3 J	180 J	53 J	11 J
Trichlorobiphenyls, Total	pg/g	6.3 J	8.8 J	11 J	5.9 J	4.3 J	25 J	170 J	220 J	66 J	7.1 J	6.8 J	7.9 J	3.5 J	84 J	8.8 J	6.0 J
Tetrachlorobiphenyls, Total	pg/g	11 J	15 J	13 J	9.7 J	4.2 J	19 J	38 J	50 J	92 J	10 J	12 J	16 J	6.5 J	92 J	11 J	13 J
Pentachlorobiphenyls, Total	pg/g	23 J	22 J	14 J	18 J	8.0 J	20 J	53 J	31 J	140 J	28 J	28 J	35 J	14 J	190 J	50 J	34 J
Hexachlorobiphenyls, Total	pg/g	26 J	23 J	13 J	20 J	6.7 J	16 J	25 J	32 J	120 J	47 J	30 J	32 J	24 J	170 J	65 J	37 J
Heptachlorobiphenyls, Total	pg/g	25 J	21 J	14 J	19 J	7.1 J	17 J	39 J	42 J	160 J	75 J	27 J	27 J	35 J	310	130 J	29 J
Octachlorobiphenyls, Total	pg/g	40 J	31 J	26 J	31 J	11 J	29 J	65 J	77 J	410	220 J	37 J	50 J	98 J	960	400	39 J
Nonachlorobiphenyls, Total	pg/g	110 J	84 J	85 J	89 J	38 J	86 J	180 J	230 J	1,600	880	99 J	160 J	410	4,100	1,500	110 J
Decachlorobiphenyl (PCB-209)	pg/g	720	530	1,400	660	320	1,000	4,800 J	6,900 J	11,000 J	7,000 J	700	1,000	2,900 J	49,000 J	17,000 J	760
Total PCBs	pg/g	970	760	1,600	880	410	1,300	5,500	7,800	14,000	8,300	960	1,400	3,500	55,000	20,000	1,000
03- Metals																	
Total Aluminum	mg/kg	12,000	14,000	13,000	12,000	9,300	16,000	13,000	15,000	11,000	7,400	13,000	14,000	5,700	12,000	4,400	13,000
Total Antimony	mg/kg	0.26 J-	0.33 J-	0.42 J-	0.32 J-	0.28 J-	0.36 J-	0.25 J-	0.29 J	0.26 J-	0.25 J-	0.33 J-	0.44 J-	< 0.21 UJ	0.37 J-	< 0.21 UJ	0.41 J-
Total Arsenic	mg/kg	4.0	4.9	6.5	4.9	11	8.2	5.5	6.4	5.5	5.6	4.6	6.9	4.8	8.7	5.8	5.2
Total Barium	mg/kg	280	280	400	260	400	300	190	250	170	340	290	400	270	210	290	240
Total Beryllium	mg/kg	0.50	0.59	0.64	0.55	0.39 J-	0.68 J-	0.61	0.64	0.51	0.36	0.62	0.63	0.27	0.52	0.20 J	0.62
Total Cadmium	mg/kg	0.29	0.39	0.36	0.31	0.16	0.29	0.31	0.36	0.28	0.18 J	0.44	0.36	0.19 J	0.18 J	< 0.10 U	0.35
Total Calcium	mg/kg	87,000	86,000	81,000	93,000	180,000	86,000	88,000	100,000	86,000	190,000	79,000	87,000	210,000	94,000	270,000	110,000
Total Chromium	mg/kg	12	14	16	14	11	17	15	30 J	12	7.8	15	16	6.2	15	5.7	15
Total Cobalt	mg/kg	3.7	4.3	5.0	4.6	3.8	5.5	4.8	5.6	3.8	2.8	4.6	5.1	2.2	4.3	1.8	5.3
Total Copper	mg/kg	11	13	15	13	8.2 J-	15 J-	140	15	14	8.6	16	14	7.4	13	4.7	15
Total Iron	mg/kg	11,000	12,000	17,000	13,000	12,000	15,000	14,000	15,000	11,000	6,100	13,000	13,000	5,500	14,000	4,500	14,000
Total Lead	mg/kg	11 J	12 J	12 J	13 J	8.6 J-	12 J-	11 J	12 J	11 J	9.4 J	16 J	12 J	8.9 J	9.5 J	6.0 J	13 J
Total Magnesium	mg/kg	23,000	26,000	28,000	25,000	26,000	31,000	26,000	27,000	23,000	15,000	24,000	26,000	14,000	24,000	18,000	27,000
Total Manganese	mg/kg	250	290	310	330	300	320	350	400	310	230	340	320	170	230	120	350
Total Mercury	mg/kg	0.010 J	< 0.0097 U	0.013 J	< 0.010 U	0.015 J+	0.016 J+	0.014 J	0.011 J	0.017 J	0.015 J	< 0.011 U	< 0.011 U	0.015 J	0.011 J	< 0.0097 U	0.0095 J
Total Molybdenum	mg/kg	0.34 J	0.40 J	0.74	0.31 J	< 0.2 U	< 0.41 U	0.69	0.53	0.67 J	0.43 J	0.42 J	0.41	0.30 J	3.3 J	1.1	0.45 J
Total Nickel	mg/kg	8.9	10	13	11	10 J-	14 J-	12	14	9.1	6.4	11	13	5.1	11	4.1	13
Total Potassium	mg/kg	5,700	6,900	6,800	6,000	4,100	7,200	5,700	5,800	4,400 J+	2,500	6,600	6,100	2,000	5,500 J+	1,900	8,100
Total Selenium	mg/kg	0.23 J-	< 0.24 UJ	0.25 J-	< 0.25 UJ	0.18 J-	0.24 J-	0.23 J	< 0.26 U	0.21 J-	< 0.22 UJ	0.25 J-	0.23 J-	< 0.21 UJ	0.22 J-	< 0.21 UJ	< 0.25 UJ
Total Silver	mg/kg	< 0.068 U	< 0.071 U	< 0.074 U	< 0.075 U	< 0.042 U	< 0.073 U	< 0.059 U	< 0.077 U	< 0.058 U	< 0.067 U	< 0.070 U	< 0.061 U	< 0.062 U	< 0.059 U	< 0.062 U	< 0.074 U
Total Sodium	mg/kg	2,900	2,800	1,900	1,900	2,900	1,600	1,400	1,500	750 J+	2,100	2,400	1,800	2,400	1,200 J+	3,100	8,600
Total Thallium	mg/kg	< 0.11 U	< 0.12 U	0.13 J	0.12 J	< 0.070 U	< 0.12 U	0.16 J	< 0.13 U	< 0.097 U	< 0.11 U	0.17 J	0.15 J	< 0.10 U	< 0.099 U	< 0.10 U	0.13 J
Total Vanadium	mg/kg	17	20	24	21	26 J-	28 J-	22	25	18	14	21	24	11	24	11	23
Total Zinc	mg/kg	44 J-	48 J-	56 J-	48 J-	26 J-	83 J-	120 J-	43	44 J-	37 J-	54 J-	57 J-	30 J-	53 J-	26 J-	52 J-

Table I-2
Analytical Results for Solids Samples -
PRI-8 Northwest Ponded Waste Lagoon Overflow
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	**PRI-8**	**PRI-8**	**PRI-8**	**PRI-8**	**PRI-8**	**PRI-8**	**PRI-8**	**PRI-8**	**PRI-8**
	Location ID	**PRI8-014**	**PRI8-014**	**PRI8-015**	**PRI8-016**	**PRI8-016**	**PRI8-017**	**PRI8-017SB**	**PRI8-017SB**	**PRI8-017SB**
	Sample Date	**26-Mar-14**	**26-Mar-14**	**25-Mar-14**	**19-Dec-13**	**19-Dec-13**	**25-Mar-14**	**16-Dec-13**	**16-Dec-13**	**16-Dec-13**
	Sample Type	**FINE**	**N**	**N**	**FINE**	**N**	**N**	**N**	**N**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**6 - 8 FEET**	**8 - 10 FEET**	**10 - 12 FEET**
	Sample ID	**PRI8-014-SS01-032614 FINES**	**PRI8-014-SS01-032614**	**PRI8-015-SS01-032514**	**PRI8-016-SS01-121913 FINES**	**PRI8-016-SS01-121913**	**PRI8-017-SS01-032514**	**PRI8-017-SB01-6-121613**	**PRI8-017-SB02-8-121613**	**PRI8-017-SB03-10-121613**
Analyte	**Unit**									
01-Dioxins and Furans										
2,3,7,8-TCDD	pg/g	*< 0.081 U*	*< 0.035 U*	*< 0.028 U*	*< 0.048 U*	*< 0.032 U*	*< 0.042 U*	*< 0.081 U*	*< 0.076 U*	*< 0.080 U*
1,2,3,7,8-PeCDD	pg/g	*< 0.18 U*	*< 0.070 U*	*< 0.093 UQ*	*< 0.11 UQ*	*< 0.069 U*	*< 0.25 UQ*	*< 0.18 U*	*< 0.24 U*	*< 0.26 U*
1,2,3,4,7,8-HxCDD	pg/g	*< 0.30 U*	*< 0.10 U*	*< 0.087 U*	*< 0.096 U*	*< 0.070 U*	*< 0.15 U*	*< 0.068 U*	*< 0.097 U*	*< 0.070 U*
1,2,3,6,7,8-HxCDD	pg/g	*< 0.22 U*	*< 0.081 U*	*< 0.068 U*	0.26 J	*< 0.17 U*	1.0 J	*< 0.066 U*	*< 0.094 U*	0.20 J
1,2,3,7,8,9-HxCDD	pg/g	*< 0.21 U*	*< 0.078 U*	*< 0.065 U*	0.27 J	*< 0.17 U*	*< 0.93 UQ*	*< 0.061 U*	*< 0.086 U*	*< 0.13 UQ*
1,2,3,4,6,7,8-HpCDD	pg/g	1.8 J	*< 1.2 UQ*	2.0 J	*< 1.6 UQ*	*< 0.55 UQ*	7.1 J	0.48 J	0.30 J	0.88 J
OCDD	pg/g	*< 9 U*	4.6 J	7.7 J	10 J	*< 3.3 UQ*	24	*< 2.5 U*	*< 1.1 U*	5.5 J
2,3,7,8-TCDF	pg/g	7.3	4.7	7.7	2.6	1.4	19	0.42 J	0.25 J	1.3
1,2,3,7,8-PeCDF	pg/g	4.2 J	*< 2.5 UQ*	5.3 J	5.8	2.4 J	20	*< 0.56 UQ*	*< 0.13 U*	2.6 J
2,3,4,7,8-PeCDF	pg/g	1.9 J	2.1 J	2.1 J	3.3 J	1.5 J	8.7	*< 0.19 U*	*< 0.14 U*	1.2 J
1,2,3,4,7,8-HxCDF	pg/g	10	8.3	14	23	7.5	59	1.8 J	0.53 J	9.0
1,2,3,6,7,8-HxCDF	pg/g	6.6	6.4 J	9.4	14	5.1 J	39	1.2 J	0.44 J	6.0 J
1,2,3,7,8,9-HxCDF	pg/g	0.93 J	0.61 J	1.5 J	1.2 J	*< 0.33 UQ*	4.9 J	*< 0.14 U*	*< 0.10 U*	0.89 J
2,3,4,6,7,8-HxCDF	pg/g	1.7 J	1.6 J	2.7 J	8.4	2.3 J	9.4	*< 0.42 UQ*	0.27 J	1.6 J
1,2,3,4,6,7,8-HpCDF	pg/g	74	49	91	140	35	370	12	4.2 J	66
1,2,3,4,7,8,9-HpCDF	pg/g	21	14	23	22	*< 4.6 UQ*	100	*< 2.6 UQ*	*< 0.53 UQ*	15
OCDF	pg/g	730	610	1,100	1,200 J	240	4,300	84	41	920
Calculated TEQ (ND=0), Mammalian	pg/g	4.5	3.6	5.8	8.1	2.6	23	0.49	0.21	3.4
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	4.7	3.8	5.9	8.2	2.7	23	0.74	0.43	3.6
Calculated TEQ (ND=0), Avian	pg/g	290	240	320	13	5.0	1,500	0.85	0.42	230
Calculated TEQ (ND=1/2 DL), Avian	pg/g	290	240	320	25	18	1,500	14	15	230
02-PCBs										
PCB-81	pg/g	*< 0.42 U*	*< 1.1 U*	*< 0.45 U*	*< 0.27 U*	*< 0.32 U*	*< 1.0 U*	*< 0.67 U*	*< 0.75 U*	*< 0.89 U*
PCB-77	pg/g	*< 0.55 UQ*	*< 1.1 U*	1.2 J	1.3 J	*< 1.2 UQ*	2.5 J	*< 0.70 U*	*< 0.77 U*	*< 0.93 U*
PCB-105	pg/g	1.6 J	*< 1.0 U*	1.8 J	3.9	1.8 J	2.3 J	*< 0.94 UQ*	*< 0.58 UQ*	*< 0.66 UQ*
PCB-114	pg/g	*< 0.51 U*	*< 0.97 U*	*< 0.46 U*	*< 0.32 U*	*< 0.27 U*	1.1 J	*< 0.33 U*	*< 0.34 U*	*< 0.53 U*
PCB-118	pg/g	3.3	2.6 J	3.2	7.0	3.1	5.4	*< 1.7 U*	*< 1.6 U*	*< 1.5 U*
PCB-123	pg/g	*< 0.50 U*	*< 0.98 U*	*< 0.48 U*	*< 0.32 U*	*< 0.27 U*	*< 1.0 U*	*< 0.32 U*	*< 0.33 U*	*< 0.50 U*
PCB-126	pg/g	*< 0.58 U*	*< 1.1 U*	*< 0.53 U*	*< 0.41 UQ*	*< 0.44 UQ*	*< 1.1 U*	*< 0.41 U*	*< 0.40 U*	*< 0.61 U*
PCB-156 & 157	pg/g	1.9 J	*< 0.79 U*	*< 1.2 UQ*	1.9 J	1.8 J	3.5 J	0.57 J	*< 0.40 U*	*< 0.85 UQ*
PCB-167	pg/g	1.6 J	*< 0.64 U*	1.3 J	0.95 J	*< 1 UQ*	3.7	*< 0.23 U*	*< 0.30 U*	0.82 J
PCB-169	pg/g	*< 0.27 U*	*< 0.71 U*	*< 0.39 UQ*	*< 0.22 U*	*< 0.48 UQ*	1.3 J	*< 0.29 U*	*< 0.36 U*	*< 0.34 U*
PCB-189	pg/g	*< 0.9 UQ*	*< 0.86 U*	2.0 J	*< 0.86 UQ*	1.6 J	5.6	*< 0.37 U*	*< 0.42 U*	*< 0.84 UQ*
Monochlorobiphenyls, Total	pg/g	3.8 J	1.6 J	10 J	3.0 J	2.3 J	19 J	2.0 J	11 J	38 J
Dichlorobiphenyls, Total	pg/g	61 J	44 J	81 J	31 J	18 J	240 J	4.3 J	58 J	210 J
Trichlorobiphenyls, Total	pg/g	88 J	64 J	110 J	28 J	5.4 J	230 J	*< 1.5 U*	2.4 J	15 J
Tetrachlorobiphenyls, Total	pg/g	23 J	15 J	37 J	35 J	6.2 J	92 J	3.4 J	3.2 J	7.5 J
Pentachlorobiphenyls, Total	pg/g	34 J	18 J	27 J	54 J	23 J	83 J	9.2 J	7.6 J	21 J
Hexachlorobiphenyls, Total	pg/g	53 J	9.1 J	38 J	47 J	33 J	110 J	8.3 J	7.3 J	20 J
Heptachlorobiphenyls, Total	pg/g	130 J	27 J	62 J	63 J	73 J	180 J	12 J	6.9 J	38 J
Octachlorobiphenyls, Total	pg/g	130 J	73 J	140 J	200	220 J	470	24 J	14 J	76 J
Nonachlorobiphenyls, Total	pg/g	300	210 J	490	790	840	1,500	67 J	32 J	190 J
Decachlorobiphenyl (PCB-209)	pg/g	6,500 J	5,100 J	9,700 J	6,200 J	6,500 J	34,000 J	680	340	7,500 J
Total PCBs	pg/g	7,400	5,600	11,000	7,500	7,700	37,000	810	480	8,200
03- Metals										
Total Aluminum	mg/kg	19,000	19,000	18,000	9,200	8,600	20,000	5,600	9,500	2,600
Total Antimony	mg/kg	0.43 J-	0.49 J-	0.46 J	*< 0.20 UJ*	0.19 J-	0.66 J	*< 0.39 UJ*	0.41 J-	0.51 J-
Total Arsenic	mg/kg	9.5	9.0	9.1	3.7	3.7	13	7.6	7.7	12
Total Barium	mg/kg	330	330	270	210	360	370	300	360	210
Total Beryllium	mg/kg	0.84	0.76	0.70	0.38	0.37	0.83	0.25	0.52	0.15
Total Cadmium	mg/kg	0.33	0.31	0.31	0.18 J	0.20	0.28	0.16 J	0.16 J	0.25
Total Calcium	mg/kg	90,000	91,000	47,000	72,000	100,000	91,000	230,000	180,000	190,000
Total Chromium	mg/kg	20	21	19	10	9.4	27 J-	9.3	14	6.8
Total Cobalt	mg/kg	6.4	6.5	6.4	3.1	2.9	7.4	2.5	4.0	2.1
Total Copper	mg/kg	230 J	15	17	12	8.3	19	5.8	11	6.2
Total Iron	mg/kg	17,000	16,000	11,000	8,600	7,800	20,000	4,800	9,300	4,800
Total Lead	mg/kg	12 J	11 J	11 J	9.3 J	10 J	12 J	6.4 J	9.9	8.5
Total Magnesium	mg/kg	30,000	30,000	18,000	19,000	18,000	31,000	30,000	18,000	20,000
Total Manganese	mg/kg	350	330	370	240	240	410	230	260	150
Total Mercury	mg/kg	0.013 J	*< 0.011 U*	*< 0.012 U*	0.013 J	0.010 J	*< 0.013 U*	*< 0.0096 U*	*< 0.012 U*	0.016 J
Total Molybdenum	mg/kg	0.63	0.35	0.23 J	0.99 J	0.94	1.0	1.7	1.6	14
Total Nickel	mg/kg	16	16	16	7.7	6.8	20 J-	6.9	11	7.2
Total Potassium	mg/kg	7,900	7,600	4,000	4,100 J+	4,100	8,300	2,200 J+	3,800 J+	920 J+
Total Selenium	mg/kg	0.31 J	0.26 J	0.28 J	*< 0.20 UJ*	0.18 J-	0.27 J-	0.33 J-	0.21 J-	0.26 J-
Total Silver	mg/kg	*< 0.065 U*	*< 0.043 U*	*< 0.078 U*	*< 0.061 U*	*< 0.041 U*	*< 0.045 U*	*< 0.071 U*	*< 0.056 U*	0.044 J
Total Sodium	mg/kg	1,400	1,400	830	4,300 J+	9,300	1,800	3,300 J+	2,600 J+	3,200 J+
Total Thallium	mg/kg	0.19 J	0.15	*< 0.13 U*	*< 0.10 U*	0.082 J	0.17	*< 0.12 U*	*< 0.093 U*	*< 0.069 U*
Total Vanadium	mg/kg	30	30	30	15	14	38	20	25	25
Total Zinc	mg/kg	100 J-	49	50	34 J-	36 J-	52	17	35	22

Table I-2
Analytical Results for Solids Samples -
PRI-8 Northwest Ponded Waste Lagoon Overflow
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8
	Location ID	PRI8-001	PRI8-002	PRI8-003	PRI8-004	PRI8-005A	PRI8-005B	PRI8-006	PRI8-006	PRI8-007	PRI8-007	PRI8-008	PRI8-009	PRI8-011	PRI8-012	PRI8-012	PRI8-013
	Sample Date	17-Dec-13	17-Dec-13	17-Dec-13	18-Dec-13	08-May-14	08-May-14	25-Mar-14	25-Mar-14	18-Dec-13	18-Dec-13	18-Dec-13	18-Dec-13	17-Dec-13	17-Dec-13	17-Dec-13	18-Dec-13
	Sample Type	N	N	N	N	N	N	FINE	N	FINE	N	N	N	N	FINE	N	N
	Depth	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in
	Sample ID	PRI8-001-SS01-121713	PRI8-002-SS01-121713	PRI8-003-SS01-121713	PRI8-004-SS01-121813	PRI8-005A-SS01-050814	PRI8-005B-SS01-050814	PRI8-006-SS01-032514 FINES	PRI8-006-SS01-032514	PRI8-007-SS01-121813 FINES	PRI8-007-SS01-121813	PRI8-008-SS01-121813	PRI8-009-SS01-121813	PRI8-011-SS01-121713	PRI8-012-SS01-121713 FINES	PRI8-012-SS01-121713	PRI8-013-SS01-121813
Analyte	Unit																
05-SVOCs																	
1,1'-Biphenyl	µg/kg	< 190 U	< 200 U	< 210 U	< 200 U	< 220 U	< 210 U	< 170 U	< 210 U	< 170 U	< 190 U	< 190 U	< 200 U	< 180 U	< 170 U	< 170 U	< 200 U
1,2,4,5-Tetrachlorobenzene	µg/kg	< 30 U	< 31 U	< 32 U	< 31 U	< 34 U	< 32 U	< 27 U	< 33 U	< 27 U	< 29 U	< 30 U	< 32 U	< 28 U	< 26 U	< 27 U	< 31 U
2,3,4,6-Tetrachlorophenol	µg/kg	< 94 U	< 98 U	< 100 U	< 98 U	< 110 UJ	< 100 UJ	< 85 U	< 100 UJ	< 86 UJ	< 93 U	< 95 U	< 100 U	< 88 U	< 83 U	< 86 U	< 97 U
2,4,5-Trichlorophenol	µg/kg	< 95 U	< 99 U	< 100 U	< 99 U	< 110 UJ	< 100 UJ	< 86 U	< 100 U	< 87 UJ	< 94 U	< 97 U	< 100 U	< 89 U	< 84 U	< 87 U	< 98 U
2,4,6-Trichlorophenol	µg/kg	< 96 U	< 100 U	< 100 U	< 100 U	< 110 U	< 100 U	< 87 U	< 110 U	< 88 U	< 95 U	< 98 U	< 100 U	< 90 U	< 85 U	< 88 U	< 99 U
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	< 5.1 U	< 5.3 U	< 5.5 U	< 5.3 U	< 5.8 U	< 5.5 U	< 4.5 U	< 5.5 U	< 46 UJ	< 5.0 U	< 5.1 U	< 5.4 U	< 4.7 U	< 4.5 U	< 4.6 U	< 5.2 U
2,2-Oxybis(1-chloropropane)	µg/kg	< 91 U	< 94 U	< 98 U	< 95 U	< 100 UJ	< 99 UJ	< 81 UJ	< 100 UJ	< 83 U	< 89 U	< 92 U	< 96 U	< 85 U	< 80 U	< 83 U	< 94 U
2,4-Dichlorophenol	µg/kg	< 100 U	< 110 U	< 110 U	< 110 U	< 120 UJ	< 110 UJ	< 92 U	< 110 U	< 93 U	< 100 U	< 100 U	< 110 U	< 96 U	< 90 U	< 93 U	< 110 U
2,4-Dimethylphenol	µg/kg	< 190 UJ	< 200 UJ	< 210 U	< 200 U	< 220 UJ	< 210 UJ	< 170 U	< 210 UJ	< 170 U	< 190 U	< 190 U	< 200 U	< 180 UJ	< 170 U	< 180 UJ	< 200 U
2,4-Dinitrophenol	µg/kg	< 250 U	< 260 U	< 270 U	300 J	< 280 U	< 270 U	< 220 U	< 270 U	< 220 UJ	< 240 U	< 250 U	< 260 U	< 230 U	< 220 U	< 220 U	< 250 U
2,4-Dinitrotoluene	µg/kg	< 100 U	< 110 U	< 110 U	< 110 U	< 120 U	< 110 U	< 92 U	< 110 U	< 93 U	< 100 U	< 100 U	< 110 U	< 96 U	< 90 U	< 93 U	< 110 U
2,6-Dinitrotoluene	µg/kg	< 110 U	< 120 U	< 120 U	< 120 U	< 130 U	< 120 U	< 100 U	< 120 U	< 100 U	< 110 U	< 120 U	< 120 U	< 110 U	< 100 U	< 100 U	< 120 U
2-Chloronaphthalene	µg/kg	< 93 U	< 97 U	< 100 U	< 97 U	< 110 U	< 100 U	< 84 U	< 100 U	< 85 U	< 91 U	< 94 U	< 99 U	< 87 U	< 82 U	< 85 U	< 96 U
2-Chlorophenol	µg/kg	< 100 U	< 110 U	< 110 U	< 110 U	< 120 U	< 110 U	< 91 U	< 110 U	< 92 U	< 99 U	< 100 U	< 110 U	< 95 U	< 89 U	< 92 U	< 100 U
2-Methylphenol	µg/kg	< 67 U	< 69 U	< 72 U	< 70 U	< 77 UJ	< 72 UJ	< 60 U	< 73 U	< 61 U	< 66 U	< 67 U	< 71 U	< 62 U	< 59 U	< 61 U	< 69 U
2-Nitroaniline	µg/kg	< 96 U	< 100 U	< 100 U	< 100 U	< 110 U	< 100 U	< 87 U	< 110 U	< 88 U	< 95 U	< 98 U	< 100 U	< 90 U	< 85 U	< 88 U	< 99 U
2-Nitrophenol	µg/kg	< 94 U	< 98 U	< 100 U	< 98 U	< 110 U	< 100 U	< 85 U	< 100 U	< 86 U	< 93 U	< 95 U	< 100 U	< 88 U	< 83 U	< 86 U	< 97 U
3,3'-Dichlorobenzidine	µg/kg	< 110 U	< 110 U	< 120 U	< 110 U	< 120 UJ	< 120 UJ	< 97 UJ	< 120 U	< 98 UJ	< 110 U	< 110 U	< 110 U	< 100 U	< 95 UJ	< 99 U	< 110 U
3-Nitroaniline	µg/kg	< 190 U	< 200 U	< 210 U	< 200 UJ	< 220 UJ	< 210 UJ	< 170 UJ	< 210 U	< 170 UJ	< 190 UJ	< 190 UJ	< 200 UJ	< 180 U	< 170 UJ	< 180 U	< 200 UJ
4,6-Dinitro-2-methylphenol	µg/kg	< 93 U	< 97 U	< 100 U	< 97 U	< 110 U	320 J	< 84 U	< 100 U	< 85 UJ	< 91 U	< 94 U	< 99 U	< 87 U	< 82 U	< 85 U	< 96 U
4-Bromophenyl-phenylether	µg/kg	< 98 U	< 100 U	< 110 U	< 100 U	< 110 U	< 110 U	< 88 U	< 110 U	< 89 U	< 96 U	< 99 U	< 100 U	< 91 U	< 86 U	< 89 U	< 100 U
4-Chloro-3-methylphenol	µg/kg	< 110 U	< 110 U	< 110 U	< 110 U	< 120 UJ	< 110 UJ	< 95 U	< 120 U	< 96 U	< 100 U	< 110 U	< 110 U	< 99 U	< 93 U	< 97 U	< 110 U
4-Chloroaniline	µg/kg	< 67 UJ	< 69 UJ	< 72 U	< 70 UJ	< 77 UJ	< 72 UJ	< 60 UJ	< 73 U	< 61 UJ	< 66 UJ	< 67 UJ	< 71 UJ	< 62 UJ	< 59 UJ	< 61 UJ	< 69 UJ
4-Chlorophenyl-phenylether	µg/kg	< 110 U	< 110 U	< 120 U	< 110 U	< 120 UJ	< 120 UJ	< 96 U	< 120 U	< 97 U	< 110 U	< 110 U	< 110 U	< 100 U	< 94 U	< 98 U	< 110 U
3 & 4 Methylphenol	µg/kg	< 380 U	< 390 U	< 410 U	< 400 U	< 440 U	< 410 U	< 340 U	< 420 U	< 340 U	< 370 U	< 380 U	< 400 U	< 360 U	< 340 U	< 350 U	< 390 U
4-Nitroaniline	µg/kg	< 100 U	< 110 U	< 110 U	< 110 U	< 120 U	< 110 U	< 91 U	< 110 U	< 92 U	< 99 U	< 100 U	< 110 U	< 95 U	< 89 U	< 92 U	< 100 U
4-Nitrophenol	µg/kg	< 320 U	< 330 U	< 350 U	< 340 U	< 370 U	< 350 U	< 290 U	< 350 U	< 290 U	< 320 U	< 330 U	< 340 U	< 300 U	< 280 U	< 290 U	< 330 U
Acetophenone	µg/kg	< 29 U	< 30 U	< 31 U	< 30 U	< 33 UJ	< 31 UJ	220 J	< 32 U	< 26 U	< 28 U	< 29 U	< 31 U	< 27 U	100 J	< 26 U	< 30 U
Benzaldehyde	µg/kg	< 190 U	< 200 U	< 210 U	< 200 U	< 220 U	< 210 U	600	< 210 U	< 170 U	< 190 U	< 190 U	< 200 U	< 180 U	< 170 U	< 170 U	< 200 U
Benzylbutylphthalate	µg/kg	< 110 U	< 110 U	< 120 U	< 110 U	< 130 U	< 120 U	< 98 U	< 120 U	< 99 U	< 110 U	< 110 U	< 120 U	< 100 U	< 96 U	< 100 U	< 110 U
Bis(2-chloroethoxy)methane	µg/kg	< 100 U	< 110 U	< 110 U	< 110 U	< 120 U	< 110 U	< 91 U	< 110 U	< 92 U	< 99 U	< 100 U	< 110 U	< 95 U	< 89 U	< 92 U	< 100 U
bis(2-Chloroethyl) ether	µg/kg	< 93 U	< 97 U	< 100 U	< 97 U	< 110 U	< 100 U	< 84 U	< 100 U	< 85 U	< 91 U	< 94 U	< 99 U	< 87 U	< 82 U	< 85 U	< 96 U
Bis(2-ethylhexyl)phthalate	µg/kg	< 110 U	< 120 U	< 120 U	< 120 U	< 130 U	140 J	< 140 U	< 120 U	< 100 U	< 110 U	< 110 U	< 120 U	< 110 U	< 100 U	< 100 U	< 120 U
Carbazole	µg/kg	< 110 U	< 110 U	< 120 U	< 110 U	< 130 UJ	< 120 UJ	< 98 U	< 120 U	< 99 UJ	< 110 U	< 110 U	< 120 U	< 100 U	< 96 U	< 100 U	< 110 U
Dibenzofuran	µg/kg	< 99 U	< 100 U	< 110 U	< 100 U	< 110 UJ	< 110 UJ	< 89 U	< 110 U	< 90 U	< 97 U	< 100 U	< 100 U	< 93 U	< 87 U	< 90 U	< 100 U
Diethyl phthalate	µg/kg	< 100 U	< 110 U	< 110 U	< 110 U	< 120 U	< 110 U	< 93 U	< 110 U	< 94 U	< 100 U	< 100 U	< 110 U	< 97 U	< 91 U	< 95 U	< 110 U
Dimethylphthalate	µg/kg	< 100 U	< 100 U	< 110 U	< 100 U	< 120 U	< 110 U	< 90 U	< 110 U	< 91 U	< 98 U	< 100 U	< 110 U	< 94 U	< 88 U	< 91 U	< 100 U
Di-n-butylphthalate	µg/kg	< 110 U	< 120 U	< 120 U	< 120 U	< 130 U	< 120 U	< 100 U	< 120 U	< 100 U	< 110 U	< 110 U	< 120 U	< 100 U	< 98 U	< 100 U	< 110 U
Di-n-octylphthalate	µg/kg	< 110 U	< 120 U	< 120 U	< 120 U	< 130 U	< 120 U	< 100 U	< 120 U	< 100 U	< 110 U	< 110 U	< 120 U	< 100 U	< 98 U	< 100 U	< 110 U
Hexachlorobenzene	µg/kg	< 100 U	< 110 U	< 110 U	< 110 U	< 120 U	< 110 U	< 92 U	< 110 U	< 93 U	< 100 U	< 100 U	< 110 U	< 96 U	< 90 U	< 93 U	< 110 U
Hexachlorobenzene (SIM Screen)	µg/kg	< 2.5 U	< 2.6 U	2.7 J	< 2.6 U	< 2.9 U	< 2.8 U	14 J	21	31 J	3.1 J	< 2.6 U	< 2.7 U	2.5 J	29	29	< 2.6 U
Hexachlorobutadiene	µg/kg	< 94 U	< 98 U	< 100 U	< 98 U	< 110 U	< 100 U	< 85 U	< 100 U	< 86 U	< 93 U	< 95 U	< 100 U	< 88 U	< 83 U	< 86 U	< 97 U
Hexachlorobutadiene (SIM Screen)	µg/kg	< 4.2 U	< 4.4 U	< 4.6 U	< 4.4 U	< 4.9 U	< 4.6 U	< 3.8 U	< 4.7 U	< 39 UJ	< 4.2 U	< 4.3 U	< 4.5 U	< 4.0 U	< 3.8 U	< 3.9 U	< 4.4 U
Hexachlorocyclopentadiene	µg/kg	< 71 U	< 74 U	< 77 U	< 74 U	< 82 UJ	< 77 UJ	< 64 U	< 78 UJ	< 65 UJ	< 70 U	< 72 U	< 76 U	< 67 U	< 63 U	< 65 U	< 73 U
Hexachloroethane	µg/kg	< 93 U	< 97 U	< 100 U	< 97 U	< 110 U	< 100 U	< 84 U	< 100 U	< 85 U	< 91 U	< 94 U	< 99 U	< 87 U	< 82 U	< 85 U	< 96 U
Isophorone	µg/kg	< 110 U	< 110 U	< 120 U	< 110 U	< 120 UJ	< 120 UJ	< 96 U	< 120 U	< 97 U	< 110 U	< 110 U	< 110 U	< 100 U	< 94 U	< 98 U	< 110 U
Nitrobenzene	µg/kg	< 87 U	< 91 U	< 94 U	< 91 U	< 100 U	< 95 U	< 78 U	< 96 U	< 79 U	< 86 U	< 88 U	< 93 U	< 82 U	< 77 U	< 80 U	< 90 U
N-Nitrosodimethylamine	µg/kg	< 110 U	< 110 U	< 120 U	< 120 U	< 130 UJ	< 120 UJ	< 99 U	< 120 U	< 100 UJ	< 110 U	< 110 U	< 120 U	< 100 U	< 97 U	< 100 U	< 110 U
n-Nitrosodimethylamine (SIM Screen)	µg/kg	< 110 U	< 110 U	< 120 U	< 120 U	< 130 U	< 120 U	< 99 U	< 120 U	< 1,000 UJ	< 110 U	< 110 U	< 120 U	< 100 U	< 97 U	< 100 U	< 110 U
N-Nitroso-di-n-propylamine	µg/kg	< 96 U	< 100 U	< 100 U	< 100 U	< 110 U	< 100 U	< 87 U	< 110 U	< 88 U	< 95 U	< 98 U	< 100 U	< 90 U	< 85 U	< 88 U	< 99 U
N-Nitrosodiphenylamine	µg/kg	< 99 U	< 100 U	< 110 U	< 100 U	< 110 U	< 110 U	< 89 U	< 110 U	< 90 U	< 97 U	< 100 U	< 100 U	< 93 U	< 87 U	< 90 U	< 100 U
Pentachlorophenol	µg/kg	< 59 U	< 61 U	< 63 U	< 61 U	< 68 UJ	250 J-	< 53 U	< 64 U	< 53 UJ	< 58 U	< 59 U	< 62 U	< 55 U	< 52 U	< 54 U	< 60 U
Pentachlorophenol (SIM Screen)	µg/kg	< 28 U	< 29 U	< 30 U	63 J	< 32 UJ	< 30 UJ	< 25 UJ	< 30 UJ	< 250 UJ	< 27 U	< 28 U	< 29 U	< 26 U	< 24 U	< 25 U	< 28 U
Phenol	µg/kg	< 95 U	< 99 U	< 100 U	< 99 U	< 110 UJ	< 100 UJ	< 86 U	< 100 U	< 87 U	< 94 U	< 97 U	< 100 U	< 89 U	< 84 U	< 87 U	< 98 U
06-PAHs by SIM																	
2-Methylnaphthalene	µg/kg	< 0.48 U	< 0.46 U	< 0.51 U	< 0.47 U	< 0.57 U	< 0.53 U	< 0.45 U	< 0.50 U	0.56 J	< 0.47 U	< 0.51 U	< 0.58 U	< 0.48 U	< 0.46 U	< 0.44 U	< 0.51 UJ
Acenaphthene	µg/kg	< 0.52 U	< 0.50 U	< 0.56 U	< 0.52 U	< 0.62 U	< 0.58 U	< 0.49 U	< 0.55 U	< 0.48 U	< 0.52 U	< 0.56 U	< 0.63 U	< 0.52 U	< 0.50 U	< 0.48 U	< 0.56 UJ
Acenaphthylene	µg/kg	< 0.37 U	< 0.35 U	< 0.39 U	< 0.36 U	< 0.44 U	< 0.41 U	< 0.34 U	< 0.39 U	< 0.33 U	< 0.36 U	< 0.39 U	< 0.44 U	< 0.37 U	< 0.35 U	< 0.34 U	< 0.39 UJ
Anthracene	µg/kg	< 0.44 U	< 0.42 U	< 0.47 U	< 0.43 U	< 0.52 U	< 0.49 U	< 0.41 U	< 0.46 U	< 0.40 U	< 0.43 U	< 0.47 U	< 0.53 U	< 0.44 U	< 0.42 U	< 0.41 U	< 0.47 UJ
Benzo(a)anthracene	µg/kg	< 0.34 U	0.35 J	< 0.36 U	< 0.33 U	< 0.40 U	< 0.37 U	< 0.31 U	< 0.35 U	< 0.31 U	< 0.33 U	< 0.36 U	< 0.41 U	< 0.34 U	< 0.32 U	< 0.31 U	< 0.36 UJ
Benzo(a)pyrene	µg/kg	< 0.44 U	< 0.43 U	< 0.47 U	< 0.44 U	< 0.53 U	< 0.49 U	< 0.41 U	< 0.47 U	< 0.40 U	< 0.44 U	< 0.48 U	< 0.54 U	< 0.45 U	< 0.42 U	< 0.41 U	< 0.47 UJ
Benzo(b)fluoranthene	µg/kg	< 0.56 U	< 0.54 U	< 0.60 U	< 0.55 U	< 0.67 U	< 0.62 U	< 0.52 U	< 0.59 U	0.96 J	< 0.55 U	< 0.60 U	< 0.68 U	< 0.56 U	< 0.54 U	< 0.52 U	< 0.60 UJ
Benzo(g,h,i)perylene	µg/kg	< 1.1 U	< 1.1 U	< 1.2 U	< 1.1 U	< 1.3 U	< 1.2 U	< 1.0 U	< 1.2 U	< 1.0 U	< 1.1 U	< 1.2 U	< 1.3 U	< 1.1 U	< 1.1 U	< 1.0 U	< 1.2 UJ
Benzo(k)fluoranthene	µg/kg	< 0.84 U	< 0.82 U	< 0.90 U	< 0.83 U	< 1.0 U	< 0.94 U	< 0.79 U	< 0.89 U	< 0.77 U	< 0.83 U	< 0.91 U	< 1.0 U	< 0.85 U	< 0.81 U	< 0.78 U	< 0.90 UJ
Chrysene	µg/kg	0.58 J	0.76 J	0.50 J	0.63 J	< 0.46 U	< 0.43 U	< 0.36 U	< 0.41 U	0.41 J	0.40 J	0.91 J	0.49 J	0.41 J	0.48 J	< 0.36 U	< 0.41 UJ
Dibenzo(a,h)anthracene	µg/kg	< 1.3 U	< 1.3 U	< 1.4 U	< 1.3 U	< 1.6 U	< 1.5 U	< 1.2 U	< 1.4 U	< 1.2 U	< 1.3 U	< 1.4 U	< 1.6 U	< 1.3 U	< 1.3 U	< 1.2 U	< 1.4 UJ
Fluoranthene	µg/kg	0.38 J	0.59 J	< 0.35 U	0.37 J	< 0.39 U	< 0.36 U	< 0.30 U	< 0.34 U	0.60 J	< 0.32 U	0.51 J	0.39 J	< 0.33 U	0.45 J	< 0.30 U	< 0.35 UJ
Fluorene	µg/kg	< 0.54 U	< 0.53 U	< 0.58 U	< 0.54 U	< 0.65 U	< 0.60 U	< 0.51 U	< 0.57 U	< 0.50 U	< 0.54 U	< 0.58 U	< 0.66 U	< 0.55 U	< 0.52 U	< 0.50 U	< 0.58 UJ
Indeno(1,2,3-cd)pyrene	µg/kg	< 0.53 U	< 0.51 U	< 0.57 U	< 0.53 U	< 0.63 U	< 0.59 U	< 0.50 U	< 0.56 U	< 0.48 U	< 0.53 U	< 0.57 U	< 0.64 U	< 0.53 U	< 0.51 U	< 0.49 U	< 0.57 UJ
Naphthalene	µg/kg	< 0.34 U	< 0.33 U	< 0.37 U	< 0.34 U	< 0.41 U	< 0.38 U	< 0.32 U	< 0.36 U	0.85 J	< 0.34 U	< 0.37 U	< 0.41 U	< 0.34 U	0.57 J	< 0.32 U	< 0.36 UJ
Phenanthrene	µg/kg	0.56 J	1.1 J	0.80 J	0.62 J	0.53 J	0.46 J	0.43 J	< 0.41 U	0.95 J	0.38 J	0.76 J	0.77 J	0.41 J	1.3 J	0.47 J	0.49 J-
Pyrene	µg/kg	< 0.39 U	0.51 J	< 0.42 U	< 0.38 U	< 0.46 U	< 0.43 U	< 0.36 U	< 0.41 U	0.54 J	< 0.38 U	0.43 J	< 0.47 U	< 0.39 U	0.54 J	< 0.36 U	< 0.42 UJ

Table I-2
Analytical Results for Solids Samples -
PRI-8 Northwest Ponded Waste Lagoon Overflow
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8
	Location ID	PRI8-014	PRI8-014	PRI8-015	PRI8-016	PRI8-016	PRI8-017	PRI8-017SB	PRI8-017SB	PRI8-017SB
	Sample Date	26-Mar-14	26-Mar-14	25-Mar-14	19-Dec-13	19-Dec-13	25-Mar-14	16-Dec-13	16-Dec-13	16-Dec-13
	Sample Type	FINE	N	N	FINE	N	N	N	N	N
	Depth	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	6 - 8 FEET	8 - 10 FEET	10 - 12 FEET
	Sample ID	PRI8-014-SS01-032614 FINES	PRI8-014-SS01-032614	PRI8-015-SS01-032514	PRI8-016-SS01-121913 FINES	PRI8-016-SS01-121913	PRI8-017-SS01-032514	PRI8-017-SB01-6-121613	PRI8-017-SB02-8-121613	PRI8-017-SB03-10-121613
Analyte	Unit									
05-SVOCs										
1,1'-Biphenyl	µg/kg	< 170 U	< 240 U	< 220 U	< 170 U	< 190 U	< 240 U	< 200 U	< 210 U	< 220 U
1,2,4,5-Tetrachlorobenzene	µg/kg	< 27 U	< 39 U	< 35 U	< 27 U	< 31 U	< 38 U	< 31 U	< 33 U	< 34 U
2,3,4,6-Tetrachlorophenol	µg/kg	< 86 U	< 120 UJ	< 110 UJ	< 84 UJ	< 97 U	< 120 UJ	< 97 U	< 100 U	< 110 U
2,4,5-Trichlorophenol	µg/kg	< 87 U	< 120 UJ	< 110 U	< 85 UJ	< 98 U	< 120 U	< 98 U	< 110 U	< 110 U
2,4,6-Trichlorophenol	µg/kg	< 88 U	< 120 U	< 110 U	< 86 UJ	< 99 U	< 120 U	< 100 U	< 110 U	< 110 U
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	< 4.6 U	< 6.5 U	< 6.0 U	< 4.5 UJ	< 5.2 U	< 6.4 U	< 5.2 U	< 5.6 U	< 5.8 U
2,2-Oxybis(1-chloropropane)	µg/kg	< 83 UJ	< 120 UJ	< 110 UJ	< 81 U	< 93 U	< 120 UJ	< 94 U	< 100 U	< 100 U
2,4-Dichlorophenol	µg/kg	< 93 U	< 130 UJ	< 120 U	< 91 UJ	< 110 U	< 130 U	< 110 U	< 110 U	< 120 U
2,4-Dimethylphenol	µg/kg	< 180 U	< 250 U	< 230 UJ	< 170 UJ	< 200 U	< 240 UJ	< 200 U	< 210 U	< 220 U
2,4-Dinitrophenol	µg/kg	< 220 U	< 320 U	< 290 U	< 220 UJ	< 250 U	< 310 U	< 250 U	< 270 U	< 280 U
2,4-Dinitrotoluene	µg/kg	< 93 U	< 130 U	< 120 U	< 91 U	< 110 U	< 130 U	< 110 U	< 110 U	< 120 U
2,6-Dinitrotoluene	µg/kg	< 100 U	< 150 U	< 130 U	< 100 U	< 120 U	< 140 U	< 120 U	< 130 U	< 130 U
2-Chloronaphthalene	µg/kg	< 85 U	< 120 UJ	< 110 U	< 83 U	< 96 U	< 120 U	< 96 U	< 100 U	< 110 U
2-Chlorophenol	µg/kg	< 92 U	< 130 UJ	< 120 U	< 90 UJ	< 100 U	< 130 U	< 100 U	< 110 U	< 120 U
2-Methylphenol	µg/kg	< 61 U	< 86 UJ	< 79 U	< 59 UJ	< 68 U	< 85 U	< 69 U	< 74 U	< 76 U
2-Nitroaniline	µg/kg	< 88 U	< 120 U	< 110 U	< 86 U	< 99 U	< 120 U	< 100 U	< 110 U	< 110 U
2-Nitrophenol	µg/kg	< 86 U	< 120 UJ	< 110 U	< 84 UJ	< 97 U	< 120 U	< 97 U	< 100 U	< 110 U
3,3'-Dichlorobenzidine	µg/kg	< 99 UJ	< 140 U	< 130 U	< 96 U	< 110 U	< 140 UJ	< 110 U	< 120 U	< 120 U
3-Nitroaniline	µg/kg	< 180 UJ	< 250 UJ	< 230 U	< 170 UJ	< 200 UJ	< 240 UJ	< 200 U	< 210 U	< 220 U
4,6-Dinitro-2-methylphenol	µg/kg	< 85 U	< 120 U	< 110 U	< 83 UJ	< 96 U	< 120 U	< 96 U	< 100 U	< 110 U
4-Bromophenyl-phenylether	µg/kg	< 89 U	< 130 U	< 120 U	< 87 U	< 100 U	< 120 U	< 100 U	< 110 U	< 110 U
4-Chloro-3-methylphenol	µg/kg	< 96 U	< 140 U	< 130 U	< 94 UJ	< 110 U	< 130 U	< 110 U	< 120 U	< 120 U
4-Chloroaniline	µg/kg	< 61 UJ	< 86 UJ	< 79 U	< 59 UJ	< 68 UJ	< 85 UJ	< 69 UJ	< 74 UJ	< 76 UJ
4-Chlorophenyl-phenylether	µg/kg	< 97 U	< 140 UJ	< 130 U	< 95 U	< 110 U	< 140 U	< 110 U	< 120 U	< 120 U
3 & 4 Methylphenol	µg/kg	< 350 U	< 490 U	< 450 U	< 340 UJ	< 390 U	< 480 U	< 390 U	< 420 U	< 440 U
4-Nitroaniline	µg/kg	< 92 U	< 130 U	< 120 U	< 90 U	< 100 U	< 130 U	< 100 UJ	< 110 UJ	< 120 UJ
4-Nitrophenol	µg/kg	< 290 U	< 420 U	< 380 U	< 290 UJ	< 330 U	< 410 U	< 330 U	< 360 U	< 370 U
Acetophenone	µg/kg	100 J	< 37 UJ	< 34 U	< 26 U	< 30 U	< 36 U	< 30 U	< 32 U	< 33 U
Benzaldehyde	µg/kg	220 J	< 240 U	< 220 U	< 170 U	< 190 U	< 240 U	< 200 U	< 210 U	< 220 U
Benzylbutylphthalate	µg/kg	< 100 U	< 140 U	< 130 U	< 97 U	< 110 U	< 140 U	< 110 U	< 120 U	< 130 U
Bis(2-chloroethoxy)methane	µg/kg	< 92 U	< 130 UJ	< 120 U	< 90 U	< 100 U	< 130 U	< 100 U	< 110 U	< 120 U
bis(2-Chloroethyl) ether	µg/kg	< 85 U	< 120 UJ	< 110 U	< 83 U	< 96 U	< 120 U	< 96 U	< 100 U	< 110 U
Bis(2-ethylhexyl)phthalate	µg/kg	< 100 U	< 150 U	170 J	< 100 U	< 120 U	< 140 U	< 120 U	< 120 U	< 130 U
Carbazole	µg/kg	< 100 U	< 140 U	< 130 U	< 97 U	< 110 U	< 140 U	< 110 U	< 120 U	< 130 U
Dibenzofuran	µg/kg	< 90 U	< 130 UJ	< 120 U	< 88 U	< 100 U	< 130 U	< 100 U	< 110 U	< 110 U
Diethyl phthalate	µg/kg	< 94 U	< 130 U	< 120 U	< 92 U	< 110 U	< 130 U	< 110 U	< 110 U	< 120 U
Dimethylphthalate	µg/kg	< 91 U	< 130 U	< 120 U	< 89 U	< 100 U	< 130 U	< 100 U	< 110 U	< 110 U
Di-n-butylphthalate	µg/kg	< 100 U	< 140 U	< 130 U	< 99 U	< 110 U	< 140 U	< 120 U	< 120 U	< 130 U
Di-n-octylphthalate	µg/kg	< 100 U	< 140 U	< 130 U	< 99 U	< 110 U	< 140 U	< 120 U	< 120 U	< 130 U
Hexachlorobenzene	µg/kg	< 93 U	< 130 U	< 120 U	< 91 U	< 110 U	< 130 U	< 110 U	< 110 U	< 120 U
Hexachlorobenzene (SIM Screen)	µg/kg	28	23 J	31	< 2.3 U	< 2.6 U	150	< 2.6 U	< 2.8 U	22
Hexachlorobutadiene	µg/kg	< 86 U	< 120 UJ	< 110 U	< 84 U	< 97 U	< 120 U	< 97 U	< 100 U	< 110 U
Hexachlorobutadiene (SIM Screen)	µg/kg	< 3.9 U	< 5.5 UJ	< 5.0 U	< 3.8 U	< 4.4 U	< 5.4 U	< 4.4 U	< 4.7 U	< 4.9 U
Hexachlorocyclopentadiene	µg/kg	< 65 U	< 92 UJ	< 84 UJ	< 64 U	< 73 U	< 90 UJ	< 74 U	< 79 U	< 82 U
Hexachloroethane	µg/kg	< 85 U	< 120 UJ	< 110 U	< 83 U	< 96 U	< 120 U	< 96 U	< 100 U	< 110 U
Isophorone	µg/kg	< 97 U	< 140 U	< 130 U	< 95 U	< 110 U	< 140 U	< 110 U	< 120 U	< 120 U
Nitrobenzene	µg/kg	< 80 U	< 110 U	< 100 U	< 78 U	< 90 U	< 110 U	< 90 U	< 96 U	< 100 U
N-Nitrosodimethylamine	µg/kg	< 100 U	< 140 UJ	< 130 U	< 98 U	< 110 U	< 140 UJ	< 110 U	< 120 U	< 130 U
n-Nitrosodimethylamine (SIM Screen)	µg/kg	< 100 U	< 140 UJ	< 130 U	< 98 U	< 110 U	< 140 UJ	< 110 U	< 120 U	< 130 U
N-Nitroso-di-n-propylamine	µg/kg	< 88 U	< 120 U	< 110 U	< 86 U	< 99 U	< 120 U	< 100 U	< 110 U	< 110 U
N-Nitrosodiphenylamine	µg/kg	< 90 U	< 130 UJ	< 120 U	< 88 U	< 100 U	< 130 U	< 100 U	< 110 U	< 110 U
Pentachlorophenol	µg/kg	< 53 U	< 76 U	< 69 U	< 52 UJ	< 60 U	< 74 U	< 60 U	< 65 U	< 67 U
Pentachlorophenol (SIM Screen)	µg/kg	< 25 UJ	< 36 UJ	< 33 UJ	< 25 UJ	71 J	< 35 UJ	< 28 U	< 30 U	< 32 U
Phenol	µg/kg	< 87 U	< 120 UJ	< 110 U	< 85 UJ	< 98 U	< 120 U	< 98 U	< 110 U	< 110 U
06-PAHs by SIM										
2-Methylnaphthalene	µg/kg	< 0.43 U	< 0.60 U	< 0.59 U	< 0.42 U	< 0.47 U	< 0.61 U	< 0.49 U	< 0.61 U	< 0.57 U
Acenaphthene	µg/kg	< 0.47 U	< 0.66 U	< 0.65 U	< 0.46 U	< 0.52 U	< 0.67 U	< 0.53 U	< 0.66 U	< 0.62 U
Acenaphthylene	µg/kg	< 0.33 U	< 0.46 U	< 0.46 U	< 0.32 U	< 0.36 U	< 0.47 U	< 0.37 U	< 0.46 U	< 0.44 U
Anthracene	µg/kg	< 0.40 U	< 0.55 U	< 0.55 U	< 0.38 U	< 0.44 U	< 0.56 U	< 0.45 U	< 0.56 U	< 0.52 U
Benzo(a)anthracene	µg/kg	< 0.30 U	< 0.42 U	< 0.42 U	< 0.29 U	< 0.33 U	< 0.43 U	< 0.34 U	< 0.43 U	< 0.40 U
Benzo(a)pyrene	µg/kg	< 0.40 U	< 0.56 U	< 0.55 U	< 0.39 U	< 0.44 U	< 0.57 U	< 0.45 U	< 0.56 U	< 0.53 U
Benzo(b)fluoranthene	µg/kg	< 0.51 U	< 0.71 U	< 0.70 U	< 0.49 U	< 0.56 U	< 0.72 U	< 0.57 U	< 0.71 U	< 0.67 U
Benzo(g,h,i)perylene	µg/kg	< 1.0 U	< 1.4 U	< 1.4 U	< 0.97 U	< 1.1 U	< 1.4 U	< 1.1 U	< 1.4 U	< 1.3 U
Benzo(k)fluoranthene	µg/kg	< 0.76 U	< 1.1 U	< 1.0 U	< 0.74 U	< 0.84 U	< 1.1 U	< 0.86 U	< 1.1 U	< 1.0 U
Chrysene	µg/kg	< 0.35 U	< 0.49 U	< 0.48 U	< 0.34 U	< 0.38 U	< 0.49 U	< 0.39 U	< 0.49 U	< 0.46 U
Dibenzo(a,h)anthracene	µg/kg	< 1.2 U	< 1.7 U	< 1.7 U	< 1.2 U	< 1.3 U	< 1.7 U	< 1.4 U	< 1.7 U	< 1.6 U
Fluoranthene	µg/kg	< 0.29 U	< 0.41 U	< 0.40 U	0.29 J	< 0.32 U	< 0.42 U	< 0.33 U	< 0.41 U	< 0.39 U
Fluorene	µg/kg	< 0.49 U	< 0.69 U	< 0.68 U	< 0.48 U	< 0.54 U	< 0.70 U	< 0.56 U	< 0.69 U	< 0.65 U
Indeno(1,2,3-cd)pyrene	µg/kg	< 0.48 U	< 0.67 U	< 0.66 U	< 0.47 U	< 0.53 U	< 0.68 U	< 0.54 U	< 0.67 U	< 0.63 U
Naphthalene	µg/kg	< 0.31 U	< 0.43 U	< 0.42 U	0.49 J	< 0.34 U	< 0.44 U	< 0.35 U	< 0.43 U	< 0.41 U
Phenanthrene	µg/kg	0.37 J	< 0.49 U	0.57 J	0.65 J	< 0.45 U	0.55 J	0.59 J	0.67 J	0.80 J
Pyrene	µg/kg	< 0.35 U	< 0.49 U	< 0.48 U	< 0.34 U	< 0.39 U	< 0.50 U	< 0.40 U	< 0.49 U	< 0.46 U

Table I-2
Analytical Results for Solids Samples -
PRI-8 Northwest Ponded Waste Lagoon Overflow
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8
	Location ID	PRI8-001	PRI8-002	PRI8-003	PRI8-004	PRI8-005A	PRI8-005B	PRI8-006	PRI8-006	PRI8-007	PRI8-007	PRI8-008	PRI8-009	PRI8-011	PRI8-012	PRI8-012	PRI8-013
	Sample Date	17-Dec-13	17-Dec-13	17-Dec-13	18-Dec-13	08-May-14	08-May-14	25-Mar-14	25-Mar-14	18-Dec-13	18-Dec-13	18-Dec-13	18-Dec-13	17-Dec-13	17-Dec-13	17-Dec-13	18-Dec-13
	Sample Type	N	N	N	N	N	N	FINE	N	FINE	N	N	N	N	FINE	N	N
	Depth	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in
	Sample ID	PRI8-001-SS01-121713	PRI8-002-SS01-121713	PRI8-003-SS01-121713	PRI8-004-SS01-121813	PRI8-005A-SS01-050814	PRI8-005B-SS01-050814	PRI8-006-SS01-032514 FINES	PRI8-006-SS01-032514	PRI8-007-SS01-121813 FINES	PRI8-007-SS01-121813	PRI8-008-SS01-121813	PRI8-009-SS01-121813	PRI8-011-SS01-121713	PRI8-012-SS01-121713 FINES	PRI8-012-SS01-121713	PRI8-013-SS01-121813
Analyte	Unit																
Low Molecular Weight PAH (ND=0)	µg/kg	0.56	1.1	0.80	0.62	0.53	0.46	0.43	*< 0.57 U*	2.4	0.38	0.76	0.77	0.41	1.9	0.47	0.49
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	1.9	2.4	2.2	2.0	2.1	2.0	1.7	*< 1.6 U*	3.2	1.7	2.2	2.4	1.8	3.0	1.7	1.9
High Molecular Weight PAH (ND=0)	µg/kg	0.96	2.2	0.50	1.0	*< 1.6 U*	*< 1.5 U*	*< 1.2 U*	*< 1.4 U*	2.5	0.40	1.9	0.88	0.41	1.5	*< 1.2 U*	*< 1.4 U*
High Molecular Weight PAH (ND=1/2DL)	µg/kg	3.7	4.6	3.6	3.7	*< 3.7 U*	*< 3.5 U*	*< 2.9 U*	*< 3.3 U*	4.6	3.3	4.6	4.2	3.3	4.0	*< 2.9 U*	*< 3.3 U*
07-VOCs																	
1,4-Dioxane	µg/kg					*< 51 UJ*											
1,1-Dichloroethane	µg/kg					*< 0.38 U*											
1,1-Dichloroethene	µg/kg					*< 0.34 U*											
1,2-Dibromo-3-chloropropane	µg/kg					*< 1.1 U*											
1,2-Dibromoethane	µg/kg					*< 0.35 U*											
1,2-Dichlorobenzene	µg/kg					*< 0.84 U*											
1,2-Dichloroethane	µg/kg					*< 0.95 U*											
cis-1,2-Dichloroethene	µg/kg					*< 1.2 U*											
trans-1,2-Dichloroethene	µg/kg					*< 0.50 U*											
1,2-Dichloropropane	µg/kg					*< 0.78 U*											
1,3-Dichlorobenzene	µg/kg					*< 0.39 U*											
cis-1,3-Dichloropropene	µg/kg					*< 0.84 U*											
trans-1,3-Dichloropropene	µg/kg					*< 0.98 U*											
1,4-Dichlorobenzene	µg/kg					*< 1.0 U*											
1,1,1-Trichloroethane	µg/kg					*< 0.47 U*											
1,1,2-Trichloroethane	µg/kg					*< 0.57 U*											
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	µg/kg					*< 1.1 U*											
1,2,3-Trichlorobenzene	µg/kg					*< 0.98 U*											
1,2,4-Trichlorobenzene	µg/kg					*< 0.98 U*											
1,1,2,2-Tetrachloroethane	µg/kg					*< 0.89 U*											
2-Butanone	µg/kg					*< 1.8 U*											
2-Hexanone	µg/kg					*< 0.97 UJ*											
4-Methyl-2-pentanone	µg/kg					*< 1.2 U*											
Acetone	µg/kg					*< 8.6 UJ*											
Benzene	µg/kg					*< 0.34 U*											
Bromochloromethane	µg/kg					*< 1.2 U*											
Bromodichloromethane	µg/kg					13											
Bromoform	µg/kg					13											
Bromomethane	µg/kg					*< 1.1 U*											
Carbon disulfide	µg/kg					*< 0.64 U*											
Carbon tetrachloride	µg/kg					*< 0.69 U*											
Chlorobenzene	µg/kg					*< 0.38 U*											
Cyclohexane	µg/kg					*< 3.4 U*											
Dibromochloromethane	µg/kg					15											
Chloroethane	µg/kg					*< 0.59 U*											
Chloroform	µg/kg					19											
Chloromethane	µg/kg					*< 0.65 U*											
Dichlorodifluoromethane (Freon-12)	µg/kg					*< 1.2 U*											
Ethyl benzene	µg/kg					*< 0.44 U*											
Isopropylbenzene	µg/kg					*< 0.68 U*											
Methyl tertbutyl ether (MTBE)	µg/kg					*< 0.78 U*											
Dichloromethane (Methylene chloride)	µg/kg					1.1 J											
Styrene	µg/kg					*< 0.41 U*											
Tetrachloroethene	µg/kg					*< 0.80 U*											
Toluene	µg/kg					*< 0.80 U*											
Trichloroethene	µg/kg					*< 0.78 U*											
Trichlorofluoromethane (Freon-11)	µg/kg					*< 0.44 U*											
Vinyl chloride	µg/kg					*< 0.47 U*											
o-Xylene	µg/kg					*< 0.43 U*											
m,p Xylenes	µg/kg					*< 1.1 U*											
08-General Chemistry Parameters for Solids																	
Perchlorate	µg/kg	*< 23 U*	*< 23 U*	90	*< 23 U*	*< 27 U*	*< 24 U*		*< 24 U*		*< 24 U*	*< 23 U*	*< 24 U*	*< 21 U*		*< 21 U*	*< 24 U*
				1.1 J													
Total Organic Carbon	g/kg	6.8	8.8	7.8	5.3	11	9.3		11		4.0	5.3	*< 3.5 U*	*< 3.5 U*		*< 1.7 U*	6.9
pH	pH units	8.69	8.87	7.04	7.87	7.06	7.41		7.05		8.51	8.68	7.66	8.54		8.51	8.03
Cyanide, Total	mg/kg	*< 0.23 U*	*< 0.24 U*	*< 0.25 U*	*< 0.25 U*	*< 0.28 U*	*< 0.25 U*		*< 0.26 U*		*< 0.24 U*	*< 0.23 U*	*< 0.25 U*	*< 0.21 U*		*< 0.23 U*	*< 0.24 U*

Table I-2
Analytical Results for Solids Samples -
PRI-8 Northwest Ponded Waste Lagoon Overflow
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8	PRI-8
	Location ID	**PRI8-014**	**PRI8-014**	**PRI8-015**	**PRI8-016**	**PRI8-016**	**PRI8-017**	**PRI8-017SB**	**PRI8-017SB**	**PRI8-017SB**
	Sample Date	**26-Mar-14**	**26-Mar-14**	**25-Mar-14**	**19-Dec-13**	**19-Dec-13**	**25-Mar-14**	**16-Dec-13**	**16-Dec-13**	**16-Dec-13**
	Sample Type	**FINE**	**N**	**N**	**FINE**	**N**	**N**	**N**	**N**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**6 - 8 FEET**	**8 - 10 FEET**	**10 - 12 FEET**
	Sample ID	**PRI8-014-SS01-032614 FINES**	**PRI8-014-SS01-032614**	**PRI8-015-SS01-032514**	**PRI8-016-SS01-121913 FINES**	**PRI8-016-SS01-121913**	**PRI8-017-SS01-032514**	**PRI8-017-SB01-6-121613**	**PRI8-017-SB02-8-121613**	**PRI8-017-SB03-10-121613**
Analyte	**Unit**									
Low Molecular Weight PAH (ND=0)	µg/kg	0.37	*< 0.69 U*	0.57	1.1	*< 0.54 U*	0.55	0.59	0.67	0.80
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	1.6	*< 1.9 U*	2.2	2.2	*< 1.6 U*	2.3	2.0	2.4	2.4
High Molecular Weight PAH (ND=0)	µg/kg	*< 1.2 U*	*< 1.7 U*	*< 1.7 U*	0.29	*< 1.3 U*	*< 1.7 U*	*< 1.4 U*	*< 1.7 U*	*< 1.6 U*
High Molecular Weight PAH (ND=1/2DL)	µg/kg	*< 2.8 U*	*< 4.0 U*	*< 3.9 U*	2.9	*< 3.1 U*	*< 4.0 U*	*< 3.2 U*	*< 4.0 U*	*< 3.7 U*
07-VOCs										
1,4-Dioxane	µg/kg		*< 68 UJ*	*< 56 UJ*			*< 63 UJ*	*< 46 UJ*	*< 52 UJ*	*< 65 UJ*
1,1-Dichloroethane	µg/kg		*< 0.50 U*	*< 0.41 U*			*< 0.47 U*	*< 0.34 U*	*< 0.39 U*	*< 0.48 U*
1,1-Dichloroethene	µg/kg		*< 0.45 U*	*< 0.37 U*			*< 0.42 U*	*< 0.31 U*	*< 0.35 U*	*< 0.43 U*
1,2-Dibromo-3-chloropropane	µg/kg		*< 1.5 U*	*< 1.3 U*			*< 1.4 UJ*	*< 1.0 U*	*< 1.2 U*	*< 1.5 U*
1,2-Dibromoethane	µg/kg		*< 0.47 U*	*< 0.38 U*			*< 0.44 U*	*< 0.32 U*	*< 0.36 U*	*< 0.45 U*
1,2-Dichlorobenzene	µg/kg		*< 1.1 U*	*< 0.91 U*			*< 1.0 U*	*< 0.75 U*	*< 0.86 U*	*< 1.1 U*
1,2-Dichloroethane	µg/kg		*< 1.3 U*	*< 1.0 U*			*< 1.2 U*	*< 0.86 U*	*< 0.98 U*	*< 1.2 U*
cis-1,2-Dichloroethene	µg/kg		*< 1.5 U*	*< 1.3 U*			*< 1.4 U*	*< 1.0 U*	*< 1.2 U*	*< 1.5 U*
trans-1,2-Dichloroethene	µg/kg		*< 0.66 U*	*< 0.54 U*			*< 0.61 U*	*< 0.45 U*	*< 0.51 U*	*< 0.63 U*
1,2-Dichloropropane	µg/kg		*< 1.0 U*	*< 0.85 U*			*< 0.97 UJ*	*< 0.71 U*	*< 0.80 U*	*< 1.0 U*
1,3-Dichlorobenzene	µg/kg		*< 0.52 U*	*< 0.43 U*			*< 0.48 U*	*< 0.35 U*	*< 0.40 U*	*< 0.50 U*
cis-1,3-Dichloropropene	µg/kg		*< 1.1 U*	*< 0.91 U*			*< 1.0 U*	*< 0.75 U*	*< 0.86 U*	*< 1.1 U*
trans-1,3-Dichloropropene	µg/kg		*< 1.3 U*	*< 1.1 U*			*< 1.2 U*	*< 0.88 U*	*< 1.0 U*	*< 1.2 U*
1,4-Dichlorobenzene	µg/kg		*< 1.4 U*	*< 1.1 U*			*< 1.3 U*	*< 0.92 U*	*< 1.0 U*	*< 1.3 U*
1,1,1-Trichloroethane	µg/kg		*< 0.63 U*	*< 0.51 U*			*< 0.58 U*	*< 0.42 U*	*< 0.48 U*	*< 0.60 U*
1,1,2-Trichloroethane	µg/kg		*< 0.76 U*	*< 0.63 U*			*< 0.71 U*	*< 0.52 U*	*< 0.59 U*	*< 0.73 U*
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	µg/kg		*< 1.4 U*	*< 1.2 U*			*< 1.3 U*	*< 0.98 U*	*< 1.1 U*	*< 1.4 U*
1,2,3-Trichlorobenzene	µg/kg		*< 1.3 U*	*< 1.1 U*			*< 1.2 U*	*< 0.88 U*	*< 1.0 U*	*< 1.2 U*
1,2,4-Trichlorobenzene	µg/kg		*< 1.3 U*	*< 1.1 U*			*< 1.2 U*	*< 0.88 U*	*< 1.0 U*	*< 1.2 U*
1,1,2,2-Tetrachloroethane	µg/kg		*< 1.2 U*	*< 0.97 U*			*< 1.1 U*	*< 0.80 U*	*< 0.91 U*	*< 1.1 U*
2-Butanone	µg/kg		15 J-	5.8 J-			6.3 J-	7.6 J	7.0 J	*< 2.3 U*
2-Hexanone	µg/kg		*< 1.3 UJ*	*< 1.1 UJ*			*< 1.2 UJ*	*< 0.87 U*	*< 0.99 U*	*< 1.2 U*
4-Methyl-2-pentanone	µg/kg		*< 1.6 UJ*	*< 1.3 UJ*			*< 1.5 UJ*	*< 1.1 U*	*< 1.2 U*	*< 1.5 U*
Acetone	µg/kg		56 J-	*< 22 UJ*			*< 16 UJ*	17 J	74	83
Benzene	µg/kg		0.68 J	0.59 J			0.99 J	*< 0.31 U*	*< 0.35 U*	*< 0.43 U*
Bromochloromethane	µg/kg		*< 1.6 U*	*< 1.3 U*			*< 1.5 U*	*< 1.1 U*	*< 1.3 U*	7.3 J
Bromodichloromethane	µg/kg		220	32			26 J	*< 0.62 U*	5.3 J+	7.2 J+
Bromoform	µg/kg		570	130			120 J	*< 0.47 U*	11	2.4 J
Bromomethane	µg/kg		*< 1.5 U*	*< 1.2 U*			*< 1.4 U*	*< 1.0 U*	*< 1.2 U*	*< 1.4 U*
Carbon disulfide	µg/kg		*< 0.85 U*	*< 0.70 U*			*< 0.79 U*	0.81 J	0.71 J	20
Carbon tetrachloride	µg/kg		*< 0.92 U*	0.98 J			*< 0.86 U*	*< 0.62 U*	*< 0.71 U*	*< 0.88 U*
Chlorobenzene	µg/kg		*< 0.50 U*	*< 0.41 U*			*< 0.47 U*	*< 0.34 U*	*< 0.39 U*	*< 0.48 U*
Cyclohexane	µg/kg		*< 4.6 U*	*< 3.7 U*			*< 4.3 UJ*	*< 3.1 U*	*< 3.5 U*	*< 4.4 U*
Dibromochloromethane	µg/kg		390	68			57 J	*< 0.25 U*	8.8	5.9 J
Chloroethane	µg/kg		*< 0.78 U*	*< 0.64 U*			*< 0.73 U*	*< 0.53 U*	*< 0.60 U*	*< 0.75 U*
Chloroform	µg/kg		110	20			21 J	3.9 J	6.8	40
Chloromethane	µg/kg		*< 0.87 U*	*< 0.71 U*			*< 0.81 U*	*< 0.59 U*	*< 0.67 U*	*< 0.83 U*
Dichlorodifluoromethane (Freon-12)	µg/kg		*< 1.5 U*	*< 1.3 U*			*< 1.4 U*	*< 1.0 U*	*< 1.2 U*	*< 1.5 U*
Ethyl benzene	µg/kg		*< 0.59 U*	*< 0.48 U*			*< 0.55 U*	*< 0.40 U*	*< 0.45 U*	*< 0.57 U*
Isopropylbenzene	µg/kg		*< 0.90 U*	*< 0.74 U*			*< 0.84 U*	*< 0.61 U*	*< 0.70 U*	*< 0.86 U*
Methyl tertbutyl ether (MTBE)	µg/kg		*< 1.0 U*	*< 0.85 U*			*< 0.97 U*	*< 0.71 U*	*< 0.80 U*	*< 1.0 U*
Dichloromethane (Methylene chloride)	µg/kg		*< 1.5 U*	*< 1.2 U*			*< 1.4 U*	*< 0.99 U*	*< 1.1 U*	2.6 J
Styrene	µg/kg		*< 0.54 U*	*< 0.44 U*			*< 0.50 U*	*< 0.37 U*	*< 0.41 U*	*< 0.52 U*
Tetrachloroethene	µg/kg		*< 1.1 U*	*< 0.87 U*			*< 0.99 U*	*< 0.72 U*	*< 0.82 U*	*< 1.0 U*
Toluene	µg/kg		*< 1.1 U*	*< 0.87 U*			*< 0.99 U*	*< 0.72 U*	*< 0.82 U*	*< 1.0 U*
Trichloroethene	µg/kg		*< 1.0 U*	*< 0.85 U*			*< 0.97 U*	*< 0.71 U*	*< 0.80 U*	*< 1.0 U*
Trichlorofluoromethane (Freon-11)	µg/kg		*< 0.59 U*	*< 0.48 U*			*< 0.55 U*	*< 0.40 U*	*< 0.45 U*	*< 0.57 U*
Vinyl chloride	µg/kg		*< 0.63 U*	*< 0.51 U*			*< 0.58 U*	*< 0.42 U*	*< 0.48 U*	*< 0.60 U*
o-Xylene	µg/kg		*< 0.57 U*	*< 0.47 U*			*< 0.53 U*	*< 0.39 U*	*< 0.44 U*	*< 0.55 U*
m,p Xylenes	µg/kg		*< 1.4 U*	*< 1.2 U*			*< 1.3 U*	*< 0.96 U*	*< 1.1 U*	*< 1.3 U*
08-General Chemistry Parameters for Solids										
Perchlorate	µg/kg		*< 29 U*	*< 27 U*		*< 23 U*	*< 29 U*	*< 24 U*	*< 26 U*	*< 26 U*
Total Organic Carbon	g/kg		6.8	7.5		4.3	6.3	*< 1.7 U*	*< 1.7 U*	*< 1.7 U*
pH	pH units		6.99	7.16		7.77	6.84	7.27	7.43	6.96
Cyanide, Total	mg/kg		*< 0.31 U*	*< 0.27 U*		*< 0.24 U*	*< 0.30 U*	*< 0.25 U*	*< 0.26 U*	*< 0.27 U*

Notes:
< = Compound not detected. Reportable detection limit shown.
µg/kg = micrograms per kilogram
Empty cells = Not analyzed
FD = Field Duplicate Sample
FINE = Fines Portion (Sieved) of Normal Sample
FINES FD = Field Duplicate of FINES sample
g/kg = grams per kilogram
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
in = inches
mg/kg = milligrams per kilogram
N = Normal Environmental Sample
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pg/g = picogram per gram (1 pg/g = 0.001 µg/kg)
pH units = pH units
SIM = Selected ion monitoring
SVOC = Semi-volatile organic compound
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence
VOC = Volatile organic compound

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity, biased high. The associated numerical value is the approximate concentration of the analyte in the sample.
J- = The result is an estimated quantity, biased low. The associated numerical value is the approximate concentration of the analyte in the sample.
R = The sample result is rejected and unusable due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
U = Compound was analyzed for, but not detected. The associated numerical value is the reporting limit.
UJ = The nondetected analyte was qualified as estimated at the sample quantitation limit. The reported sample quantitation limit is approximate and may be inaccurate or imprecise.
UQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration.

Table I-3
Analytical Results for Solids Samples - PRI-9 Smut Area
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**
	Location ID	**PRI9-001**	**PRI9-001**	**PRI9-002**	**PRI9-002**	**PRI9-003**	**PRI9-004**	**PRI9-004**	**PRI9-005**	**PRI9-006**	**PRI9-007**	**PRI9-008**
	Sample Date	**06-Jan-14**	**06-Jan-14**	**06-Jan-14**	**06-Jan-14**	**06-Jan-14**	**07-Jan-14**	**07-Jan-14**	**07-Jan-14**	**07-Jan-14**	**07-Jan-14**	**07-Jan-14**
	Sample Type	**FINE**	**N**	**FINE**	**N**	**N**	**FINE**	**N**	**N**	**N**	**N**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**
	Sample ID	**PRI9-001-SS01-010614 FINES**	**PRI9-001-SS01-010614**	**PRI9-002-SS01-010614 FINES**	**PRI9-002-SS01-010614**	**PRI9-003-SS01-010614**	**PRI9-004-SS01-010714 FINES**	**PRI9-004-SS01-010714**	**PRI9-005-SS01-010714**	**PRI9-006-SS01-010714**	**PRI9-007-SS01-010714**	**PRI9-008-SS01-010714**
Analyte	**Unit**											
01-Dioxins and Furans												
2,3,7,8-TCDD	pg/g	*< 1.4 U*	*< 0.038 U*	0.31 J	*< 0.14 UQ*	*< 0.049 U*	*< 0.028 U*	*< 0.030 U*	*< 0.077 U*	*< 0.048 U*	*< 0.13 UQ*	1.1 J
1,2,3,7,8-PeCDD	pg/g	*< 2.9 U*	*< 0.045 U*	1.3 J	0.69 J	*< 0.059 U*	0.11 J	*< 0.035 U*	1.2 J	*< 0.069 U*	0.24 J	5.9 J
1,2,3,4,7,8-HxCDD	pg/g	*< 1.2 U*	*< 0.046 U*	*< 1.2 UQ*	*< 0.55 UQ*	*< 0.056 U*	*< 0.025 U*	*< 0.026 U*	0.75 J	*< 0.069 U*	0.36 J	5.0 J
1,2,3,6,7,8-HxCDD	pg/g	*< 1.2 U*	*< 0.032 U*	5.6 J	2.0 J	*< 0.16 UQ*	0.15 J	*< 0.025 U*	3.7 J	*< 0.049 U*	0.97 J	24
1,2,3,7,8,9-HxCDD	pg/g	*< 1.1 U*	*< 0.033 U*	5.2 J	1.8 J	*< 0.041 U*	*< 0.092 UQ*	*< 0.052 U*	4.2 J	*< 0.051 U*	1.1 J	26
1,2,3,4,6,7,8-HpCDD	pg/g	*< 0.70 U*	*< 0.095 UJQ*	27	9.0	0.99 J	0.57 J	*< 0.3 U*	14	0.54 J	5.1 J	120
OCDD	pg/g	*< 2.6 U*	*< 0.34 UJQ*	62	15 J	2.2 J	*< 2.1 U*	*< 0.8 UQ*	16	1.1 J	12	240
2,3,7,8-TCDF	pg/g	*< 1.2 U*	0.23 J	3.3	1.7	*< 0.58 UQ*	0.37 J	0.17 J	1.8	0.23 J	0.88 J	14
1,2,3,7,8-PeCDF	pg/g	*< 2.3 U*	*< 0.031 U*	9.5	4.7 J	0.64 J	0.48 J	*< 0.13 UQ*	3.0 J	*< 0.14 UQ*	2.6 J	38
2,3,4,7,8-PeCDF	pg/g	*< 2.5 U*	*< 0.033 U*	4.8 J	2.6 J	0.33 J	0.17 J	0.090 J	2.3 J	0.11 J	1.4 J	30
1,2,3,4,7,8-HxCDF	pg/g	*< 1.2 U*	*< 0.29 UQ*	42	17	1.8 J	1.5 J	*< 0.63 UQ*	8.6	0.60 J	7.9	140
1,2,3,6,7,8-HxCDF	pg/g	*< 1.1 U*	*< 0.11 UQ*	17	6.7 J	0.78 J	0.72 J	*< 0.23 UQ*	*< 4.1 UQ*	*< 0.27 UQ*	*< 4.6 UQ*	97
1,2,3,7,8,9-HxCDF	pg/g	*< 1.3 U*	*< 0.038 U*	1.7 J	0.38 J	*< 0.058 U*	0.33 J	*< 0.029 U*	*< 0.32 UQ*	*< 0.053 U*	0.18 J	7.3 J
2,3,4,6,7,8-HxCDF	pg/g	*< 1.2 U*	*< 0.035 U*	4.7 J	2.4 J	0.25 J	*< 0.38 UQ*	*< 0.081 UQ*	1.8 J	*< 0.048 U*	1.8 J	94
1,2,3,4,6,7,8-HpCDF	pg/g	9.9	*< 0.7 UQ*	150	44	5.4 J	6.0	3.0 J	26	1.4 J	*< 38 UQ*	2,300
1,2,3,4,7,8,9-HpCDF	pg/g	*< 1.1 U*	0.18 J	42	12	1.3 J	1.4 J	0.71 J	5.8 J	*< 0.32 UQ*	8.5	270
OCDF	pg/g	89	5.3 J	1,700	450	42	64	46 J	660	17	400	19,000
Calculated TEQ (ND=0), Mammalian	pg/g	0.13	0.026	14	5.7	0.49	0.58	0.095	4.7	0.14	2.3	92
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	3.2	0.14	14	5.8	0.63	0.63	0.21	5.1	0.26	2.8	92
Calculated TEQ (ND=0), Avian	pg/g	0.40	0.23	980	400	0.75	1.1	0.30	8.4	0.42	180	880
Calculated TEQ (ND=1/2 DL), Avian	pg/g	60	15	980	400	19	13	14	25	18	180	880
02-PCBs												
PCB-81	pg/g	0.59 J	*< 0.64 U*	*< 0.73 UQ*	*< 0.86 U*	*< 0.68 U*	0.45 J	*< 0.40 U*	*< 0.95 U*	*< 0.80 U*	*< 0.55 U*	8.1
PCB-77	pg/g	2.6	*< 0.68 U*	6.2	*< 3.5 UQ*	*< 0.71 U*	0.90 J	*< 0.41 U*	8.1	*< 0.82 U*	2.8	49
PCB-105	pg/g	5.4	*< 0.75 UQ*	12	7.6	*< 0.58 UQ*	*< 2.4 U*	*< 0.34 U*	120	*< 0.42 U*	6.6	290
PCB-114	pg/g	0.84 J	*< 0.41 U*	1.4 J	*< 0.77 U*	*< 0.48 U*	0.45 J	*< 0.32 U*	7.3	*< 0.40 U*	*< 0.52 U*	23
PCB-118	pg/g	11	2.4 J	24	15	*< 1.7 UQ*	*< 3.6 U*	*< 0.82 UQ*	180	*< 0.81 U*	11	520
PCB-123	pg/g	0.86 J	*< 0.39 U*	1.1 J	*< 0.75 U*	*< 0.46 U*	0.48 J	*< 0.31 U*	4.3	*< 0.38 U*	*< 0.51 U*	17
PCB-126	pg/g	*< 0.38 UQ*	*< 0.54 U*	1.7 J	1.1 J	*< 0.59 U*	*< 0.19 U*	*< 0.40 U*	*< 1.6 U*	*< 0.47 U*	*< 0.64 U*	17
PCB-156 & 157	pg/g	1.8 J	*< 0.51 U*	7.9	4.4 J	*< 0.38 U*	*< 1.3 U*	*< 0.28 U*	23	*< 0.39 U*	2.5 J	110
PCB-167	pg/g	1.0 J	*< 0.38 U*	4.8	*< 2.6 UQ*	*< 0.29 U*	0.79 J	*< 0.22 U*	6.2	*< 0.30 U*	*< 1.1 UQ*	46
PCB-169	pg/g	*< 0.19 UQ*	*< 0.53 U*	*< 0.44 UQ*	*< 0.55 U*	*< 0.37 U*	*< 0.080 U*	*< 0.27 U*	*< 0.54 U*	*< 0.37 U*	*< 0.30 U*	*< 6.0 U*
PCB-189	pg/g	*< 0.49 UQ*	*< 0.72 U*	4.9	*< 1.9 UQ*	*< 0.45 U*	*< 0.51 UQ*	*< 0.52 U*	1.7 J	*< 0.41 U*	*< 0.44 U*	*< 33 UQ*
Monochlorobiphenyls, Total	pg/g	22 J	10 J	62 J	55 J	25 J	13 J	9.2 J	54 J	9.1 J	8.5 J	110 J
Dichlorobiphenyls, Total	pg/g	210 J	27 J	170 J	94 J	43 J	20 J	*< 7.6 U*	66 J	*< 21 U*	28 J	310
Trichlorobiphenyls, Total	pg/g	210 J	9.2 J	94 J	37 J	6.0 J	16 J	1.6 J	43 J	*< 1.5 U*	12 J	430
Tetrachlorobiphenyls, Total	pg/g	180 J	9.8 J	120 J	49 J	8.5 J	20 J	1.7 J	170 J	1.2 J	22 J	1,200
Pentachlorobiphenyls, Total	pg/g	77 J	13 J	150 J	90 J	10 J	23 J	2.2 J	660	1.6 J	48 J	2,500
Hexachlorobiphenyls, Total	pg/g	34 J	5.1 J	120 J	78 J	4.0 J	19 J	1.9 J	320	0.89 J	36 J	1,800
Heptachlorobiphenyls, Total	pg/g	24 J	2.0 J	130 J	76 J	5.4 J	19 J	1.2 J	87 J	0.41 J	43 J	1,200
Octachlorobiphenyls, Total	pg/g	46 J	6.1 J	270	160 J	16 J	26 J	6.3 J	130 J	1.9 J	120 J	2,200
Nonachlorobiphenyls, Total	pg/g	80 J	24 J	1,100	510	46 J	59 J	30 J	480	11 J	380	6,000
Decachlorobiphenyl (PCB-209)	pg/g	920	290	12,000 J	5,900 J	430 J	870	410	17,000 J	340	4,200 J	63,000 J
Total PCBs	pg/g	1,800	400	15,000	7,000	590	1,100	470	19,000	360	4,900	79,000
03- Metals												
Total Aluminum	mg/kg	6,900	3,400	7,100	6,000	13,000	5,600	4,300	2,200	960	9,500	3,300
Total Antimony	mg/kg	*< 0.24 UJ*	*< 0.15 U*	*< 0.24 UJ*	*< 0.20 U*	*< 0.34 U*	*< 0.21 UJ*	*< 0.13 U*	*< 0.24 U*	*< 0.31 U*	0.26 J	*< 0.18 U*
Total Arsenic	mg/kg	0.64	0.34	1.1	1.1	*< 0.51 U*	2.2	1.8	1.2	*< 0.47 U*	4.1	1.3
Total Barium	mg/kg	74	39 J+	49	41 J+	25 J+	66	69 J+	110 J+	75 J+	140 J+	840 J+
Total Beryllium	mg/kg	110	53 J	63	60 J	200 J	0.27	0.21 J	0.72 J	0.059 J	2.0 J	0.53 J
Total Cadmium	mg/kg	*< 0.12 U*	*< 0.073 U*	*< 0.12 U*	*< 0.10 U*	*< 0.17 U*	*< 0.11 U*	*< 0.066 U*	*< 0.12 U*	*< 0.16 U*	0.26	0.39
Total Calcium	mg/kg	67,000	41,000 J	65,000	50,000 J	40,000 J	69,000	58,000 J	53,000 J	37,000 J	76,000 J	49,000 J
Total Chromium	mg/kg	14	7.5	12	8.0	34	6.1	4.1	15	11	11	22
Total Cobalt	mg/kg	8.8	4.9	16	10	0.96	1.0	0.77	3.8	3.1	3.1	8.6
Total Copper	mg/kg	58	6.9	46	19	4.5	19	1.9	11	17	10	39
Total Iron	mg/kg	25,000	16,000 J	12,000	10,000 J	4,500 J	4,300	2,900 J	52,000 J	58,000 J	11,000 J	52,000 J
Total Lead	mg/kg	4.6 J	3.4 J	5.5 J	6.1 J	1.3 J	2.1 J	1.8 J	6.1 J	28	7.0 J	63
Total Magnesium	mg/kg	140,000	110,000	130,000	120,000	180,000	25,000	35,000	160,000	170,000	34,000	140,000
Total Manganese	mg/kg	2,600	1,200	2,200	1,800	7,300	64	52	260	170	290	290
Total Mercury	mg/kg	*< 0.053 U*	0.073 J-	*< 0.011 U*	*< 0.013 UJ*	*< 0.014 UJ*	*< 0.0094 U*	*< 0.011 UJ*	0.050 J-	0.073 J-	0.013 J-	*< 0.013 UJ*
Total Molybdenum	mg/kg	1.8	1.0	1.3	1.4	0.86	0.12 J	*< 0.11 U*	1.8	6.3	*< 0.49 U*	1.7
Total Nickel	mg/kg	350	190	280	180	13	3.8	2.5	73	58	17	110
Total Potassium	mg/kg	20,000	23,000	11,000	11,000	14,000	7,600	20,000	14,000	22,000	4,400	13,000
Total Selenium	mg/kg	*< 0.24 U*	*< 0.15 UJ*	*< 0.24 U*	*< 0.20 UJ*	*< 0.34 UJ*	*< 0.21 U*	*< 0.13 UJ*	*< 0.24 UJ*	*< 0.31 UJ*	*< 0.26 UJ*	*< 0.18 UJ*
Total Silver	mg/kg	*< 0.071 U*	*< 0.044 U*	*< 0.073 U*	*< 0.060 U*	*< 0.10 U*	*< 0.063 U*	*< 0.040 U*	*< 0.072 U*	*< 0.094 U*	*< 0.077 U*	0.10 J
Total Sodium	mg/kg	11,000	20,000	17,000	25,000	14,000	61,000	66,000	25,000	38,000	2,100	13,000
Total Thallium	mg/kg	*< 0.12 U*	*< 0.073 U*	*< 0.12 U*	*< 0.10 U*	*< 0.17 U*	*< 0.11 U*	*< 0.066 U*	*< 0.12 U*	*< 0.16 U*	*< 0.13 U*	*< 0.088 U*
Total Vanadium	mg/kg	71	43 J+	28	21 J+	7.5 J+	9.0	6.7 J+	37 J+	29 J+	18 J+	30 J+

Table I-3
Analytical Results for Solids Samples - PRI-9 Smut Area
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

Analyte	Location Group Location ID Sample Date Sample Type Depth Sample ID Unit	PRI-9 PRI9-009 07-Jan-14 N 0 - 6 in PRI9-009-SS01-010714	PRI-9 PRI9-010 07-Jan-14 FINE 0 - 6 in PRI9-010-SS01-010714 FINES	PRI-9 PRI9-010 07-Jan-14 N 0 - 6 in PRI9-010-SS01-010714	PRI-9 PRI9-011 06-Jan-14 N 0 - 6 in PRI9-011-SS01-010614	PRI-9 PRI9-012 20-Dec-13 N 0 - 6 in PRI9-012-SS01-122013	PRI-9 PRI9-013 20-Dec-13 FINE 0 - 6 in PRI9-013-SS01-122013 FINES	PRI-9 PRI9-013 20-Dec-13 N 0 - 6 in PRI9-013-SS01-122013	PRI-9 PRI9-014 20-Dec-13 N 0 - 6 in PRI9-014-SS01-122013
01-Dioxins and Furans									
2,3,7,8-TCDD	pg/g	3.4	*< 0.58 U*	*< 0.88 UQ*	*< 0.21 UQ*	*< 0.032 U*	*< 0.36 UQ*	*< 0.32 UQ*	*< 0.24 UQ*
1,2,3,7,8-PeCDD	pg/g	10	8.2	6.2 J	0.55 J	*< 0.061 U*	1.4 J	1.2 J	0.78 J
1,2,3,4,7,8-HxCDD	pg/g	7.4 J	9.9	6.0 J	*< 0.45 UQ*	*< 0.12 UQ*	0.98 J	*< 0.96 UQ*	0.68 J
1,2,3,6,7,8-HxCDD	pg/g	48	47	28	1.4 J	0.30 J	3.3 J	3.0 J	3.0 J
1,2,3,7,8,9-HxCDD	pg/g	50	49	32	1.7 J	0.25 J	3.8 J	3.5 J	3.0 J
1,2,3,4,6,7,8-HpCDD	pg/g	230	210	160	6.6 J	2.1 J	21	21	21
OCDD	pg/g	230 J	360	280	15	9.2 J	88	82	85
2,3,7,8-TCDF	pg/g	14	41	42	1.5	0.99 J	12	12	2.6
1,2,3,7,8-PeCDF	pg/g	47	77	72	3.0 J	1.2 J	28	29	5.0 J
2,3,4,7,8-PeCDF	pg/g	27	36	33	2.2 J	0.75 J	15	16	3.7 J
1,2,3,4,7,8-HxCDF	pg/g	110	190	140	8.5	4.5 J	96	94	16
1,2,3,6,7,8-HxCDF	pg/g	53	82	59	5.4 J	3.1 J	52	53	8.3
1,2,3,7,8,9-HxCDF	pg/g	5.1 J	8.0	6.2 J	0.57 J	*< 0.27 UQ*	5.9	6.7 J	0.92 J
2,3,4,6,7,8-HxCDF	pg/g	20	21	20	1.9 J	1.3 J	20	22	4.1 J
1,2,3,4,6,7,8-HpCDF	pg/g	190	410	310	35	33	430	430	70
1,2,3,4,7,8,9-HpCDF	pg/g	60	130	98	8.1	*< 5.5 UQ*	130	130	16
OCDF	pg/g	1,300	5,300 J	4,100	450	420	6,400 J	5,100	1,500
Calculated TEQ (ND=0), Mammalian	pg/g	60	75	60	4.2	1.8	34	34	7.7
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	60	76	60	4.3	1.9	35	34	9.5
Calculated TEQ (ND=0), Avian	pg/g	260	1,000	600	100	120	5,900	3,300	200
Calculated TEQ (ND=1/2 DL), Avian	pg/g	260	1,000	600	100	120	5,900	3,300	200
02-PCBs									
PCB-81	pg/g	7.7	*< 5.5 UQ*	5.4	*< 0.65 U*	0.22 J	4.0	*< 0.72 UQ*	*< 13 U*
PCB-77	pg/g	27	40	32	13	3.8	28	*< 6.5 UQ*	95
PCB-105	pg/g	46	110	94	19	17	130	130	2,400
PCB-114	pg/g	5.6	14	12	1.5 J	1.3 J	11	9.8	130
PCB-118	pg/g	77	180	150	36	33	270	260	4,600 J
PCB-123	pg/g	5.0	12	12	*< 0.9 UQ*	0.61 J	5.7	6.7	78
PCB-126	pg/g	6.6	*< 13 U*	9.2	1.2 J	*< 0.33 UQ*	5.2	*< 3.8 U*	*< 32 U*
PCB-156 & 157	pg/g	21	54	44	7.8	4.0 J	41	47	610
PCB-167	pg/g	11	37	27	2.9	1.5 J	22	23	160
PCB-169	pg/g	4.5	*< 5.4 U*	*< 4.1 U*	*< 0.65 U*	*< 0.098 U*	*< 1.6 U*	2.3 J	*< 2.2 U*
PCB-189	pg/g	11	34	30	*< 1.7 UQ*	*< 0.39 UQ*	12	*< 7.5 UJQ*	16
Monochlorobiphenyls, Total	pg/g	110 J	100 J	78 J	37 J	6.5 J	250	300 J	150 J
Dichlorobiphenyls, Total	pg/g	130 J	270 J	200 J	25 J	28 J	320	380	330
Trichlorobiphenyls, Total	pg/g	160 J	630	530	57 J	36 J	430	480	780
Tetrachlorobiphenyls, Total	pg/g	300 J	1,100	990	78 J	93 J	910	440	11,000 J
Pentachlorobiphenyls, Total	pg/g	410	1,300	1,200	190 J	200 J	1,300	1,300	27,000 J
Hexachlorobiphenyls, Total	pg/g	340	1,400	1,200	150 J	88 J	690	810	10,000
Heptachlorobiphenyls, Total	pg/g	330 J	1,500	1,300 J	100 J	37 J	470	420	1,200
Octachlorobiphenyls, Total	pg/g	540	2,500	1,900 J	180 J	72 J	810	790	270 J
Nonachlorobiphenyls, Total	pg/g	1,100	4,300	3,400	500	280	2,100	2,100	700
Decachlorobiphenyl (PCB-209)	pg/g	11,000 J	69,000 J	55,000 J	8,900 J	4,100 J	29,000 J	30,000 J	19,000 J
Total PCBs	pg/g	14,000	82,000	66,000	10,000	4,900	36,000	37,000	71,000
03- Metals									
Total Aluminum	mg/kg	2,100	3,300	2,400	2,100	15,000	3,100	3,200	3,900
Total Antimony	mg/kg	*< 0.32 U*	*< 0.23 UJ*	*< 0.27 U*	0.16 J	0.34 J-	*< 0.22 UJ*	*< 0.30 UJ*	2.1 J-
Total Arsenic	mg/kg	1.4	3.5	2.7	0.69	5.6	1.1	1.1	10
Total Barium	mg/kg	100 J+	140	130 J+	80 J+	180	310	460	230
Total Beryllium	mg/kg	0.16 J	0.20 J	0.12 J	14 J	1.3	0.49	0.47	0.24
Total Cadmium	mg/kg	*< 0.16 U*	*< 0.11 U*	*< 0.14 U*	*< 0.068 U*	0.48	0.19 J	0.23 J	0.37
Total Calcium	mg/kg	49,000 J	70,000	83,000 J	85,000 J	87,000	66,000	59,000	86,000
Total Chromium	mg/kg	13	18	14	4.1	15	59	59	22
Total Cobalt	mg/kg	4.1	4.2	3.0	0.46	5.2	24	24	20
Total Copper	mg/kg	18	58	26	7.6	15	77	71	140
Total Iron	mg/kg	68,000 J	57,000	46,000 J	2,300 J	14,000	55,000	54,000	48,000
Total Lead	mg/kg	50	30	22	3.1 J	13 J	8.6 J	8.4 J	69 J
Total Magnesium	mg/kg	150,000	160,000	140,000	42,000	31,000	180,000	180,000	80,000
Total Manganese	mg/kg	200	160	110	710	390	710	670	570
Total Mercury	mg/kg	0.048 J-	0.22	0.16 J-	*< 0.010 UJ*	*< 0.010 U*	*< 0.0087 U*	*< 0.014 U*	*< 0.015 U*
Total Molybdenum	mg/kg	4.2 J	3.8	4.5	1.3	0.91 J	12 J	11	15
Total Nickel	mg/kg	94	80	59	3.6	13	180	180	94
Total Potassium	mg/kg	12,000	7,800	10,000	15,000	7,400	6,100 J	13,000	14,000
Total Selenium	mg/kg	*< 0.32 UJ*	*< 0.23 U*	*< 0.27 UJ*	*< 0.14 UJ*	0.45 J-	*< 0.22 UJ*	*< 0.30 UJ*	*< 0.18 UJ*
Total Silver	mg/kg	*< 0.096 U*	*< 0.068 U*	*< 0.082 U*	*< 0.041 U*	0.099 J	*< 0.066 U*	*< 0.091 U*	0.12 J
Total Sodium	mg/kg	24,000	18,000	27,000	130,000	2,100	6,400 J+	11,000	46,000
Total Thallium	mg/kg	*< 0.16 U*	*< 0.11 U*	*< 0.14 U*	*< 0.068 U*	0.18 J	*< 0.11 U*	*< 0.15 U*	*< 0.089 U*
Total Vanadium	mg/kg	45 J+	50	40 J+	3.4 J+	23	15	16	25

Table I-3
Analytical Results for Solids Samples - PRI-9 Smut Area
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**
	Location ID	**PRI9-001**	**PRI9-001**	**PRI9-002**	**PRI9-002**	**PRI9-003**	**PRI9-004**	**PRI9-004**	**PRI9-005**	**PRI9-006**	**PRI9-007**	**PRI9-008**
	Sample Date	**06-Jan-14**	**06-Jan-14**	**06-Jan-14**	**06-Jan-14**	**06-Jan-14**	**07-Jan-14**	**07-Jan-14**	**07-Jan-14**	**07-Jan-14**	**07-Jan-14**	**07-Jan-14**
	Sample Type	**FINE**	**N**	**FINE**	**N**	**N**	**FINE**	**N**	**N**	**N**	**N**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**
	Sample ID	**PRI9-001-SS01-010614 FINES**	**PRI9-001-SS01-010614**	**PRI9-002-SS01-010614 FINES**	**PRI9-002-SS01-010614**	**PRI9-003-SS01-010614**	**PRI9-004-SS01-010714 FINES**	**PRI9-004-SS01-010714**	**PRI9-005-SS01-010714**	**PRI9-006-SS01-010714**	**PRI9-007-SS01-010714**	**PRI9-008-SS01-010714**
Analyte	**Unit**											
Total Zinc	mg/kg	12	3.5	31	28	5.3	12	9.1	20	10	38	75
05-SVOCs												
1,1'-Biphenyl	µg/kg	*< 200 U*	*< 220 U*	*< 600 U*	*< 260 U*	*< 260 U*	*< 170 U*	*< 200 U*	*< 250 U*	*< 260 U*	*< 200 U*	*< 250 U*
1,2,4,5-Tetrachlorobenzene	µg/kg	*< 32 U*	*< 35 U*	*< 95 U*	*< 42 U*	*< 41 U*	*< 27 U*	*< 32 U*	*< 39 U*	*< 40 U*	*< 32 U*	*< 39 U*
2,3,4,6-Tetrachlorophenol	µg/kg	*< 100 UJ*	*< 110 U*	*< 300 UJ*	*< 130 U*	*< 130 U*	*< 86 UJ*	*< 99 U*	*< 120 UJ*	*< 130 U*	*< 100 U*	*< 120 U*
2,4,5-Trichlorophenol	µg/kg	*< 100 UJ*	*< 110 U*	*< 300 UJ*	*< 130 U*	*< 130 U*	*< 87 UJ*	*< 100 U*	*< 120 UJ*	*< 130 U*	*< 100 U*	*< 120 U*
2,4,6-Trichlorophenol	µg/kg	*< 100 UJ*	*< 110 U*	*< 310 UJ*	*< 130 U*	*< 130 U*	*< 88 UJ*	*< 100 U*	*< 130 UJ*	*< 130 U*	*< 100 U*	*< 130 U*
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	*< 5.4 UJ*	*< 5.9 U*	*< 16 UJ*	*< 7.0 U*	*< 7.0 U*	*< 4.6 UJ*	*< 5.3 U*	*< 6.6 UJ*	*< 6.8 U*	*< 5.4 U*	*< 6.6 U*
2,2-Oxybis(1-chloropropane)	µg/kg	*< 96 UJ*	*< 110 U*	*< 290 UJ*	*< 130 U*	*< 130 U*	*< 83 UJ*	*< 96 U*	*< 120 U*	*< 120 U*	*< 96 U*	*< 120 U*
2,4-Dichlorophenol	µg/kg	*< 110 UJ*	*< 120 U*	*< 320 UJ*	*< 140 U*	*< 140 U*	*< 94 UJ*	*< 110 U*	*< 130 UJ*	*< 140 U*	*< 110 U*	*< 130 U*
2,4-Dimethylphenol	µg/kg	*< 200 UJ*	*< 230 U*	*< 610 UJ*	*< 270 U*	*< 270 U*	*< 180 UJ*	*< 200 U*	*< 250 UJ*	*< 260 U*	*< 200 U*	*< 250 U*
2,4-Dinitrophenol	µg/kg	*< 260 UJ*	330 J	*< 780 UJ*	*< 340 U*	*< 340 U*	*< 220 UJ*	*< 260 U*	*< 320 UJ*	*< 330 U*	*< 260 U*	*< 320 U*
2,4-Dinitrotoluene	µg/kg	*< 110 U*	*< 120 U*	*< 320 U*	*< 140 U*	*< 140 U*	*< 94 U*	*< 110 U*	*< 130 U*	*< 140 U*	*< 110 U*	*< 130 U*
2,6-Dinitrotoluene	µg/kg	*< 120 UJ*	*< 130 U*	*< 360 U*	*< 160 U*	*< 160 U*	*< 100 U*	*< 120 U*	*< 150 U*	*< 150 U*	*< 120 U*	*< 150 U*
2-Chloronaphthalene	µg/kg	*< 99 U*	*< 110 U*	*< 300 U*	*< 130 U*	*< 130 U*	*< 85 U*	*< 98 U*	*< 120 U*	*< 130 U*	*< 99 U*	*< 120 U*
2-Chlorophenol	µg/kg	*< 110 U*	*< 120 U*	*< 320 UJ*	*< 140 U*	*< 140 U*	*< 92 UJ*	*< 110 U*	*< 130 UJ*	*< 140 U*	*< 110 U*	*< 130 U*
2-Methylphenol	µg/kg	*< 71 UJ*	*< 78 U*	*< 210 UJ*	*< 93 U*	*< 93 U*	*< 61 UJ*	*< 70 U*	*< 87 UJ*	*< 90 U*	*< 71 U*	*< 87 U*
2-Nitroaniline	µg/kg	*< 100 U*	*< 110 U*	*< 310 U*	*< 130 U*	*< 130 U*	*< 88 U*	*< 100 U*	*< 130 U*	*< 130 U*	*< 100 U*	*< 130 U*
2-Nitrophenol	µg/kg	*< 100 U*	*< 110 U*	*< 300 UJ*	*< 130 U*	*< 130 U*	*< 86 UJ*	*< 99 U*	*< 120 UJ*	*< 130 U*	*< 100 U*	*< 120 U*
3,3'-Dichlorobenzidine	µg/kg	*< 110 UJ*	*< 130 U*	*< 340 UJ*	*< 150 U*	*< 150 U*	*< 99 UJ*	*< 110 U*	*< 140 U*	*< 150 U*	*< 110 U*	*< 140 U*
3-Nitroaniline	µg/kg	*< 200 UJ*	*< 230 UJ*	*< 610 UJ*	*< 270 UJ*	*< 270 UJ*	*< 180 UJ*	*< 200 UJ*	*< 250 UJ*	*< 260 UJ*	*< 200 UJ*	*< 250 UJ*
4,6-Dinitro-2-methylphenol	µg/kg	*< 99 UJ*	*< 110 U*	*< 300 UJ*	*< 130 U*	*< 130 U*	*< 85 UJ*	*< 98 U*	*< 120 UJ*	*< 130 U*	*< 99 U*	*< 120 U*
4-Bromophenyl-phenylether	µg/kg	*< 100 U*	*< 110 U*	*< 310 U*	*< 140 U*	*< 140 U*	*< 89 U*	*< 100 U*	*< 130 U*	*< 130 U*	*< 100 U*	*< 130 U*
4-Chloro-3-methylphenol	µg/kg	*< 110 UJ*	*< 120 U*	*< 340 UJ*	*< 150 U*	*< 150 U*	*< 97 UJ*	*< 110 U*	*< 140 UJ*	*< 140 U*	*< 110 U*	*< 140 U*
4-Chloroaniline	µg/kg	*< 71 UJ*	*< 78 UJ*	*< 210 UJ*	*< 93 UJ*	*< 93 UJ*	*< 61 UJ*	*< 70 UJ*	*< 87 UJ*	*< 90 UJ*	*< 71 UJ*	*< 87 UJ*
4-Chlorophenyl-phenylether	µg/kg	*< 110 UJ*	*< 130 U*	*< 340 U*	*< 150 U*	*< 150 U*	*< 98 U*	*< 110 U*	*< 140 U*	*< 140 U*	*< 110 U*	*< 140 U*
3 & 4 Methylphenol	µg/kg	*< 400 UJ*	*< 450 U*	*< 1,200 UJ*	*< 530 U*	*< 530 U*	*< 350 UJ*	*< 400 U*	*< 500 UJ*	*< 510 U*	*< 400 U*	*< 490 U*
4-Nitroaniline	µg/kg	*< 110 UJ*	*< 120 U*	*< 320 U*	*< 140 U*	*< 140 U*	*< 92 U*	*< 110 U*	*< 130 U*	*< 140 U*	*< 110 U*	*< 130 U*
4-Nitrophenol	µg/kg	*< 340 U*	*< 380 U*	*< 1,000 UJ*	*< 450 U*	*< 450 U*	*< 290 UJ*	*< 340 U*	*< 420 UJ*	*< 430 U*	*< 340 U*	*< 420 U*
Acetophenone	µg/kg	61 J	*< 34 U*	*< 280 U*	*< 40 U*	*< 40 U*	240 J	*< 30 U*	*< 38 U*	*< 39 U*	*< 30 U*	*< 37 U*
Benzaldehyde	µg/kg	200 J+	*< 220 U*	*< 600 U*	*< 260 U*	*< 260 U*	600	*< 200 U*	*< 250 U*	*< 260 U*	*< 200 U*	*< 250 U*
Benzylbutylphthalate	µg/kg	*< 120 U*	*< 130 U*	*< 350 U*	*< 150 U*	*< 150 U*	*< 100 U*	*< 120 U*	*< 140 U*	*< 150 U*	*< 120 U*	*< 140 U*
Bis(2-chloroethoxy)methane	µg/kg	*< 110 U*	*< 120 U*	*< 320 U*	*< 140 U*	*< 140 U*	*< 92 U*	*< 110 U*	*< 130 U*	*< 140 U*	*< 110 U*	*< 130 U*
bis(2-Chloroethyl) ether	µg/kg	*< 99 U*	*< 110 U*	*< 300 U*	*< 130 U*	*< 130 U*	*< 85 U*	*< 98 U*	*< 120 U*	*< 130 U*	*< 99 U*	*< 120 U*
Bis(2-ethylhexyl)phthalate	µg/kg	*< 120 U*	*< 130 U*	*< 360 U*	*< 160 U*	*< 160 U*	120 J	*< 120 U*	*< 150 U*	*< 150 U*	*< 120 U*	*< 150 U*
Carbazole	µg/kg	*< 120 UJ*	*< 130 U*	*< 350 U*	*< 150 U*	*< 150 U*	*< 100 U*	*< 120 U*	*< 140 U*	*< 150 U*	*< 120 U*	*< 140 U*
Dibenzofuran	µg/kg	*< 110 UJ*	*< 120 U*	*< 310 U*	*< 140 U*	*< 140 U*	*< 90 U*	*< 100 U*	*< 130 U*	*< 130 U*	*< 100 U*	*< 130 U*
Diethyl phthalate	µg/kg	*< 110 U*	*< 120 U*	*< 330 U*	*< 140 U*	*< 140 U*	*< 95 U*	*< 110 U*	*< 140 U*	*< 140 U*	*< 110 U*	*< 130 U*
Dimethylphthalate	µg/kg	*< 110 U*	*< 120 U*	*< 320 U*	*< 140 U*	*< 140 U*	*< 91 U*	*< 110 U*	*< 130 U*	*< 140 U*	*< 110 U*	*< 130 U*
Di-n-butylphthalate	µg/kg	*< 120 U*	*< 130 U*	*< 350 U*	*< 150 U*	*< 150 U*	*< 100 U*	*< 120 U*	*< 150 U*	*< 150 U*	*< 120 U*	*< 150 U*
Di-n-octylphthalate	µg/kg	*< 120 U*	*< 130 U*	*< 350 U*	*< 150 U*	*< 150 U*	*< 100 U*	*< 120 U*	*< 150 U*	*< 150 U*	*< 120 U*	*< 150 U*
Hexachlorobenzene	µg/kg	*< 110 U*	*< 120 U*	*< 320 U*	*< 140 U*	*< 140 U*	*< 94 U*	*< 110 U*	*< 130 U*	*< 140 U*	*< 110 U*	*< 130 U*
Hexachlorobenzene (SIM Screen)	µg/kg	*< 11 UJ*	*< 3.0 U*	96 J	39	*< 3.5 U*	*< 2.3 UJ*	*< 2.7 U*	*< 3.3 U*	*< 3.4 U*	18 J	75
Hexachlorobutadiene	µg/kg	*< 100 U*	*< 110 U*	*< 300 U*	*< 130 U*	*< 130 U*	*< 86 U*	*< 99 U*	*< 120 U*	*< 130 U*	*< 100 U*	*< 120 U*
Hexachlorobutadiene (SIM Screen)	µg/kg	*< 4.5 U*	*< 5.0 U*	*< 13 U*	*< 5.9 U*	*< 5.9 U*	*< 3.9 U*	*< 4.5 U*	*< 5.6 U*	*< 5.7 U*	*< 4.5 U*	*< 5.5 U*
Hexachlorocyclopentadiene	µg/kg	*< 76 UJ*	*< 84 U*	*< 230 U*	*< 99 U*	*< 99 U*	*< 65 U*	*< 75 U*	*< 93 U*	*< 96 U*	*< 75 U*	*< 93 U*
Hexachloroethane	µg/kg	*< 99 U*	*< 110 U*	*< 300 U*	*< 130 U*	*< 130 U*	*< 85 U*	*< 98 U*	*< 120 U*	*< 130 U*	*< 99 U*	*< 120 U*
Isophorone	µg/kg	*< 110 U*	*< 130 U*	*< 340 U*	*< 150 U*	*< 150 U*	*< 98 U*	*< 110 U*	*< 140 U*	*< 140 U*	*< 110 U*	*< 140 U*
Nitrobenzene	µg/kg	*< 93 U*	*< 100 U*	*< 280 U*	*< 120 U*	*< 120 U*	*< 80 U*	*< 92 U*	*< 110 U*	*< 120 U*	*< 92 U*	*< 110 U*
N-Nitrosodimethylamine	µg/kg	*< 120 UJ*	*< 130 U*	*< 350 U*	*< 150 U*	*< 150 U*	*< 100 U*	*< 120 U*	*< 140 U*	*< 150 U*	*< 120 U*	*< 140 U*
n-Nitrosodimethylamine (SIM Screen)	µg/kg	*< 120 UJ*	*< 130 UJ*	*< 350 U*	*< 150 UJ*	*< 150 UJ*	*< 100 U*	*< 120 UJ*	*< 140 UJ*	*< 150 UJ*	*< 120 UJ*	*< 140 UJ*
N-Nitroso-di-n-propylamine	µg/kg	*< 100 U*	*< 110 U*	*< 310 U*	*< 130 U*	*< 130 U*	*< 88 U*	*< 100 U*	*< 130 U*	*< 130 U*	*< 100 U*	*< 130 U*
N-Nitrosodiphenylamine	µg/kg	*< 110 U*	*< 120 U*	*< 310 U*	*< 140 U*	*< 140 U*	*< 90 U*	*< 100 U*	*< 130 U*	*< 130 U*	*< 100 U*	*< 130 U*
Pentachlorophenol	µg/kg	*< 62 UJ*	*< 69 U*	240 J-	*< 81 U*	*< 81 U*	*< 54 UJ*	*< 62 U*	*< 77 UJ*	*< 79 U*	*< 62 U*	*< 76 U*
Pentachlorophenol (SIM Screen)	µg/kg	*< 29 UJ*	130	*< 88 UJ*	*< 38 U*	*< 38 U*	*< 25 UJ*	*< 29 U*	*< 36 UJ*	*< 37 U*	*< 29 U*	*< 36 U*
Phenol	µg/kg	*< 100 UJ*	*< 110 U*	*< 300 UJ*	*< 130 U*	*< 130 U*	*< 87 UJ*	*< 100 U*	*< 120 UJ*	*< 130 U*	*< 100 U*	*< 120 U*
06-PAHs by SIM												
2-Methylnaphthalene	µg/kg	4.6 J-	*< 0.55 UJ*	5.7 J	4.0 J-	*< 0.66 UJ*	0.89 J	0.82 J-	1.4 J-	0.96 J-	*< 0.52 UJ*	1.9 J-
Acenaphthene	µg/kg	*< 0.60 R*	*< 0.60 UJ*	*< 0.59 U*	*< 0.73 UJ*	*< 0.72 UJ*	*< 0.54 U*	*< 0.56 UJ*	*< 0.70 UJ*	*< 0.71 UJ*	*< 0.57 UJ*	*< 0.72 UJ*
Acenaphthylene	µg/kg	*< 0.42 R*	*< 0.42 UJ*	*< 0.41 U*	*< 0.51 UJ*	*< 0.50 UJ*	*< 0.38 U*	*< 0.39 UJ*	*< 0.49 UJ*	*< 0.50 UJ*	*< 0.40 UJ*	*< 0.51 UJ*
Anthracene	µg/kg	*< 0.51 R*	*< 0.51 UJ*	*< 0.50 U*	*< 0.61 UJ*	*< 0.60 UJ*	*< 0.45 U*	*< 0.47 UJ*	*< 0.59 UJ*	*< 0.59 UJ*	*< 0.48 UJ*	*< 0.61 UJ*
Benzo(a)anthracene	µg/kg	*< 0.39 R*	*< 0.39 UJ*	*< 0.38 U*	*< 0.47 UJ*	*< 0.46 UJ*	*< 0.35 U*	*< 0.36 UJ*	*< 0.45 UJ*	*< 0.46 UJ*	*< 0.37 UJ*	*< 0.47 UJ*
Benzo(a)pyrene	µg/kg	*< 0.51 R*	*< 0.51 UJ*	*< 0.50 U*	*< 0.62 UJ*	*< 0.61 UJ*	*< 0.46 U*	*< 0.48 UJ*	*< 0.59 UJ*	*< 0.60 UJ*	*< 0.49 UJ*	*< 0.61 UJ*
Benzo(b)fluoranthene	µg/kg	*< 0.65 R*	*< 0.65 UJ*	*< 0.63 U*	*< 0.78 UJ*	*< 0.77 UJ*	*< 0.58 U*	*< 0.60 UJ*	*< 0.75 UJ*	*< 0.76 UJ*	*< 0.61 UJ*	*< 0.78 UJ*
Benzo(g,h,i)perylene	µg/kg	*< 1.3 R*	*< 1.3 UJ*	*< 1.3 U*	*< 1.6 UJ*	*< 1.5 UJ*	*< 1.1 U*	*< 1.2 UJ*	*< 1.5 UJ*	*< 1.5 UJ*	*< 1.2 UJ*	*< 1.5 UJ*
Benzo(k)fluoranthene	µg/kg	*< 0.97 R*	*< 0.97 UJ*	*< 0.95 U*	*< 1.2 UJ*	*< 1.2 UJ*	*< 0.87 U*	*< 0.91 UJ*	*< 1.1 UJ*	*< 1.1 UJ*	*< 0.93 UJ*	*< 1.2 UJ*
Chrysene	µg/kg	*< 0.44 R*	*< 0.45 UJ*	*< 0.44 U*	*< 0.54 UJ*	*< 0.53 UJ*	*< 0.40 U*	*< 0.41 UJ*	*< 0.52 UJ*	*< 0.52 UJ*	*< 0.42 UJ*	0.74 J-
Dibenzo(a,h)anthracene	µg/kg	*< 1.5 R*	*< 1.5 UJ*	*< 1.5 U*	*< 1.9 UJ*	*< 1.8 UJ*	*< 1.4 U*	*< 1.4 UJ*	*< 1.8 UJ*	*< 1.8 UJ*	*< 1.5 UJ*	*< 1.8 UJ*
Fluoranthene	µg/kg	*< 0.38 R*	*< 0.38 UJ*	0.59 J	*< 0.46 UJ*	*< 0.45 UJ*	*< 0.34 U*	*< 0.35 UJ*	*< 0.44 UJ*	*< 0.44 UJ*	*< 0.36 UJ*	0.66 J-

Table I-3
Analytical Results for Solids Samples - PRI-9 Smut Area
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-9	PRI-9	PRI-9	PRI-9	PRI-9	PRI-9	PRI-9	PRI-9
	Location ID	PRI9-009	PRI9-010	PRI9-010	PRI9-011	PRI9-012	PRI9-013	PRI9-013	PRI9-014
	Sample Date	07-Jan-14	07-Jan-14	07-Jan-14	06-Jan-14	20-Dec-13	20-Dec-13	20-Dec-13	20-Dec-13
	Sample Type	N	FINE	N	N	N	FINE	N	N
	Depth	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in
	Sample ID	PRI9-009-SS01-010714	PRI9-010-SS01-010714 FINES	PRI9-010-SS01-010714	PRI9-011-SS01-010614	PRI9-012-SS01-122013	PRI9-013-SS01-122013 FINES	PRI9-013-SS01-122013	PRI9-014-SS01-122013
Analyte	**Unit**								
Total Zinc	mg/kg	16	23	23	34	160 J	81 J	67 J-	180 J-
05-SVOCs									
1,1'-Biphenyl	µg/kg	*< 280 U*	*< 190 U*	*< 220 U*	*< 230 U*	*< 200 U*	*< 180 U*	*< 250 U*	*< 270 U*
1,2,4,5-Tetrachlorobenzene	µg/kg	*< 44 U*	*< 30 U*	*< 35 U*	*< 36 U*	*< 32 U*	*< 28 U*	*< 39 U*	*< 42 U*
2,3,4,6-Tetrachlorophenol	µg/kg	*< 140 U*	*< 94 UJ*	*< 110 U*	*< 110 U*	*< 100 U*	*< 88 U*	*< 120 U*	*< 130 U*
2,4,5-Trichlorophenol	µg/kg	*< 140 U*	*< 95 UJ*	*< 110 U*	*< 120 U*	*< 100 U*	*< 89 U*	*< 130 U*	*< 130 U*
2,4,6-Trichlorophenol	µg/kg	*< 140 U*	*< 96 UJ*	*< 110 U*	*< 120 U*	*< 100 U*	*< 90 U*	*< 130 U*	*< 140 U*
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	*< 7.5 U*	*< 5.0 UJ*	*< 5.9 U*	7.1 J+	*< 5.4 U*	*< 4.7 U*	*< 6.7 U*	8.7 J
2,2-Oxybis(1-chloropropane)	µg/kg	*< 130 U*	*< 90 UJ*	*< 110 U*	*< 110 U*	*< 98 U*	*< 85 U*	*< 120 U*	*< 130 U*
2,4-Dichlorophenol	µg/kg	*< 150 U*	*< 100 UJ*	*< 120 U*	*< 120 U*	*< 110 U*	*< 95 U*	*< 130 U*	*< 140 U*
2,4-Dimethylphenol	µg/kg	*< 290 U*	*< 190 UJ*	*< 230 U*	*< 230 U*	*< 210 U*	*< 180 U*	*< 250 U*	*< 270 U*
2,4-Dinitrophenol	µg/kg	*< 370 U*	*< 240 UJ*	*< 290 U*	340 J	*< 260 U*	*< 230 U*	*< 320 U*	*< 340 U*
2,4-Dinitrotoluene	µg/kg	*< 150 U*	*< 100 U*	*< 120 U*	*< 120 U*	*< 110 U*	*< 95 U*	*< 130 U*	*< 140 U*
2,6-Dinitrotoluene	µg/kg	*< 170 U*	*< 110 U*	*< 130 U*	*< 140 U*	*< 120 U*	*< 110 U*	*< 150 U*	*< 160 U*
2-Chloronaphthalene	µg/kg	*< 140 U*	*< 92 U*	*< 110 U*	*< 110 U*	*< 100 U*	*< 87 U*	*< 120 U*	*< 130 U*
2-Chlorophenol	µg/kg	*< 150 U*	*< 100 UJ*	*< 120 U*	*< 120 U*	*< 110 U*	*< 94 U*	*< 130 U*	*< 140 U*
2-Methylphenol	µg/kg	*< 99 U*	*< 66 UJ*	*< 78 U*	*< 81 U*	*< 72 U*	*< 62 U*	*< 88 U*	*< 93 U*
2-Nitroaniline	µg/kg	*< 140 U*	*< 96 U*	*< 110 U*	*< 120 U*	*< 100 U*	*< 90 U*	*< 130 U*	*< 140 U*
2-Nitrophenol	µg/kg	*< 140 U*	*< 94 UJ*	*< 110 U*	*< 110 U*	*< 100 U*	*< 88 U*	*< 120 U*	*< 130 U*
3,3'-Dichlorobenzidine	µg/kg	*< 160 U*	*< 110 UJ*	*< 130 U*	*< 130 U*	*< 120 U*	*< 100 UJ*	*< 140 U*	*< 150 U*
3-Nitroaniline	µg/kg	*< 290 UJ*	*< 190 UJ*	*< 230 UJ*	*< 230 UJ*	*< 210 UJ*	*< 180 UJ*	*< 250 UJ*	*< 270 UJ*
4,6-Dinitro-2-methylphenol	µg/kg	*< 140 U*	*< 92 UJ*	*< 110 U*	*< 110 U*	*< 100 U*	*< 87 U*	*< 120 U*	*< 130 U*
4-Bromophenyl-phenylether	µg/kg	*< 150 U*	*< 97 U*	*< 110 U*	*< 120 U*	*< 110 U*	*< 91 U*	*< 130 U*	*< 140 U*
4-Chloro-3-methylphenol	µg/kg	*< 160 U*	*< 100 UJ*	*< 120 U*	*< 130 U*	*< 110 U*	*< 99 U*	*< 140 U*	*< 150 U*
4-Chloroaniline	µg/kg	*< 99 UJ*	*< 66 UJ*	*< 78 UJ*	*< 81 UJ*	*< 72 UJ*	*< 62 UJ*	*< 88 UJ*	*< 93 UJ*
4-Chlorophenyl-phenylether	µg/kg	*< 160 U*	*< 110 U*	*< 130 U*	*< 130 U*	*< 120 U*	*< 100 U*	*< 140 U*	*< 150 U*
3 & 4 Methylphenol	µg/kg	*< 560 U*	*< 380 UJ*	*< 440 U*	*< 460 U*	*< 410 U*	*< 350 U*	*< 500 U*	*< 530 U*
4-Nitroaniline	µg/kg	*< 150 U*	*< 100 U*	*< 120 U*	*< 120 U*	*< 110 U*	*< 94 U*	*< 130 U*	*< 140 U*
4-Nitrophenol	µg/kg	*< 480 U*	*< 320 UJ*	*< 380 U*	*< 390 U*	*< 350 U*	*< 300 U*	*< 420 U*	*< 450 U*
Acetophenone	µg/kg	55 J	120 J	38 J	*< 35 U*	*< 31 U*	170 J	*< 38 U*	*< 40 U*
Benzaldehyde	µg/kg	*< 280 U*	230 J	*< 220 U*	*< 230 U*	*< 200 U*	*< 180 U*	*< 250 U*	*< 270 U*
Benzylbutylphthalate	µg/kg	*< 160 U*	*< 110 U*	*< 130 U*	*< 130 U*	*< 120 U*	*< 100 U*	*< 140 U*	*< 150 U*
Bis(2-chloroethoxy)methane	µg/kg	*< 150 U*	*< 100 U*	*< 120 U*	*< 120 U*	*< 110 U*	*< 94 U*	*< 130 U*	*< 140 U*
bis(2-Chloroethyl) ether	µg/kg	*< 140 U*	*< 92 U*	*< 110 U*	*< 110 U*	*< 100 U*	*< 87 U*	*< 120 U*	*< 130 U*
Bis(2-ethylhexyl)phthalate	µg/kg	*< 170 U*	130 J	*< 130 U*	*< 140 U*	*< 120 U*	*< 110 U*	*< 150 U*	*< 160 U*
Carbazole	µg/kg	*< 160 U*	*< 110 U*	*< 130 U*	*< 130 U*	*< 120 U*	*< 100 U*	*< 140 U*	*< 150 U*
Dibenzofuran	µg/kg	*< 150 U*	*< 98 U*	*< 120 U*	*< 120 U*	*< 110 U*	*< 92 U*	*< 130 U*	*< 140 U*
Diethyl phthalate	µg/kg	*< 150 U*	*< 100 U*	*< 120 U*	*< 130 U*	*< 110 U*	*< 96 U*	*< 140 U*	*< 140 U*
Dimethylphthalate	µg/kg	*< 150 U*	*< 99 U*	*< 120 U*	*< 120 U*	*< 110 U*	*< 93 U*	*< 130 U*	*< 140 U*
Di-n-butylphthalate	µg/kg	*< 170 U*	*< 110 U*	*< 130 U*	*< 140 U*	*< 120 U*	*< 100 U*	*< 150 U*	*< 160 U*
Di-n-octylphthalate	µg/kg	*< 170 U*	*< 110 U*	140 J	*< 140 U*	*< 120 U*	*< 100 U*	*< 150 U*	*< 160 U*
Hexachlorobenzene	µg/kg	*< 150 U*	*< 100 U*	*< 120 U*	*< 120 U*	*< 110 U*	580	320 J	*< 140 U*
Hexachlorobenzene (SIM Screen)	µg/kg	17 J	87 J	48	9.4 J	12 J	400	240	18 J
Hexachlorobutadiene	µg/kg	*< 140 U*	*< 94 U*	*< 110 U*	*< 110 U*	*< 100 U*	*< 88 U*	*< 120 U*	*< 130 U*
Hexachlorobutadiene (SIM Screen)	µg/kg	*< 6.3 U*	*< 4.2 U*	*< 5.0 U*	*< 5.2 U*	*< 4.6 U*	*< 4.0 U*	*< 5.6 U*	*< 5.9 U*
Hexachlorocyclopentadiene	µg/kg	*< 110 U*	*< 71 U*	*< 84 U*	*< 87 U*	*< 77 U*	*< 66 U*	*< 94 U*	*< 100 U*
Hexachloroethane	µg/kg	*< 140 U*	*< 92 U*	*< 110 U*	*< 110 U*	*< 100 U*	*< 87 U*	*< 120 U*	*< 130 U*
Isophorone	µg/kg	*< 160 U*	*< 110 U*	*< 130 U*	*< 130 U*	*< 120 U*	*< 100 U*	*< 140 U*	*< 150 U*
Nitrobenzene	µg/kg	*< 130 U*	*< 87 U*	*< 100 U*	*< 110 U*	*< 94 U*	*< 81 U*	*< 120 U*	*< 120 U*
N-Nitrosodimethylamine	µg/kg	*< 160 U*	*< 110 U*	*< 130 U*	*< 130 U*	*< 120 U*	*< 100 U*	*< 150 U*	*< 150 U*
n-Nitrosodimethylamine (SIM Screen)	µg/kg	*< 160 UJ*	*< 110 U*	*< 130 UJ*	*< 130 U*	*< 120 U*	*< 100 U*	*< 150 U*	*< 150 U*
N-Nitroso-di-n-propylamine	µg/kg	*< 140 U*	*< 96 U*	*< 110 U*	*< 120 U*	*< 100 U*	*< 90 U*	*< 130 U*	*< 140 U*
N-Nitrosodiphenylamine	µg/kg	*< 150 U*	*< 98 U*	*< 120 U*	*< 120 U*	*< 110 U*	*< 92 U*	*< 130 U*	*< 140 U*
Pentachlorophenol	µg/kg	*< 87 U*	*< 58 UJ*	*< 69 U*	280 J	*< 63 U*	*< 55 U*	*< 77 U*	*< 82 U*
Pentachlorophenol (SIM Screen)	µg/kg	*< 41 U*	*< 27 UJ*	*< 32 U*	520	*< 30 U*	*< 26 U*	*< 36 U*	*< 39 U*
Phenol	µg/kg	*< 140 U*	*< 95 UJ*	*< 110 U*	*< 120 U*	*< 100 U*	*< 89 U*	*< 130 U*	*< 130 U*
06-PAHs by SIM									
2-Methylnaphthalene	µg/kg	1.9 J-	2.5 J	1.5 J-	*< 0.56 UJ*	*< 0.48 U*	9.5	6.0 J	2.5 J
Acenaphthene	µg/kg	*< 0.78 UJ*	1.1 J	*< 0.60 UJ*	*< 0.62 UJ*	*< 0.52 U*	*< 0.52 U*	*< 0.69 U*	*< 0.73 U*
Acenaphthylene	µg/kg	*< 0.55 UJ*	*< 0.38 U*	*< 0.42 UJ*	*< 0.43 UJ*	*< 0.37 U*	*< 0.37 U*	*< 0.48 U*	*< 0.51 U*
Anthracene	µg/kg	*< 0.66 UJ*	*< 0.46 U*	*< 0.50 UJ*	*< 0.52 UJ*	*< 0.44 U*	*< 0.44 U*	*< 0.58 U*	*< 0.61 U*
Benzo(a)anthracene	µg/kg	*< 0.50 UJ*	*< 0.35 U*	*< 0.38 UJ*	*< 0.40 UJ*	*< 0.34 U*	*< 0.34 U*	*< 0.44 U*	*< 0.47 U*
Benzo(a)pyrene	µg/kg	*< 0.66 UJ*	*< 0.46 U*	*< 0.51 UJ*	*< 0.52 UJ*	*< 0.45 U*	*< 0.44 U*	*< 0.58 U*	*< 0.62 U*
Benzo(b)fluoranthene	µg/kg	*< 0.84 UJ*	*< 0.59 U*	*< 0.64 UJ*	*< 0.66 UJ*	*< 0.56 U*	*< 0.56 U*	*< 0.74 U*	*< 0.78 U*
Benzo(g,h,i)perylene	µg/kg	*< 1.7 UJ*	*< 1.2 U*	*< 1.3 UJ*	*< 1.3 UJ*	*< 1.1 U*	*< 1.1 U*	*< 1.5 U*	*< 1.6 U*
Benzo(k)fluoranthene	µg/kg	*< 1.3 UJ*	*< 0.88 U*	*< 0.96 UJ*	*< 1.0 UJ*	*< 0.85 U*	*< 0.84 U*	*< 1.1 U*	*< 1.2 U*
Chrysene	µg/kg	*< 0.58 UJ*	*< 0.40 U*	*< 0.44 UJ*	0.57 J-	*< 0.39 U*	*< 0.38 U*	*< 0.51 U*	*< 0.54 U*
Dibenzo(a,h)anthracene	µg/kg	*< 2.0 UJ*	*< 1.4 U*	*< 1.5 UJ*	*< 1.6 UJ*	*< 1.3 U*	*< 1.3 U*	*< 1.8 U*	*< 1.9 U*
Fluoranthene	µg/kg	0.56 J-	1.3 J	*< 0.37 UJ*	*< 0.38 UJ*	*< 0.33 U*	0.59 J	*< 0.43 U*	*< 0.45 U*

Table I-3
Analytical Results for Solids Samples - PRI-9 Smut Area
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-9	PRI-9	PRI-9	PRI-9	PRI-9	PRI-9	PRI-9	PRI-9	PRI-9	PRI-9	PRI-9
	Location ID	PRI9-001	PRI9-001	PRI9-002	PRI9-002	PRI9-003	PRI9-004	PRI9-004	PRI9-005	PRI9-006	PRI9-007	PRI9-008
	Sample Date	06-Jan-14	06-Jan-14	06-Jan-14	06-Jan-14	06-Jan-14	07-Jan-14	07-Jan-14	07-Jan-14	07-Jan-14	07-Jan-14	07-Jan-14
	Sample Type	FINE	N	FINE	N	N	FINE	N	N	N	N	N
	Depth	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in
	Sample ID	PRI9-001-SS01-010614 FINES	PRI9-001-SS01-010614	PRI9-002-SS01-010614 FINES	PRI9-002-SS01-010614	PRI9-003-SS01-010614	PRI9-004-SS01-010714 FINES	PRI9-004-SS01-010714	PRI9-005-SS01-010714	PRI9-006-SS01-010714	PRI9-007-SS01-010714	PRI9-008-SS01-010714
Analyte	**Unit**											
Fluorene	µg/kg	0.78 J-	*< 0.63 UJ*	*< 0.61 U*	*< 0.76 UJ*	*< 0.75 UJ*	*< 0.56 U*	*< 0.58 UJ*	*< 0.73 UJ*	*< 0.74 UJ*	*< 0.60 UJ*	*< 0.75 UJ*
Indeno(1,2,3-cd)pyrene	µg/kg	*< 0.61 R*	*< 0.61 UJ*	*< 0.60 U*	*< 0.74 UJ*	*< 0.73 UJ*	*< 0.55 U*	*< 0.57 UJ*	*< 0.71 UJ*	*< 0.72 UJ*	*< 0.58 UJ*	*< 0.74 UJ*
Naphthalene	µg/kg	10 J-	0.73 J-	5.1 J	2.7 J-	0.85 J-	0.84 J	0.72 J-	2.2 J-	1.8 J-	0.43 J-	0.92 J-
Phenanthrene	µg/kg	0.90 J	*< 0.45 UJ*	2.5 J	1.2 J-	*< 0.53 UJ*	1.1 J	0.55 J-	*< 0.52 UJ*	*< 0.53 UJ*	0.58 J-	4.8 J-
Pyrene	µg/kg	*< 0.45 R*	*< 0.45 UJ*	0.70 J	*< 0.54 UJ*	*< 0.53 UJ*	*< 0.40 U*	*< 0.42 UJ*	*< 0.52 UJ*	*< 0.53 UJ*	*< 0.43 UJ*	0.88 J-
Low Molecular Weight PAH (ND=0)	µg/kg	16	0.73	13	7.9	0.85	2.8	2.1	3.6	2.8	1.0	7.6
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	17	2.3	14	9.2	2.7	3.8	3.1	5.1	4.3	2.3	8.9
High Molecular Weight PAH (ND=0)	µg/kg	*< 1.5 U*	*< 1.5 U*	1.3	*< 1.9 U*	*< 1.8 U*	*< 1.4 U*	*< 1.4 U*	*< 1.8 U*	*< 1.8 U*	*< 1.5 U*	2.3
High Molecular Weight PAH (ND=1/2DL)	µg/kg	*< 3.6 U*	*< 3.6 U*	4.4	*< 4.4 U*	*< 4.3 U*	*< 3.2 U*	*< 3.4 U*	*< 4.2 U*	*< 4.2 U*	*< 3.4 U*	5.8
08-General Chemistry Parameters for Solids												
Perchlorate	µg/kg		*< 140 U*		*< 150 U*	*< 130 U*		*< 120 U*	*< 120 U*	*< 160 U*	*< 25 U*	*< 61 U*
Total Organic Carbon	g/kg		50		44	*< 1.7 U*		*< 1.7 U*	*< 1.7 U*	*< 1.7 U*	5.2 J	5.9
pH	pH units		9.02		9.08	9.48		9.15	9.50	9.13	9.12	9.18
Cyanide, Total	mg/kg		0.62 J		0.77	1.0		*< 0.25 U*	*< 0.33 U*	*< 0.33 U*	*< 0.25 U*	*< 0.31 U*

Table I-3
Analytical Results for Solids Samples - PRI-9 Smut Area
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**	**PRI-9**
	Location ID	**PRI9-009**	**PRI9-010**	**PRI9-010**	**PRI9-011**	**PRI9-012**	**PRI9-013**	**PRI9-013**	**PRI9-014**
	Sample Date	**07-Jan-14**	**07-Jan-14**	**07-Jan-14**	**06-Jan-14**	**20-Dec-13**	**20-Dec-13**	**20-Dec-13**	**20-Dec-13**
	Sample Type	**N**	**FINE**	**N**	**N**	**N**	**FINE**	**N**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**
	Sample ID	**PRI9-009-SS01-010714**	**PRI9-010-SS01-010714 FINES**	**PRI9-010-SS01-010714**	**PRI9-011-SS01-010614**	**PRI9-012-SS01-122013**	**PRI9-013-SS01-122013 FINES**	**PRI9-013-SS01-122013**	**PRI9-014-SS01-122013**
Analyte	**Unit**								
Fluorene	µg/kg	*< 0.81 UJ*	0.74 J	*< 0.62 UJ*	*< 0.64 UJ*	*< 0.55 U*	0.69 J	*< 0.72 U*	*< 0.76 U*
Indeno(1,2,3-cd)pyrene	µg/kg	*< 0.80 UJ*	*< 0.56 U*	*< 0.61 UJ*	*< 0.63 UJ*	*< 0.53 U*	*< 0.53 U*	*< 0.70 U*	*< 0.74 U*
Naphthalene	µg/kg	1.7 J-	2.6 J	1.6 J-	*< 0.40 UJ*	*< 0.34 U*	5.2 J	3.3 J	1.3 J
Phenanthrene	µg/kg	2.7 J-	8.3	2.8 J-	1.2 J-	*< 0.45 U*	*< 3.4 U*	*< 0.99 U*	*< 2.6 U*
Pyrene	µg/kg	0.67 J-	1.6 J	*< 0.44 UJ*	*< 0.46 UJ*	*< 0.39 U*	0.41 J	*< 0.51 U*	*< 0.54 U*
Low Molecular Weight PAH (ND=0)	µg/kg	6.3	15	5.9	1.2	*< 0.55 U*	15	9.3	3.8
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	7.7	16	7.0	2.8	*< 1.6 U*	18	11	6.4
High Molecular Weight PAH (ND=0)	µg/kg	1.2	2.9	*< 1.5 U*	0.57	*< 1.3 U*	1.0	*< 1.8 U*	*< 1.9 U*
High Molecular Weight PAH (ND=1/2DL)	µg/kg	5.4	5.8	*< 3.6 U*	4.0	*< 3.1 U*	3.7	*< 4.2 U*	*< 4.4 U*
08-General Chemistry Parameters for Solids									
Perchlorate	µg/kg	*< 140 U*		*< 110 U*	*< 270 U*	*< 24 U*		*< 60 U*	*< 130 U*
Total Organic Carbon	g/kg	16 J		7.6	*< 1.7 U*	*< 2.3 U*		11 J	*< 1.7 UJ*
pH	pH units	9.65		9.58	8.86	9.34		9.90	9.52
Cyanide, Total	mg/kg	*< 0.34 U*		*< 0.29 U*	*< 0.29 U*	0.26 J		*< 0.32 U*	*< 0.33 U*

Notes:
< = Compound not detected. Reportable detection limit shown
µg/kg = micrograms per kilogram
Empty cells = Not analyzed
FINE = Fines Portion (Sieved) of Normal Sample
g/kg = grams per kilogram
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
in = inches
mg/kg = milligrams per kilogram
N = Normal Environmental Sample
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pg/g = picogram per gram (1 pg/g = 0.001 µg/kg)
pH units = pH units
SIM = Selected ion monitoring
SVOC = Semi-volatile organic compound
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence
VOC = Volatile organic compound

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample
J+ = The result is an estimated quantity, biased high. The associated numerical value is the approximate concentration of the analyte in the sample
J- = The result is an estimated quantity, biased low. The associated numerical value is the approximate concentration of the analyte in the sample
R = The sample result is rejected and unusable due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample
U = Compound was analyzed for, but not detected. The associated numerical value is the reporting limit
UJ = The nondetected analyte was qualified as estimated at the sample quantitation limit. The reported sample quantitation limit is approximate and may be inaccurate or imprecise
UJQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration, value is an estimate
UQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration

Table I-4
Analytical Results for Solids Samples -
PRI-10 Barium Sulfate Area
Soil Summary Table
US Magnesium, LLC Facility
Rowley, Utah

	Location Group	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10
	Location ID	**PRI10-001**	**PRI10-002**	**PRI10-003**	**PRI10-004**	**PRI10-005**	**PRI10-006**	**PRI10-006**	**PRI10-007**	**PRI10-007**	**PRI10-008**	**PRI10-008**	**PRI10-008**
	Sample Date	**12-Dec-13**	**12-Dec-13**	**12-Dec-13**	**12-Dec-13**	**13-Dec-13**	**13-Dec-13**	**13-Dec-13**	**13-Dec-13**	**13-Dec-13**	**17-Dec-13**	**17-Dec-13**	**05-May-14**
	Sample Type	**N**	**N**	**N**	**N**	**N**	**FINE**	**N**	**FINE**	**N**	**FINE**	**N**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0.5 - 2 FEET**
	Sample ID	**PRI10-001-SS01-121213**	**PRI10-002-SS01-121213**	**PRI10-003-SS01-121213**	**PRI10-004-SS01-121213**	**PRI10-005-SS01-121313**	**PRI10-006-SS01-121313 FINES**	**PRI10-006-SS01-121313**	**PRI10-007-SS01-121313 FINES**	**PRI10-007-SS01-121313**	**PRI10-008-SS01-121713 FINES**	**PRI10-008-SS01-121713**	**PRI10-008-SB01-0.5-050514**
Analyte	**Unit**												
01-Dioxins and Furans													
2,3,7,8-TCDD	pg/g	*< 0.055 U*	*< 0.39 UJ*	*< 0.065 U*	*< 0.072 U*	*< 0.030 U*	*< 0.018 U*	*< 0.066 U*	*< 0.021 U*	*< 0.15 UJ*	*< 0.018 U*	*< 0.032 U*	*< 0.13 U*
1,2,3,7,8-PeCDD	pg/g	*< 0.10 U*	*< 0.75 UJ*	*< 0.098 U*	*< 0.11 U*	*< 0.056 U*	*< 0.034 U*	*< 0.13 U*	*< 0.030 U*	*< 0.21 UJ*	0.061 J	*< 0.093 U*	*< 0.21 U*
1,2,3,4,7,8-HxCDD	pg/g	*< 0.082 U*	*< 1.0 UJ*	*< 0.073 U*	*< 0.16 U*	*< 0.069 U*	*< 0.046 U*	*< 0.16 U*	*< 0.041 U*	*< 0.39 U*	*< 0.046 U*	*< 0.091 U*	*< 0.46 U*
1,2,3,6,7,8-HxCDD	pg/g	*< 0.081 U*	*< 1.0 UJ*	*< 0.071 U*	*< 0.29 UQ*	*< 0.049 U*	*< 0.032 U*	*< 0.15 U*	*< 0.094 UQ*	*< 0.38 U*	0.23 J	*< 0.064 U*	0.70 J
1,2,3,7,8,9-HxCDD	pg/g	*< 0.070 U*	*< 0.89 UJ*	*< 0.062 U*	*< 0.14 U*	*< 0.050 U*	*< 0.033 U*	*< 0.13 U*	*< 0.030 U*	*< 0.33 U*	0.16 J	*< 0.066 U*	*< 0.71 UQ*
1,2,3,4,6,7,8-HpCDD	pg/g	*< 0.22 UQ*	1.3 J	*< 0.2 UQ*	1.9 J	0.43 J	0.31 J	0.30 J	0.79 J	1.8 J	0.91 J	0.48 J	5.1 J
OCDD	pg/g	*< 0.99 U*	*< 5.5 UJQ*	*< 0.6 UQ*	*< 4.8 UQ*	1.8 J	0.92 J	*< 0.87 U*	2.3 J	*< 6 UJQ*	3.8 J	1.8 J	18
2,3,7,8-TCDF	pg/g	*< 0.085 U*	*< 1.2 UJQ*	*< 0.11 U*	1.1 J	0.29 J	*< 0.29 UQ*	*< 0.27 UQ*	0.57 J	0.87 J	0.79 J	0.58 J	1.1 J
1,2,3,7,8-PeCDF	pg/g	*< 0.16 U*	*< 1.3 UJ*	*< 0.15 U*	2.3 J	0.27 J	0.26 J	*< 0.19 U*	*< 0.38 UQ*	*< 1.4 UJ*	0.72 J	0.65 J	2.1 J
2,3,4,7,8-PeCDF	pg/g	*< 0.17 U*	*< 1.3 UJ*	*< 0.15 U*	1.3 J	0.16 J	0.12 J	*< 0.19 U*	0.28 J	*< 1.4 UJ*	0.50 J	*< 0.33 U*	1.4 J
1,2,3,4,7,8-HxCDF	pg/g	*< 0.16 UQ*	*< 1.8 UJ*	*< 0.2 U*	5.5 J	1.1 J	0.66 J	0.59 J	1.6 J	3.8 J	2.3 J	*< 1.9 U*	4.9 J
1,2,3,6,7,8-HxCDF	pg/g	0.15 J	*< 1.6 UJ*	0.18 J	5.2 J	*< 0.84 UQ*	0.39 J	0.44 J	1.0 J	*< 2.6 UJQ*	1.7 J	1.4 J	2.9 J
1,2,3,7,8,9-HxCDF	pg/g	*< 0.082 U*	*< 1.8 UJ*	*< 0.079 U*	*< 0.39 UQ*	*< 0.058 U*	*< 0.035 U*	*< 0.082 U*	*< 0.36 UQ*	*< 0.97 UJ*	0.29 J	*< 0.14 UQ*	*< 0.28 U*
2,3,4,6,7,8-HxCDF	pg/g	*< 0.077 U*	*< 1.7 UJ*	*< 0.074 U*	1.3 J	0.38 J	*< 0.38 UQ*	0.32 J	0.91 J	*< 0.92 UJ*	0.81 J	0.72 J	1.3 J
1,2,3,4,6,7,8-HpCDF	pg/g	1.1 J	*< 3.4 UJQ*	0.57 J	38	6.3	*< 2.4 UQ*	2.5 J	9.5	18 J	16	*< 10 U*	27
1,2,3,4,7,8,9-HpCDF	pg/g	*< 0.086 U*	*< 0.63 UJQ*	0.12 J	10	1.1 J	0.27 J	*< 0.41 UQ*	1.8 J	*< 3.3 UJQ*	2.8 J	1.9 J	6.5
OCDF	pg/g	12	22 J	6.3 J	310	64	37	26	110	250 J	240	130	630
Calculated TEQ (ND=0), Mammalian	pg/g	0.030	0.020	0.027	2.4	0.33	0.17	0.17	0.65	0.74	1.1	0.38	2.2
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	0.18	1.4	0.19	2.5	0.44	0.28	0.37	0.73	1.5	1.2	0.66	2.6
Calculated TEQ (ND=0), Avian	pg/g	0.027	0.0035	0.026	4.3	0.71	35	0.16	90	1.7	89	1.0	77
Calculated TEQ (ND=1/2 DL), Avian	pg/g	13	16	13	18	14	36	15	91	16	89	14	77
02-PCBs													
PCB-81	pg/g	*< 0.42 U*	*< 0.55 U*	*< 0.37 U*	*< 0.50 U*	*< 0.26 U*	*< 0.78 U*	*< 0.50 U*	*< 0.42 U*	*< 0.95 UJ*	*< 1.6 U*	*< 0.12 U*	*< 0.85 U*
PCB-77	pg/g	*< 0.42 U*	*< 0.55 U*	*< 0.39 U*	*< 2.6 UQ*	*< 0.33 UQ*	*< 0.76 U*	*< 0.53 U*	0.95 J	2.4 J	*< 2 UQ*	1.1 J	7.5
PCB-105	pg/g	*< 0.21 U*	*< 0.45 U*	*< 0.29 U*	10	*< 0.77 UQ*	1.6 J	1.2 J	*< 2.8 UQ*	*< 6.2 UJQ*	*< 4.8 UQ*	0.95 J	93
PCB-114	pg/g	*< 0.20 U*	*< 0.44 U*	*< 0.27 U*	0.55 J	*< 0.18 U*	*< 0.47 U*	*< 0.36 U*	*< 0.36 U*	*< 0.90 UJ*	*< 1.2 U*	*< 0.10 U*	5.6
PCB-118	pg/g	0.76 J	*< 0.74 UQ*	0.55 J	16	1.7 J	*< 2.8 U*	*< 2.3 UQ*	5.6	13 J	11	1.9 J	150
PCB-123	pg/g	*< 0.20 U*	*< 0.44 U*	*< 0.26 U*	*< 0.47 U*	*< 0.17 U*	*< 0.44 U*	*< 0.36 U*	*< 0.35 U*	*< 0.89 UJ*	*< 1.1 UQ*	*< 0.12 UQ*	4.2
PCB-126	pg/g	*< 0.23 U*	*< 0.49 U*	*< 0.33 U*	*< 0.59 U*	*< 0.21 U*	*< 0.55 U*	*< 0.43 U*	*< 0.46 U*	*< 1.1 UJ*	*< 1.5 U*	0.28 J	*< 2.7 U*
PCB-156 & 157	pg/g	*< 0.20 U*	*< 0.29 U*	*< 0.28 U*	3.4 J	0.59 J	*< 0.42 UQ*	*< 0.37 UQ*	*< 0.85 UQ*	3.2 J	3.4 J	0.54 J	24
PCB-167	pg/g	*< 0.15 U*	*< 0.22 U*	*< 0.21 U*	1.2 J	*< 0.14 U*	*< 0.27 U*	*< 0.26 U*	*< 0.33 U*	1.5 J	1.2 J	0.32 J	7.5
PCB-169	pg/g	*< 0.17 U*	*< 0.29 U*	*< 0.27 U*	*< 0.40 U*	*< 0.17 U*	*< 0.38 U*	*< 0.30 U*	*< 0.47 U*	*< 0.97 UJ*	*< 1.1 U*	*< 0.18 UQ*	*< 0.67 U*
PCB-189	pg/g	*< 0.52 UQ*	*< 0.51 U*	*< 0.34 U*	1.6 J	*< 0.23 U*	*< 0.61 U*	*< 0.55 UQ*	*< 0.40 U*	3.0 J	*< 1.3 U*	*< 0.13 UQ*	2.4
Monochlorobiphenyls, Total	pg/g	2.3 J	2.8 J	6.0 J	2.5 J	5.1 J	1.6 J	2.6 J	1.2 J	3.8 J	27 J	9.3 J	4.1 J
Dichlorobiphenyls, Total	pg/g	*< 5.3 U*	20 J	*< 6.2 U*	21 J	9.2 J	*< 24 U*	13 J	31 J	24 J	46 J	20 J	13 J
Trichlorobiphenyls, Total	pg/g	2.1 J	49 J	2.5 J	12 J	2.3 J	19 J	6.0 J	13 J	11 J	52 J	5.6 J	51 J
Tetrachlorobiphenyls, Total	pg/g	1.6 J	8.4 J	2.2 J	27 J	5.4 J	17 J	6.7 J	22 J	30 J	56 J	8.3 J	280
Pentachlorobiphenyls, Total	pg/g	4.0 J	1.3 J	1.3 J	84 J	6.2 J	18 J	14 J	30 J	71 J	80 J	12 J	740
Hexachlorobiphenyls, Total	pg/g	3.6 J	*< 0.49 U*	1.9 J	65 J	6.5 J	16 J	9.9 J	32 J	68 J	54 J	12 J	410
Heptachlorobiphenyls, Total	pg/g	3.3 J	*< 0.51 U*	1.5 J	52 J	6.1 J	14 J	9.3 J	25 J	60 J	26 J	13 J	120 J
Octachlorobiphenyls, Total	pg/g	3.3 J	*< 0.25 U*	*< 0.26 U*	95 J	13 J	14 J	12 J	30 J	100 J	39 J	25 J	120 J
Nonachlorobiphenyls, Total	pg/g	9.9 J	3.3 J	2.5 J	250	37 J	25 J	27 J	64 J	300 J	100 J	78 J	310
Decachlorobiphenyl (PCB-209)	pg/g	65	31	20 J	2,500 J	220	230	210	480	2,300 J	700	570	11,000 J
Total PCBs	pg/g	95 J	120 J	38 J	3,100	310	350	310	730	3,000	1,200	750	13,000
03- Metals													
Total Aluminum	mg/kg	7,200	14,000	12,000	10,000	5,600	12,000	9,300	14,000	13,000	12,000	14,000	10,000
Total Antimony	mg/kg	*< 0.31 UJ*	0.56 J-	0.49 J-	*< 0.4 UJ*	*< 0.29 UJ*	*< 0.37 UJ*	*< 0.45 UJ*	0.48 J-	*< 0.44 UJ*	0.29 J-	0.45 J-	*< 0.27 UJ*
Total Arsenic	mg/kg	8.1	13	9.2	9.7	6.9	9.1	9.5	10	9.9	6.8	7.2	6.0
Total Barium	mg/kg	210	350	340	390	190	250	270	270	330	160	340	750
Total Beryllium	mg/kg	0.29	0.77	0.65	0.85	0.23 J	0.59	0.85	0.80	0.83	0.47	0.58	1.0
Total Cadmium	mg/kg	0.17 J	0.20 J	0.27	0.30	0.12 J	0.27	0.24 J	0.29	0.32	0.25	0.26	0.21 J
Total Calcium	mg/kg	160,000	100,000	120,000	140,000	230,000	110,000	150,000	99,000	110,000	89,000	99,000	130,000 J
Total Chromium	mg/kg	7.3	17	16	15	6.6	12	12	16	18	12	14	12
Total Cobalt	mg/kg	2.7	6.6	5.8	4.7	2.6	4.4	3.9	6.0	6.0	4.0	5.1	3.7
Total Copper	mg/kg	6.5	15	13	13	5.6	27	10	36	15	18	12	15
Total Iron	mg/kg	7,200	16,000	14,000	11,000	4,400	11,000	10,000	16,000	17,000	11,000	13,000	11,000 J
Total Lead	mg/kg	5.6 J	11	9.7	11	4.7 J	7.2	9.2	11	12	7.2 J	11 J	16
Total Magnesium	mg/kg	20,000 J-	22,000 J-	23,000 J-	24,000 J-	33,000	40,000	39,000 J-	30,000	29,000 J-	32,000	27,000	42,000 J
Total Manganese	mg/kg	170	260	370	360	220	330	280	380	370	260	250	300
Total Mercury	mg/kg	*< 0.010 U*	0.020 J	*< 0.0091 U*	0.017 J	0.011 J	0.0092 J	0.022 J	0.011 J	0.020 J	0.010 J	*< 0.011 U*	0.016 J+

Table I-4
Analytical Results for Solids Samples -
PRI-10 Barium Sulfate Area
Soil Summary Table
US Magnesium, LLC Facility
Rowley, Utah

	Location Group	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10
	Location ID	PRI10-008	PRI10-008	PRI10-008	PRI10-008	PRI10-009	PRI10-009	PRI10-010	PRI10-011	PRI10-012	PRI10-012	PRI10-013	PRI10-014
	Sample Date	05-May-14	05-May-14	05-May-14	05-May-14	13-Dec-13	13-Dec-13	17-Dec-13	17-Dec-13	16-Dec-13	16-Dec-13	12-Dec-13	16-Dec-13
	Sample Type	N	N	N	N	FINE	N	N	N	FINE	N	N	N
	Depth	2 - 4 FEET	4 - 6 FEET	6 - 8 FEET	8 - 9 FEET	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in
	Sample ID	PRI10-008-SB02-2-050514	PRI10-008-SB03-4-050514	PRI10-008-SB04-6-050514	PRI10-008-SB05-8-050514	PRI10-009-SS01-121313 FINES	PRI10-009-SS01-121313	PRI10-010-SS01-121713	PRI10-011-SS01-121713	PRI10-012-SS01-121613 FINES	PRI10-012-SS01-121613	PRI10-013-SS01-121213	PRI10-014-SS01-121613
Analyte	Unit												
01-Dioxins and Furans													
2,3,7,8-TCDD	pg/g	*< 0.13 U*	*< 0.10 U*	*< 0.099 U*	*< 0.14 U*	*< 0.018 U*	*< 0.018 U*	*< 0.028 U*	*< 0.029 U*	*< 0.022 U*	*< 0.12 U*	*< 0.077 U*	*< 0.10 U*
1,2,3,7,8-PeCDD	pg/g	*< 0.23 U*	*< 0.25 U*	*< 0.20 U*	*< 0.46 UQ*	*< 0.026 U*	*< 0.036 U*	*< 0.049 U*	*< 0.057 U*	*< 0.036 U*	*< 0.15 U*	*< 0.30 U*	*< 0.25 U*
1,2,3,4,7,8-HxCDD	pg/g	*< 0.44 U*	*< 0.12 U*	*< 0.14 U*	*< 0.42 UQ*	*< 0.048 U*	*< 0.050 U*	*< 0.11 U*	*< 0.058 U*	0.089 J	*< 0.17 U*	*< 0.24 U*	*< 0.11 U*
1,2,3,6,7,8-HxCDD	pg/g	*< 0.37 U*	*< 0.099 U*	*< 0.12 U*	2.9 J	*< 0.034 U*	*< 0.035 U*	*< 0.075 U*	*< 0.041 U*	*< 0.26 UQ*	*< 0.13 U*	*< 0.24 U*	0.21 J
1,2,3,7,8,9-HxCDD	pg/g	*< 0.36 U*	*< 0.095 U*	*< 0.12 U*	3.0 J	*< 0.035 U*	*< 0.036 U*	*< 0.078 U*	*< 0.042 U*	0.30 J	*< 0.13 U*	*< 0.21 U*	0.17 J
1,2,3,4,6,7,8-HpCDD	pg/g	*< 0.48 UQ*	*< 0.081 U*	*< 0.11 U*	18	*< 0.32 UQ*	0.36 J	*< 0.52 UQ*	0.82 J	1.3 J	1.0 J	1.7 J	1.4 J
OCDD	pg/g	1.9 J	0.28 J	0.32 J	67	1.3 J	1.5 J	5.3 J	2.0 J	5.6 J	3.9 J	6.0 J	8.9 J
2,3,7,8-TCDF	pg/g	0.23 J	*< 0.086 U*	*< 0.089 U*	3.0	0.43 J	0.41 J	*< 0.24 U*	*< 0.24 U*	0.74 J	*< 0.74 UQ*	*< 0.68 UQ*	0.49 J
1,2,3,7,8-PeCDF	pg/g	*< 0.21 U*	*< 0.19 U*	*< 0.18 U*	6.7 J	*< 0.31 UQ*	0.44 J	*< 0.29 UQ*	0.22 J	1.1 J	0.76 J	0.82 J	0.65 J
2,3,4,7,8-PeCDF	pg/g	*< 0.22 U*	*< 0.20 U*	*< 0.19 U*	3.6 J	0.17 J	0.17 J	*< 0.086 U*	*< 0.13 U*	0.80 J	*< 0.54 UQ*	*< 0.42 UQ*	0.50 J
1,2,3,4,7,8-HxCDF	pg/g	0.56 J	*< 0.055 U*	*< 0.057 U*	13	0.85 J	0.86 J	*< 0.44 UQ*	*< 0.57 U*	3.1 J	2.5 J	*< 1.8 UQ*	1.3 J
1,2,3,6,7,8-HxCDF	pg/g	0.41 J	*< 0.049 U*	*< 0.050 U*	7.7	*< 0.57 UQ*	*< 0.5 UQ*	*< 0.23 UQ*	*< 0.29 UQ*	*< 2.2 UQ*	1.4 J	*< 1.1 UQ*	0.90 J
1,2,3,7,8,9-HxCDF	pg/g	*< 0.079 U*	*< 0.058 U*	*< 0.059 U*	*< 0.62 UQ*	*< 0.1 UQ*	*< 0.11 UQ*	*< 0.044 U*	*< 0.041 U*	0.21 J	*< 0.18 U*	*< 0.37 U*	*< 0.13 UQ*
2,3,4,6,7,8-HxCDF	pg/g	*< 0.12 UQ*	*< 0.054 U*	*< 0.055 U*	3.1 J	0.52 J	0.48 J	*< 0.040 U*	*< 0.27 UQ*	1.1 J	0.60 J	*< 0.52 UQ*	*< 0.39 UQ*
1,2,3,4,6,7,8-HpCDF	pg/g	*< 2.4 UQ*	*< 0.2 UQ*	0.18 J	78	4.6 J	4.8 J	*< 1.8 U*	*< 2.9 U*	23	16	9.2	6.7
1,2,3,4,7,8,9-HpCDF	pg/g	0.77 J	*< 0.086 U*	*< 0.083 U*	21	0.80 J	0.86 J	*< 0.27 UQ*	0.42 J	4.0 J	3.5 J	*< 1.7 UQ*	*< 1.1 UQ*
OCDF	pg/g	54	3.0 J	1.0 J	2,000	72	52	*< 16 U*	39	270	250	140	75
Calculated TEQ (ND=0), Mammalian	pg/g	0.15	0.0010	0.0022	6.4	0.31	0.32	0.061	0.032	1.2	0.75	0.18	0.58
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	0.49	0.28	0.24	7.2	0.41	0.39	0.19	0.19	1.4	1.1	0.74	0.82
Calculated TEQ (ND=0), Avian	pg/g	0.34	0.00035	0.0019	110	51	0.82	0.10	0.11	120	78	0.49	1.5
Calculated TEQ (ND=1/2 DL), Avian	pg/g	15	14	16	110	51	14	14	14	120	79	15	15
02-PCBs													
PCB-81	pg/g	*< 0.55 U*	*< 0.63 U*	*< 0.46 U*	*< 2.9 U*	*< 0.56 U*	*< 0.19 U*	*< 0.11 U*	*< 0.11 U*	*< 0.32 U*	*< 0.22 U*	*< 0.58 U*	*< 0.38 U*
PCB-77	pg/g	*< 0.58 U*	*< 0.67 U*	*< 0.49 U*	25	*< 0.56 U*	*< 0.6 UQ*	0.54 J	0.80 J	*< 2.1 UQ*	1.9 J	3.0	0.81 J
PCB-105	pg/g	7.8	*< 0.52 U*	*< 0.29 U*	320	1.5 J	0.77 J	0.83 J	1.4 J	7.3	3.9	19	*< 2.4 U*
PCB-114	pg/g	*< 0.57 U*	*< 0.47 U*	*< 0.27 U*	18	*< 0.41 U*	*< 0.16 U*	*< 0.24 UQ*	*< 0.088 U*	*< 0.49 UQ*	*< 0.27 U*	0.84 J	*< 0.30 U*
PCB-118	pg/g	13	1.8 J	*< 0.27 U*	520	*< 3.4 U*	*< 1.4 U*	1.4 J	3.0	14	6.5	32	*< 3.7 U*
PCB-123	pg/g	*< 0.55 U*	*< 0.48 U*	*< 0.27 U*	12	*< 0.38 U*	*< 0.15 U*	*< 0.099 U*	*< 0.091 U*	*< 0.39 U*	*< 0.28 U*	*< 0.79 UQ*	*< 0.30 U*
PCB-126	pg/g	*< 0.79 U*	*< 0.65 U*	*< 0.36 U*	*< 8.8 U*	*< 0.52 U*	*< 0.19 U*	0.47 J	*< 0.12 UQ*	0.51 J	*< 0.49 UQ*	*< 0.63 U*	*< 0.37 U*
PCB-156 & 157	pg/g	2.2 J	*< 0.30 U*	*< 0.26 U*	83	*< 0.35 U*	0.33 J	0.63 J	*< 0.49 UQ*	2.1 J	1.3 J	5.6	*< 0.64 UQ*
PCB-167	pg/g	0.50 J	*< 0.23 U*	*< 0.20 U*	27	*< 0.27 U*	*< 0.17 UQ*	0.33 J	0.29 J	*< 0.68 UQ*	0.45 J	1.7 J	*< 0.35 U*
PCB-169	pg/g	*< 0.37 U*	*< 0.35 U*	*< 0.29 U*	*< 2.4 U*	*< 0.39 U*	*< 0.17 U*	0.40 J	*< 0.050 U*	*< 0.16 U*	*< 0.19 U*	*< 0.37 U*	*< 0.42 U*
PCB-189	pg/g	*< 0.80 U*	*< 0.48 U*	*< 0.37 U*	7.7	*< 0.69 U*	*< 0.26 U*	*< 0.44 UQ*	*< 0.14 UQ*	*< 0.24 U*	*< 0.43 UQ*	*< 0.55 U*	*< 0.47 U*
Monochlorobiphenyls, Total	pg/g	4.1 J	3.0 J	4.2 J	12 J	*< 0.66 U*	4.2 J	9.7 J	8.8 J	22 J	4.8 J	5.2 J	3.4 J
Dichlorobiphenyls, Total	pg/g	*< 7.7 U*	*< 5.4 U*	*< 7.4 U*	37 J	32 J	13 J	7.0 J	8.3 J	80 J	23 J	8.6 J	7.0 J
Trichlorobiphenyls, Total	pg/g	2.7 J	1.7 J	*< 0.99 U*	180 J	13 J	5.1 J	4.6 J	7.4 J	46 J	12 J	34 J	4.2 J
Tetrachlorobiphenyls, Total	pg/g	27 J	7.4 J	2.4 J	1,100	20 J	5.1 J	7.4 J	11 J	58 J	21 J	74 J	7.0 J
Pentachlorobiphenyls, Total	pg/g	63 J	11 J	1.4 J	2,700	23 J	9.7 J	8.7 J	19 J	110 J	40 J	180 J	20 J
Hexachlorobiphenyls, Total	pg/g	33 J	4.2 J	0.67 J	1,400	29 J	9.0 J	7.6 J	15 J	64 J	24 J	110 J	18 J
Heptachlorobiphenyls, Total	pg/g	6.6 J	48 J	0.28 J	430 J	30 J	9.6 J	4.9 J	12 J	45 J	25 J	43 J	11 J
Octachlorobiphenyls, Total	pg/g	8.5 J	*< 0.39 U*	*< 0.33 U*	410 J	17 J	15 J	5.8 J	14 J	60 J	41 J	50 J	18 J
Nonachlorobiphenyls, Total	pg/g	28 J	0.74 J	*< 0.31 U*	1,100	32 J	38 J	13 J	33 J	140 J	100 J	100 J	44 J
Decachlorobiphenyl (PCB-209)	pg/g	850	46	10 J	34,000 J	290	220 J+	93	260	1,200	1,000	1,200	290
Total PCBs	pg/g	1,000	120 J	19 J	42,000	490	330	160 J	390	1,800	1,300	1,800	430
03- Metals													
Total Aluminum	mg/kg	4,100	460	2,500	6,300	11,000	10,000	13,000	17,000	12,000	9,000	9,400	9,700
Total Antimony	mg/kg	*< 0.19 UJ*	*< 0.18 UJ*	*< 0.2 UJ*	*< 0.2 UJ*	*< 0.36 UJ*	*< 0.33 UJ*	0.44 J-	0.53 J-	0.31 J-	*< 0.25 UJ*	*< 0.36 UJ*	*< 0.31 UJ*
Total Arsenic	mg/kg	4.5	2.0	2.9	2.8	7.6	7.3	9.5	8.6	6.6	6.3	6.2	6.2
Total Barium	mg/kg	290	310	120	4,000	200	250	330	300	270	350	910	300
Total Beryllium	mg/kg	0.22	0.026 J	0.087 J	7.4	0.58	0.46	0.71	0.70	0.88	0.55	1.2	0.48
Total Cadmium	mg/kg	0.090 J	*< 0.091 U*	0.27	0.15 J	0.29	0.26	0.34	0.28	0.28	0.23	0.25	0.25
Total Calcium	mg/kg	280,000 J	320,000 J	190,000 J	86,000 J	100,000	130,000	120,000	91,000	86,000	160,000	120,000	130,000
Total Chromium	mg/kg	5.0	0.94	3.3	10	13	11	17	17	13	10	14	11
Total Cobalt	mg/kg	2.6	0.98	1.2	2.1	4.5	3.9	5.3	6.1	4.0	3.2	3.9	3.6
Total Copper	mg/kg	4.9	0.89	2.3	22	40	11	12	15	33	9.8	19	10
Total Iron	mg/kg	4,500 J	940 J	2,100 J	11,000 J	12,000	9,700	14,000	14,000	11,000	8,800	11,000	11,000
Total Lead	mg/kg	4.5	1.9	5.4	18	8.1	7.9	11 J	12 J	8.3	7.8	9.8	9.0
Total Magnesium	mg/kg	17,000 J	16,000 J	79,000 J	120,000 J	35,000	28,000	29,000	29,000	37,000	30,000	39,000 J-	28,000
Total Manganese	mg/kg	1,200	190	230	610	330	280	340	280	300	220	330	230
Total Mercury	mg/kg	0.022 J+	0.016 J+	*< 0.011 U*	*< 0.012 U*	0.016 J	*< 0.011 U*	0.014 J	*< 0.011 U*	0.012 J	*< 0.0092 U*	0.020 J	*< 0.011 U*

Table I-4
Analytical Results for Solids Samples -
PRI-10 Barium Sulfate Area
Soil Summary Table
US Magnesium, LLC Facility
Rowley, Utah

	Location Group	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**
	Location ID	**PRI10-001**	**PRI10-002**	**PRI10-003**	**PRI10-004**	**PRI10-005**	**PRI10-006**	**PRI10-006**	**PRI10-007**	**PRI10-007**	**PRI10-008**	**PRI10-008**	**PRI10-008**
	Sample Date	**12-Dec-13**	**12-Dec-13**	**12-Dec-13**	**12-Dec-13**	**13-Dec-13**	**13-Dec-13**	**13-Dec-13**	**13-Dec-13**	**13-Dec-13**	**17-Dec-13**	**17-Dec-13**	**05-May-14**
	Sample Type	**N**	**N**	**N**	**N**	**N**	**FINE**	**N**	**FINE**	**N**	**FINE**	**N**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0.5 - 2 FEET**
	Sample ID	**PRI10-001-SS01-121213**	**PRI10-002-SS01-121213**	**PRI10-003-SS01-121213**	**PRI10-004-SS01-121213**	**PRI10-005-SS01-121313**	**PRI10-006-SS01-121313 FINES**	**PRI10-006-SS01-121313**	**PRI10-007-SS01-121313 FINES**	**PRI10-007-SS01-121313**	**PRI10-008-SS01-121713 FINES**	**PRI10-008-SS01-121713**	**PRI10-008-SB01-0.5-050514**
Analyte	**Unit**												
Total Molybdenum	mg/kg	*< 0.29 U*	*< 0.44 U*	0.97	0.85	*< 0.18 U*	0.49 J	0.54	0.79 J	0.66	0.49 J	0.28 J	0.52
Total Nickel	mg/kg	6.8	16	15	13	6.5	12	10	15	16	10	12	13
Total Potassium	mg/kg	3,500	8,200	7,100	5,000	2,900 J+	7,600 J+	7,200	14,000 J+	16,000	9,500 J+	9,200	7,600 J
Total Selenium	mg/kg	0.32 J-	0.26 J-	0.38 J-	0.25 J-	*< 0.24 UJ*	0.39 J-	0.36 J-	0.32 J-	0.30 J-	0.33 J-	0.28 J-	0.24 J-
Total Silver	mg/kg	0.068 J	*< 0.073 U*	*< 0.073 U*	*< 0.070 U*	*< 0.071 U*	*< 0.065 U*	0.077 J	*< 0.062 U*	*< 0.072 U*	*< 0.065 U*	*< 0.068 U*	*< 0.069 U*
Total Sodium	mg/kg	9,900	14,000	10,000	10,000	6,100 J+	7,100 J+	11,000	6,100 J+	9,900	4,400 J+	8,900	7,300
Total Thallium	mg/kg	*< 0.11 U*	*< 0.17 U*	*< 0.14 U*	*< 0.12 U*	*< 0.12 U*	*< 0.11 U*	*< 0.12 U*	*< 0.12 U*	*< 0.16 U*	*< 0.11 U*	*< 0.11 U*	*< 0.11 U*
Total Vanadium	mg/kg	20	36	27	25	17	24	22	28	28	22	24	22
Total Zinc	mg/kg	22 J-	56 J-	52 J-	52 J-	17	47 J-	41 J-	57 J-	56 J-	40 J-	50 J-	33
05-SVOCs													
1,1'-Biphenyl	µg/kg	*< 190 U*	*< 200 U*	*< 190 U*	*< 200 U*	*< 200 U*	*< 180 U*	*< 210 U*	*< 180 U*	*< 200 U*	*< 170 U*	*< 200 U*	*< 200 U*
1,2,4,5-Tetrachlorobenzene	µg/kg	*< 30 U*	*< 32 U*	*< 30 U*	*< 32 U*	*< 31 U*	*< 28 U*	*< 33 U*	*< 28 U*	*< 32 U*	*< 27 U*	*< 31 U*	*< 31 U*
2,3,4,6-Tetrachlorophenol	µg/kg	*< 93 U*	*< 100 U*	*< 94 U*	*< 100 U*	*< 98 U*	*< 88 UJ*	*< 110 U*	*< 88 UJ*	*< 100 U*	*< 84 UJ*	*< 98 U*	*< 98 U*
2,4,5-Trichlorophenol	µg/kg	*< 95 U*	*< 100 U*	*< 95 U*	*< 100 U*	*< 99 U*	*< 89 UJ*	*< 110 U*	*< 89 UJ*	*< 100 U*	*< 85 UJ*	*< 99 U*	*< 99 U*
2,4,6-Trichlorophenol	µg/kg	*< 96 U*	*< 100 U*	*< 96 U*	*< 100 U*	*< 100 U*	*< 90 UJ*	*< 110 U*	*< 90 UJ*	*< 100 U*	*< 87 UJ*	*< 100 U*	*< 100 U*
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	*< 5.0 U*	*< 5.5 U*	*< 5.0 U*	*< 5.4 U*	*< 5.3 U*	*< 4.7 UJ*	*< 5.6 U*	*< 4.7 UJ*	*< 5.4 U*	*< 4.5 UJ*	*< 5.2 U*	*< 5.3 U*
2,2-Oxybis(1-chloropropane)	µg/kg	*< 90 U*	*< 98 U*	*< 91 U*	*< 96 U*	*< 94 U*	*< 85 U*	*< 100 U*	*< 84 U*	*< 97 U*	*< 81 U*	*< 94 U*	*< 95 UJ*
2,4-Dichlorophenol	µg/kg	*< 100 U*	*< 110 U*	*< 100 U*	*< 110 U*	*< 110 U*	*< 95 UJ*	*< 110 U*	*< 95 UJ*	*< 110 U*	*< 92 UJ*	*< 110 U*	*< 110 U*
2,4-Dimethylphenol	µg/kg	*< 190 U*	*< 210 U*	*< 190 U*	*< 200 U*	*< 200 U*	*< 180 UJ*	*< 210 U*	*< 180 UJ*	*< 200 U*	*< 170 UJ*	*< 200 UJ*	*< 200 U*
2,4-Dinitrophenol	µg/kg	*< 240 U*	*< 270 U*	*< 250 U*	*< 260 U*	*< 260 U*	*< 230 UJ*	*< 270 U*	*< 230 UJ*	*< 260 U*	*< 220 UJ*	*< 260 U*	*< 260 U*
2,4-Dinitrotoluene	µg/kg	*< 100 U*	*< 110 U*	*< 100 U*	*< 110 U*	*< 110 U*	*< 95 U*	*< 110 U*	*< 95 U*	*< 110 U*	*< 92 U*	*< 110 U*	*< 110 U*
2,6-Dinitrotoluene	µg/kg	*< 110 U*	*< 120 U*	*< 110 U*	*< 120 U*	*< 120 U*	*< 110 U*	*< 130 U*	*< 110 U*	*< 120 U*	*< 100 U*	*< 120 U*	*< 120 U*
2-Chloronaphthalene	µg/kg	*< 92 U*	*< 100 U*	*< 93 U*	*< 99 U*	*< 97 U*	*< 87 U*	*< 100 U*	*< 87 U*	*< 99 U*	*< 83 U*	*< 97 U*	*< 97 U*
2-Chlorophenol	µg/kg	*< 100 U*	*< 110 U*	*< 100 U*	*< 110 U*	*< 110 U*	*< 94 UJ*	*< 110 U*	*< 94 UJ*	*< 110 U*	*< 91 UJ*	*< 100 U*	*< 110 U*
2-Methylphenol	µg/kg	*< 66 U*	*< 72 U*	*< 66 U*	*< 71 U*	*< 69 U*	*< 62 UJ*	*< 74 U*	*< 62 UJ*	*< 71 U*	*< 60 UJ*	*< 69 U*	*< 69 U*
2-Nitroaniline	µg/kg	*< 96 U*	*< 100 U*	*< 96 U*	*< 100 U*	*< 100 U*	*< 90 U*	*< 110 U*	*< 90 U*	*< 100 U*	*< 87 U*	*< 100 U*	*< 100 U*
2-Nitrophenol	µg/kg	*< 93 U*	*< 100 U*	*< 94 U*	*< 100 U*	*< 98 U*	*< 88 UJ*	*< 110 U*	*< 88 UJ*	*< 100 U*	*< 84 UJ*	*< 98 U*	*< 98 U*
3,3'-Dichlorobenzidine	µg/kg	*< 110 U*	*< 120 U*	*< 110 U*	*< 110 U*	*< 110 U*	*< 100 UJ*	*< 120 U*	*< 100 UJ*	*< 120 U*	*< 97 UJ*	*< 110 U*	*< 110 UJ*
3-Nitroaniline	µg/kg	*< 190 UJ*	*< 210 UJ*	*< 190 UJ*	*< 200 UJ*	*< 200 UJ*	*< 180 UJ*	*< 210 UJ*	*< 180 UJ*	*< 200 UJ*	*< 170 UJ*	*< 200 U*	*< 200 UJ*
4,6-Dinitro-2-methylphenol	µg/kg	*< 92 U*	*< 100 U*	*< 93 U*	*< 99 U*	*< 97 U*	*< 87 UJ*	*< 100 U*	*< 87 UJ*	*< 99 U*	*< 83 UJ*	*< 97 U*	*< 97 U*
4-Bromophenyl-phenylether	µg/kg	*< 97 U*	*< 110 U*	*< 97 U*	*< 100 U*	*< 100 U*	*< 91 U*	*< 110 U*	*< 91 U*	*< 100 U*	*< 88 U*	*< 100 U*	*< 100 U*
4-Chloro-3-methylphenol	µg/kg	*< 100 U*	*< 110 U*	*< 110 U*	*< 110 U*	*< 110 U*	*< 99 UJ*	*< 120 U*	*< 98 UJ*	*< 110 U*	*< 95 UJ*	*< 110 U*	*< 110 U*
4-Chloroaniline	µg/kg	*< 66 UJ*	*< 72 UJ*	*< 66 UJ*	*< 71 UJ*	*< 69 UJ*	*< 62 UJ*	*< 74 UJ*	*< 62 UJ*	*< 71 UJ*	*< 60 UJ*	*< 69 UJ*	*< 69 UJ*
4-Chlorophenyl-phenylether	µg/kg	*< 110 U*	*< 120 U*	*< 110 U*	*< 110 U*	*< 110 U*	*< 100 U*	*< 120 U*	*< 99 U*	*< 110 U*	*< 96 U*	*< 110 U*	*< 110 U*
3 & 4 Methylphenol	µg/kg	*< 380 U*	*< 410 U*	*< 380 U*	*< 400 U*	*< 390 U*	*< 350 UJ*	*< 420 U*	*< 350 UJ*	*< 400 U*	*< 340 UJ*	*< 390 U*	*< 400 U*
4-Nitroaniline	µg/kg	*< 100 U*	*< 110 U*	*< 100 U*	*< 110 U*	*< 110 U*	*< 94 U*	*< 110 U*	*< 94 U*	*< 110 U*	*< 91 U*	*< 100 U*	*< 110 U*
4-Nitrophenol	µg/kg	*< 320 U*	*< 350 U*	*< 320 U*	*< 340 U*	*< 330 U*	*< 300 UJ*	*< 360 U*	*< 300 UJ*	*< 340 U*	*< 290 UJ*	*< 330 U*	*< 340 U*
Acetophenone	µg/kg	*< 28 U*	*< 31 U*	*< 29 U*	*< 31 U*	*< 34 U*	930	*< 40 U*	940	*< 40 U*	200 J	*< 30 U*	*< 30 U*
Benzaldehyde	µg/kg	*< 190 U*	*< 200 U*	*< 190 U*	*< 200 U*	*< 200 U*	430	*< 210 U*	480	*< 200 U*	180 J	*< 200 U*	*< 200 U*
Benzylbutylphthalate	µg/kg	*< 110 U*	*< 120 U*	*< 110 U*	*< 120 U*	*< 110 U*	*< 100 U*	*< 120 U*	*< 100 U*	*< 120 U*	*< 98 U*	*< 110 U*	*< 110 U*
Bis(2-chloroethoxy)methane	µg/kg	*< 100 U*	*< 110 U*	*< 100 U*	*< 110 U*	*< 110 U*	*< 94 U*	*< 110 U*	*< 94 U*	*< 110 U*	*< 91 U*	*< 100 U*	*< 110 U*
bis(2-Chloroethyl) ether	µg/kg	*< 92 U*	*< 100 U*	*< 93 U*	*< 99 U*	*< 97 U*	*< 87 U*	*< 100 U*	*< 87 U*	*< 99 U*	*< 83 U*	*< 97 U*	*< 97 U*
Bis(2-ethylhexyl)phthalate	µg/kg	*< 110 U*	*< 120 U*	*< 110 U*	*< 120 U*	*< 120 U*	*< 110 U*	*< 130 U*	*< 100 U*	*< 120 U*	*< 100 U*	*< 120 U*	160 J
Carbazole	µg/kg	*< 110 U*	*< 120 U*	*< 110 U*	*< 120 U*	*< 110 U*	*< 100 U*	*< 120 U*	*< 100 U*	*< 120 U*	*< 98 U*	*< 110 U*	*< 110 UJ*
Dibenzofuran	µg/kg	*< 98 U*	*< 110 U*	*< 99 U*	*< 110 U*	*< 100 U*	*< 92 U*	*< 110 U*	*< 92 U*	*< 110 U*	*< 89 U*	*< 100 U*	*< 100 U*
Diethyl phthalate	µg/kg	*< 100 U*	*< 110 U*	*< 100 U*	*< 110 U*	*< 110 U*	*< 97 U*	*< 120 U*	*< 96 U*	*< 110 U*	*< 93 U*	*< 110 U*	*< 110 U*
Dimethylphthalate	µg/kg	*< 99 U*	*< 110 U*	*< 100 U*	*< 110 U*	*< 100 U*	*< 93 U*	*< 110 U*	*< 93 U*	*< 110 U*	*< 90 U*	*< 100 U*	*< 100 U*
Di-n-butylphthalate	µg/kg	*< 110 U*	*< 120 U*	*< 110 U*	*< 120 U*	*< 120 U*	*< 100 U*	*< 120 U*	*< 100 U*	*< 120 U*	*< 100 U*	*< 120 U*	*< 120 U*
Di-n-octylphthalate	µg/kg	*< 110 U*	*< 120 U*	*< 110 U*	*< 120 U*	*< 120 U*	*< 100 U*	*< 120 U*	*< 100 U*	*< 120 U*	*< 100 U*	*< 120 U*	*< 120 U*
Hexachlorobenzene	µg/kg	*< 100 U*	*< 110 U*	*< 100 U*	*< 110 U*	*< 110 U*	*< 95 U*	*< 110 U*	*< 95 U*	*< 110 U*	*< 92 U*	*< 110 U*	*< 110 U*
Hexachlorobenzene (SIM Screen)	µg/kg	*< 2.5 U*	*< 2.7 U*	*< 2.5 U*	*< 2.7 U*	*< 2.6 U*	3.5 J	*< 2.8 U*	8.9 J	*< 2.7 U*	8.7 J	*< 2.6 U*	7.2 J
Hexachlorobutadiene	µg/kg	*< 93 U*	*< 100 U*	*< 94 U*	*< 100 U*	*< 98 U*	*< 88 U*	*< 110 U*	*< 88 U*	*< 100 U*	*< 84 U*	*< 98 U*	*< 98 U*
Hexachlorobutadiene (SIM Screen)	µg/kg	*< 4.2 U*	*< 4.6 U*	*< 4.2 U*	*< 4.5 U*	*< 4.4 U*	*< 4.0 UJ*	*< 4.7 U*	*< 4.0 U*	*< 4.5 U*	*< 3.8 U*	*< 4.4 U*	*< 4.4 U*
Hexachlorocyclopentadiene	µg/kg	*< 71 U*	*< 77 U*	*< 71 U*	*< 76 U*	*< 74 U*	*< 67 U*	*< 79 U*	*< 66 U*	*< 76 U*	*< 64 U*	*< 74 U*	*< 74 UJ*
Hexachloroethane	µg/kg	*< 92 U*	*< 100 U*	*< 93 U*	*< 99 U*	*< 97 U*	*< 87 U*	*< 100 U*	*< 87 U*	*< 99 U*	*< 83 U*	*< 97 U*	*< 97 U*
Isophorone	µg/kg	*< 110 U*	*< 120 U*	*< 110 U*	*< 110 U*	*< 110 U*	*< 100 U*	*< 120 U*	*< 99 U*	*< 110 U*	*< 96 U*	*< 110 U*	*< 110 U*
Nitrobenzene	µg/kg	*< 87 U*	*< 94 U*	*< 87 U*	*< 93 U*	*< 91 U*	*< 82 U*	*< 97 U*	*< 81 U*	*< 93 U*	*< 78 U*	*< 91 U*	*< 91 U*
N-Nitrosodimethylamine	µg/kg	*< 110 U*	*< 120 U*	*< 110 U*	*< 120 U*	*< 110 U*	*< 100 U*	*< 120 U*	*< 100 U*	*< 120 U*	*< 99 U*	*< 110 U*	*< 110 U*
n-Nitrosodimethylamine (SIM Screen)	µg/kg	*< 110 U*	*< 120 U*	*< 110 U*	*< 120 U*	*< 110 U*	*< 100 UJ*	*< 120 U*	*< 100 UJ*	*< 120 U*	*< 99 U*	*< 110 U*	*< 110 U*
N-Nitroso-di-n-propylamine	µg/kg	*< 96 U*	*< 100 U*	*< 96 U*	*< 100 U*	*< 100 U*	*< 90 U*	*< 110 U*	*< 90 U*	*< 100 U*	*< 87 U*	*< 100 U*	*< 100 U*
N-Nitrosodiphenylamine	µg/kg	*< 98 U*	*< 110 U*	*< 99 U*	*< 110 U*	*< 100 U*	*< 92 U*	*< 110 U*	*< 92 U*	*< 110 U*	*< 89 U*	*< 100 U*	*< 100 U*
Pentachlorophenol	µg/kg	*< 58 U*	*< 63 U*	*< 58 U*	*< 62 U*	*< 61 U*	*< 55 UJ*	*< 65 U*	*< 55 UJ*	*< 62 U*	*< 53 UJ*	*< 61 U*	*< 61 U*
Pentachlorophenol (SIM Screen)	µg/kg	*< 27 U*	*< 30 U*	*< 28 U*	*< 29 U*	*< 29 U*	*< 26 UJ*	*< 31 U*	*< 26 UJ*	*< 29 U*	*< 25 UJ*	*< 29 U*	*< 29 U*

Table I-4
Analytical Results for Solids Samples -
PRI-10 Barium Sulfate Area
Soil Summary Table
US Magnesium, LLC Facility
Rowley, Utah

	Location Group	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10
	Location ID	**PRI10-008**	**PRI10-008**	**PRI10-008**	**PRI10-008**	**PRI10-009**	**PRI10-009**	**PRI10-010**	**PRI10-011**	**PRI10-012**	**PRI10-012**	**PRI10-013**	**PRI10-014**
	Sample Date	**05-May-14**	**05-May-14**	**05-May-14**	**05-May-14**	**13-Dec-13**	**13-Dec-13**	**17-Dec-13**	**17-Dec-13**	**16-Dec-13**	**16-Dec-13**	**12-Dec-13**	**16-Dec-13**
	Sample Type	**N**	**N**	**N**	**N**	**FINE**	**N**	**N**	**N**	**FINE**	**N**	**N**	**N**
	Depth	**2 - 4 FEET**	**4 - 6 FEET**	**6 - 8 FEET**	**8 - 9 FEET**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**
	Sample ID	**PRI10-008-SB02-2-050514**	**PRI10-008-SB03-4-050514**	**PRI10-008-SB04-6-050514**	**PRI10-008-SB05-8-050514**	**PRI10-009-SS01-121313 FINES**	**PRI10-009-SS01-121313**	**PRI10-010-SS01-121713**	**PRI10-011-SS01-121713**	**PRI10-012-SS01-121613 FINES**	**PRI10-012-SS01-121613**	**PRI10-013-SS01-121213**	**PRI10-014-SS01-121613**
Analyte	**Unit**												
Total Molybdenum	mg/kg	*< 0.035 U*	*< 0.036 U*	*< 0.14 U*	0.91	0.66 J	*< 0.44 U*	0.64	0.30 J	0.48 J	*< 0.32 U*	*< 0.45 U*	*< 0.35 U*
Total Nickel	mg/kg	7.9	2.3	4.0	14	12	10	15	14	11	8.4	11	8.9
Total Potassium	mg/kg	2,500 J	460 J	890 J	5,300 J	9,600 J+	5,500 J+	8,200	10,000	11,000 J+	9,400 J+	12,000	7,200 J+
Total Selenium	mg/kg	*< 0.17 UJ*	*< 0.18 UJ*	0.35 J-	*< 0.16 UJ*	0.37 J-	0.35 J-	0.36 J-	0.29 J-	0.32 J-	0.25 J-	*< 0.24 UJ*	0.32 J-
Total Silver	mg/kg	*< 0.052 U*	*< 0.055 U*	0.050 J	0.055 J	0.064 J	0.088 J	*< 0.076 U*	*< 0.071 U*	*< 0.063 U*	*< 0.068 U*	*< 0.071 U*	*< 0.075 U*
Total Sodium	mg/kg	4,600	3,800	2,700	7,400	8,200 J+	10,000 J+	10,000	9,600	4,900 J+	8,000 J+	5,600	7,100 J+
Total Thallium	mg/kg	*< 0.086 U*	*< 0.091 U*	*< 0.081 U*	*< 0.082 U*	*< 0.11 U*	*< 0.13 U*	*< 0.13 U*	*< 0.12 U*	*< 0.11 U*	*< 0.11 U*	*< 0.12 U*	*< 0.12 U*
Total Vanadium	mg/kg	16	7.7	20	13	24	22	28	28	22	18	18	19
Total Zinc	mg/kg	13	2.6	6.0	84	46 J-	33	55 J-	58 J-	49 J-	29	72 J-	32
05-SVOCs													
1,1'-Biphenyl	µg/kg	*< 220 U*	*< 200 U*	*< 240 U*	*< 240 U*	*< 170 U*	*< 200 U*	*< 210 U*	*< 210 U*	*< 180 U*	*< 190 U*	*< 210 U*	*< 200 U*
1,2,4,5-Tetrachlorobenzene	µg/kg	*< 34 U*	*< 32 U*	*< 38 U*	*< 38 U*	*< 27 U*	*< 31 U*	*< 33 U*	*< 33 U*	*< 28 U*	*< 30 U*	*< 32 U*	*< 31 U*
2,3,4,6-Tetrachlorophenol	µg/kg	*< 110 U*	*< 99 UJ*	*< 120 U*	*< 120 U*	*< 85 UJ*	*< 98 U*	*< 100 U*	*< 100 U*	*< 89 UJ*	*< 96 U*	*< 100 U*	*< 99 U*
2,4,5-Trichlorophenol	µg/kg	*< 110 U*	*< 100 UJ*	*< 120 U*	*< 120 U*	*< 86 UJ*	*< 100 U*	*< 110 U*	*< 100 U*	*< 90 UJ*	*< 97 U*	*< 100 U*	*< 100 U*
2,4,6-Trichlorophenol	µg/kg	*< 110 U*	*< 100 UJ*	*< 120 U*	*< 120 U*	*< 87 UJ*	*< 100 U*	*< 110 U*	*< 110 U*	*< 91 UJ*	*< 98 U*	*< 100 U*	*< 100 U*
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	*< 5.8 U*	*< 5.3 UJ*	*< 6.4 U*	*< 6.5 U*	*< 4.6 UJ*	*< 5.3 U*	*< 5.6 U*	*< 5.5 U*	*< 4.8 UJ*	*< 5.1 U*	*< 5.5 U*	*< 5.3 U*
2,2-Oxybis(1-chloropropane)	µg/kg	*< 100 UJ*	*< 96 UJ*	*< 110 UJ*	*< 120 UJ*	*< 82 U*	*< 95 U*	*< 100 U*	*< 99 U*	*< 85 U*	*< 92 U*	*< 99 U*	*< 95 U*
2,4-Dichlorophenol	µg/kg	*< 120 U*	*< 110 UJ*	*< 130 U*	*< 130 U*	*< 92 UJ*	*< 110 U*	*< 110 U*	*< 110 U*	*< 96 UJ*	*< 100 U*	*< 110 U*	*< 110 U*
2,4-Dimethylphenol	µg/kg	*< 220 U*	*< 200 UJ*	*< 240 U*	*< 250 U*	*< 170 UJ*	*< 200 U*	*< 210 UJ*	*< 210 UJ*	*< 180 UJ*	*< 190 U*	*< 210 U*	*< 200 U*
2,4-Dinitrophenol	µg/kg	*< 280 U*	*< 260 UJ*	*< 310 U*	*< 310 U*	*< 220 UJ*	*< 260 U*	*< 270 U*	*< 270 U*	*< 230 UJ*	*< 250 U*	*< 270 U*	*< 260 U*
2,4-Dinitrotoluene	µg/kg	*< 120 U*	*< 110 U*	*< 130 U*	*< 130 U*	*< 92 U*	*< 110 U*	*< 110 U*	*< 110 U*	*< 96 U*	*< 100 U*	*< 110 U*	*< 110 U*
2,6-Dinitrotoluene	µg/kg	*< 130 U*	*< 120 U*	*< 140 U*	*< 150 U*	*< 100 U*	*< 120 U*	*< 130 U*	*< 120 U*	*< 110 U*	*< 120 U*	*< 120 U*	*< 120 U*
2-Chloronaphthalene	µg/kg	*< 110 U*	*< 98 U*	*< 120 U*	*< 120 U*	*< 84 U*	*< 97 U*	*< 100 U*	*< 100 U*	*< 88 U*	*< 95 U*	*< 100 U*	*< 97 U*
2-Chlorophenol	µg/kg	*< 120 U*	*< 110 UJ*	*< 130 U*	*< 130 U*	*< 91 UJ*	*< 110 U*	*< 110 U*	*< 110 U*	*< 95 UJ*	*< 100 U*	*< 110 U*	*< 110 U*
2-Methylphenol	µg/kg	*< 77 U*	*< 70 UJ*	*< 84 U*	*< 85 U*	*< 60 UJ*	*< 70 U*	*< 74 U*	*< 73 U*	*< 63 UJ*	*< 68 U*	*< 72 U*	*< 70 U*
2-Nitroaniline	µg/kg	*< 110 U*	*< 100 U*	*< 120 U*	*< 120 U*	*< 87 U*	*< 100 U*	*< 110 U*	*< 110 U*	*< 91 U*	*< 98 U*	*< 100 U*	*< 100 U*
2-Nitrophenol	µg/kg	*< 110 U*	*< 99 UJ*	*< 120 U*	*< 120 U*	*< 85 UJ*	*< 98 U*	*< 100 U*	*< 100 U*	*< 89 UJ*	*< 96 U*	*< 100 U*	*< 99 U*
3,3'-Dichlorobenzidine	µg/kg	*< 120 UJ*	*< 110 UJ*	*< 140 UJ*	*< 140 UJ*	*< 98 UJ*	*< 110 UJ*	*< 120 U*	*< 120 U*	*< 100 UJ*	*< 110 U*	*< 120 U*	*< 110 U*
3-Nitroaniline	µg/kg	*< 220 UJ*	*< 200 UJ*	*< 240 UJ*	*< 250 UJ*	*< 170 UJ*	*< 200 UJ*	*< 210 U*	*< 210 U*	*< 180 UJ*	*< 190 U*	*< 210 UJ*	*< 200 U*
4,6-Dinitro-2-methylphenol	µg/kg	*< 110 U*	*< 98 UJ*	*< 120 U*	*< 120 U*	*< 84 UJ*	*< 97 U*	*< 100 U*	*< 100 U*	*< 88 UJ*	*< 95 U*	*< 100 U*	*< 97 U*
4-Bromophenyl-phenylether	µg/kg	*< 110 U*	*< 100 U*	*< 120 U*	*< 120 U*	*< 88 U*	*< 100 U*	*< 110 U*	*< 110 U*	*< 92 U*	*< 99 U*	*< 110 U*	*< 100 U*
4-Chloro-3-methylphenol	µg/kg	*< 120 U*	*< 110 UJ*	*< 130 U*	*< 140 U*	*< 95 UJ*	*< 110 U*	*< 120 U*	*< 120 U*	*< 99 UJ*	*< 110 U*	*< 110 U*	*< 110 U*
4-Chloroaniline	µg/kg	*< 77 UJ*	*< 70 UJ*	*< 84 UJ*	*< 85 UJ*	*< 60 UJ*	*< 70 UJ*	*< 74 UJ*	*< 73 UJ*	*< 63 UJ*	*< 68 UJ*	*< 72 UJ*	*< 70 UJ*
4-Chlorophenyl-phenylether	µg/kg	*< 120 U*	*< 110 U*	*< 140 U*	*< 140 U*	*< 96 U*	*< 110 U*	*< 120 U*	*< 120 U*	*< 100 U*	*< 110 U*	*< 120 U*	*< 110 U*
3 & 4 Methylphenol	µg/kg	*< 440 U*	*< 400 UJ*	*< 480 U*	*< 490 U*	*< 340 UJ*	*< 400 U*	*< 420 U*	*< 410 U*	*< 360 UJ*	*< 390 U*	*< 410 U*	*< 400 U*
4-Nitroaniline	µg/kg	*< 120 U*	*< 110 U*	*< 130 U*	*< 130 U*	*< 91 U*	*< 110 UJ*	*< 110 U*	*< 110 U*	*< 95 U*	*< 100 UJ*	*< 110 U*	*< 110 UJ*
4-Nitrophenol	µg/kg	*< 370 U*	*< 340 UJ*	*< 410 U*	*< 410 U*	*< 290 UJ*	*< 340 U*	*< 360 U*	*< 350 U*	*< 300 UJ*	*< 330 U*	*< 350 U*	*< 340 U*
Acetophenone	µg/kg	*< 33 U*	*< 30 U*	*< 36 U*	*< 37 U*	560	*< 34 U*	38 J	*< 31 U*	400	*< 29 U*	*< 31 U*	*< 30 U*
Benzaldehyde	µg/kg	*< 220 U*	*< 200 U*	*< 240 U*	*< 240 U*	610	*< 200 U*	*< 210 U*	*< 210 U*	380	*< 190 U*	*< 210 U*	*< 200 U*
Benzylbutylphthalate	µg/kg	*< 130 U*	*< 120 U*	*< 140 U*	*< 140 U*	*< 99 U*	*< 110 U*	*< 120 U*	*< 120 U*	*< 100 U*	*< 110 U*	*< 120 U*	*< 110 U*
Bis(2-chloroethoxy)methane	µg/kg	*< 120 U*	*< 110 U*	*< 130 U*	*< 130 U*	*< 91 U*	*< 110 U*	*< 110 U*	*< 110 U*	*< 95 U*	*< 100 U*	*< 110 U*	*< 110 U*
bis(2-Chloroethyl) ether	µg/kg	*< 110 U*	*< 98 U*	*< 120 U*	*< 120 U*	*< 84 U*	*< 97 U*	*< 100 U*	*< 100 U*	*< 88 U*	*< 95 U*	*< 100 U*	*< 97 U*
Bis(2-ethylhexyl)phthalate	µg/kg	180 J	150 J	170 J	*< 140 U*	*< 100 U*	*< 120 U*	*< 120 U*	*< 120 U*	*< 110 U*	*< 110 U*	*< 120 U*	*< 120 U*
Carbazole	µg/kg	*< 130 UJ*	*< 120 UJ*	*< 140 UJ*	*< 140 UJ*	*< 99 U*	*< 110 U*	*< 120 U*	*< 120 U*	*< 100 U*	*< 110 U*	*< 120 U*	*< 110 U*
Dibenzofuran	µg/kg	*< 110 U*	*< 100 U*	*< 120 U*	*< 130 U*	*< 89 U*	*< 100 U*	*< 110 U*	*< 110 U*	*< 93 U*	*< 100 U*	*< 110 U*	*< 100 U*
Diethyl phthalate	µg/kg	*< 120 U*	*< 110 U*	*< 130 U*	*< 130 U*	*< 93 U*	*< 110 U*	*< 110 U*	*< 110 U*	*< 97 U*	*< 110 U*	*< 110 U*	*< 110 U*
Dimethylphthalate	µg/kg	*< 120 U*	*< 110 U*	*< 130 U*	*< 130 U*	*< 90 U*	*< 100 U*	*< 110 U*	*< 110 U*	*< 94 U*	*< 100 U*	*< 110 U*	*< 100 U*
Di-n-butylphthalate	µg/kg	*< 130 U*	*< 120 U*	*< 140 U*	*< 140 U*	*< 100 U*	*< 120 U*	*< 120 U*	*< 120 U*	*< 100 U*	*< 110 U*	*< 120 U*	*< 120 U*
Di-n-octylphthalate	µg/kg	*< 130 U*	*< 120 U*	*< 140 U*	*< 140 U*	*< 100 U*	*< 120 U*	*< 120 U*	*< 120 U*	*< 100 U*	*< 110 U*	*< 120 U*	*< 120 U*
Hexachlorobenzene	µg/kg	*< 120 U*	*< 110 U*	*< 130 U*	*< 130 U*	*< 92 U*	*< 110 U*	*< 110 U*	*< 110 U*	*< 96 U*	*< 100 U*	*< 110 U*	*< 110 U*
Hexachlorobenzene (SIM Screen)	µg/kg	*< 2.9 U*	*< 2.7 U*	*< 3.2 U*	9.6 J	5.0 J	*< 2.6 U*	*< 2.8 U*	*< 2.8 U*	12 J	7.7 J	*< 2.7 U*	*< 2.6 U*
Hexachlorobutadiene	µg/kg	*< 110 U*	*< 99 U*	*< 120 U*	*< 120 U*	*< 85 U*	*< 98 U*	*< 100 U*	*< 100 U*	*< 89 U*	*< 96 U*	*< 100 U*	*< 99 U*
Hexachlorobutadiene (SIM Screen)	µg/kg	*< 4.9 U*	*< 4.5 U*	*< 5.4 U*	*< 5.4 U*	*< 3.8 U*	*< 4.4 U*	*< 4.7 U*	*< 4.6 U*	*< 4.0 U*	*< 4.3 U*	*< 4.6 U*	*< 4.4 U*
Hexachlorocyclopentadiene	µg/kg	*< 82 UJ*	*< 75 UJ*	*< 90 UJ*	*< 91 UJ*	*< 64 U*	*< 74 U*	*< 79 U*	*< 78 U*	*< 67 U*	*< 72 U*	*< 77 U*	*< 75 U*
Hexachloroethane	µg/kg	*< 110 U*	*< 98 U*	*< 120 U*	*< 120 U*	*< 84 U*	*< 97 U*	*< 100 U*	*< 100 U*	*< 88 U*	*< 95 U*	*< 100 U*	*< 97 U*
Isophorone	µg/kg	*< 120 U*	*< 110 U*	*< 140 U*	*< 140 U*	*< 96 U*	*< 110 U*	*< 120 U*	*< 120 U*	*< 100 U*	*< 110 U*	*< 120 U*	*< 110 U*
Nitrobenzene	µg/kg	*< 100 U*	*< 92 U*	*< 110 U*	*< 110 U*	*< 79 U*	*< 91 U*	*< 97 U*	*< 95 U*	*< 82 U*	*< 89 U*	*< 95 U*	*< 91 U*
N-Nitrosodimethylamine	µg/kg	*< 130 U*	*< 120 U*	*< 140 U*	*< 140 U*	*< 100 U*	*< 120 U*	*< 120 U*	*< 120 U*	*< 100 U*	*< 110 U*	*< 120 U*	*< 120 U*
n-Nitrosodimethylamine (SIM Screen)	µg/kg	*< 130 U*	*< 120 U*	*< 140 U*	*< 140 U*	*< 100 U*	*< 120 U*	*< 120 U*	*< 120 U*	*< 100 UJ*	*< 110 U*	*< 120 U*	*< 120 U*
N-Nitroso-di-n-propylamine	µg/kg	*< 110 U*	*< 100 U*	*< 120 U*	*< 120 U*	*< 87 U*	*< 100 U*	*< 110 U*	*< 110 U*	*< 91 U*	*< 98 U*	*< 100 U*	*< 100 U*
N-Nitrosodiphenylamine	µg/kg	*< 110 U*	*< 100 U*	*< 120 U*	*< 130 U*	*< 89 U*	*< 100 U*	*< 110 U*	*< 110 U*	*< 93 U*	*< 100 U*	*< 110 U*	*< 100 U*
Pentachlorophenol	µg/kg	*< 67 U*	*< 62 UJ*	*< 74 U*	*< 75 U*	*< 53 UJ*	*< 61 U*	*< 65 U*	*< 64 U*	*< 55 UJ*	*< 60 U*	*< 64 U*	*< 61 U*
Pentachlorophenol (SIM Screen)	µg/kg	*< 32 U*	*< 29 UJ*	*< 35 U*	*< 35 U*	*< 25 UJ*	*< 29 U*	*< 31 U*	47 J	*< 26 UJ*	*< 28 U*	*< 30 U*	*< 29 U*

Table I-4
Analytical Results for Solids Samples -
PRI-10 Barium Sulfate Area
Soil Summary Table
US Magnesium, LLC Facility
Rowley, Utah

	Location Group	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10
	Location ID	**PRI10-001**	**PRI10-002**	**PRI10-003**	**PRI10-004**	**PRI10-005**	**PRI10-006**	**PRI10-006**	**PRI10-007**	**PRI10-007**	**PRI10-008**	**PRI10-008**	**PRI10-008**
	Sample Date	**12-Dec-13**	**12-Dec-13**	**12-Dec-13**	**12-Dec-13**	**13-Dec-13**	**13-Dec-13**	**13-Dec-13**	**13-Dec-13**	**13-Dec-13**	**17-Dec-13**	**17-Dec-13**	**05-May-14**
	Sample Type	**N**	**N**	**N**	**N**	**N**	**FINE**	**N**	**FINE**	**N**	**FINE**	**N**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0.5 - 2 FEET**
	Sample ID	**PRI10-001-SS01-121213**	**PRI10-002-SS01-121213**	**PRI10-003-SS01-121213**	**PRI10-004-SS01-121213**	**PRI10-005-SS01-121313**	**PRI10-006-SS01-121313 FINES**	**PRI10-006-SS01-121313**	**PRI10-007-SS01-121313 FINES**	**PRI10-007-SS01-121313**	**PRI10-008-SS01-121713 FINES**	**PRI10-008-SS01-121713**	**PRI10-008-SB01-0.5-050514**
Analyte	**Unit**												
Phenol	µg/kg	*< 95 U*	*< 100 U*	*< 95 U*	*< 100 U*	*< 99 U*	160 J-	*< 110 U*	170 J-	*< 100 U*	*< 85 UJ*	*< 99 U*	*< 99 U*
06-PAHs by SIM													
2-Methylnaphthalene	µg/kg	*< 0.45 U*	*< 0.59 U*	*< 0.48 U*	*< 0.56 U*	*< 0.48 U*	0.82 J	*< 0.60 U*	0.83 J	*< 0.53 U*	0.46 J	*< 0.49 U*	*< 0.52 U*
Acenaphthene	µg/kg	*< 0.49 U*	*< 0.65 U*	*< 0.53 U*	*< 0.61 U*	*< 0.52 U*	*< 0.48 U*	*< 0.65 U*	*< 0.52 U*	*< 0.57 U*	*< 0.48 U*	*< 0.53 U*	*< 0.56 U*
Acenaphthylene	µg/kg	*< 0.35 U*	*< 0.46 U*	*< 0.37 U*	*< 0.43 U*	*< 0.37 U*	*< 0.34 U*	*< 0.46 U*	*< 0.36 U*	*< 0.40 U*	*< 0.34 U*	*< 0.37 U*	*< 0.40 U*
Anthracene	µg/kg	*< 0.42 U*	*< 0.55 U*	*< 0.44 U*	*< 0.51 U*	*< 0.44 U*	*< 0.40 U*	*< 0.55 U*	*< 0.43 U*	*< 0.48 U*	*< 0.41 U*	*< 0.45 U*	*< 0.47 U*
Benzo(a)anthracene	µg/kg	*< 0.32 U*	*< 0.42 U*	*< 0.34 U*	*< 0.39 U*	*< 0.34 U*	*< 0.31 U*	*< 0.42 U*	*< 0.33 U*	*< 0.37 U*	*< 0.31 U*	*< 0.34 U*	*< 0.36 U*
Benzo(a)pyrene	µg/kg	*< 0.42 U*	*< 0.55 U*	*< 0.45 U*	*< 0.52 U*	*< 0.44 U*	*< 0.41 U*	*< 0.55 U*	*< 0.44 U*	*< 0.49 U*	*< 0.41 U*	*< 0.45 U*	*< 0.48 U*
Benzo(b)fluoranthene	µg/kg	*< 0.53 U*	*< 0.70 U*	*< 0.56 U*	*< 0.65 U*	*< 0.56 U*	*< 0.51 U*	*< 0.70 U*	*< 0.56 U*	*< 0.62 U*	*< 0.52 U*	*< 0.57 U*	*< 0.61 U*
Benzo(g,h,i)perylene	µg/kg	*< 1.1 U*	*< 1.4 U*	*< 1.1 U*	*< 1.3 U*	*< 1.1 U*	*< 1.0 U*	*< 1.4 U*	*< 1.1 U*	*< 1.2 U*	*< 1.0 U*	*< 1.1 U*	*< 1.2 U*
Benzo(k)fluoranthene	µg/kg	*< 0.80 U*	*< 1.1 U*	*< 0.85 U*	*< 0.98 U*	*< 0.84 U*	*< 0.77 U*	*< 1.1 U*	*< 0.84 U*	*< 0.93 U*	*< 0.78 U*	*< 0.86 U*	*< 0.91 U*
Chrysene	µg/kg	*< 0.37 U*	*< 0.48 U*	*< 0.39 U*	*< 0.45 U*	*< 0.38 U*	*< 0.35 U*	*< 0.48 U*	*< 0.38 U*	*< 0.42 U*	*< 0.36 U*	*< 0.39 U*	*< 0.42 U*
Dibenzo(a,h)anthracene	µg/kg	*< 1.3 U*	*< 1.7 U*	*< 1.3 U*	*< 1.6 U*	*< 1.3 U*	*< 1.2 U*	*< 1.7 U*	*< 1.3 U*	*< 1.5 U*	*< 1.2 U*	*< 1.4 U*	*< 1.4 U*
Fluoranthene	µg/kg	*< 0.31 U*	*< 0.40 U*	*< 0.33 U*	0.77 J	*< 0.32 U*	0.34 J	*< 0.41 U*	0.41 J	*< 0.36 U*	0.35 J	*< 0.33 U*	0.35 J
Fluorene	µg/kg	*< 0.52 U*	*< 0.68 U*	*< 0.55 U*	*< 0.63 U*	*< 0.54 U*	*< 0.50 U*	*< 0.68 U*	*< 0.54 U*	*< 0.60 U*	*< 0.50 U*	*< 0.55 U*	*< 0.59 U*
Indeno(1,2,3-cd)pyrene	µg/kg	*< 0.50 U*	*< 0.66 U*	*< 0.54 U*	*< 0.62 U*	*< 0.53 U*	*< 0.49 U*	*< 0.67 U*	*< 0.53 U*	*< 0.59 U*	*< 0.49 U*	*< 0.54 U*	*< 0.58 U*
Naphthalene	µg/kg	*< 0.32 U*	*< 0.44 U*	*< 0.43 U*	*< 0.40 U*	*< 0.34 U*	1.0 J	*< 0.6 U*	1.1 J	*< 0.46 U*	0.72 J	*< 0.35 U*	*< 0.37 U*
Phenanthrene	µg/kg	*< 0.37 U*	0.50 J	0.43 J	0.97 J	0.41 J	1.5 J	1.1 J	1.0 J	0.68 J	1.0 J	0.46 J	*< 0.45 U*
Pyrene	µg/kg	*< 0.37 U*	*< 0.48 U*	*< 0.39 U*	0.92 J	*< 0.39 U*	0.41 J	*< 0.49 U*	*< 0.38 U*	*< 0.43 U*	*< 0.36 U*	*< 0.40 U*	*< 0.42 U*
Low Molecular Weight PAH (ND=0)	µg/kg	*< 0.52 U*	0.50	0.43	0.97	0.41	3.3	1.1	2.9	0.68	2.2	0.46	*< 0.59 U*
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	*< 1.5 U*	2.2	1.8	2.5	1.8	4.2	2.9	3.9	2.2	3.0	1.8	*< 1.7 U*
High Molecular Weight PAH (ND=0)	µg/kg	*< 1.3 U*	*< 1.7 U*	*< 1.3 U*	1.7	*< 1.3 U*	0.75	*< 1.7 U*	0.41	*< 1.5 U*	0.35	*< 1.4 U*	0.35
High Molecular Weight PAH (ND=1/2DL)	µg/kg	*< 3.0 U*	*< 3.9 U*	*< 3.1 U*	4.9	*< 3.1 U*	3.3	*< 4.0 U*	3.3	*< 3.5 U*	3.1	*< 3.2 U*	3.5
07-VOCs													
1,4-Dioxane	µg/kg												*< 47 UJ*
1,1-Dichloroethane	µg/kg												*< 0.35 U*
1,1-Dichloroethene	µg/kg												*< 0.31 U*
1,2-Dibromo-3-chloropropane	µg/kg												*< 1.1 U*
1,2-Dibromoethane	µg/kg												*< 0.32 U*
1,2-Dichlorobenzene	µg/kg												*< 0.77 U*
1,2-Dichloroethane	µg/kg												*< 0.88 U*
cis-1,2-Dichloroethene	µg/kg												*< 1.1 U*
trans-1,2-Dichloroethene	µg/kg												*< 0.46 U*
1,2-Dichloropropane	µg/kg												*< 0.72 U*
1,3-Dichlorobenzene	µg/kg												*< 0.36 U*
cis-1,3-Dichloropropene	µg/kg												*< 0.77 U*
trans-1,3-Dichloropropene	µg/kg												*< 0.90 U*
1,4-Dichlorobenzene	µg/kg												*< 0.94 U*
1,1,1-Trichloroethane	µg/kg												*< 0.43 U*
1,1,2-Trichloroethane	µg/kg												*< 0.53 U*
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	µg/kg												*< 1.0 U*
1,2,3-Trichlorobenzene	µg/kg												*< 0.90 U*
1,2,4-Trichlorobenzene	µg/kg												*< 0.90 U*
1,1,2,2-Tetrachloroethane	µg/kg												*< 0.82 U*
2-Butanone	µg/kg												*< 1.7 U*
2-Hexanone	µg/kg												*< 0.89 U*
4-Methyl-2-pentanone	µg/kg												*< 1.1 U*
Acetone	µg/kg												*< 1.7 U*
Benzene	µg/kg												*< 0.31 U*
Bromochloromethane	µg/kg												*< 1.1 U*
Bromodichloromethane	µg/kg												*< 0.64 U*
Bromoform	µg/kg												*< 0.48 U*
Bromomethane	µg/kg												*< 1.0 U*
Carbon disulfide	µg/kg												*< 0.59 U*
Carbon tetrachloride	µg/kg												*< 0.64 U*
Chlorobenzene	µg/kg												*< 0.35 U*
Cyclohexane	µg/kg												*< 3.2 U*
Dibromochloromethane	µg/kg												*< 0.25 U*
Chloroethane	µg/kg												*< 0.54 U*
Chloroform	µg/kg												*< 0.31 U*
Chloromethane	µg/kg												*< 0.60 U*
Dichlorodifluoromethane (Freon-12)	µg/kg												*< 1.1 U*

Table I-4
Analytical Results for Solids Samples -
PRI-10 Barium Sulfate Area
Soil Summary Table
US Magnesium, LLC Facility
Rowley, Utah

	Location Group	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10	PRI-10
	Location ID	**PRI10-008**	**PRI10-008**	**PRI10-008**	**PRI10-008**	**PRI10-009**	**PRI10-009**	**PRI10-010**	**PRI10-011**	**PRI10-012**	**PRI10-012**	**PRI10-013**	**PRI10-014**
	Sample Date	**05-May-14**	**05-May-14**	**05-May-14**	**05-May-14**	**13-Dec-13**	**13-Dec-13**	**17-Dec-13**	**17-Dec-13**	**16-Dec-13**	**16-Dec-13**	**12-Dec-13**	**16-Dec-13**
	Sample Type	**N**	**N**	**N**	**N**	**FINE**	**N**	**N**	**N**	**FINE**	**N**	**N**	**N**
	Depth	**2 - 4 FEET**	**4 - 6 FEET**	**6 - 8 FEET**	**8 - 9 FEET**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**
	Sample ID	**PRI10-008-SB02-2-050514**	**PRI10-008-SB03-4-050514**	**PRI10-008-SB04-6-050514**	**PRI10-008-SB05-8-050514**	**PRI10-009-SS01-121313 FINES**	**PRI10-009-SS01-121313**	**PRI10-010-SS01-121713**	**PRI10-011-SS01-121713**	**PRI10-012-SS01-121613 FINES**	**PRI10-012-SS01-121613**	**PRI10-013-SS01-121213**	**PRI10-014-SS01-121613**
Analyte	**Unit**												
Phenol	µg/kg	< 110 U	< 100 UJ	< 120 U	< 120 U	120 J-	< 100 U	< 110 U	< 100 U	< 90 UJ	< 97 U	< 100 U	< 100 U
06-PAHs by SIM													
2-Methylnaphthalene	µg/kg	< 0.53 U	< 0.49 U	< 0.66 U	0.92 J	1.0 J	< 0.51 U	< 0.60 U	< 0.51 U	0.71 J	< 0.49 U	< 0.50 U	< 0.55 U
Acenaphthene	µg/kg	< 0.58 U	< 0.54 U	< 0.72 U	< 0.75 U	< 0.52 U	< 0.55 U	< 0.66 U	< 0.56 U	< 0.47 U	< 0.54 U	< 0.54 U	< 0.60 U
Acenaphthylene	µg/kg	< 0.41 U	< 0.38 U	< 0.51 U	< 0.53 U	< 0.36 U	< 0.39 U	< 0.46 U	< 0.39 U	< 0.33 U	< 0.38 U	< 0.38 U	< 0.42 U
Anthracene	µg/kg	< 0.48 U	< 0.45 U	< 0.61 U	< 0.63 U	< 0.43 U	< 0.47 U	< 0.55 U	< 0.47 U	< 0.40 U	< 0.45 U	< 0.46 U	< 0.51 U
Benzo(a)anthracene	µg/kg	< 0.37 U	< 0.35 U	< 0.46 U	< 0.48 U	< 0.33 U	< 0.36 U	< 0.42 U	< 0.36 U	< 0.30 U	< 0.35 U	< 0.35 U	< 0.39 U
Benzo(a)pyrene	µg/kg	< 0.49 U	< 0.46 U	< 0.61 U	< 0.64 U	< 0.44 U	< 0.47 U	< 0.56 U	< 0.47 U	< 0.40 U	< 0.46 U	< 0.46 U	< 0.51 U
Benzo(b)fluoranthene	µg/kg	< 0.62 U	< 0.58 U	< 0.77 U	< 0.81 U	< 0.56 U	< 0.59 U	< 0.71 U	< 0.60 U	< 0.51 U	< 0.58 U	< 0.58 U	< 0.65 U
Benzo(g,h,i)perylene	µg/kg	< 1.2 U	< 1.1 U	< 1.5 U	< 1.6 U	< 1.1 U	< 1.2 U	< 1.4 U	< 1.2 U	< 1.0 U	< 1.1 U	< 1.2 U	< 1.3 U
Benzo(k)fluoranthene	µg/kg	< 0.93 U	< 0.87 U	< 1.2 U	< 1.2 U	< 0.84 U	< 0.90 U	< 1.1 U	< 0.90 U	< 0.76 U	< 0.87 U	< 0.88 U	< 0.97 U
Chrysene	µg/kg	< 0.43 U	< 0.40 U	< 0.53 U	< 0.55 U	< 0.38 U	< 0.41 U	< 0.49 U	< 0.41 U	0.35 J	< 0.40 U	< 0.40 U	< 0.44 U
Dibenzo(a,h)anthracene	µg/kg	< 1.5 U	< 1.4 U	< 1.8 U	< 1.9 U	< 1.3 U	< 1.4 U	< 1.7 U	< 1.4 U	< 1.2 U	< 1.4 U	< 1.4 U	< 1.5 U
Fluoranthene	µg/kg	< 0.36 U	< 0.34 U	< 0.45 U	< 0.47 U	< 0.32 U	< 0.35 U	< 0.41 U	< 0.35 U	0.43 J	< 0.33 U	0.39 J	< 0.38 U
Fluorene	µg/kg	< 0.60 U	< 0.56 U	< 0.75 U	< 0.78 U	< 0.54 U	< 0.58 U	< 0.68 U	< 0.58 U	< 0.49 U	< 0.56 U	< 0.57 U	< 0.63 U
Indeno(1,2,3-cd)pyrene	µg/kg	< 0.59 U	< 0.55 U	< 0.73 U	< 0.76 U	< 0.53 U	< 0.56 U	< 0.67 U	< 0.57 U	< 0.48 U	< 0.55 U	< 0.55 U	< 0.61 U
Naphthalene	µg/kg	< 0.38 U	< 0.35 U	< 0.47 U	< 0.49 U	1.7 J	< 0.36 U	< 0.43 U	< 0.36 U	1.1 J	0.49 J	< 0.63 U	< 0.39 U
Phenanthrene	µg/kg	< 0.43 U	< 0.48 U	< 0.66 U	< 1.4 U	1.1 J	0.65 J	0.61 J	0.55 J	1.2 J	0.58 J	1.3 J	0.47 J
Pyrene	µg/kg	< 0.43 U	< 0.40 U	< 0.54 U	< 0.56 U	< 0.39 U	< 0.41 U	< 0.49 U	< 0.41 U	0.40 J	< 0.40 U	< 0.41 U	< 0.45 U
Low Molecular Weight PAH (ND=0)	µg/kg	< 0.60 U	< 0.56 U	< 0.75 U	0.92	3.8	0.65	0.61	0.55	3.0	1.1	1.3	0.47
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	< 1.7 U	< 1.6 U	< 2.2 U	3.2	4.7	2.1	2.3	2.0	3.9	2.3	2.8	2.0
High Molecular Weight PAH (ND=0)	µg/kg	< 1.5 U	< 1.4 U	< 1.8 U	< 1.9 U	< 1.3 U	< 1.4 U	< 1.7 U	< 1.4 U	1.2	< 1.4 U	0.39	< 1.5 U
High Molecular Weight PAH (ND=1/2DL)	µg/kg	< 3.5 U	< 3.2 U	< 4.3 U	< 4.5 U	< 3.1 U	< 3.3 U	< 4.0 U	< 3.3 U	3.5	< 3.2 U	3.5	< 3.6 U
07-VOCs													
1,4-Dioxane	µg/kg	< 51 UJ	< 67 UJ	< 74 UJ	< 68 UJ								
1,1-Dichloroethane	µg/kg	< 0.38 U	< 0.50 U	< 0.55 U	< 0.51 U								
1,1-Dichloroethene	µg/kg	< 0.34 U	< 0.45 U	< 0.49 U	< 0.46 U								
1,2-Dibromo-3-chloropropane	µg/kg	< 1.1 U	< 1.5 U	< 1.7 U	< 1.5 U								
1,2-Dibromoethane	µg/kg	< 0.35 U	< 0.46 U	< 0.51 U	< 0.47 U								
1,2-Dichlorobenzene	µg/kg	< 0.83 U	< 1.1 U	< 1.2 U	< 1.1 U								
1,2-Dichloroethane	µg/kg	< 0.95 U	< 1.3 U	< 1.4 U	< 1.3 U								
cis-1,2-Dichloroethene	µg/kg	< 1.2 U	< 1.5 U	< 1.7 U	< 1.6 U								
trans-1,2-Dichloroethene	µg/kg	< 0.49 U	< 0.65 U	< 0.72 U	< 0.67 U								
1,2-Dichloropropane	µg/kg	< 0.78 U	< 1.0 U	< 1.1 U	< 1.1 U								
1,3-Dichlorobenzene	µg/kg	< 0.39 U	< 0.51 U	< 0.57 U	< 0.53 U								
cis-1,3-Dichloropropene	µg/kg	< 0.83 U	< 1.1 U	< 1.2 U	< 1.1 U								
trans-1,3-Dichloropropene	µg/kg	< 0.97 U	< 1.3 U	< 1.4 U	< 1.3 U								
1,4-Dichlorobenzene	µg/kg	< 1.0 U	< 1.3 U	< 1.5 U	< 1.4 U								
1,1,1-Trichloroethane	µg/kg	< 0.47 U	< 0.62 U	< 0.68 U	< 0.63 U								
1,1,2-Trichloroethane	µg/kg	< 0.57 U	< 0.75 U	< 0.84 U	< 0.77 U								
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	µg/kg	< 1.1 U	< 1.4 U	< 1.6 U	< 1.5 U								
1,2,3-Trichlorobenzene	µg/kg	< 0.97 U	< 1.3 U	< 1.4 U	< 1.3 U								
1,2,4-Trichlorobenzene	µg/kg	< 0.97 U	< 1.3 U	< 1.4 U	< 1.3 U								
1,1,2,2-Tetrachloroethane	µg/kg	< 0.88 U	< 1.2 U	< 1.3 U	< 1.2 U								
2-Butanone	µg/kg	8.0 J	13 J	17 J	< 2.5 U								
2-Hexanone	µg/kg	< 0.96 U	< 1.3 U	< 1.4 U	< 1.3 U								
4-Methyl-2-pentanone	µg/kg	< 1.2 U	< 1.6 U	< 1.7 U	< 1.6 U								
Acetone	µg/kg	< 22 UJ	65 J+	86 J+	< 5.6 UJ								
Benzene	µg/kg	< 0.34 U	< 0.45 U	< 0.49 U	< 0.46 U								
Bromochloromethane	µg/kg	4.7 J	< 1.6 U	1.9 J	< 1.6 U								
Bromodichloromethane	µg/kg	2.3 J	< 0.91 U	< 1.0 U	1.2 J								
Bromoform	µg/kg	1.4 J	< 0.69 U	< 0.76 U	< 0.70 U								
Bromomethane	µg/kg	< 1.1 U	< 1.5 U	< 1.6 U	< 1.5 U								
Carbon disulfide	µg/kg	< 0.69 U	< 0.84 U	< 6.6 U	< 0.86 U								
Carbon tetrachloride	µg/kg	< 0.69 U	< 0.91 U	< 1.0 U	< 0.93 U								
Chlorobenzene	µg/kg	< 0.38 U	< 0.50 U	< 0.55 U	< 0.51 U								
Cyclohexane	µg/kg	< 3.4 U	< 4.5 U	< 5.0 U	< 4.6 U								
Dibromochloromethane	µg/kg	1.9 J	< 0.36 U	< 0.40 U	1.3 J								
Chloroethane	µg/kg	< 0.58 U	< 0.77 U	< 0.86 U	< 0.79 U								
Chloroform	µg/kg	16	1.8 J	10	1.5 J								
Chloromethane	µg/kg	< 0.65 U	< 0.86 U	< 0.95 U	< 0.88 U								
Dichlorodifluoromethane (Freon-12)	µg/kg	< 1.2 U	< 1.5 U	< 1.7 U	< 1.6 U								

Table I-4
Analytical Results for Solids Samples -
PRI-10 Barium Sulfate Area
Soil Summary Table
US Magnesium, LLC Facility
Rowley, Utah

	Location Group	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**
	Location ID	**PRI10-001**	**PRI10-002**	**PRI10-003**	**PRI10-004**	**PRI10-005**	**PRI10-006**	**PRI10-006**	**PRI10-007**	**PRI10-007**	**PRI10-008**	**PRI10-008**	**PRI10-008**
	Sample Date	**12-Dec-13**	**12-Dec-13**	**12-Dec-13**	**12-Dec-13**	**13-Dec-13**	**13-Dec-13**	**13-Dec-13**	**13-Dec-13**	**13-Dec-13**	**17-Dec-13**	**17-Dec-13**	**05-May-14**
	Sample Type	**N**	**N**	**N**	**N**	**N**	**FINE**	**N**	**FINE**	**N**	**FINE**	**N**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0.5 - 2 FEET**
	Sample ID	**PRI10-001-SS01-121213**	**PRI10-002-SS01-121213**	**PRI10-003-SS01-121213**	**PRI10-004-SS01-121213**	**PRI10-005-SS01-121313**	**PRI10-006-SS01-121313 FINES**	**PRI10-006-SS01-121313**	**PRI10-007-SS01-121313 FINES**	**PRI10-007-SS01-121313**	**PRI10-008-SS01-121713 FINES**	**PRI10-008-SS01-121713**	**PRI10-008-SB01-0.5-050514**
Analyte	**Unit**												
Ethyl benzene	µg/kg												*< 0.41 U*
Isopropylbenzene	µg/kg												*< 0.62 U*
Methyl tertbutyl ether (MTBE)	µg/kg												*< 0.72 U*
Dichloromethane (Methylene chloride)	µg/kg												*< 1.0 U*
Styrene	µg/kg												*< 0.37 U*
Tetrachloroethene	µg/kg												*< 0.73 U*
Toluene	µg/kg												*< 0.73 U*
Trichloroethene	µg/kg												*< 0.72 U*
Trichlorofluoromethane (Freon-11)	µg/kg												*< 0.41 U*
Vinyl chloride	µg/kg												*< 0.43 U*
o-Xylene	µg/kg												*< 0.40 U*
m,p Xylenes	µg/kg												*< 0.97 U*
08-General Chemistry Parameters for Solids													
Perchlorate	µg/kg	*< 23 U*	*< 25 U*	*< 23 U*	*< 24 U*	*< 24 U*		*< 26 U*		*< 24 U*		*< 22 U*	*< 24 U*
Total Organic Carbon	g/kg	*< 1.7 U*	*< 1.7 U*	*< 3.5 U*	5.3	*< 1.7 U*		*< 1.7 U*		*< 2.8 U*		8.9	7.5
pH	pH units	8.67	8.61	8.52	8.54	7.93		8.18		8.19		8.05	9.46
Cyanide, Total	mg/kg	*< 0.24 U*	*< 0.25 U*	*< 0.23 U*	*< 0.25 U*	*< 0.24 U*		*< 0.26 U*		*< 0.25 U*		0.27 J	*< 0.25 U*

Table I-4
Analytical Results for Solids Samples -
PRI-10 Barium Sulfate Area
Soil Summary Table
US Magnesium, LLC Facility
Rowley, Utah

	Location Group	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**	**PRI-10**
	Location ID	**PRI10-008**	**PRI10-008**	**PRI10-008**	**PRI10-008**	**PRI10-009**	**PRI10-009**	**PRI10-010**	**PRI10-011**	**PRI10-012**	**PRI10-012**	**PRI10-013**	**PRI10-014**
	Sample Date	**05-May-14**	**05-May-14**	**05-May-14**	**05-May-14**	**13-Dec-13**	**13-Dec-13**	**17-Dec-13**	**17-Dec-13**	**16-Dec-13**	**16-Dec-13**	**12-Dec-13**	**16-Dec-13**
	Sample Type	**N**	**N**	**N**	**N**	**FINE**	**N**	**N**	**N**	**FINE**	**N**	**N**	**N**
	Depth	**2 - 4 FEET**	**4 - 6 FEET**	**6 - 8 FEET**	**8 - 9 FEET**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**
	Sample ID	**PRI10-008-SB02-2-050514**	**PRI10-008-SB03-4-050514**	**PRI10-008-SB04-6-050514**	**PRI10-008-SB05-8-050514**	**PRI10-009-SS01-121313 FINES**	**PRI10-009-SS01-121313**	**PRI10-010-SS01-121713**	**PRI10-011-SS01-121713**	**PRI10-012-SS01-121613 FINES**	**PRI10-012-SS01-121613**	**PRI10-013-SS01-121213**	**PRI10-014-SS01-121613**
Analyte	**Unit**												
Ethyl benzene	µg/kg	*< 0.44 U*	*< 0.58 U*	*< 0.65 U*	*< 0.60 U*								
Isopropylbenzene	µg/kg	*< 0.67 U*	*< 0.89 U*	*< 0.99 U*	*< 0.91 U*								
Methyl tertbutyl ether (MTBE)	µg/kg	*< 0.78 U*	*< 1.0 U*	*< 1.1 U*	*< 1.1 U*								
Dichloromethane (Methylene chloride)	µg/kg	3.2 J	*< 1.4 U*	*< 1.6 U*	*< 1.5 U*								
Styrene	µg/kg	*< 0.40 U*	*< 0.53 U*	*< 0.59 U*	*< 0.54 U*								
Tetrachloroethene	µg/kg	*< 0.79 U*	*< 1.0 U*	*< 1.2 U*	*< 1.1 U*								
Toluene	µg/kg	*< 0.79 U*	*< 1.0 U*	*< 1.2 U*	*< 1.1 U*								
Trichloroethene	µg/kg	*< 0.78 U*	*< 1.0 U*	*< 1.1 U*	*< 1.1 U*								
Trichlorofluoromethane (Freon-11)	µg/kg	*< 0.44 U*	*< 0.58 U*	*< 0.65 U*	*< 0.60 U*								
Vinyl chloride	µg/kg	*< 0.47 U*	*< 0.62 U*	*< 0.68 U*	*< 0.63 U*								
o-Xylene	µg/kg	*< 0.43 U*	*< 0.57 U*	*< 0.63 U*	*< 0.58 U*								
m,p Xylenes	µg/kg	*< 1.1 U*	*< 1.4 U*	*< 1.5 U*	*< 1.4 U*								
08-General Chemistry Parameters for Solids													
Perchlorate	µg/kg	*< 26 U*	*< 25 U*	*< 29 U*	*< 29 U*		*< 25 U*	*< 24 U*	*< 24 U*		*< 23 U*	*< 25 U*	*< 24 U*
Total Organic Carbon	g/kg	5.6	6.6	5.6	4.9		*< 1.7 U*	*< 1.7 U*	4.2		*< 1.9 U*	*< 3.9 U*	*< 1.7 U*
pH	pH units	8.87	7.70	6.98	9.66		8.18	7.79	8.28		8.32	9.11	8.33
Cyanide, Total	mg/kg	*< 0.26 U*	*< 0.26 U*	*< 0.29 U*	*< 0.30 U*		*< 0.25 U*	*< 0.26 U*	*< 0.25 U*		*< 0.24 U*	*< 0.25 U*	*< 0.25 U*

Notes:
< = Compound not detected. Reportable detection limit shown.
Empty cells = Not analyzed
N = Normal Environmental Sample
FINE = Fines Portion (Sieved) of Normal Sample
µg/kg = micrograms per kilogram
pg/g = picogram per gram
mg/kg = milligrams per kilogram
g/kg = grams per kilogram
pH units = pH units
in = inches

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity, biased high. The associated numerical value is the approximate concentration of the analyte in the sample.
J- = The result is an estimated quantity, biased low. The associated numerical value is the approximate concentration of the analyte in the sample.
U = Compound was analyzed for, but not detected. The associated numerical value is the SQL.
UJ = The nondetected analyte was qualified as estimated at the sample quantitation limit. The reported sample quantitation limit is approximate and may be inaccurate or imprecise.
UJQ
UQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration.

Table I-5
Analytical Results for Soilds Samples - PRI-11 ATI
Titanium Plant and US Magnesium Parking Lots
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11
	Location ID	PRI11-001	PRI11-002	PRI11-003	PRI11-004	PRI11-004	PRI11-005	PRI11-005	PRI11-006	PRI11-007	PRI11-007	PRI11-008	PRI11-009
	Sample Date	07-May-14	07-May-14	06-May-14	07-May-14	07-May-14	07-May-14	07-May-14	07-May-14	07-May-14	07-May-14	07-May-14	07-May-14
	Sample Type	N	N	N	FINE	N	FINE	N	N	FINE	N	N	N
	Depth	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in
	Sample ID	PRI11-001-SS01-050714	PRI11-002-SS01-050714	PRI11-003-SS01-050614	PRI11-004-SS01-050714 FINES	PRI11-004-SS01-050714	PRI11-005-SS01-050714 FINES	PRI11-005-SS01-050714	PRI11-006-SS01-050714	PRI11-007-SS01-050714 FINES	PRI11-007-SS01-050714	PRI11-008-SS01-050714	PRI11-009-SS01-050714
Analyte	**Unit**												
01-Dioxins and Furans													
2,3,7,8-TCDD	pg/g	< 0.4 UQ	< 0.14 U	< 0.18 U	< 0.17 U	< 0.16 U	< 0.15 U	< 0.33 U	< 0.16 U	< 0.13 U	< 0.050 U	< 0.032 U	< 0.050 U
1,2,3,7,8-PeCDD	pg/g	0.34 J	< 0.34 U	< 0.35 U	0.87 J	< 0.45 UQ	< 0.27 U	< 0.59 U	< 0.40 U	< 0.26 U	0.21 J	< 0.053 U	< 0.077 UQ
1,2,3,4,7,8-HxCDD	pg/g	0.094 J	< 0.21 UQ	< 0.58 U	0.60 J	< 0.35 UQ	0.30 J	< 0.39 U	< 0.16 U	< 0.10 U	< 0.033 U	< 0.055 U	0.078 J
1,2,3,6,7,8-HxCDD	pg/g	< 0.13 UQ	< 0.33 UQ	1.7 J	< 1 UQ	0.74 J	0.73 J	< 0.96 UQ	< 0.34 UQ	< 0.086 U	< 0.026 U	< 0.043 U	0.17 J
1,2,3,7,8,9-HxCDD	pg/g	< 0.14 UQ	0.33 J	1.3 J	1.2 J	< 0.65 UQ	< 0.54 UQ	< 0.48 UQ	< 0.36 UQ	0.25 J	< 0.15 UQ	< 0.041 U	0.12 J
1,2,3,4,6,7,8-HpCDD	pg/g	2.7 J	2.6 J	20	< 8.4 UQ	7.1	7.0	8.8	6.7	1.2 J	1.7 J	< 0.43 UQ	1.4 J
OCDD	pg/g	13	15	130	48	35	40	52	67	5.0 J	5.6 J	< 2 UQ	5.7 J
2,3,7,8-TCDF	pg/g	< 1.8 UQ	0.69 J	3.5	5.1	3.9	1.0	2.2	0.68 J	1.9	1.3	0.24 J	0.60 J
1,2,3,7,8-PeCDF	pg/g	< 0.44 UQ	1.5 J	< 4.1 UQ	< 4.3 UQ	4.5 J	< 2.3 UQ	< 2.9 UQ	< 0.43 UQ	< 0.61 UQ	0.69 J	< 0.2 UQ	< 0.44 UQ
2,3,4,7,8-PeCDF	pg/g	< 0.49 UQ	< 0.58 UQ	3.5 J	2.9 J	2.7 J	1.4 J	2.4 J	< 0.35 U	< 0.51 UQ	0.50 J	< 0.095 UQ	0.32 J
1,2,3,4,7,8-HxCDF	pg/g	1.0 J	4.5 J	15	12	11	7.2	11	1.6 J	1.8 J	2.0 J	< 0.46 UQ	1.5 J
1,2,3,6,7,8-HxCDF	pg/g	0.59 J	2.8 J	10	8.3	7.3	5.2	6.6	1.1 J	1.4 J	1.2 J	0.32 J	1.2 J
1,2,3,7,8,9-HxCDF	pg/g	< 0.037 U	< 0.56 U	< 0.96 U	< 0.43 U	< 0.86 U	< 0.36 U	< 0.71 U	< 0.40 U	< 0.11 U	< 0.094 UQ	< 0.032 U	< 0.051 UQ
2,3,4,6,7,8-HxCDF	pg/g	0.48 J	1.2 J	5.5	< 2.9 UQ	3.4 J	2.2 J	3.7 J	< 0.37 U	< 0.39 UQ	< 0.59 UQ	< 0.17 UQ	0.65 J
1,2,3,4,6,7,8-HpCDF	pg/g	7.3	36	150	100	85	70	96	< 10 UQ	13	13	3.3 J	14
1,2,3,4,7,8,9-HpCDF	pg/g	0.68 J	< 5.8 UQ	18	12	13	< 8 UQ	16	< 0.74 U	2.0 J	2.4 J	0.55 J	1.8 J
OCDF	pg/g	47	440	2,300	1,000	770	860	3,000	300	120	140	44	140
Calculated TEQ (ND=0), Mammalian	pg/g	0.69	1.5	17	6.2	5.1	3.1	5.2	0.52	0.80	1.1	0.11	0.74
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	1.1	2.0	18	6.6	5.6	3.5	6.0	1.2	1.1	1.2	0.24	0.85
Calculated TEQ (ND=0), Avian	pg/g	4.2	37	720	68	12	61	68	1.5	31	7.1	45	29
Calculated TEQ (ND=1/2 DL), Avian	pg/g	18	38	720	68	25	62	69	15	31	20	46	30
02-PCBs													
PCB-81	pg/g	< 0.57 U	< 0.42 U	< 8.5 U	< 0.41 U	< 0.57 U	< 0.32 U	< 1.3 UJ	< 0.81 U	< 0.45 U	< 1.2 U	< 0.58 U	< 0.66 U
PCB-77	pg/g	36	< 1.4 UQ	290	22	16	5.0	12 J	4.6	42	45	< 0.61 U	< 0.70 U
PCB-105	pg/g	< 0.63 UQ	6.2	2,200 J	19	17	27	26 J	36	< 0.98 UQ	< 0.80 U	< 0.38 U	1.0 J
PCB-114	pg/g	< 0.41 U	< 0.39 U	64	0.92 J	< 0.54 U	< 1 UQ	< 1.3 UJ	< 2.0 U	< 0.35 U	< 0.74 U	< 0.36 U	< 0.43 U
PCB-118	pg/g	< 2.3 UQ	9.6	3,100 J	29	24	51	38 J	75	7.0	7.6	< 1.1 UQ	1.7 J
PCB-123	pg/g	< 0.41 U	< 0.37 U	< 67 UQ	< 0.75 UQ	< 0.86 UQ	0.84 J	1.4 J	< 2 UQ	< 0.34 U	< 0.73 U	< 0.36 U	< 0.43 U
PCB-126	pg/g	< 0.56 U	< 0.53 U	98	3.1	2.7	< 1.6 UQ	< 2.5 UJQ	< 2.8 U	0.56 J	< 1.0 U	< 0.50 U	< 0.63 U
PCB-156 & 157	pg/g	< 0.37 U	< 2.1 UQ	690	7.4	6.6	12	11	17	0.79 J	< 0.42 U	< 0.36 U	< 0.37 UQ
PCB-167	pg/g	< 0.27 U	0.80 J	260	3.0	2.5	3.8	5.8	5.2	< 0.36 UQ	< 0.32 U	< 0.28 U	< 0.24 U
PCB-169	pg/g	< 0.42 U	< 0.51 U	< 9.1 U	< 0.39 UQ	< 0.42 U	< 0.28 U	< 1.5 U	< 1.2 U	< 0.16 U	< 0.51 U	< 0.45 U	< 0.38 U
PCB-189	pg/g	< 0.66 U	< 0.49 U	47	< 1 UQ	< 0.98 UQ	< 1 UQ	< 1.6 U	1.6 J	< 0.25 U	< 0.72 U	< 0.42 U	< 0.43 U
Monochlorobiphenyls, Total	pg/g	< 0.68 U	< 0.32 U	8.5 J	3.7 J	1.8 J	3.0 J	1.5 J	3.7 J	1.9 J	< 0.50 U	< 0.32 U	0.65 J
Dichlorobiphenyls, Total	pg/g	< 28 U	< 8.5 U	140 J	32 J	< 5.3 U	31 J	< 21 UJ	36 J	40 J	< 22 U	< 13 U	< 16 U
Trichlorobiphenyls, Total	pg/g	2.9 J	3.3 J	540	23 J	9.3 J	21 J	16 J	70 J	13 J	5.5 J	1.6 J	4.3 J
Tetrachlorobiphenyls, Total	pg/g	78 J	12 J	3,300	70 J	48 J	71 J	81 J	270	79 J	82 J	0.71 J	3.6 J
Pentachlorobiphenyls, Total	pg/g	9.2 J	41 J	20,000	140 J	110 J	290	210 J	580	23 J	16 J	5.2 J	10 J
Hexachlorobiphenyls, Total	pg/g	4.0 J	40 J	20,000	120 J	110 J	250	270 J	600	16 J	11 J	4.8 J	11 J
Heptachlorobiphenyls, Total	pg/g	3.6 J	29 J	10,000	88 J	75 J	170 J	210 J	460	27 J	18 J	1.1 J	15 J
Octachlorobiphenyls, Total	pg/g	6.5 J	57 J	3,100	170 J	150 J	140 J	350	140 J	20 J	24 J	4.1 J	28 J
Nonachlorobiphenyls, Total	pg/g	34 J	220 J	1,700	610	560	410	1,400 J	85 J	56 J	71 J	22 J	86 J
Decachlorobiphenyl (PCB-209)	pg/g	260	2,100	14,000 J	4,400 J	3,500 J	4,100 J	27,000 J	1,300	520	640	170	670
Total PCBs	pg/g	390	2,500	73,000	5,600	4,600	5,500	29,000	3,600	790	870	210 J	820

Table I-5
Analytical Results for Soilds Samples - PRI-11 ATI
Titanium Plant and US Magnesium Parking Lots
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11
	Location ID	PRI11-010	PRI11-010	PRI11-011	PRI11-012	PRI11-013	PRI11-013	PRI11-014
	Sample Date	07-May-14	07-May-14	06-May-14	06-May-14	06-May-14	06-May-14	06-May-14
	Sample Type	FINE	N	N	N	FINE	N	N
	Depth	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in
	Sample ID	PRI11-010-SS01-050714 FINES	PRI11-010-SS01-050714	PRI11-011-SS01-050614	PRI11-012-SS01-050614	PRI11-013-SS01-050614 FINES	PRI11-013-SS01-050614	PRI11-014-SS01-050614
Analyte	**Unit**							
01-Dioxins and Furans								
2,3,7,8-TCDD	pg/g	< 0.20 U	< 0.051 U	< 0.16 U	< 0.17 U	< 0.17 U	< 0.18 U	< 0.17 UQ
1,2,3,7,8-PeCDD	pg/g	< 0.36 U	< 0.079 U	< 0.31 U	< 0.40 U	< 0.40 U	< 0.29 U	< 0.21 UQ
1,2,3,4,7,8-HxCDD	pg/g	< 0.23 U	< 0.082 U	< 0.48 U	< 0.54 U	< 0.34 U	< 0.28 U	< 0.24 UQ
1,2,3,6,7,8-HxCDD	pg/g	< 0.20 U	< 0.064 U	< 0.41 U	< 0.46 U	< 0.43 UQ	< 0.24 U	0.59 J
1,2,3,7,8,9-HxCDD	pg/g	< 0.19 U	< 0.061 U	< 0.40 U	< 0.44 U	< 0.48 UQ	< 0.23 U	< 0.52 U
1,2,3,4,6,7,8-HpCDD	pg/g	1.0 J	1.3 J	4.7 J	13	6.9	3.9 J	9.9
OCDD	pg/g	5.5 J	< 4.9 UQ	32	88	45	22	70
2,3,7,8-TCDF	pg/g	< 0.19 U	0.43 J	0.91 J	1.7	1.0	1.0 J	0.94 J
1,2,3,7,8-PeCDF	pg/g	< 0.35 UQ	0.47 J	1.3 J	< 3.3 UQ	1.1 J	< 0.85 UQ	1.5 J
2,3,4,7,8-PeCDF	pg/g	< 0.25 U	< 0.3 UQ	0.84 J	2.3 J	0.87 J	0.71 J	< 0.79 UQ
1,2,3,4,7,8-HxCDF	pg/g	< 1.2 UQ	1.7 J	4.0 J	12	3.9 J	3.4 J	4.5 J
1,2,3,6,7,8-HxCDF	pg/g	1.2 J	1.2 J	3.8 J	8.3	2.4 J	2.6 J	2.8 J
1,2,3,7,8,9-HxCDF	pg/g	< 0.24 U	< 0.068 U	< 0.32 U	< 0.91 U	< 0.24 U	< 0.31 U	< 0.14 UQ
2,3,4,6,7,8-HxCDF	pg/g	0.77 J	1.1 J	3.0 J	4.5 J	0.91 J	1.8 J	0.99 J
1,2,3,4,6,7,8-HpCDF	pg/g	15	18	45	110	29	24	30
1,2,3,4,7,8,9-HpCDF	pg/g	< 1.4 UQ	< 1.7 UQ	7.4	22	4.7 J	2.9 J	3.7 J
OCDF	pg/g	160	160	730	2,000	360	220	190
Calculated TEQ (ND=0), Mammalian	pg/g	0.41	0.70	2.3	5.4	1.6	1.5	1.6
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	0.87	0.87	2.6	6.0	2.0	1.8	1.9
Calculated TEQ (ND=0), Avian	pg/g	690	1.1	66	590	110	100	2.8
Calculated TEQ (ND=1/2 DL), Avian	pg/g	690	14	66	590	110	100	16
02-PCBs								
PCB-81	pg/g	< 0.21 U	< 0.73 U	< 0.40 U	< 0.41 U	< 0.29 U	< 0.31 U	< 0.34 U
PCB-77	pg/g	0.62 J	< 0.79 U	< 2.1 UQ	5.7	3.6	3.8	4.6
PCB-105	pg/g	1.4 J	2.6	3.7	8.3	3.8	2.6	< 1.2 UQ
PCB-114	pg/g	< 0.23 U	< 0.45 U	< 0.47 UQ	0.50 J	0.30 J	< 0.32 U	< 0.32 U
PCB-118	pg/g	2.5	3.9	7.3	15	7.1	5.0	2.8
PCB-123	pg/g	< 0.22 U	< 0.45 U	< 0.36 U	< 0.41 U	< 0.29 U	< 0.30 U	< 0.31 U
PCB-126	pg/g	< 0.27 U	< 0.66 U	< 0.50 U	< 1.5 UQ	< 0.6 UQ	0.61 J	< 0.47 UQ
PCB-156 & 157	pg/g	< 0.68 UQ	< 0.62 UQ	< 1.6 UQ	4.2	1.5 J	1.2 J	< 0.86 UQ
PCB-167	pg/g	< 0.22 UQ	< 0.31 U	< 0.79 UQ	2.0 J	0.63 J	< 0.45 UQ	< 0.36 UQ
PCB-169	pg/g	< 0.24 U	< 0.47 U	0.50 J	0.57 J	< 0.24 U	< 0.20 U	0.38 J
PCB-189	pg/g	< 0.27 U	< 0.52 U	0.73 J	< 1.2 UQ	< 0.57 UQ	< 0.27 U	< 0.39 U
Monochlorobiphenyls, Total	pg/g	0.37 J	1.4 J	0.93 J	2.6 J	2.1 J	2.4 J	5.4 J
Dichlorobiphenyls, Total	pg/g	14 J	< 14 U	18 J	21 J	30 J	18 J	21 J
Trichlorobiphenyls, Total	pg/g	8.7 J	3.1 J	5.7 J	11 J	21 J	12 J	5.9 J
Tetrachlorobiphenyls, Total	pg/g	8.8 J	7.4 J	12 J	29 J	30 J	17 J	13 J
Pentachlorobiphenyls, Total	pg/g	13 J	19 J	42 J	93 J	42 J	30 J	14 J
Hexachlorobiphenyls, Total	pg/g	12 J	16 J	50 J	110 J	34 J	28 J	13 J
Heptachlorobiphenyls, Total	pg/g	13 J	13 J	56 J	110 J	32 J	28 J	15 J
Octachlorobiphenyls, Total	pg/g	24 J	36 J	100 J	180 J	53 J	54 J	26 J
Nonachlorobiphenyls, Total	pg/g	72 J	120 J	300	670	170 J	160 J	98 J
Decachlorobiphenyl (PCB-209)	pg/g	430	700	2,000	5,600 J	1,200	980	910
Total PCBs	pg/g	590	910	2,600	6,900	1,600	1,300	1,100

Table I-5
Analytical Results for Soilds Samples - PRI-11 ATI
Titanium Plant and US Magnesium Parking Lots
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	**PRI-11**	**PRI-11**	**PRI-11**	**PRI-11**	**PRI-11**	**PRI-11**	**PRI-11**	**PRI-11**	**PRI-11**	**PRI-11**	**PRI-11**	**PRI-11**
	Location ID	**PRI11-001**	**PRI11-002**	**PRI11-003**	**PRI11-004**	**PRI11-004**	**PRI11-005**	**PRI11-005**	**PRI11-006**	**PRI11-007**	**PRI11-007**	**PRI11-008**	**PRI11-009**
	Sample Date	**07-May-14**	**07-May-14**	**06-May-14**	**07-May-14**	**07-May-14**	**07-May-14**	**07-May-14**	**07-May-14**	**07-May-14**	**07-May-14**	**07-May-14**	**07-May-14**
	Sample Type	**N**	**N**	**N**	**FINE**	**N**	**FINE**	**N**	**N**	**FINE**	**N**	**N**	**N**
	Depth	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**
	Sample ID	**PRI11-001-SS01-050714**	**PRI11-002-SS01-050714**	**PRI11-003-SS01-050614**	**PRI11-004-SS01-050714 FINES**	**PRI11-004-SS01-050714**	**PRI11-005-SS01-050714 FINES**	**PRI11-005-SS01-050714**	**PRI11-006-SS01-050714**	**PRI11-007-SS01-050714 FINES**	**PRI11-007-SS01-050714**	**PRI11-008-SS01-050714**	**PRI11-009-SS01-050714**
Analyte	**Unit**												
03- Metals													
Total Aluminum	mg/kg	4,700	6,900	7,200	5,100	4,000	6,400	5,700	10,000	6,600	5,300	6,600	5,700
Total Antimony	mg/kg	*< 0.22 UJ*	*< 0.23 UJ*	*< 0.21 UJ*	*< 0.19 UJ*	*< 0.22 UJ*	*< 0.20 UJ*	*< 0.22 UJ*	0.32 J-	0.42 J-	0.58 J-	*< 0.24 UJ*	*< 0.22 UJ*
Total Arsenic	mg/kg	4.5	4.6	4.5	3.8	4.0	4.0	4.4	11	5.1	6.1	4.8	4.9
Total Barium	mg/kg	78	96	130	90	210	100	100	130	110	97	100	93
Total Beryllium	mg/kg	0.28	0.37	0.31	0.26	0.24	0.28	0.27	0.44	0.32	0.27	0.36	0.29
Total Cadmium	mg/kg	*< 0.11 U*	0.16 J	0.44	0.12 J	0.12 J	0.14 J	0.12 J	0.46	0.13 J	0.18 J	0.12 J	0.13 J
Total Calcium	mg/kg	100,000	96,000	64,000 J	68,000	100,000	57,000	92,000	42,000	54,000	94,000	73,000	100,000
Total Chromium	mg/kg	20	8.5	9.3	7.2 J-	6.2	7.6 J-	7.8	14	14 J-	13	7.8	7.0
Total Cobalt	mg/kg	2.2 J-	2.7 J-	2.3	1.7	1.4 J-	1.9	2.0 J-	4.0 J-	6.0	6.5 J-	2.6 J-	2.3 J-
Total Copper	mg/kg	5.1	7.0	13	18	7.8	9.4	7.2	33	210	220	5.9	6.0
Total Iron	mg/kg	6,800	9,500	6,000 J	5,900	8,500	5,900	6,000	13,000	18,000	18,000	5,400	8,100
Total Lead	mg/kg	11 J-	12 J-	13	7.4	6.3 J-	5.7	5.9 J-	19 J-	14	19 J-	9.8 J-	16 J-
Total Magnesium	mg/kg	29,000	20,000	14,000 J	16,000	19,000	13,000	18,000	9,800	14,000	30,000	14,000	26,000
Total Manganese	mg/kg	150 J	180 J	180	140	130 J	130	170 J	230 J	170	170 J	180 J	200 J
Total Mercury	mg/kg	0.016 J	*< 0.02 U*	0.012 J	*< 0.0089 U*	*< 0.012 U*	0.012 J	*< 0.010 U*	0.092	*< 0.0089 U*	*< 0.0093 U*	0.021 J	0.016 J
Total Molybdenum	mg/kg	1.1 J-	0.34 J-	*< 0.37 U*	0.46	0.26 J-	0.40	0.25 J-	0.68 J-	23 J-	29 J-	0.27 J-	0.39 J-
Total Nickel	mg/kg	12 J-	6.7 J-	6.2	4.8	4.0 J-	4.8	5.0 J-	9.8 J-	5.9	5.2 J-	6.0 J-	5.1 J-
Total Potassium	mg/kg	1,600	2,600	2,500 J	1,900	1,700	2,000	1,900	3,000	1,900	1,500	2,500	2,300
Total Selenium	mg/kg	*< 0.22 U*	*< 0.23 U*	*< 0.21 UJ*	*< 0.19 U*	*< 0.22 U*	*< 0.20 U*	*< 0.22 U*	0.43 J	0.26 J	0.30 J	*< 0.24 U*	*< 0.22 U*
Total Silver	mg/kg	*< 0.067 U*	*< 0.068 U*	*< 0.063 U*	*< 0.058 U*	*< 0.066 U*	*< 0.059 U*	*< 0.067 U*	0.21 J	*< 0.060 U*	*< 0.065 U*	*< 0.072 U*	*< 0.067 U*
Total Sodium	mg/kg	400 J	480 J	900	410 J	450 J	470 J	600	890	630	490 J	980	770
Total Thallium	mg/kg	*< 0.11 U*	*< 0.11 U*	*< 0.10 U*	*< 0.096 U*	*< 0.11 U*	*< 0.098 U*	*< 0.11 U*	0.20 J	*< 0.10 U*	*< 0.11 U*	*< 0.12 U*	*< 0.11 U*
Total Vanadium	mg/kg	13	16	14	12	9.9	12	12	20	18 J-	15	16	15
Total Zinc	mg/kg	22 J-	28 J-	390	23 J-	20 J-	72 J-	42 J-	63 J-	78 J-	88 J-	25 J-	27 J-
05-SVOCs													
1,1'-Biphenyl	µg/kg	*< 180 U*	*< 180 U*	*< 170 U*	*< 170 U*	*< 180 U*	*< 170 U*	*< 190 U*	*< 190 U*	*< 160 U*	*< 190 U*	*< 190 U*	*< 180 U*
1,2,4,5-Tetrachlorobenzene	µg/kg	*< 29 U*	*< 29 U*	*< 28 U*	*< 26 U*	*< 28 U*	*< 26 U*	*< 30 U*	*< 31 U*	*< 26 U*	*< 29 U*	*< 30 U*	*< 29 U*
2,3,4,6-Tetrachlorophenol	µg/kg	*< 91 U*	*< 91 U*	*< 87 U*	*< 82 U*	*< 88 U*	*< 82 U*	*< 94 U*	*< 96 U*	*< 81 U*	*< 92 U*	*< 96 U*	*< 91 U*
2,4,5-Trichlorophenol	µg/kg	*< 92 U*	*< 92 U*	*< 88 U*	*< 83 U*	*< 89 U*	*< 83 U*	*< 95 U*	*< 98 U*	*< 82 U*	*< 93 U*	*< 97 U*	*< 92 U*
2,4,6-Trichlorophenol	µg/kg	*< 93 U*	*< 93 U*	*< 89 U*	*< 84 U*	*< 90 U*	*< 84 U*	*< 96 U*	*< 99 U*	*< 83 U*	*< 94 U*	*< 98 U*	*< 93 U*
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	*< 4.9 U*	*< 4.9 UJ*	*< 4.7 U*	*< 4.4 U*	*< 4.7 U*	*< 4.4 U*	*< 5.0 U*	*< 5.2 U*	*< 4.3 U*	*< 4.9 U*	*< 5.1 U*	*< 4.9 U*
2,2-Oxybis(1-chloropropane)	µg/kg	*< 87 UJ*	*< 88 UJ*	*< 84 UJ*	*< 79 UJ*	*< 85 UJ*	*< 79 UJ*	*< 90 UJ*	*< 93 UJ*	*< 78 UJ*	*< 89 UJ*	*< 92 UJ*	*< 88 UJ*
2,4-Dichlorophenol	µg/kg	*< 98 U*	*< 99 U*	*< 94 U*	*< 89 U*	*< 96 U*	*< 89 U*	*< 100 U*	*< 100 U*	*< 88 U*	*< 100 U*	*< 100 U*	*< 99 U*
2,4-Dimethylphenol	µg/kg	*< 180 UJ*	*< 190 UJ*	*< 180 U*	*< 170 U*	*< 180 UJ*	*< 170 U*	*< 190 UJ*	*< 200 UJ*	*< 170 UJ*	*< 190 UJ*	*< 190 UJ*	*< 190 UJ*
2,4-Dinitrophenol	µg/kg	*< 240 U*	*< 240 U*	*< 230 U*	*< 210 U*	*< 230 U*	*< 210 U*	*< 240 U*	*< 250 U*	*< 210 U*	*< 240 U*	280 J	*< 240 U*
2,4-Dinitrotoluene	µg/kg	*< 98 U*	*< 99 U*	*< 94 U*	*< 89 U*	*< 96 U*	*< 89 U*	*< 100 U*	*< 100 U*	*< 88 U*	*< 100 U*	*< 100 U*	*< 99 U*
2,6-Dinitrotoluene	µg/kg	*< 110 U*	*< 110 U*	*< 100 U*	*< 99 U*	*< 110 U*	*< 99 U*	*< 110 U*	*< 120 U*	*< 98 U*	*< 110 U*	*< 120 U*	*< 110 U*
2-Chloronaphthalene	µg/kg	*< 89 U*	*< 90 U*	*< 86 U*	*< 81 U*	*< 87 U*	*< 81 U*	*< 93 U*	*< 95 U*	*< 80 U*	*< 91 U*	*< 94 U*	*< 90 U*
2-Chlorophenol	µg/kg	*< 97 U*	*< 98 U*	*< 93 U*	*< 88 U*	*< 95 U*	*< 88 U*	*< 100 U*	*< 100 U*	*< 87 U*	*< 99 U*	*< 100 U*	*< 98 U*
2-Methylphenol	µg/kg	*< 64 U*	*< 64 U*	*< 61 U*	*< 58 U*	*< 62 U*	*< 58 U*	*< 66 U*	*< 68 U*	*< 57 U*	*< 65 U*	*< 68 U*	*< 64 U*
2-Nitroaniline	µg/kg	*< 93 U*	*< 93 U*	*< 89 U*	*< 84 U*	*< 90 U*	*< 84 U*	*< 96 U*	*< 99 U*	*< 83 U*	*< 94 U*	*< 98 U*	*< 93 U*
2-Nitrophenol	µg/kg	*< 91 U*	*< 91 U*	*< 87 U*	*< 82 U*	*< 88 U*	*< 82 U*	*< 94 U*	*< 96 U*	*< 81 U*	*< 92 U*	*< 96 U*	*< 91 U*
3,3'-Dichlorobenzidine	µg/kg	*< 100 UJ*	*< 100 UJ*	*< 100 UJ*	*< 94 UJ*	*< 100 UJ*	*< 94 UJ*	*< 110 UJ*	*< 110 UJ*	*< 93 UJ*	*< 110 UJ*	*< 110 UJ*	*< 100 UJ*
3-Nitroaniline	µg/kg	*< 180 U*	*< 190 U*	*< 180 UJ*	*< 170 U*	*< 180 U*	*< 170 U*	*< 190 U*	*< 200 U*	*< 170 UJ*	*< 190 UJ*	*< 190 U*	*< 190 U*
4,6-Dinitro-2-methylphenol	µg/kg	*< 89 U*	*< 90 U*	*< 86 U*	*< 81 U*	*< 87 U*	*< 81 U*	*< 93 U*	*< 95 U*	*< 80 U*	*< 91 U*	*< 94 U*	*< 90 U*
4-Bromophenyl-phenylether	µg/kg	*< 94 U*	*< 94 U*	*< 90 U*	*< 85 U*	*< 92 U*	*< 85 U*	*< 97 U*	*< 100 U*	*< 84 U*	*< 95 U*	*< 99 U*	*< 94 U*
4-Chloro-3-methylphenol	µg/kg	*< 100 U*	*< 100 U*	*< 97 U*	*< 92 U*	*< 99 U*	*< 92 U*	*< 110 U*	*< 110 U*	*< 91 U*	*< 100 U*	*< 110 U*	*< 100 U*
4-Chloroaniline	µg/kg	*< 64 UJ*	*< 64 UJ*	*< 61 UJ*	*< 58 U*	*< 62 UJ*	*< 58 U*	*< 66 UJ*	*< 68 UJ*	*< 57 UJ*	*< 65 UJ*	*< 68 UJ*	*< 64 UJ*
4-Chlorophenyl-phenylether	µg/kg	*< 100 U*	*< 100 U*	*< 99 U*	*< 93 U*	*< 100 U*	*< 93 U*	*< 110 U*	*< 110 U*	*< 92 U*	*< 100 U*	*< 110 U*	*< 100 U*
3 & 4 Methylphenol	µg/kg	*< 360 U*	*< 370 U*	*< 350 U*	*< 330 U*	*< 360 U*	*< 330 U*	*< 380 U*	*< 390 U*	*< 330 U*	*< 370 U*	*< 380 U*	*< 370 U*
4-Nitroaniline	µg/kg	*< 97 U*	*< 98 U*	*< 93 U*	*< 88 U*	*< 95 U*	*< 88 U*	*< 100 U*	*< 100 U*	*< 87 U*	*< 99 U*	*< 100 U*	*< 98 U*
4-Nitrophenol	µg/kg	*< 310 U*	*< 310 U*	*< 300 U*	*< 280 U*	*< 300 U*	*< 280 U*	*< 320 U*	*< 330 U*	*< 280 U*	*< 310 U*	*< 330 U*	*< 310 U*
Acetophenone	µg/kg	*< 28 U*	*< 28 U*	*< 26 U*	30 J	*< 27 U*	*< 25 U*	*< 29 U*	*< 29 U*	92 J	*< 28 UJ*	*< 29 U*	*< 38 U*
Benzaldehyde	µg/kg	*< 180 U*	*< 180 U*	*< 170 U*	*< 170 U*	*< 180 U*	*< 170 U*	*< 190 U*	*< 190 U*	*< 160 U*	*< 190 U*	*< 190 U*	*< 180 U*
Benzylbutylphthalate	µg/kg	*< 100 U*	*< 110 U*	*< 100 U*	*< 95 U*	1,100	*< 95 U*	*< 110 U*	*< 110 U*	*< 94 U*	*< 110 U*	110 J	*< 110 U*
Bis(2-chloroethoxy)methane	µg/kg	*< 97 U*	*< 98 U*	*< 93 U*	*< 88 U*	*< 95 U*	*< 88 U*	*< 100 U*	*< 100 U*	*< 87 U*	*< 99 U*	*< 100 U*	*< 98 U*
bis(2-Chloroethyl) ether	µg/kg	*< 89 U*	*< 90 U*	*< 86 U*	*< 81 U*	*< 87 U*	*< 81 U*	*< 93 U*	*< 95 U*	*< 80 U*	*< 91 U*	*< 94 U*	*< 90 U*
Bis(2-ethylhexyl)phthalate	µg/kg	*< 110 U*	*< 110 U*	150 J	*< 98 U*	140 J	100 J	120 J	180 J	140 J	140 J	*< 110 U*	*< 110 U*
Carbazole	µg/kg	*< 100 U*	*< 110 U*	*< 100 UJ*	*< 95 U*	*< 100 U*	*< 95 U*	*< 110 U*	*< 110 U*	*< 94 U*	*< 110 U*	*< 110 U*	*< 110 U*
Dibenzofuran	µg/kg	*< 95 U*	*< 96 U*	*< 91 U*	*< 86 U*	*< 93 U*	*< 86 U*	*< 98 U*	*< 100 U*	*< 85 U*	*< 97 U*	*< 100 U*	*< 95 U*
Diethyl phthalate	µg/kg	*< 99 U*	*< 100 U*	*< 95 U*	*< 90 U*	*< 97 U*	*< 90 U*	*< 100 U*	*< 110 U*	*< 89 U*	*< 100 U*	*< 100 U*	*< 100 U*
Dimethylphthalate	µg/kg	*< 96 U*	*< 97 U*	*< 92 U*	*< 87 U*	*< 94 U*	*< 87 U*	*< 99 U*	*< 100 U*	*< 86 U*	*< 98 U*	*< 100 U*	*< 96 U*
Di-n-butylphthalate	µg/kg	*< 110 U*	*< 110 U*	*< 100 U*	*< 97 U*	*< 100 U*	*< 97 U*	*< 110 U*	*< 110 U*	*< 96 U*	*< 110 U*	*< 110 U*	*< 110 U*
Di-n-octylphthalate	µg/kg	*< 110 U*	*< 110 U*	*< 100 U*	*< 97 U*	*< 100 U*	*< 97 U*	*< 110 U*	*< 110 U*	*< 96 U*	*< 110 U*	*< 110 U*	*< 110 U*
Hexachlorobenzene	µg/kg	*< 98 U*	*< 99 U*	*< 94 U*	*< 89 U*	*< 96 U*	*< 89 U*	*< 100 U*	*< 100 U*	*< 88 U*	*< 100 U*	*< 100 U*	*< 99 U*
Hexachlorobenzene (SIM Screen)	µg/kg	*< 2.4 U*	3.5 J	67	5.3 J	*< 2.4 U*	5.6 J	5.9 J	*< 2.6 U*	2.4 J	*< 2.5 U*	4.5 J	2.8 J
Hexachlorobutadiene	µg/kg	*< 91 U*	*< 91 U*	*< 87 U*	*< 82 U*	*< 88 U*	*< 82 U*	*< 94 U*	*< 96 U*	*< 81 U*	*< 92 U*	*< 96 U*	*< 91 U*
Hexachlorobutadiene (SIM Screen)	µg/kg	*< 4.1 U*	*< 4.1 UJ*	*< 3.9 U*	*< 3.7 U*	*< 4.0 U*	*< 3.7 U*	*< 4.2 U*	*< 4.3 U*	*< 3.7 U*	*< 4.2 U*	*< 4.3 U*	*< 4.1 U*
Hexachlorocyclopentadiene	µg/kg	*< 68 U*	*< 69 U*	*< 66 UJ*	*< 62 U*	*< 67 U*	*< 62 U*	*< 71 U*	*< 73 U*	*< 61 UJ*	*< 70 U*	*< 72 U*	*< 69 U*
Hexachloroethane	µg/kg	*< 89 U*	*< 90 U*	*< 86 U*	*< 81 U*	*< 87 U*	*< 81 U*	*< 93 U*	*< 95 U*	*< 80 U*	*< 91 U*	*< 94 U*	*< 90 U*
Isophorone	µg/kg	*< 100 U*	*< 100 U*	*< 99 U*	*< 93 U*	*< 100 U*	*< 93 U*	*< 110 U*	*< 110 U*	*< 92 U*	*< 100 U*	*< 110 U*	*< 100 U*
Nitrobenzene	µg/kg	*< 84 U*	*< 84 U*	*< 81 U*	*< 76 U*	*< 82 U*	*< 76 U*	*< 87 U*	*< 89 U*	*< 75 U*	*< 85 U*	*< 89 U*	*< 84 U*

Table I-5
Analytical Results for Soilds Samples - PRI-11 ATI
Titanium Plant and US Magnesium Parking Lots
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

Analyte	Location Group / Location ID / Sample Date / Sample Type / Depth / Sample ID / Unit	PRI-11 / PRI11-010 / 07-May-14 / FINE / 0 - 2 in / PRI11-010-SS01-050714 FINES	PRI-11 / PRI11-010 / 07-May-14 / N / 0 - 2 in / PRI11-010-SS01-050714	PRI-11 / PRI11-011 / 06-May-14 / N / 0 - 2 in / PRI11-011-SS01-050614	PRI-11 / PRI11-012 / 06-May-14 / N / 0 - 2 in / PRI11-012-SS01-050614	PRI-11 / PRI11-013 / 06-May-14 / FINE / 0 - 2 in / PRI11-013-SS01-050614 FINES	PRI-11 / PRI11-013 / 06-May-14 / N / 0 - 2 in / PRI11-013-SS01-050614	PRI-11 / PRI11-014 / 06-May-14 / N / 0 - 2 in / PRI11-014-SS01-050614
03- Metals								
Total Aluminum	mg/kg	6,000	6,300	15,000	12,000	11,000	11,000	16,000
Total Antimony	mg/kg	*< 0.21 UJ*	*< 0.23 UJ*	*< 0.36 UJ*	*< 0.28 UJ*	*< 0.21 UJ*	*< 0.21 UJ*	0.60 J-
Total Arsenic	mg/kg	3.8	4.3	7.0	7.5	5.7	6.2	23
Total Barium	mg/kg	90	100	270	220	190	240	360
Total Beryllium	mg/kg	0.25	0.25	0.69	0.52	0.49	0.52	0.85
Total Cadmium	mg/kg	0.17 J	0.18 J	0.41	0.37	0.31	0.34	0.32
Total Calcium	mg/kg	46,000	65,000	83,000 J	110,000 J	89,000	100,000 J	78,000 J
Total Chromium	mg/kg	5.5 J-	5.9	17	15	11 J-	12	21
Total Cobalt	mg/kg	1.7	1.8 J-	5.6	4.0	3.8	4.3	8.9
Total Copper	mg/kg	7.4	5.7	18	14	14 J-	12	19
Total Iron	mg/kg	4,600	5,600	13,000 J	9,700 J	10,000	11,000 J	17,000 J
Total Lead	mg/kg	3.9	4.8 J-	17	9.2	9.9	12	14
Total Magnesium	mg/kg	12,000	14,000	25,000 J	29,000 J	23,000	23,000 J	16,000 J
Total Manganese	mg/kg	110	130 J	480	280	300	320	530
Total Mercury	mg/kg	*< 0.0087 U*	*< 0.0095 U*	0.027 J	*< 0.0090 U*	*< 0.0088 U*	*< 0.019 U*	*< 0.013 U*
Total Molybdenum	mg/kg	*< 0.095 U*	0.047 J-	0.74	*< 0.25 U*	0.65	0.54	3.0
Total Nickel	mg/kg	4.1	4.6 J-	15	11	10 J-	11	22
Total Potassium	mg/kg	2,000	2,600	5,900 J	4,600 J	4,400	4,600 J	4,200 J
Total Selenium	mg/kg	*< 0.21 U*	*< 0.23 U*	0.27 J-	0.39 J-	0.28 J-	0.27 J-	0.30 J-
Total Silver	mg/kg	*< 0.063 U*	*< 0.070 U*	*< 0.064 U*	*< 0.061 U*	*< 0.064 U*	*< 0.063 U*	*< 0.065 U*
Total Sodium	mg/kg	700	940	2,900	1,700	1,500	1,500	610
Total Thallium	mg/kg	*< 0.10 U*	*< 0.12 U*	*< 0.11 U*	0.12 J	0.12 J	*< 0.10 U*	0.20 J
Total Vanadium	mg/kg	11	12	28	23	18	21	34
Total Zinc	mg/kg	17 J-	19 J-	51	60	48 J-	47	59
05-SVOCs								
1,1'-Biphenyl	µg/kg	*< 170 U*	*< 190 U*	*< 170 U*	*< 170 U*	*< 170 U*	*< 180 U*	*< 190 U*
1,2,4,5-Tetrachlorobenzene	µg/kg	*< 27 U*	*< 30 U*	*< 27 U*	*< 27 U*	*< 27 U*	*< 29 U*	*< 30 U*
2,3,4,6-Tetrachlorophenol	µg/kg	*< 85 U*	*< 93 U*	*< 86 U*	*< 86 U*	*< 84 UJ*	*< 90 U*	*< 93 U*
2,4,5-Trichlorophenol	µg/kg	*< 86 U*	*< 95 U*	*< 87 U*	*< 87 U*	*< 85 UJ*	*< 91 U*	*< 95 U*
2,4,6-Trichlorophenol	µg/kg	*< 87 U*	*< 96 U*	*< 88 U*	*< 88 U*	*< 87 U*	*< 92 U*	*< 96 U*
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	*< 4.5 U*	*< 5.0 U*	*< 4.6 U*	*< 4.6 U*	*< 4.5 U*	*< 4.8 U*	*< 5.0 U*
2,2-Oxybis(1-chloropropane)	µg/kg	*< 82 UJ*	*< 90 UJ*	*< 83 UJ*	*< 83 UJ*	*< 81 UJ*	*< 87 UJ*	*< 90 UJ*
2,4-Dichlorophenol	µg/kg	*< 92 U*	*< 100 U*	*< 93 U*	*< 94 U*	*< 92 U*	*< 98 U*	*< 100 U*
2,4-Dimethylphenol	µg/kg	*< 170 U*	*< 190 UJ*	*< 180 U*	*< 180 U*	*< 170 UJ*	*< 180 UJ*	*< 190 U*
2,4-Dinitrophenol	µg/kg	*< 220 U*	*< 240 U*	*< 220 U*	*< 220 U*	*< 220 U*	*< 230 U*	*< 240 U*
2,4-Dinitrotoluene	µg/kg	*< 92 U*	*< 100 U*	*< 93 U*	*< 94 U*	*< 92 U*	*< 98 U*	*< 100 U*
2,6-Dinitrotoluene	µg/kg	*< 100 U*	*< 110 U*	*< 100 U*	*< 100 U*	*< 100 U*	*< 110 U*	*< 110 U*
2-Chloronaphthalene	µg/kg	*< 84 U*	*< 92 U*	*< 85 U*	*< 85 U*	*< 83 U*	*< 89 U*	*< 92 U*
2-Chlorophenol	µg/kg	*< 91 U*	*< 100 U*	*< 92 U*	*< 93 U*	*< 91 U*	*< 97 U*	*< 100 U*
2-Methylphenol	µg/kg	*< 60 U*	*< 66 U*	*< 61 U*	*< 61 U*	*< 60 U*	*< 64 U*	*< 66 U*
2-Nitroaniline	µg/kg	*< 87 U*	*< 96 U*	*< 88 U*	*< 88 U*	*< 87 U*	*< 92 U*	*< 96 U*
2-Nitrophenol	µg/kg	*< 85 U*	*< 93 U*	*< 86 U*	*< 86 U*	*< 84 U*	*< 90 U*	*< 93 U*
3,3'-Dichlorobenzidine	µg/kg	*< 97 UJ*	*< 110 UJ*	*< 99 UJ*	*< 99 UJ*	*< 97 UJ*	*< 100 UJ*	*< 110 UJ*
3-Nitroaniline	µg/kg	*< 170 U*	*< 190 U*	*< 180 UJ*	*< 180 UJ*	*< 170 UJ*	*< 180 UJ*	*< 190 UJ*
4,6-Dinitro-2-methylphenol	µg/kg	*< 84 U*	*< 92 U*	*< 85 U*	*< 85 U*	*< 83 U*	*< 89 U*	*< 92 U*
4-Bromophenyl-phenylether	µg/kg	*< 88 U*	*< 97 U*	*< 89 U*	*< 89 U*	*< 88 U*	*< 93 U*	*< 97 U*
4-Chloro-3-methylphenol	µg/kg	*< 95 U*	*< 100 U*	*< 96 U*	*< 97 U*	*< 95 U*	*< 100 U*	*< 100 U*
4-Chloroaniline	µg/kg	*< 60 U*	*< 66 UJ*	*< 61 UJ*	*< 61 UJ*	*< 60 UJ*	*< 64 UJ*	*< 66 UJ*
4-Chlorophenyl-phenylether	µg/kg	*< 96 U*	*< 110 U*	*< 98 U*	*< 98 U*	*< 96 U*	*< 100 U*	*< 110 U*
3 & 4 Methylphenol	µg/kg	*< 340 U*	*< 380 U*	*< 350 U*	*< 350 U*	*< 340 U*	*< 360 U*	*< 380 U*
4-Nitroaniline	µg/kg	*< 91 U*	*< 100 U*	*< 92 U*	*< 93 U*	*< 91 U*	*< 97 U*	*< 100 U*
4-Nitrophenol	µg/kg	*< 290 U*	*< 320 U*	*< 290 U*	*< 290 U*	*< 290 U*	*< 310 U*	*< 320 U*
Acetophenone	µg/kg	36 J	*< 29 U*	*< 26 U*	*< 26 U*	39 J-	*< 27 U*	*< 28 U*
Benzaldehyde	µg/kg	*< 170 U*	*< 190 U*	*< 170 U*	*< 170 U*	*< 170 U*	*< 180 U*	*< 190 U*
Benzylbutylphthalate	µg/kg	*< 98 U*	*< 110 U*	*< 100 U*	*< 100 U*	98 J	*< 100 U*	*< 110 U*
Bis(2-chloroethoxy)methane	µg/kg	*< 91 U*	*< 100 U*	*< 92 U*	*< 93 U*	*< 91 U*	*< 97 U*	*< 100 U*
bis(2-Chloroethyl) ether	µg/kg	*< 84 U*	*< 92 U*	*< 85 U*	*< 85 U*	*< 83 U*	*< 89 U*	*< 92 U*
Bis(2-ethylhexyl)phthalate	µg/kg	*< 100 U*	120 J	130 J	130 J	120 J	*< 110 U*	130 J
Carbazole	µg/kg	*< 98 U*	*< 110 U*	*< 100 UJ*	*< 100 UJ*	*< 98 U*	*< 100 UJ*	*< 110 UJ*
Dibenzofuran	µg/kg	*< 89 U*	*< 98 U*	*< 90 U*	*< 90 U*	*< 89 U*	*< 94 U*	*< 98 U*
Diethyl phthalate	µg/kg	*< 93 U*	*< 100 U*	*< 94 U*	*< 95 U*	*< 93 U*	*< 99 U*	*< 100 U*
Dimethylphthalate	µg/kg	*< 90 U*	*< 99 U*	*< 91 U*	*< 91 U*	*< 90 U*	*< 95 U*	*< 99 U*
Di-n-butylphthalate	µg/kg	*< 100 U*	*< 110 U*	*< 100 U*	*< 100 U*	*< 100 U*	*< 110 U*	*< 110 U*
Di-n-octylphthalate	µg/kg	*< 100 U*	*< 110 U*	*< 100 U*	*< 100 U*	*< 100 U*	*< 110 U*	*< 110 U*
Hexachlorobenzene	µg/kg	*< 92 U*	*< 100 U*	*< 93 U*	*< 94 U*	*< 92 U*	*< 98 U*	*< 100 U*
Hexachlorobenzene (SIM Screen)	µg/kg	69	*< 2.5 U*	6.2 J	58	11 J	10 J	*< 2.5 U*
Hexachlorobutadiene	µg/kg	*< 85 U*	*< 93 U*	*< 86 U*	*< 86 U*	*< 84 U*	*< 90 U*	*< 93 U*
Hexachlorobutadiene (SIM Screen)	µg/kg	*< 3.8 U*	*< 4.2 U*	*< 3.9 U*	*< 3.9 U*	*< 3.8 U*	*< 4.1 U*	*< 4.2 U*
Hexachlorocyclopentadiene	µg/kg	*< 64 U*	*< 71 U*	*< 65 UJ*	*< 65 UJ*	*< 64 UJ*	*< 68 UJ*	*< 71 UJ*
Hexachloroethane	µg/kg	*< 84 U*	*< 92 U*	*< 85 U*	*< 85 U*	*< 83 U*	*< 89 U*	*< 92 U*
Isophorone	µg/kg	*< 96 U*	*< 110 U*	*< 98 U*	*< 98 U*	*< 96 U*	*< 100 U*	*< 110 U*
Nitrobenzene	µg/kg	*< 79 U*	*< 87 U*	*< 80 U*	*< 80 U*	*< 78 U*	*< 83 U*	*< 87 U*

Table I-5
Analytical Results for Soilds Samples - PRI-11 ATI
Titanium Plant and US Magnesium Parking Lots
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11
	Location ID	PRI11-001	PRI11-002	PRI11-003	PRI11-004	PRI11-004	PRI11-005	PRI11-005	PRI11-006	PRI11-007	PRI11-007	PRI11-008	PRI11-009
	Sample Date	07-May-14	07-May-14	06-May-14	07-May-14	07-May-14	07-May-14	07-May-14	07-May-14	07-May-14	07-May-14	07-May-14	07-May-14
	Sample Type	N	N	N	FINE	N	FINE	N	N	FINE	N	N	N
	Depth	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in
	Sample ID	PRI11-001-SS01-050714	PRI11-002-SS01-050714	PRI11-003-SS01-050614	PRI11-004-SS01-050714 FINES	PRI11-004-SS01-050714	PRI11-005-SS01-050714 FINES	PRI11-005-SS01-050714	PRI11-006-SS01-050714	PRI11-007-SS01-050714 FINES	PRI11-007-SS01-050714	PRI11-008-SS01-050714	PRI11-009-SS01-050714
Analyte	**Unit**												
N-Nitrosodimethylamine	µg/kg	< 110 U	< 110 U	< 100 U	< 96 U	< 100 U	< 96 U	< 110 U	< 110 U	< 95 U	< 110 U	< 110 U	< 110 U
n-Nitrosodimethylamine (SIM Screen)	µg/kg	< 110 UJ	< 110 UJ	< 100 U	< 96 UJ	< 100 UJ	< 96 UJ	< 110 UJ	< 110 UJ	< 95 UJ	< 110 UJ	< 110 UJ	< 110 UJ
N-Nitroso-di-n-propylamine	µg/kg	< 93 U	< 93 U	< 89 U	< 84 U	< 90 U	< 84 U	< 96 U	< 99 U	< 83 U	< 94 U	< 98 U	< 93 U
N-Nitrosodiphenylamine	µg/kg	< 95 U	< 96 U	< 91 U	< 86 U	< 93 U	< 86 U	< 98 U	< 100 U	< 85 U	< 97 U	< 100 U	< 95 U
Pentachlorophenol	µg/kg	< 56 U	< 57 U	< 54 U	< 51 U	< 55 U	< 51 U	< 58 U	< 60 U	< 50 UJ	< 57 U	< 59 U	< 57 U
Pentachlorophenol (SIM Screen)	µg/kg	37 J	< 27 UJ	< 25 U	< 24 U	< 26 U	< 24 U	< 27 U	< 28 U	< 24 UJ	< 27 U	45 J+	< 27 U
Phenol	µg/kg	< 92 U	< 92 U	< 88 U	< 83 U	< 89 U	< 83 U	< 95 U	< 98 U	< 82 U	< 93 U	< 97 U	< 92 U
06-PAHs by SIM													
2-Methylnaphthalene	µg/kg	< 0.48 U	< 0.50 U	0.61 J	0.51 J	< 0.51 U	0.70 J	< 0.46 U	0.63 J	< 0.43 U	< 0.49 U	< 0.51 U	< 0.51 U
Acenaphthene	µg/kg	< 0.52 U	< 0.55 U	< 0.51 U	< 0.46 U	< 0.56 U	< 0.47 U	< 0.50 U	< 0.54 U	< 0.47 U	< 0.54 U	< 0.56 U	< 0.56 U
Acenaphthylene	µg/kg	< 0.37 U	< 0.38 U	< 0.36 U	< 0.32 U	< 0.39 U	< 0.33 U	< 0.35 U	< 0.38 U	< 0.33 U	< 0.38 U	< 0.39 U	< 0.39 U
Anthracene	µg/kg	1.0 J	< 0.46 U	< 0.43 U	0.73 J	1.2 J	< 0.39 U	< 0.42 U	< 0.45 U	0.50 J	0.63 J	< 0.47 U	< 0.47 U
Benzo(a)anthracene	µg/kg	< 0.34 U	< 0.35 U	1.8 J	0.52 J	0.53 J	0.63 J	0.98 J	14	0.33 J	0.43 J	< 0.36 U	< 0.36 U
Benzo(a)pyrene	µg/kg	< 0.44 U	< 0.46 U	2.0 J	0.47 J	< 0.48 U	0.57 J	0.87 J	21	< 0.40 U	< 0.46 U	< 0.48 U	< 0.48 U
Benzo(b)fluoranthene	µg/kg	< 0.56 U	< 0.59 U	4.3 J	1.0 J	0.75 J	0.83 J	1.1 J	24	2.6 J	1.5 J	< 0.60 U	0.68 J
Benzo(g,h,i)perylene	µg/kg	< 1.1 U	< 1.2 U	2.3 J	1.6 J	< 1.2 U	< 1.0 U	< 1.1 U	11	< 1.0 U	< 1.1 U	< 1.2 U	< 1.2 U
Benzo(k)fluoranthene	µg/kg	< 0.85 U	< 0.88 U	1.9 J	< 0.74 U	< 0.91 U	< 0.76 U	< 0.81 U	18	1.1 J	< 0.87 U	< 0.91 U	< 0.91 U
Chrysene	µg/kg	0.53 J	< 0.40 U	4.7 J	2.2 J	1.6 J	1.1 J	1.3 J	20	3.0 J	2.3 J	< 0.41 U	1.3 J
Dibenzo(a,h)anthracene	µg/kg	< 1.3 U	< 1.4 U	< 1.3 U	< 1.2 U	< 1.4 U	< 1.2 U	< 1.3 U	3.6 J	< 1.2 U	< 1.4 U	< 1.4 U	< 1.4 U
Fluoranthene	µg/kg	< 0.33 U	< 0.34 U	3.0 J	1.6 J	1.0 J	1.2 J	2.1 J	8.4	2.8 J	2.4 J	< 0.35 U	1.7 J
Fluorene	µg/kg	< 0.55 U	< 0.57 U	< 0.53 U	< 0.48 U	< 0.58 U	< 0.49 U	< 0.52 U	< 0.56 U	< 0.49 U	< 0.56 U	< 0.59 U	< 0.58 U
Indeno(1,2,3-cd)pyrene	µg/kg	< 0.53 U	< 0.56 U	1.2 J	0.61 J	0.59 J	0.50 J	0.55 J	13	0.76 J	< 0.55 U	< 0.57 U	< 0.57 U
Naphthalene	µg/kg	< 0.34 U	< 0.36 U	0.49 J	0.49 J	< 0.37 U	0.60 J	< 0.33 U	0.61 J	< 0.31 U	< 0.35 U	< 0.37 U	< 0.37 U
Phenanthrene	µg/kg	0.39 J	0.43 J	< 1.6 U	1.3 J	0.76 J	0.81 J	0.88 J	1.9 J	2.7 J	2.1 J	< 0.42 U	0.99 J
Pyrene	µg/kg	< 0.39 U	< 0.41 U	3.6 J	2.3 J	1.8 J	1.2 J	2.1 J	9.3	2.4 J	2.0 J	< 0.42 U	1.3 J
Low Molecular Weight PAH (ND=0)	µg/kg	1.4	0.43	1.1	3.0	2.0	2.1	0.88	3.1	3.2	2.7	< 0.59 U	0.99
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	2.5	1.8	2.8	3.7	3.2	3.0	2.2	4.1	4.2	3.9	< 1.7 U	2.4
High Molecular Weight PAH (ND=0)	µg/kg	0.53	< 1.4 U	25	10	6.3	6.0	9.0	140	13	8.6	< 1.4 U	5.0
High Molecular Weight PAH (ND=1/2DL)	µg/kg	3.5	< 3.3 U	25	11	8.3	7.5	11	140	14	11	< 3.4 U	7.4
08-General Chemistry Parameters for Solids													
Perchlorate	µg/kg	< 22 UJ	< 22 UJ	< 21 U		< 22 UJ		< 23 UJ	< 23 UJ		< 22 U	< 23 U	< 22 U
Total Organic Carbon	g/kg	< 1.7 U	2.2 J	12		< 1.7 U		3.4 J	< 1.7 U		1.9 J	< 1.7 U	3.4 J
pH	pH units	8.58	8.02	8.63		9.10		8.63	7.99		9.21	8.21	8.13
Cyanide, Total	mg/kg	0.44 J	< 0.23 U	< 0.22 U		< 0.23 U		< 0.24 U	< 0.24 U		< 0.22 U	< 0.24 U	< 0.23 U

Table I-5
Analytical Results for Soilds Samples - PRI-11 ATI
Titanium Plant and US Magnesium Parking Lots
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11	PRI-11
	Location ID	PRI11-010	PRI11-010	PRI11-011	PRI11-012	PRI11-013	PRI11-013	PRI11-014
	Sample Date	07-May-14	07-May-14	06-May-14	06-May-14	06-May-14	06-May-14	06-May-14
	Sample Type	FINE	N	N	N	FINE	N	N
	Depth	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in
	Sample ID	PRI11-010-SS01-050714 FINES	PRI11-010-SS01-050714	PRI11-011-SS01-050614	PRI11-012-SS01-050614	PRI11-013-SS01-050614 FINES	PRI11-013-SS01-050614	PRI11-014-SS01-050614
Analyte	**Unit**							
N-Nitrosodimethylamine	µg/kg	< 99 U	< 110 U	< 100 U	< 100 U	< 99 UJ	< 110 UJ	< 110 U
n-Nitrosodimethylamine (SIM Screen)	µg/kg	< 99 UJ	< 110 UJ	< 100 U	< 100 U	< 99 UJ	< 110 U	< 110 U
N-Nitroso-di-n-propylamine	µg/kg	< 87 U	< 96 U	< 88 U	< 88 U	< 87 U	< 92 U	< 96 U
N-Nitrosodiphenylamine	µg/kg	< 89 U	< 98 U	< 90 U	< 90 U	< 89 U	< 94 U	< 98 U
Pentachlorophenol	µg/kg	< 53 U	< 58 U	< 53 U	< 54 U	270 J-	< 56 UJ	< 58 U
Pentachlorophenol (SIM Screen)	µg/kg	< 25 U	< 27 U	< 25 U	< 25 U	140 J-	< 26 UJ	< 27 U
Phenol	µg/kg	< 86 U	< 95 U	< 87 U	< 87 U	< 85 U	< 91 U	< 95 U
06-PAHs by SIM								
2-Methylnaphthalene	µg/kg	< 0.42 U	< 0.45 U	< 0.44 U	< 0.43 U	0.54 J	< 0.50 U	< 0.49 U
Acenaphthene	µg/kg	< 0.46 U	< 0.49 U	< 0.48 U	< 0.47 U	< 0.48 U	< 0.55 U	< 0.54 U
Acenaphthylene	µg/kg	< 0.32 U	< 0.34 U	< 0.34 U	< 0.33 U	< 0.34 U	< 0.38 U	< 0.38 U
Anthracene	µg/kg	< 0.38 U	< 0.41 U	< 0.41 U	< 0.40 U	< 0.41 U	< 0.46 U	< 0.45 U
Benzo(a)anthracene	µg/kg	< 0.29 U	< 0.31 U	0.38 J	1.1 J	< 0.31 U	< 0.35 U	< 0.35 U
Benzo(a)pyrene	µg/kg	< 0.39 U	< 0.41 U	< 0.41 U	0.99 J	< 0.41 U	< 0.46 U	< 0.45 U
Benzo(b)fluoranthene	µg/kg	< 0.49 U	< 0.52 U	0.57 J	1.2 J	< 0.52 U	< 0.59 U	< 0.58 U
Benzo(g,h,i)perylene	µg/kg	< 0.97 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.2 U	< 1.1 U
Benzo(k)fluoranthene	µg/kg	< 0.74 U	< 0.79 U	< 0.78 U	0.94 J	< 0.78 U	< 0.88 U	< 0.87 U
Chrysene	µg/kg	< 0.34 U	< 0.36 U	1.0 J	2.1 J	0.50 J	0.79 J	1.0 J
Dibenzo(a,h)anthracene	µg/kg	< 1.2 U	< 1.2 U	< 1.2 U	< 1.2 U	< 1.2 U	< 1.4 U	< 1.4 U
Fluoranthene	µg/kg	< 0.29 U	< 0.30 U	1.5 J	2.4 J	0.88 J	1.3 J	0.97 J
Fluorene	µg/kg	< 0.48 U	< 0.51 U	< 0.51 U	< 0.49 U	< 0.51 U	< 0.57 U	< 0.56 U
Indeno(1,2,3-cd)pyrene	µg/kg	< 0.47 U	< 0.50 U	< 0.49 U	0.67 J	< 0.49 U	< 0.56 U	< 0.55 U
Naphthalene	µg/kg	0.36 J	< 0.32 U	< 0.32 U	0.48 J	0.48 J	< 0.36 U	< 0.35 U
Phenanthrene	µg/kg	0.54 J	0.37 J	< 1.2 U	< 1.6 U	0.87 J	< 1.3 U	< 0.89 U
Pyrene	µg/kg	< 0.34 U	< 0.36 U	0.97 J	2.2 J	0.59 J	0.88 J	0.91 J
Low Molecular Weight PAH (ND=0)	µg/kg	0.90	0.37	< 1.2 U	0.48	1.9	< 1.3 U	< 0.89 U
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	1.9	1.6	< 1.9 U	2.3	2.8	< 2.1 U	< 1.8 U
High Molecular Weight PAH (ND=0)	µg/kg	< 1.2 U	< 1.2 U	4.4	12	2.0	3.0	2.9
High Molecular Weight PAH (ND=1/2DL)	µg/kg	< 2.8 U	< 2.9 U	6.4	13	4.3	5.7	5.5
08-General Chemistry Parameters for Solids								
Perchlorate	µg/kg		< 22 UJ	< 21 U	< 21 U		< 22 U	< 22 U
Total Organic Carbon	g/kg		2.3 J	9.7	7.7		7.9	3.8 J
pH	pH units		9.52	8.46	8.52		8.11	8.08
Cyanide, Total	mg/kg		< 0.23 U	< 0.22 U	< 0.22 U		< 0.23 U	< 0.23 U

Notes:
< = Compound not detected. Reportable detection limit shown.
µg/kg = micrograms per kilogram
Empty cells = Not analyzed
FINE = Fines Portion (Sieved) of Normal Sample
g/kg = grams per kilogram
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
in = inches
mg/kg = milligrams per kilogram
N = Normal Environmental Sample
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pg/g = picogram per gram (1 pg/g = 0.001 µg/kg)
pH units = pH units
SIM = Selected ion monitoring
SVOC = Semi-volatile organic compound
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence
VOC = Volatile organic compound

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity, biased high. The associated numerical value is the approximate concentration of the analyte in the sample.
J- = The result is an estimated quantity, biased low. The associated numerical value is the approximate concentration of the analyte in the sample.
U = Compound was analyzed for, but not detected. The associated numerical value is the reporting limit.
UJ = The nondetected analyte was qualified as estimated at the sample quantitation limit. The reported sample quantitation limit is approximate and may be inaccurate or imprecise.
UJQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration, value is an estimate.
UQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration.

Table I-6
Analytical Results for Solids Samples - PRI-12
US Magnesium Ancillary Worker Exposure Area
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

Analyte	Location Group Location ID Sample Date Sample Type Depth Sample ID Unit	PRI-12 PRI12-001 10-Dec-13 FINE 0 - 6 in PRI12-001-SS01-121013 FINES	PRI-12 PRI12-001 10-Dec-13 N 0 - 6 in PRI12-001-SS01-121013	PRI-12 PRI12-002 10-Dec-13 N 0 - 6 in PRI12-002-SS01-121013	PRI-12 PRI12-003 10-Dec-13 N 0 - 6 in PRI12-003-SS01-121013	PRI-12 PRI12-004 10-Dec-13 N 0 - 6 in PRI12-004-SS01-121013	PRI-12 PRI12-005 10-Dec-13 N 0 - 6 in PRI12-005-SS01-121013	PRI-12 PRI12-006 10-Dec-13 N 0 - 6 in PRI12-006-SS01-121013	PRI-12 PRI12-007 10-Dec-13 N 0 - 6 in PRI12-007-SS01-121013	PRI-12 PRI12-008 10-Dec-13 FINE 0 - 6 in PRI12-008-SS01-121013 FINES	PRI-12 PRI12-008 10-Dec-13 N 0 - 6 in PRI12-008-SS01-121013	PRI-12 PRI12-009 10-Dec-13 FINE 0 - 6 in PRI12-009-SS01-121013 FINES	PRI-12 PRI12-009 10-Dec-13 N 0 - 6 in PRI12-009-SS01-121013
01-Dioxins and Furans													
2,3,7,8-TCDD	pg/g	*< 0.050 U*	*< 0.055 UQ*	*< 0.15 UQ*	*< 0.22 UQ*	*< 1.2 UJ*	*< 0.19 U*	*< 0.14 U*	*< 0.098 U*	*< 0.070 U*	*< 0.10 U*	*< 0.55 UQ*	0.59 J
1,2,3,7,8-PeCDD	pg/g	*< 0.046 U*	0.23 J	0.64 J	*< 0.74 UQ*	4.6 J	1.1 J	*< 0.6 UQ*	0.33 J	0.29 J	*< 0.17 UQ*	3.2 J	*< 1.2 U*
1,2,3,4,7,8-HxCDD	pg/g	0.24 J	*< 0.25 UQ*	0.68 J	*< 0.73 UQ*	5.7 J	1.2 J	0.63 J	0.32 J	0.20 J	0.19 J	2.4 J	1.7 J
1,2,3,6,7,8-HxCDD	pg/g	0.72 J	0.77 J	1.5 J	1.9 J	19 J	3.4 J	1.7 J	*< 0.78 UQ*	0.51 J	*< 0.46 UQ*	10	9.7
1,2,3,7,8,9-HxCDD	pg/g	0.75 J	0.77 J	1.8 J	2.3 J	17 J	3.5 J	*< 1.7 UQ*	0.98 J	0.59 J	*< 0.43 UQ*	17	14
1,2,3,4,6,7,8-HpCDD	pg/g	7.1	6.7	13	20	130 J	24 J	13	5.3 J	4.5 J	3.2 J	59	48
OCDD	pg/g	62	38	74	200	590 J	130 J	89	24	22	14	130	100
2,3,7,8-TCDF	pg/g	1.9	1.7	4.4	7.6	38 J	9.4 J	3.8	1.9	1.2	1.1 J	28	22
1,2,3,7,8-PeCDF	pg/g	4.6 J	4.8 J	11	20	96 J	22	9.7	5.7	4.1 J	3.2 J	95	76
2,3,4,7,8-PeCDF	pg/g	2.9 J	2.7 J	6.9	12	65 J	15 J	5.9 J	3.2 J	2.6 J	2.0 J	54	41
1,2,3,4,7,8-HxCDF	pg/g	22	17	42	67	310 J	66 J	27	20	16	11	360	250
1,2,3,6,7,8-HxCDF	pg/g	14	12	30	43	270 J	62 J	25	15	12	9.4	210	180
1,2,3,7,8,9-HxCDF	pg/g	0.96 J	1.1 J	2.4 J	4.8 J	*< 19 UJ*	*< 4.5 U*	*< 2.0 UQ*	1.2 J	0.78 J	*< 0.63 U*	25	26
2,3,4,6,7,8-HxCDF	pg/g	6.4	5.6	17	20	140 J	27 J	10	6.5	6.2	3.7 J	74	45
1,2,3,4,6,7,8-HpCDF	pg/g	150	140	380	530	2,800 J	690	250	150	120	90	1,500	1,200
1,2,3,4,7,8,9-HpCDF	pg/g	25	23	55	96	480 J	120 J	*< 49 UQ*	*< 28 UQ*	20	18	450	440
OCDF	pg/g	3,100	1,500	3,800	7,100 J	28,000 J	7,100 J	1,900	1,100	1,200	600	9,000	7,200 J
Calculated TEQ (ND=0), Mammalian	pg/g	8.7	7.4	19	28	150	38	12	8.3	7.0	4.8	120	90
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	8.7	7.5	19	29	150	38	13	8.5	7.0	5.0	120	91
Calculated TEQ (ND=0), Avian	pg/g	160	170	310	630	710	310	150	100	62	81	1,300	680
Calculated TEQ (ND=1/2 DL), Avian	pg/g	160	170	310	630	720	310	150	100	62	82	1,300	680
02-PCBs													
PCB-81	pg/g	*< 0.61 U*	*< 0.45 U*	*< 0.39 U*	*< 1.5 UQ*	*< 3.9 UJQ*	3.0 J	*< 0.75 UQ*	*< 0.38 U*	*< 0.45 U*	*< 0.44 U*	*< 2.8 UQ*	4.1
PCB-77	pg/g	6.7	6.4	13	18	99 J	150	11	8.9	11	*< 7 UQ*	22	19
PCB-105	pg/g	18	16	28	38	380	310	39	13	20	12	41	33
PCB-114	pg/g	*< 0.60 U*	*< 0.54 U*	1.1 J	2.7	*< 12 UJ*	*< 6.6 UJQ*	2.1 J	*< 0.46 U*	*< 0.9 UQ*	*< 0.47 U*	7.5	8.3
PCB-118	pg/g	24	20	40	55	400	420	65	15	35	12	58	46
PCB-123	pg/g	0.60 J	0.60 J	*< 0.97 UQ*	*< 2.2 UQ*	*< 19 UQ*	9.0 J	2.3 J	0.48 J	*< 0.71 U*	*< 0.45 U*	6.1	5.2
PCB-126	pg/g	1.8 J	1.8 J	4.1	6.5	*< 35 UQ*	38	3.3	3.3	2.3	3.0	13	12
PCB-156 & 157	pg/g	6.4	7.1	14	25	240	150	18	11	11	8.5	48	42
PCB-167	pg/g	2.8	2.9	6.2	13	120	58	8.0	5.5	4.9	4.1	34	30
PCB-169	pg/g	*< 0.50 U*	*< 0.45 U*	1.8 J	2.9	16	2.1 J	0.86 J	0.81 J	*< 0.33 U*	*< 0.39 U*	8.2	*< 5.2 UQ*
PCB-189	pg/g	*< 0.77 U*	1.7 J	4.6	16	76	13 J	4.1	*< 2.5 UQ*	1.8 J	1.5 J	49	42
Monochlorobiphenyls, Total	pg/g	3.8 J	3.0 J	5.1 J	11 J	26 J	7.8 J	8.7 J	2.5 J	7.9 J	2.1 J	7.5 J	5.4 J
Dichlorobiphenyls, Total	pg/g	39 J	16 J	21 J	35 J	120 J	32 J	17 J	12 J	150 J	14 J	89 J	49 J
Trichlorobiphenyls, Total	pg/g	60 J	23 J	25 J	50 J	180 J	43 J	24 J	8.2 J	240	5.1 J	110 J	54 J
Tetrachlorobiphenyls, Total	pg/g	94 J	39 J	52 J	110 J	500 J	420 J	130 J	20 J	360	16 J	230	150 J
Pentachlorobiphenyls, Total	pg/g	120 J	98 J	180 J	320	2,800 J	2,100 J	420	78 J	230	63 J	570	510
Hexachlorobiphenyls, Total	pg/g	140 J	130 J	240	480	7,200 J	2,700 J	430	200 J	270	180 J	940	810
Heptachlorobiphenyls, Total	pg/g	120 J	120 J	280	600	6,400	940 J	350	190 J	170 J	130 J	1,300	1,300
Octachlorobiphenyls, Total	pg/g	260	290	770	1,300	5,400	1,300 J	400	390	260	240	2,400	2,300
Nonachlorobiphenyls, Total	pg/g	860	1,000	2,600	3,800	14,000	3,800 J+	990	1,100	720	630	5,600	5,100
Decachlorobiphenyl (PCB-209)	pg/g	7,700 J	8,000 J	20,000 J	36,000 J	100,000 J	24,000 J	7,100 J	6,700 J	4,000 J	3,300 J	41,000 J	42,000 J
Total PCBs	pg/g	9,400	9,800	24,000	43,000	140,000	36,000	9,900	8,700	6,400	4,600	53,000	52,000
03- Metals													
Total Aluminum	mg/kg	5,600	4,800	6,300	7,500	5,800	7,000	3,200	12,000	14,000	13,000	9,000	5,000
Total Antimony	mg/kg	*< 0.19 UJ*	*< 0.21 UJ*	0.84 J-	8.7 J-	*< 0.34 UJ*	*< 0.3 UJ*	*< 0.28 UJ*	*< 0.31 UJ*	*< 0.2 UJ*	*< 0.33 UJ*	*< 0.31 UJ*	*< 0.3 UJ*
Total Arsenic	mg/kg	3.8	3.7	3.8	5.3	4.0	5.4	2.7	5.3	4.9	5.2	7.2	5.4
Total Barium	mg/kg	75	75	150	300	120	190	56	270	230	290	160	150
Total Beryllium	mg/kg	0.22	0.21	0.29	0.50	0.26	0.36	0.33	0.55	0.57	0.58	0.36	0.26
Total Cadmium	mg/kg	*< 0.097 U*	0.11 J	0.19 J	0.23	0.28	0.28	*< 0.13 U*	0.39	0.44	0.47	0.19 J	0.16 J
Total Calcium	mg/kg	46,000	79,000	79,000	91,000	120,000	140,000	310,000	96,000	81,000	120,000	85,000	190,000
Total Chromium	mg/kg	5.6	4.8	6.8	10	9.0	8.9	5.1	12	14	13	9.8	6.2
Total Cobalt	mg/kg	1.6	1.6	2.0	2.7	2.0	2.4	0.66	3.8	4.1	4.1	2.8	1.9
Total Copper	mg/kg	6.5	6.2	11	16	13	12	6.2	14	14	14	20	7.0
Total Iron	mg/kg	5,200	5,300	7,500	9,000	8,300	9,000	1,900	12,000	14,000	14,000	11,000	9,400
Total Lead	mg/kg	4.6 J	4.7 J	6.5	11	7.6	9.4	7.8	13	13	14	11	9.1
Total Magnesium	mg/kg	9,600	11,000 J	13,000 J	20,000 J	14,000 J	20,000 J	4,900 J	20,000 J	22,000	24,000 J	28,000	26,000 J
Total Manganese	mg/kg	100	110	160	240	170	240	35	370	430	420	210	150
Total Mercury	mg/kg	*< 0.0088 U*	0.011 J-	0.015 J-	0.018 J-	0.056 J-	0.067 J-	0.11 J-	0.022 J-	0.022 J	0.024 J-	0.010 J	0.020 J-
Total Molybdenum	mg/kg	*< 0.33 U*	*< 0.35 U*	*< 0.39 U*	1.1	1.4	0.53	*< 0.21 U*	0.73	0.73 J	0.65	1.6	1.1
Total Nickel	mg/kg	3.8	4.1	5.1	10	6.9	7.1	4.4	9.2	10	9.9	9.6	5.4
Total Potassium	mg/kg	1,900	2,000	2,700	3,300	2,500	3,300	990	5,700	5,800	6,100	7,300	6,700
Total Selenium	mg/kg	*< 0.19 U*	*< 0.21 U*	*< 0.21 U*	0.26 J	*< 0.23 U*	*< 0.21 U*	0.29 J	*< 0.23 U*	0.25 J-	*< 0.23 U*	*< 0.20 U*	*< 0.22 U*
Total Silver	mg/kg	*< 0.058 U*	*< 0.063 U*	*< 0.063 U*	*< 0.067 U*	*< 0.068 U*	*< 0.064 U*	*< 0.079 U*	*< 0.068 U*	*< 0.058 U*	*< 0.068 U*	*< 0.060 U*	*< 0.067 U*
Total Sodium	mg/kg	570	700	720	1,700	970	1,100	5,100	1,200	670	1,000	2,900	3,800
Total Thallium	mg/kg	*< 0.097 U*	*< 0.10 U*	*< 0.10 U*	*< 0.11 U*	*< 0.11 U*	*< 0.11 U*	*< 0.13 U*	*< 0.11 U*	*< 0.11 U*	*< 0.11 U*	*< 0.10 U*	*< 0.11 U*

Table I-6
Analytical Results for Solids Samples - PRI-12
US Magnesium Ancillary Worker Exposure Area
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12
	Location ID	PRI12-010	PRI12-011	PRI12-011	PRI12-012	PRI12-013	PRI12-013	PRI12-014
	Sample Date	10-Dec-13	11-Dec-13	11-Dec-13	12-Dec-13	12-Dec-13	12-Dec-13	12-Dec-13
	Sample Type	N	FINE	N	N	FINE	N	N
	Depth	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in
	Sample ID	PRI12-010-SS01-121013	PRI12-011-SS01-121113 FINES	PRI12-011-SS01-121113	PRI12-012-SS01-121213	PRI12-013-SS01-121213 FINES	PRI12-013-SS01-121213	PRI12-014-SS01-121213
Analyte	**Unit**							
01-Dioxins and Furans								
2,3,7,8-TCDD	pg/g	*< 0.17 U*	*< 0.045 U*	*< 0.13 UQ*	*< 0.035 U*	*< 0.052 U*	*< 0.066 U*	*< 0.026 U*
1,2,3,7,8-PeCDD	pg/g	*< 0.23 U*	0.65 J	0.68 J	*< 0.064 U*	0.30 J	0.26 J	*< 0.046 U*
1,2,3,4,7,8-HxCDD	pg/g	*< 0.2 UQ*	*< 0.54 UQ*	0.42 J	*< 0.12 UQ*	*< 0.3 UQ*	*< 0.13 UQ*	*< 0.051 U*
1,2,3,6,7,8-HxCDD	pg/g	1.2 J	4.6 J	4.9 J	0.31 J	0.91 J	0.49 J	*< 0.12 UQ*
1,2,3,7,8,9-HxCDD	pg/g	1.8 J	8.8	8.0	*< 0.26 UQ*	1.3 J	0.53 J	0.14 J
1,2,3,4,6,7,8-HpCDD	pg/g	5.9 J	22	23	2.4 J	5.0 J	*< 2.3 UQ*	*< 0.79 UQ*
OCDD	pg/g	56	45	38	16	20	12	3.4 J
2,3,7,8-TCDF	pg/g	1.4 J	1.4	1.1	1.0 J	2.0	1.1	0.52 J
1,2,3,7,8-PeCDF	pg/g	4.5 J	3.8 J	4.5 J	1.7 J	5.3	*< 2.6 UQ*	0.65 J
2,3,4,7,8-PeCDF	pg/g	3.1 J	2.5 J	2.9 J	0.92 J	3.1 J	1.7 J	0.32 J
1,2,3,4,7,8-HxCDF	pg/g	14	18	17	5.9	19	9.7	2.3 J
1,2,3,6,7,8-HxCDF	pg/g	11	8.6	10	4.9 J	15	7.6	1.5 J
1,2,3,7,8,9-HxCDF	pg/g	1.4 J	1.1 J	1.0 J	*< 0.18 UQ*	1.4 J	0.69 J	*< 0.059 U*
2,3,4,6,7,8-HxCDF	pg/g	2.5 J	2.8 J	*< 2.5 UQ*	2.2 J	6.1	*< 3.3 UQ*	0.63 J
1,2,3,4,6,7,8-HpCDF	pg/g	81	67	67	40	150	58	13
1,2,3,4,7,8,9-HpCDF	pg/g	28	28	25	6.7	28	11	2.7 J
OCDF	pg/g	400	400	450	260	800	400	87
Calculated TEQ (ND=0), Mammalian	pg/g	5.8	7.3	7.2	2.4	8.2	3.7	0.81
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	6.0	7.5	7.4	2.5	8.3	4.0	0.88
Calculated TEQ (ND=0), Avian	pg/g	9.4	10	9.9	76	110	160	150
Calculated TEQ (ND=1/2 DL), Avian	pg/g	26	22	23	76	110	160	150
02-PCBs								
PCB-81	pg/g	*< 0.57 U*	*< 0.63 U*	*< 0.35 U*	*< 0.34 U*	0.65 J	*< 0.57 UQ*	*< 0.29 U*
PCB-77	pg/g	2.0 J	2.0	1.5 J	1.6 J	6.5	4.6	1.1 J
PCB-105	pg/g	7.8	16	*< 5.2 UQ*	2.4	25	6.1	1.8 J
PCB-114	pg/g	*< 1.2 UQ*	1.5 J	0.88 J	*< 0.30 U*	1.8 J	*< 0.44 U*	*< 0.21 U*
PCB-118	pg/g	11	33	8.1	4.2	55	11	*< 3.1 UQ*
PCB-123	pg/g	*< 1.1 UQ*	*< 0.89 U*	*< 0.62 UQ*	*< 0.29 U*	*< 1.3 U*	0.89 J	*< 0.21 U*
PCB-126	pg/g	1.3 J	*< 1.0 U*	*< 0.47 U*	0.54 J	1.9 J	1.3 J	*< 0.25 U*
PCB-156 & 157	pg/g	4.4 J	4.8	3.0 J	1.5 J	8.0	3.6 J	*< 0.61 UQ*
PCB-167	pg/g	2.8 J	2.6	2.2 J	0.89 J	3.9	2.0 J	*< 0.31 UQ*
PCB-169	pg/g	*< 0.63 U*	*< 0.36 U*	*< 0.44 U*	*< 0.26 U*	*< 0.33 U*	*< 0.25 U*	*< 0.18 U*
PCB-189	pg/g	3.5	*< 2.7 UQ*	*< 2.2 UQ*	*< 0.66 UQ*	2.3	*< 1.4 UQ*	*< 0.27 U*
Monochlorobiphenyls, Total	pg/g	1.4 J	72 J	2.3 J	3.3 J	56 J	5.4 J	2.5 J
Dichlorobiphenyls, Total	pg/g	24 J	210	21 J	23 J	230	37 J	28 J
Trichlorobiphenyls, Total	pg/g	15 J	120 J	16 J	6.0 J	160 J	15 J	9.5 J
Tetrachlorobiphenyls, Total	pg/g	37 J	160 J	33 J	6.7 J	270	20 J	9.8 J
Pentachlorobiphenyls, Total	pg/g	65 J	290	47 J	23 J	500	65 J	22 J
Hexachlorobiphenyls, Total	pg/g	69 J	130 J	43 J	31 J	270	90 J	21 J
Heptachlorobiphenyls, Total	pg/g	110 J	69 J	61 J	53 J	190 J	120 J	21 J
Octachlorobiphenyls, Total	pg/g	190 J	110 J	100 J	130 J	320	210 J	33 J
Nonachlorobiphenyls, Total	pg/g	470	240	240	340	840	520	83 J
Decachlorobiphenyl (PCB-209)	pg/g	3,400 J	1,600	1,600	1,600	4,700 J	2,800 J	520
Total PCBs	pg/g	4,400	3,000	2,100	2,200	7,600	3,900	750
03- Metals								
Total Aluminum	mg/kg	840	4,400	3,700	8,400	11,000	8,900	5,200
Total Antimony	mg/kg	*< 0.29 UJ*	*< 0.32 UJ*	*< 0.28 UJ*	*< 0.22 UJ*	*< 0.27 UJ*	*< 0.29 UJ*	*< 0.21 UJ*
Total Arsenic	mg/kg	4.9	5.6	5.8	4.3	5.8	5.9	4.7
Total Barium	mg/kg	31	74	96	170	170	220	220
Total Beryllium	mg/kg	0.034 J	0.17 J	0.16 J	0.41	0.47	0.41	0.20 J
Total Cadmium	mg/kg	*< 0.15 U*	*< 0.10 U*	*< 0.11 U*	0.26	0.29	0.23	0.12 J
Total Calcium	mg/kg	34,000	47,000	76,000	66,000	79,000	160,000	160,000
Total Chromium	mg/kg	1.1	5.0	3.9	9.1	12	9.8	5.5
Total Cobalt	mg/kg	0.31	1.5	1.3	2.9	3.7	3.1	1.9
Total Copper	mg/kg	0.94	7.9	3.4	9.8	15	12	5.1
Total Iron	mg/kg	1,000	5,200	4,000	8,800	13,000	8,100	5,200
Total Lead	mg/kg	1.3 J	3.4 J	3.8 J	9.1	14	13	6.0 J
Total Magnesium	mg/kg	110,000 J	26,000	23,000 J-	16,000 J-	24,000	17,000 J-	12,000 J-
Total Manganese	mg/kg	21	98	92	250	290	250	130
Total Mercury	mg/kg	*< 0.012 UJ*	*< 0.0081 U*	*< 0.010 U*	0.012 J	0.020 J	0.020 J	*< 0.0091 U*
Total Molybdenum	mg/kg	*< 0.55 U*	1.4 J	1.3	*< 0.35 U*	0.62 J	0.50	*< 0.18 U*
Total Nickel	mg/kg	0.87	3.5	3.1	7.0	9.2	7.6	4.3
Total Potassium	mg/kg	44,000	49,000 J+	72,000	3,800	5,200 J+	3,300	2,300
Total Selenium	mg/kg	*< 0.29 U*	*< 0.20 UJ*	*< 0.22 UJ*	*< 0.22 UJ*	0.23 J-	*< 0.23 UJ*	*< 0.21 UJ*
Total Silver	mg/kg	*< 0.087 U*	*< 0.061 U*	*< 0.067 U*	*< 0.067 U*	*< 0.063 U*	*< 0.069 U*	*< 0.063 U*
Total Sodium	mg/kg	32,000	12,000 J+	15,000	1,400	800 J+	1,500	2,600
Total Thallium	mg/kg	*< 0.15 U*	*< 0.10 U*	*< 0.11 U*	*< 0.11 U*	*< 0.10 U*	*< 0.11 U*	*< 0.11 U*

Table I-6
Analytical Results for Solids Samples - PRI-12
US Magnesium Ancillary Worker Exposure Area
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12
	Location ID	PRI12-001	PRI12-001	PRI12-002	PRI12-003	PRI12-004	PRI12-005	PRI12-006	PRI12-007	PRI12-008	PRI12-008	PRI12-009	PRI12-009
	Sample Date	10-Dec-13	10-Dec-13	10-Dec-13	10-Dec-13	10-Dec-13	10-Dec-13	10-Dec-13	10-Dec-13	10-Dec-13	10-Dec-13	10-Dec-13	10-Dec-13
	Sample Type	FINE	N	N	N	N	N	N	N	FINE	N	FINE	N
	Depth	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in
	Sample ID	PRI12-001-SS01-121013 FINES	PRI12-001-SS01-121013	PRI12-002-SS01-121013	PRI12-003-SS01-121013	PRI12-004-SS01-121013	PRI12-005-SS01-121013	PRI12-006-SS01-121013	PRI12-007-SS01-121013	PRI12-008-SS01-121013 FINES	PRI12-008-SS01-121013	PRI12-009-SS01-121013 FINES	PRI12-009-SS01-121013
Analyte	**Unit**												
Total Vanadium	mg/kg	11	9.3	12	15	12	14	7.5	20	22	22	21	14
Total Zinc	mg/kg	28 J-	18 J-	31 J-	75 J-	56 J-	38 J-	12 J-	52 J-	52 J-	54 J-	41 J-	25 J-
05-SVOCs													
1,1'-Biphenyl	µg/kg	< 160 U	< 170 UJ	< 180 UJ	< 190 UJ	< 180 UJ	< 180 UJ	< 220 UJ	< 190 UJ	< 170 U	< 190 UJ	< 170 U	< 180 UJ
1,2,4,5-Tetrachlorobenzene	µg/kg	< 25 U	< 27 UJ	< 29 UJ	< 29 UJ	< 28 UJ	< 28 UJ	< 34 UJ	< 29 UJ	< 27 U	< 29 UJ	< 26 U	< 29 UJ
2,3,4,6-Tetrachlorophenol	µg/kg	< 80 U	< 86 UJ	< 90 UJ	< 92 UJ	< 88 UJ	< 88 UJ	< 110 UJ	< 92 UJ	< 84 U	< 93 UJ	< 83 U	< 91 UJ
2,4,5-Trichlorophenol	µg/kg	< 81 U	< 87 UJ	< 91 UJ	< 93 UJ	< 89 UJ	< 89 UJ	< 110 UJ	< 93 UJ	< 85 U	< 94 UJ	< 84 U	< 92 UJ
2,4,6-Trichlorophenol	µg/kg	< 82 U	< 88 UJ	< 92 UJ	< 94 UJ	< 90 UJ	< 91 UJ	< 110 UJ	< 94 UJ	< 86 U	< 95 UJ	< 85 U	< 93 UJ
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	< 4.3 UJ	< 4.6 UJ	< 4.8 UJ	< 4.9 UJ	< 4.7 UJ	< 4.7 UJ	< 5.7 UJ	< 4.9 UJ	< 4.5 U	< 5.0 UJ	< 4.5 U	< 4.9 UJ
2,2-Oxybis(1-chloropropane)	µg/kg	< 77 U	< 83 UJ	< 87 UJ	< 89 UJ	< 85 UJ	< 85 UJ	< 100 UJ	< 89 UJ	< 81 U	< 89 UJ	< 80 UJ	< 88 UJ
2,4-Dichlorophenol	µg/kg	< 87 U	< 94 UJ	< 98 UJ	< 100 UJ	< 95 UJ	< 96 UJ	< 120 UJ	< 100 UJ	< 91 U	< 100 UJ	< 91 U	< 99 UJ
2,4-Dimethylphenol	µg/kg	< 160 U	< 180 UJ	< 180 UJ	< 190 UJ	< 180 UJ	< 180 UJ	< 220 UJ	< 190 UJ	< 170 U	< 190 UJ	< 170 U	< 190 UJ
2,4-Dinitrophenol	µg/kg	< 210 U	260 J-	< 240 UJ	< 240 UJ	< 230 UJ	250 J-	< 280 UJ	< 240 UJ	< 220 UJ	< 240 UJ	< 220 U	< 240 UJ
2,4-Dinitrotoluene	µg/kg	< 87 U	< 94 UJ	< 98 UJ	< 100 UJ	< 95 UJ	< 96 UJ	< 120 UJ	< 100 UJ	< 91 U	< 100 UJ	< 91 U	< 99 UJ
2,6-Dinitrotoluene	µg/kg	< 97 U	< 100 UJ	< 110 UJ	< 110 UJ	< 110 UJ	< 110 UJ	< 130 UJ	< 110 UJ	< 100 U	< 110 UJ	< 100 U	< 110 UJ
2-Chloronaphthalene	µg/kg	< 79 U	< 85 UJ	< 89 UJ	< 91 UJ	< 87 UJ	< 87 UJ	< 110 UJ	< 91 UJ	< 83 U	< 92 UJ	< 82 U	< 90 UJ
2-Chlorophenol	µg/kg	< 86 U	< 93 UJ	< 97 UJ	< 99 UJ	< 94 UJ	< 95 UJ	< 110 UJ	< 99 UJ	< 90 U	< 99 UJ	< 90 U	< 98 UJ
2-Methylphenol	µg/kg	< 57 U	< 61 UJ	< 64 UJ	< 65 UJ	< 62 UJ	< 62 UJ	< 76 UJ	< 65 UJ	< 59 U	< 66 UJ	< 59 U	< 64 UJ
2-Nitroaniline	µg/kg	< 82 U	< 88 UJ	< 92 UJ	< 94 UJ	< 90 UJ	< 91 UJ	< 110 UJ	< 94 UJ	< 86 U	< 95 UJ	< 85 U	< 93 UJ
2-Nitrophenol	µg/kg	< 80 U	< 86 UJ	< 90 UJ	< 92 UJ	< 88 UJ	< 88 UJ	< 110 UJ	< 92 UJ	< 84 U	< 93 UJ	< 83 U	< 91 UJ
3,3'-Dichlorobenzidine	µg/kg	< 92 UJ	< 99 UJ	< 100 UJ	< 110 UJ	< 100 UJ	< 100 UJ	< 120 UJ	< 110 UJ	< 96 U	< 110 UJ	< 96 U	< 100 UJ
3-Nitroaniline	µg/kg	< 160 UJ	< 180 UJ	< 180 UJ	< 190 UJ	< 180 UJ	< 180 UJ	< 220 UJ	< 190 UJ	< 170 UJ	< 190 UJ	< 170 U	< 190 UJ
4,6-Dinitro-2-methylphenol	µg/kg	< 79 U	< 85 UJ	< 89 UJ	< 91 UJ	< 87 UJ	< 87 UJ	< 110 UJ	< 91 UJ	< 83 UJ	< 92 UJ	< 82 U	< 90 UJ
4-Bromophenyl-phenylether	µg/kg	< 83 U	< 90 UJ	< 93 UJ	< 95 UJ	< 91 UJ	< 92 UJ	< 110 UJ	< 95 UJ	< 87 U	< 96 UJ	< 87 U	< 94 UJ
4-Chloro-3-methylphenol	µg/kg	< 90 U	< 97 UJ	< 100 UJ	< 100 UJ	< 98 UJ	< 99 UJ	< 120 UJ	< 100 UJ	< 94 U	< 100 UJ	< 94 U	< 100 UJ
4-Chloroaniline	µg/kg	< 57 UJ	< 61 UJ	< 64 UJ	< 65 UJ	< 62 UJ	< 62 UJ	< 76 UJ	< 65 UJ	< 59 UJ	< 66 UJ	< 59 UJ	< 64 UJ
4-Chlorophenyl-phenylether	µg/kg	< 91 U	< 98 UJ	< 100 UJ	< 100 UJ	< 99 UJ	< 100 UJ	< 120 UJ	< 100 UJ	< 95 U	< 110 UJ	< 95 U	< 100 UJ
3 & 4 Methylphenol	µg/kg	< 320 U	< 350 UJ	< 360 UJ	< 370 UJ	< 350 UJ	< 360 UJ	< 430 UJ	< 370 UJ	< 340 U	< 370 UJ	< 340 U	< 370 UJ
4-Nitroaniline	µg/kg	< 86 U	< 93 UJ	< 97 UJ	< 99 UJ	< 94 UJ	< 95 UJ	< 110 UJ	< 99 UJ	< 90 U	< 99 UJ	< 90 U	< 98 UJ
4-Nitrophenol	µg/kg	< 270 U	< 290 UJ	< 310 UJ	< 310 UJ	< 300 UJ	< 300 UJ	< 370 UJ	< 310 UJ	< 290 U	< 320 UJ	< 280 U	< 310 UJ
Acetophenone	µg/kg	140 J	< 31 UJ	< 27 UJ	< 28 UJ	< 27 UJ	< 27 UJ	< 33 UJ	< 28 UJ	< 38 U	< 28 UJ	65 J	< 28 UJ
Benzaldehyde	µg/kg	< 160 U	< 170 UJ	< 180 UJ	< 190 UJ	< 180 UJ	< 180 UJ	< 220 UJ	< 190 UJ	< 170 U	< 190 UJ	< 170 U	< 180 UJ
Benzylbutylphthalate	µg/kg	< 93 U	< 100 UJ	< 100 UJ	< 110 UJ	< 100 UJ	< 100 UJ	< 120 UJ	< 110 UJ	< 97 U	< 110 UJ	< 97 U	< 110 UJ
Bis(2-chloroethoxy)methane	µg/kg	< 86 U	< 93 UJ	< 97 UJ	< 99 UJ	< 94 UJ	< 95 UJ	< 110 UJ	< 99 UJ	< 90 U	< 99 UJ	< 90 U	< 98 UJ
bis(2-Chloroethyl) ether	µg/kg	< 79 U	< 85 UJ	< 89 UJ	< 91 UJ	< 87 UJ	< 87 UJ	< 110 UJ	< 91 UJ	< 83 U	< 92 UJ	< 82 U	< 90 UJ
Bis(2-ethylhexyl)phthalate	µg/kg	< 96 U	< 100 UJ	< 110 UJ	< 110 UJ	< 100 UJ	< 110 UJ	< 130 UJ	< 110 UJ	160 J	< 110 UJ	< 100 U	< 110 UJ
Carbazole	µg/kg	< 93 U	< 100 UJ	< 100 UJ	< 110 UJ	< 100 UJ	< 100 UJ	< 120 UJ	< 110 UJ	< 97 U	< 110 UJ	< 97 U	< 110 UJ
Dibenzofuran	µg/kg	< 84 U	< 91 UJ	< 94 UJ	< 97 UJ	< 92 UJ	< 93 UJ	< 110 UJ	< 97 UJ	< 88 U	< 97 UJ	< 88 U	< 95 UJ
Diethyl phthalate	µg/kg	< 88 U	< 95 UJ	< 99 UJ	< 100 UJ	< 96 UJ	< 97 UJ	< 120 UJ	< 100 UJ	< 92 U	< 100 UJ	< 92 U	< 100 UJ
Dimethylphthalate	µg/kg	< 85 U	< 92 UJ	< 96 UJ	< 98 UJ	< 93 UJ	< 94 UJ	< 110 UJ	< 98 UJ	< 89 U	< 98 UJ	< 89 U	< 96 UJ
Di-n-butylphthalate	µg/kg	< 95 U	< 100 UJ	< 110 UJ	< 110 UJ	< 100 UJ	< 100 UJ	< 130 UJ	< 110 UJ	120 J	< 110 UJ	< 99 U	< 110 UJ
Di-n-octylphthalate	µg/kg	< 95 U	< 100 UJ	< 110 UJ	< 110 UJ	< 100 UJ	< 100 UJ	< 130 UJ	< 110 UJ	< 99 U	< 110 UJ	< 99 U	< 110 UJ
Hexachlorobenzene	µg/kg	< 87 U	< 94 UJ	< 98 UJ	< 100 UJ	< 95 UJ	< 96 UJ	< 120 UJ	< 100 UJ	< 91 U	< 100 UJ	110 J	< 99 UJ
Hexachlorobenzene (SIM Screen)	µg/kg	15 J	16 J-	28 J-	59 J-	48 J-	25 J-	13 J-	9.0 J-	5.2 J	7.4 J-	110 J	54 J-
Hexachlorobutadiene	µg/kg	< 80 U	< 86 UJ	< 90 UJ	< 92 UJ	< 88 UJ	< 88 UJ	< 110 UJ	< 92 UJ	< 84 U	< 93 UJ	< 83 U	< 91 UJ
Hexachlorobutadiene (SIM Screen)	µg/kg	< 3.6 UJ	< 3.9 UJ	< 4.1 UJ	< 4.2 UJ	< 4.0 UJ	< 4.0 UJ	< 4.8 UJ	< 4.2 UJ	< 3.8 U	< 4.2 UJ	< 3.8 U	< 4.1 UJ
Hexachlorocyclopentadiene	µg/kg	< 61 U	< 65 UJ	< 68 UJ	< 70 UJ	< 66 UJ	< 67 UJ	< 81 UJ	< 70 UJ	< 64 U	< 70 UJ	< 63 U	< 69 UJ
Hexachloroethane	µg/kg	< 79 U	< 85 UJ	< 89 UJ	< 91 UJ	< 87 UJ	< 87 UJ	< 110 UJ	< 91 UJ	< 83 U	< 92 UJ	< 82 U	< 90 UJ
Isophorone	µg/kg	< 91 U	< 98 UJ	< 100 UJ	< 100 UJ	< 99 UJ	< 100 UJ	< 120 UJ	< 100 UJ	< 95 U	< 110 UJ	< 95 U	< 100 UJ
Nitrobenzene	µg/kg	< 74 U	< 80 UJ	< 83 UJ	< 85 UJ	< 81 UJ	< 82 UJ	< 99 UJ	< 85 UJ	< 78 U	< 86 UJ	< 77 U	< 84 UJ
N-Nitrosodimethylamine	µg/kg	< 94 U	< 100 UJ	< 110 UJ	< 110 UJ	< 100 UJ	< 100 UJ	< 130 UJ	< 110 UJ	< 98 U	< 110 UJ	< 98 U	< 110 UJ
n-Nitrosodimethylamine (SIM Screen)	µg/kg	< 94 UJ	< 100 UJ	< 110 UJ	< 110 UJ	< 100 UJ	< 100 UJ	< 130 UJ	< 110 UJ	< 98 U	< 110 UJ	< 98 U	< 110 UJ
N-Nitroso-di-n-propylamine	µg/kg	< 82 U	< 88 UJ	< 92 UJ	< 94 UJ	< 90 UJ	< 91 UJ	< 110 UJ	< 94 UJ	< 86 U	< 95 UJ	< 85 U	< 93 UJ
N-Nitrosodiphenylamine	µg/kg	< 84 U	< 91 UJ	< 94 UJ	< 97 UJ	< 92 UJ	< 93 UJ	< 110 UJ	< 97 UJ	< 88 U	< 97 UJ	< 88 U	< 95 UJ
Pentachlorophenol	µg/kg	< 50 U	< 54 UJ	< 56 UJ	< 57 UJ	< 55 UJ	< 55 UJ	< 67 UJ	< 57 UJ	< 52 UJ	< 58 UJ	< 52 U	< 57 UJ
Pentachlorophenol (SIM Screen)	µg/kg	< 23 U	67 J-	< 26 UJ	< 27 UJ	< 26 UJ	34 J-	< 31 UJ	< 27 UJ	< 25 UJ	< 27 UJ	< 24 U	< 27 UJ
Phenol	µg/kg	< 81 U	< 87 UJ	< 91 UJ	< 93 UJ	< 89 UJ	< 89 UJ	< 110 UJ	< 93 UJ	< 85 U	< 94 UJ	< 84 U	< 92 UJ
06-PAHs by SIM													
2-Methylnaphthalene	µg/kg	1.4 J	0.91 J	1.0 J	3.7 J	1.2 J	0.66 J	1.3 J	< 0.44 U	4.1 J	< 0.50 U	1.2 J	< 0.49 U
Acenaphthene	µg/kg	< 0.47 U	< 0.47 U	< 0.51 U	< 0.50 U	< 0.48 U	< 0.50 U	< 0.66 U	< 0.48 U	< 0.45 U	< 0.55 U	< 0.47 U	< 0.53 U
Acenaphthylene	µg/kg	< 0.33 U	< 0.33 U	< 0.36 U	< 0.35 U	< 0.33 U	< 0.35 U	< 0.46 U	< 0.34 U	< 0.31 U	< 0.39 U	< 0.33 U	< 0.37 U
Anthracene	µg/kg	< 0.39 U	< 0.39 U	< 0.43 U	0.52 J	< 0.40 U	< 0.42 U	< 0.55 U	< 0.40 U	< 0.38 U	< 0.46 U	0.41 J	< 0.45 U
Benzo(a)anthracene	µg/kg	1.1 J	1.1 J	3.4 J	3.5 J	2.2 J	1.1 J	1.7 J	0.73 J	0.54 J	0.43 J	0.81 J	0.45 J
Benzo(a)pyrene	µg/kg	0.96 J	0.86 J	3.2 J	3.5 J	2.1 J	0.92 J	1.5 J	0.57 J	0.44 J	< 0.47 U	1.7 J	0.73 J
Benzo(b)fluoranthene	µg/kg	1.5 J	0.92 J	3.5 J	4.9 J	2.8 J	0.82 J	1.6 J	0.57 J	0.62 J	< 0.59 U	1.1 J	< 0.57 U
Benzo(g,h,i)perylene	µg/kg	< 0.99 U	< 1.0 U	3.5 J	4.8 J	2.4 J	1.1 J	1.7 J	< 1.0 U	< 0.95 U	< 1.2 U	< 1.0 U	< 1.1 U
Benzo(k)fluoranthene	µg/kg	< 0.75 U	< 0.76 U	1.1 J	1.6 J	1.1 J	< 0.81 U	1.5 J	< 0.78 U	< 0.72 U	< 0.89 U	< 0.76 U	< 0.86 U
Chrysene	µg/kg	3.2 J	3.1 J	11	11	7.1	3.2 J	4.6 J	2.1 J	1.4 J	1.2 J	2.7 J	1.7 J

Table I-6
Analytical Results for Solids Samples - PRI-12
US Magnesium Ancillary Worker Exposure Area
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12
	Location ID	PRI12-010	PRI12-011	PRI12-011	PRI12-012	PRI12-013	PRI12-013	PRI12-014
	Sample Date	10-Dec-13	11-Dec-13	11-Dec-13	12-Dec-13	12-Dec-13	12-Dec-13	12-Dec-13
	Sample Type	N	FINE	N	N	FINE	N	N
	Depth	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in
	Sample ID	PRI12-010-SS01-121013	PRI12-011-SS01-121113 FINES	PRI12-011-SS01-121113	PRI12-012-SS01-121213	PRI12-013-SS01-121213 FINES	PRI12-013-SS01-121213	PRI12-014-SS01-121213
Analyte	**Unit**							
Total Vanadium	mg/kg	2.1 J	9.2	7.9	15	19	17	11
Total Zinc	mg/kg	4.6 J-	18 J-	16 J-	47 J-	49 J-	62 J-	25 J-
05-SVOCs								
1,1'-Biphenyl	µg/kg	*< 240 UJ*	*< 170 U*	*< 190 U*	*< 180 U*	*< 170 U*	*< 180 U*	*< 180 U*
1,2,4,5-Tetrachlorobenzene	µg/kg	*< 38 UJ*	*< 27 U*	*< 30 U*	*< 29 U*	*< 26 U*	*< 29 U*	*< 28 U*
2,3,4,6-Tetrachlorophenol	µg/kg	*< 120 UJ*	*< 84 U*	*< 96 U*	*< 91 U*	*< 84 U*	*< 91 U*	*< 89 U*
2,4,5-Trichlorophenol	µg/kg	*< 120 UJ*	*< 85 U*	*< 97 U*	*< 93 U*	*< 85 U*	*< 92 U*	*< 91 U*
2,4,6-Trichlorophenol	µg/kg	*< 120 UJ*	*< 86 U*	*< 98 U*	*< 94 U*	*< 86 U*	*< 93 U*	*< 92 U*
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	*< 6.5 UJ*	*< 4.5 U*	*< 5.1 U*	*< 4.9 U*	*< 4.5 U*	*< 4.9 U*	*< 4.8 U*
2,2-Oxybis(1-chloropropane)	µg/kg	*< 120 UJ*	*< 81 UJ*	*< 92 U*	*< 88 U*	*< 80 U*	*< 88 U*	*< 86 U*
2,4-Dichlorophenol	µg/kg	*< 130 UJ*	*< 91 U*	*< 100 U*	*< 99 U*	*< 91 U*	*< 99 U*	*< 97 U*
2,4-Dimethylphenol	µg/kg	*< 250 UJ*	*< 170 U*	*< 190 U*	*< 190 UJ*	*< 170 U*	*< 190 UJ*	*< 180 UJ*
2,4-Dinitrophenol	µg/kg	*< 320 UJ*	*< 220 U*	*< 250 U*	*< 240 U*	*< 220 U*	*< 240 U*	*< 230 U*
2,4-Dinitrotoluene	µg/kg	*< 130 UJ*	*< 91 U*	*< 100 U*	*< 99 U*	*< 91 U*	*< 99 U*	*< 97 U*
2,6-Dinitrotoluene	µg/kg	*< 150 UJ*	*< 100 U*	*< 120 U*	*< 110 U*	*< 100 U*	*< 110 U*	*< 110 U*
2-Chloronaphthalene	µg/kg	*< 120 UJ*	*< 83 U*	*< 94 U*	*< 90 U*	*< 83 U*	*< 90 U*	*< 88 U*
2-Chlorophenol	µg/kg	*< 130 UJ*	*< 90 U*	*< 100 U*	*< 98 U*	*< 90 U*	*< 98 U*	*< 96 U*
2-Methylphenol	µg/kg	*< 86 UJ*	*< 60 U*	*< 68 U*	*< 65 U*	*< 59 U*	*< 64 U*	*< 63 U*
2-Nitroaniline	µg/kg	*< 120 UJ*	*< 86 U*	*< 98 U*	*< 94 U*	*< 86 U*	*< 93 U*	*< 92 U*
2-Nitrophenol	µg/kg	*< 120 UJ*	*< 84 U*	*< 96 U*	*< 91 U*	*< 84 U*	*< 91 U*	*< 89 U*
3,3'-Dichlorobenzidine	µg/kg	*< 140 UJ*	*< 96 U*	*< 110 U*	*< 100 U*	*< 96 UJ*	*< 100 U*	*< 100 U*
3-Nitroaniline	µg/kg	*< 250 UJ*	*< 170 U*	*< 190 UJ*	*< 190 U*	*< 170 UJ*	*< 190 U*	*< 180 U*
4,6-Dinitro-2-methylphenol	µg/kg	*< 120 UJ*	*< 83 U*	*< 94 U*	*< 90 U*	*< 83 U*	*< 90 U*	*< 88 U*
4-Bromophenyl-phenylether	µg/kg	*< 130 UJ*	*< 87 U*	*< 99 U*	*< 95 U*	*< 87 U*	*< 95 U*	*< 93 U*
4-Chloro-3-methylphenol	µg/kg	*< 140 UJ*	*< 94 U*	*< 110 U*	*< 100 U*	*< 94 U*	*< 100 U*	*< 100 U*
4-Chloroaniline	µg/kg	*< 86 UJ*	*< 60 UJ*	*< 68 UJ*	*< 65 UJ*	*< 59 UJ*	*< 64 UJ*	*< 63 UJ*
4-Chlorophenyl-phenylether	µg/kg	*< 140 UJ*	*< 95 U*	*< 110 U*	*< 100 U*	*< 95 U*	*< 100 U*	*< 100 U*
3 & 4 Methylphenol	µg/kg	*< 490 UJ*	*< 340 U*	*< 380 U*	*< 370 U*	*< 340 U*	*< 370 U*	*< 360 U*
4-Nitroaniline	µg/kg	*< 130 UJ*	*< 90 U*	*< 100 U*	*< 98 U*	*< 90 U*	*< 98 U*	*< 96 U*
4-Nitrophenol	µg/kg	*< 410 UJ*	*< 290 U*	*< 330 U*	*< 310 U*	*< 290 U*	*< 310 U*	*< 310 U*
Acetophenone	µg/kg	*< 37 UJ*	36 J	*< 29 U*	*< 28 U*	73 J	*< 28 U*	*< 27 U*
Benzaldehyde	µg/kg	*< 240 UJ*	*< 170 U*	*< 190 U*	*< 180 U*	*< 170 U*	*< 180 U*	*< 180 U*
Benzylbutylphthalate	µg/kg	*< 140 UJ*	*< 98 U*	*< 110 U*	*< 110 U*	*< 97 U*	*< 110 U*	*< 100 U*
Bis(2-chloroethoxy)methane	µg/kg	*< 130 UJ*	*< 90 U*	*< 100 U*	*< 98 U*	*< 90 U*	*< 98 U*	*< 96 U*
bis(2-Chloroethyl) ether	µg/kg	*< 120 UJ*	*< 83 U*	*< 94 U*	*< 90 U*	*< 83 U*	*< 90 U*	*< 88 U*
Bis(2-ethylhexyl)phthalate	µg/kg	*< 140 UJ*	*< 100 U*	*< 110 U*	*< 110 U*	*< 100 U*	*< 110 U*	*< 110 U*
Carbazole	µg/kg	*< 140 UJ*	*< 98 U*	*< 110 U*	*< 110 U*	*< 97 U*	*< 110 U*	*< 100 U*
Dibenzofuran	µg/kg	*< 130 UJ*	*< 88 U*	*< 100 U*	*< 96 U*	*< 88 U*	*< 96 U*	*< 94 U*
Diethyl phthalate	µg/kg	*< 130 UJ*	*< 92 U*	*< 100 U*	*< 100 U*	*< 92 U*	*< 100 U*	*< 98 U*
Dimethylphthalate	µg/kg	*< 130 UJ*	*< 89 U*	*< 100 U*	*< 97 U*	*< 89 U*	*< 97 U*	*< 95 U*
Di-n-butylphthalate	µg/kg	*< 140 UJ*	*< 100 U*	*< 110 U*	*< 110 U*	*< 99 U*	*< 110 U*	*< 110 U*
Di-n-octylphthalate	µg/kg	*< 140 UJ*	*< 100 U*	*< 110 U*	*< 110 U*	*< 99 U*	*< 110 U*	*< 110 U*
Hexachlorobenzene	µg/kg	*< 130 UJ*	*< 91 U*	*< 100 U*	*< 99 U*	*< 91 U*	*< 99 U*	*< 97 U*
Hexachlorobenzene (SIM Screen)	µg/kg	*< 3.2 UJ*	*< 2.3 UJ*	*< 2.6 U*	7.2 J	10 J	15 J	15 J
Hexachlorobutadiene	µg/kg	*< 120 UJ*	*< 84 U*	*< 96 U*	*< 91 U*	*< 84 U*	*< 91 U*	*< 89 U*
Hexachlorobutadiene (SIM Screen)	µg/kg	*< 5.5 UJ*	*< 3.8 U*	*< 4.3 U*	*< 4.1 U*	*< 3.8 U*	*< 4.1 U*	*< 4.0 U*
Hexachlorocyclopentadiene	µg/kg	*< 92 UJ*	*< 64 U*	*< 72 U*	*< 69 U*	*< 63 U*	*< 69 U*	*< 68 U*
Hexachloroethane	µg/kg	*< 120 UJ*	*< 83 U*	*< 94 U*	*< 90 U*	*< 83 U*	*< 90 U*	*< 88 U*
Isophorone	µg/kg	*< 140 UJ*	*< 95 U*	*< 110 U*	*< 100 U*	*< 95 U*	*< 100 U*	*< 100 U*
Nitrobenzene	µg/kg	*< 110 UJ*	*< 78 U*	*< 89 U*	*< 85 U*	*< 77 U*	*< 84 U*	*< 83 U*
N-Nitrosodimethylamine	µg/kg	*< 140 UJ*	*< 99 U*	*< 110 U*	*< 110 U*	*< 98 U*	*< 110 U*	*< 100 U*
n-Nitrosodimethylamine (SIM Screen)	µg/kg	*< 140 UJ*	*< 99 U*	*< 110 U*	*< 110 U*	*< 98 UJ*	*< 110 U*	*< 100 U*
N-Nitroso-di-n-propylamine	µg/kg	*< 120 UJ*	*< 86 U*	*< 98 U*	*< 94 U*	*< 86 U*	*< 93 U*	*< 92 U*
N-Nitrosodiphenylamine	µg/kg	*< 130 UJ*	*< 88 U*	*< 100 U*	*< 96 U*	*< 88 U*	*< 96 U*	*< 94 U*
Pentachlorophenol	µg/kg	*< 75 UJ*	*< 52 U*	*< 59 U*	*< 57 U*	*< 52 U*	*< 57 U*	*< 56 U*
Pentachlorophenol (SIM Screen)	µg/kg	*< 35 UJ*	*< 25 U*	*< 28 U*	*< 27 U*	*< 24 U*	*< 27 U*	*< 26 U*
Phenol	µg/kg	*< 120 UJ*	*< 85 U*	*< 97 U*	*< 93 U*	*< 85 U*	*< 92 U*	*< 91 U*
06-PAHs by SIM								
2-Methylnaphthalene	µg/kg	*< 0.59 U*	*< 0.45 U*	*< 0.47 U*	*< 0.48 U*	0.53 J	*< 0.47 U*	*< 0.46 U*
Acenaphthene	µg/kg	*< 0.64 U*	*< 0.49 U*	*< 0.51 U*	*< 0.52 U*	*< 0.47 U*	*< 0.51 U*	*< 0.50 U*
Acenaphthylene	µg/kg	*< 0.45 U*	*< 0.34 U*	*< 0.36 U*	*< 0.37 U*	*< 0.33 U*	*< 0.36 U*	*< 0.35 U*
Anthracene	µg/kg	*< 0.54 U*	0.86 J	1.8 J	*< 0.44 U*	*< 0.40 U*	*< 0.43 U*	*< 0.42 U*
Benzo(a)anthracene	µg/kg	*< 0.41 U*	*< 0.31 U*	*< 0.33 U*	*< 0.34 U*	0.40 J	*< 0.33 U*	*< 0.32 U*
Benzo(a)pyrene	µg/kg	*< 0.54 U*	*< 0.41 U*	*< 0.43 U*	*< 0.44 U*	*< 0.40 U*	*< 0.43 U*	*< 0.43 U*
Benzo(b)fluoranthene	µg/kg	*< 0.69 U*	*< 0.52 U*	*< 0.55 U*	*< 0.56 U*	0.90 J	*< 0.55 U*	*< 0.54 U*
Benzo(g,h,i)perylene	µg/kg	*< 1.4 U*	*< 1.0 U*	*< 1.1 U*	*< 1.1 U*	*< 1.0 U*	*< 1.1 U*	*< 1.1 U*
Benzo(k)fluoranthene	µg/kg	*< 1.0 U*	*< 0.79 U*	*< 0.83 U*	*< 0.84 U*	*< 0.77 U*	*< 0.83 U*	*< 0.81 U*
Chrysene	µg/kg	*< 0.47 U*	*< 0.36 U*	0.38 J	0.71 J	1.1 J	0.95 J	*< 0.37 U*

Table I-6
Analytical Results for Solids Samples - PRI-12
US Magnesium Ancillary Worker Exposure Area
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	**PRI-12**	**PRI-12**	**PRI-12**	**PRI-12**	**PRI-12**	**PRI-12**	**PRI-12**	**PRI-12**	**PRI-12**	**PRI-12**	**PRI-12**	**PRI-12**
	Location ID	**PRI12-001**	**PRI12-001**	**PRI12-002**	**PRI12-003**	**PRI12-004**	**PRI12-005**	**PRI12-006**	**PRI12-007**	**PRI12-008**	**PRI12-008**	**PRI12-009**	**PRI12-009**
	Sample Date	**10-Dec-13**	**10-Dec-13**	**10-Dec-13**	**10-Dec-13**	**10-Dec-13**	**10-Dec-13**	**10-Dec-13**	**10-Dec-13**	**10-Dec-13**	**10-Dec-13**	**10-Dec-13**	**10-Dec-13**
	Sample Type	**FINE**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**FINE**	**N**	**FINE**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**
	Sample ID	**PRI12-001-SS01-121013 FINES**	**PRI12-001-SS01-121013**	**PRI12-002-SS01-121013**	**PRI12-003-SS01-121013**	**PRI12-004-SS01-121013**	**PRI12-005-SS01-121013**	**PRI12-006-SS01-121013**	**PRI12-007-SS01-121013**	**PRI12-008-SS01-121013 FINES**	**PRI12-008-SS01-121013**	**PRI12-009-SS01-121013 FINES**	**PRI12-009-SS01-121013**
Analyte	**Unit**												
Dibenzo(a,h)anthracene	µg/kg	*< 1.2 U*	*< 1.2 U*	1.6 J	*< 1.3 U*	*< 1.2 U*	*< 1.3 U*	*< 1.7 U*	*< 1.2 U*	*< 1.1 U*	*< 1.4 U*	*< 1.2 U*	*< 1.4 U*
Fluoranthene	µg/kg	1.9 J	1.6 J	1.6 J	3.9 J	1.6 J	0.67 J	2.8 J	0.49 J	1.8 J	*< 0.34 U*	1.4 J	0.57 J
Fluorene	µg/kg	*< 0.49 U*	*< 0.49 U*	*< 0.53 U*	*< 0.52 U*	*< 0.50 U*	*< 0.52 U*	*< 0.68 U*	*< 0.50 U*	0.99 J	*< 0.57 U*	*< 0.49 U*	*< 0.55 U*
Indeno(1,2,3-cd)pyrene	µg/kg	0.48 J	*< 0.48 U*	1.1 J	1.8 J	1.2 J	*< 0.51 U*	1.4 J	*< 0.49 U*	*< 0.46 U*	*< 0.56 U*	0.48 J	*< 0.54 U*
Naphthalene	µg/kg	1.8 J	0.82 J	1.2 J	1.4 J	1.4 J	0.70 J	0.99 J	0.42 J	8.1	*< 0.36 U*	1.1 J	0.42 J
Phenanthrene	µg/kg	2.0 J	1.5 J	2.1 J	5.6	2.3 J	1.2 J	6.3 J	0.72 J	3.5 J	0.50 J	2.0 J	0.92 J
Pyrene	µg/kg	1.8 J	1.6 J	3.6 J	7.1	2.8 J	1.2 J	4.6 J	0.79 J	1.6 J	*< 0.41 U*	1.6 J	0.84 J
Low Molecular Weight PAH (ND=0)	µg/kg	5.2	3.2	4.3	11	4.9	2.6	8.6	1.1	17	0.50	4.7	1.3
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	6.0	4.1	5.2	12	5.8	3.5	9.8	2.2	17	1.9	5.4	2.5
High Molecular Weight PAH (ND=0)	µg/kg	11	9.2	34	42	23	9.0	21	5.3	6.4	1.6	9.8	4.3
High Molecular Weight PAH (ND=1/2DL)	µg/kg	12	11	34	43	24	10	22	7.0	8.0	4.6	11	6.5
08-General Chemistry Parameters for Solids													
Perchlorate	µg/kg		*< 21 U*	*< 21 U*	*< 23 U*	*< 21 U*	*< 22 U*	*< 26 U*	*< 22 U*		*< 22 U*		*< 22 U*
Total Organic Carbon	g/kg		5.1	7.4	7.5	12	8.9	5.6	8.8		7.2		6.6
pH	pH units		9.16	8.43	7.57	7.68	8.11	12.4	8.23		8.56		8.37
Cyanide, Total	mg/kg		*< 0.22 U*	*< 0.22 U*	*< 0.24 U*	*< 0.23 U*	*< 0.22 U*	*< 0.47 U*	*< 0.23 U*		*< 0.24 U*		*< 0.23 U*

Table I-6
Analytical Results for Solids Samples - PRI-12
US Magnesium Ancillary Worker Exposure Area
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12	PRI-12
	Location ID	**PRI12-010**	**PRI12-011**	**PRI12-011**	**PRI12-012**	**PRI12-013**	**PRI12-013**	**PRI12-014**
	Sample Date	**10-Dec-13**	**11-Dec-13**	**11-Dec-13**	**12-Dec-13**	**12-Dec-13**	**12-Dec-13**	**12-Dec-13**
	Sample Type	**N**	**FINE**	**N**	**N**	**FINE**	**N**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**
	Sample ID	**PRI12-010-SS01-121013**	**PRI12-011-SS01-121113 FINES**	**PRI12-011-SS01-121113**	**PRI12-012-SS01-121213**	**PRI12-013-SS01-121213 FINES**	**PRI12-013-SS01-121213**	**PRI12-014-SS01-121213**
Analyte	**Unit**							
Dibenzo(a,h)anthracene	µg/kg	*< 1.6 U*	*< 1.2 U*	*< 1.3 U*	*< 1.3 U*	*< 1.2 U*	*< 1.3 U*	*< 1.3 U*
Fluoranthene	µg/kg	*< 0.40 U*	*< 0.30 U*	0.35 J	*< 0.32 U*	0.61 J	0.50 J	*< 0.31 U*
Fluorene	µg/kg	*< 0.67 U*	*< 0.51 U*	*< 0.53 U*	*< 0.54 U*	*< 0.49 U*	*< 0.53 U*	*< 0.52 U*
Indeno(1,2,3-cd)pyrene	µg/kg	*< 0.65 U*	*< 0.50 U*	*< 0.52 U*	*< 0.53 U*	*< 0.48 U*	*< 0.52 U*	*< 0.51 U*
Naphthalene	µg/kg	*< 0.42 U*	*< 0.32 U*	*< 0.33 U*	*< 0.36 U*	0.88 J	*< 0.44 U*	*< 0.37 U*
Phenanthrene	µg/kg	3.8 J	2.1 J	3.8 J	0.60 J	1.0 J	0.72 J	0.52 J
Pyrene	µg/kg	0.59 J	*< 0.36 U*	0.50 J	*< 0.39 U*	0.73 J	0.57 J	*< 0.37 U*
Low Molecular Weight PAH (ND=0)	µg/kg	3.8	3.0	5.6	0.60	2.4	0.72	0.52
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	5.5	4.0	6.7	2.0	3.3	2.1	1.8
High Molecular Weight PAH (ND=0)	µg/kg	0.59	*< 1.2 U*	1.2	0.71	3.7	2.0	*< 1.3 U*
High Molecular Weight PAH (ND=1/2DL)	µg/kg	4.2	*< 2.9 U*	3.8	3.6	5.7	4.6	*< 3.0 U*
08-General Chemistry Parameters for Solids								
Perchlorate	µg/kg	*< 280 U*		*< 180 U*	*< 22 U*		*< 22 U*	*< 22 U*
Total Organic Carbon	g/kg	*< 2.6 U*		*< 1.7 U*	*< 2.9 U*		9.1	*< 2.1 U*
pH	pH units	8.62		8.91	8.81		8.44	8.21
Cyanide, Total	mg/kg	*< 0.30 U*		*< 0.24 U*	*< 0.22 U*		*< 0.23 U*	*< 0.22 U*

Notes:
< = Compound not detected. Reportable detection limit shown.
µg/kg = micrograms per kilogram
Empty cells = Not analyzed
FINE = Fines Portion (Sieved) of Normal Sample
g/kg = grams per kilogram
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
in = inches
mg/kg = milligrams per kilogram
N = Normal Environmental Sample
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pg/g = picogram per gram (1 pg/g = 0.001 µg/kg)
pH units = pH units
SIM = Selected ion monitoring
SVOC = Semi-volatile organic compound
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence
VOC = Volatile organic compound

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample
J+ = The result is an estimated quantity, biased high. The associated numerical value is the approximate concentration of the analyte in the sample
J- = The result is an estimated quantity, biased low. The associated numerical value is the approximate concentration of the analyte in the sample
U = Compound was analyzed for, but not detected. The associated numerical value is the reporting limit
UJ = The nondetected analyte was qualified as estimated at the sample quantitation limit. The reported sample quantitation limit is approximate and may be inaccurate or imprecise
UJQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration, value is an estimate
UQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration

Table I-7
Analytical Results for Solids Samples - PRI-13
Buffer Area North and East
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13
	Location ID	PRI13-001	PRI13-001	PRI13-002	PRI13-003	PRI13-004	PRI13-005	PRI13-006	PRI13-006	PRI13-007	PRI13-008	PRI13-008	PRI13-009
	Sample Date	06-Dec-13	06-Dec-13	07-Dec-13	06-Dec-13	07-Dec-13	07-Dec-13	07-Dec-13	07-Dec-13	07-Dec-13	06-Dec-13	06-Dec-13	06-Dec-13
	Sample Type	FINE	N	N	N	N	N	FINE	N	N	FINE	N	FINE
	Depth	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in
	Sample ID	PRI13-001-SS01-120613 FINES	PRI13-001-SS01-120613	PRI13-002-SS01-120713	PRI13-003-SS01-120613	PRI13-004-SS01-120713	PRI13-005-SS01-120713	PRI13-006-SS01-120713 FINES	PRI13-006-SS01-120713	PRI13-007-SS01-120713	PRI13-008-SS01-120613 FINES	PRI13-008-SS01-120613	PRI13-009-SS01-120613 FINES
Analyte	Unit												
01-Dioxins and Furans													
2,3,7,8-TCDD	pg/g	*< 0.018 U*	*< 0.022 U*	*< 0.024 U*	*< 0.027 U*	*< 0.093 UQ*	*< 0.025 U*	*< 0.020 U*	*< 0.019 U*	*< 0.056 U*	*< 0.074 UQ*	*< 0.047 UQ*	*< 0.019 U*
1,2,3,7,8-PeCDD	pg/g	*< 0.037 U*	0.13 J	0.10 J	*< 0.061 UQ*	*< 0.24 UQ*	*< 0.040 U*	*< 0.038 U*	*< 0.027 U*	*< 0.12 U*	0.30 J	0.18 J	*< 0.038 U*
1,2,3,4,7,8-HxCDD	pg/g	0.099 J	0.088 J	0.085 J	*< 0.039 U*	*< 0.23 UQ*	*< 0.025 U*	*< 0.039 U*	*< 0.016 U*	*< 0.041 U*	0.26 J	*< 0.12 UQ*	*< 0.026 U*
1,2,3,6,7,8-HxCDD	pg/g	0.20 J	0.16 J	0.25 J	*< 0.027 U*	0.83 J	*< 0.022 U*	*< 0.038 UQ*	*< 0.014 U*	*< 0.040 U*	0.58 J	0.42 J	0.16 J
1,2,3,7,8,9-HxCDD	pg/g	*< 0.27 UQ*	*< 0.15 UQ*	0.26 J	*< 0.21 UQ*	0.92 J	*< 0.020 U*	*< 0.029 U*	*< 0.051 U*	*< 0.044 U*	0.72 J	0.51 J	0.15 J
1,2,3,4,6,7,8-HpCDD	pg/g	*< 1.1 UQ*	0.62 J	1.2 J	0.96 J	4.5 J	0.30 J	0.28 J	0.22 J	0.27 J	4.7 J	2.9 J	0.89 J
OCDD	pg/g	3.2 J	*< 1.1 UQ*	3.1 J	*< 1.9 UQ*	12 J	1.0 J	1.9 J	1.0 J	0.59 J	20	9.6 J	2.9 J
2,3,7,8-TCDF	pg/g	*< 1.1 UQ*	1.3	2.0	1.1 J	6.1	1.2 J	0.70 J	0.35 J	0.73 J	3.3	2.3	0.64 J
1,2,3,7,8-PeCDF	pg/g	3.7 J	*< 2.4 UQ*	3.8 J	3.0 J	16	0.93 J	*< 0.55 UQ*	0.31 J	0.72 J	9.2	5.3 J	*< 1.2 UQ*
2,3,4,7,8-PeCDF	pg/g	1.6 J	1.5 J	2.0 J	1.2 J	7.8	0.52 J	0.35 J	0.20 J	0.31 J	5.0 J	2.8 J	0.75 J
1,2,3,4,7,8-HxCDF	pg/g	10	6.4 J	10	7.7	47	2.1 J	1.6 J	0.97 J	1.1 J	32	22	3.6 J
1,2,3,6,7,8-HxCDF	pg/g	6.5	4.0 J	6.5	5.0 J	32	1.1 J	1.1 J	0.55 J	0.69 J	21	13	2.4 J
1,2,3,7,8,9-HxCDF	pg/g	0.66 J	0.54 J	0.88 J	0.44 J	4.3 J	0.12 J	*< 0.39 UQ*	*< 0.084 UQ*	*< 0.13 UQ*	2.1 J	1.3 J	*< 0.14 UQ*
2,3,4,6,7,8-HxCDF	pg/g	2.3 J	1.5 J	*< 2.2 UQ*	2.2 J	11	0.57 J	*< 0.69 UQ*	0.32 J	*< 0.23 UQ*	7.1	4.6 J	1.2 J
1,2,3,4,6,7,8-HpCDF	pg/g	38	18	43	28	230	5.0 J	6.8	4.0 J	2.7 J	160	100	15
1,2,3,4,7,8,9-HpCDF	pg/g	11	6.1 J	13	9.5	71	1.6 J	1.9 J	1.1 J	1.1 J	48	29	4.0 J
OCDF	pg/g	200	88	210	190	1,400	18	38	19	9.3 J	1,300	620	97
Calculated TEQ (ND=0), Mammalian	pg/g	3.1	2.3	3.4	2.5	17	0.83	0.55	0.35	0.41	12	7.3	1.4
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	3.3	2.3	3.7	2.6	17	0.90	0.68	0.41	0.55	12	7.4	1.4
Calculated TEQ (ND=0), Avian	pg/g	140	4.7	7.2	36	29	2.3	75	0.87	1.3	480	330	87
Calculated TEQ (ND=1/2 DL), Avian	pg/g	150	20	22	36	44	18	75	13	16	480	330	87
02-PCBs													
PCB-81	pg/g	*< 0.83 U*	*< 0.57 U*	*< 0.83 U*	*< 0.78 U*	*< 1.0 U*	*< 0.88 U*	*< 0.79 U*	*< 0.41 U*	*< 0.51 U*	1.6 J	*< 0.59 U*	*< 0.70 U*
PCB-77	pg/g	3.9	4.6	7.2	*< 3 UQ*	7.1	*< 0.88 U*	2.0	1.1 J	*< 1.4 UQ*	19	9.5	5.3
PCB-105	pg/g	3.2	2.4 J	6.4	2.8	13	2.8	*< 1.4 UQ*	*< 1.2 UQ*	*< 1.3 UQ*	23	8.9	4.4
PCB-114	pg/g	*< 0.53 U*	*< 0.48 U*	*< 0.69 U*	*< 0.46 U*	2.2 J	*< 0.42 U*	*< 0.44 U*	*< 0.36 U*	*< 0.36 U*	2.3	*< 1.1 UQ*	*< 0.54 U*
PCB-118	pg/g	7.5	5.1	13	5.9	26	*< 5.4 U*	*< 3.1 UQ*	*< 3.1 U*	2.6	47	18	9.5
PCB-123	pg/g	*< 0.52 U*	*< 0.46 U*	*< 0.66 U*	*< 0.45 U*	1.6 J	*< 0.40 U*	*< 0.43 U*	*< 0.34 U*	*< 0.35 U*	*< 1.6 UQ*	*< 0.73 UQ*	*< 0.51 U*
PCB-126	pg/g	*< 0.72 UQ*	*< 0.57 U*	*< 1.6 UQ*	*< 0.54 U*	*< 2.6 UQ*	0.58 J	*< 0.53 U*	*< 0.43 U*	*< 0.43 U*	3.5	2.2	0.90 J
PCB-156 & 157	pg/g	1.7 J	1.3 J	2.9 J	*< 1.4 UQ*	9.6	*< 2.4 UQ*	0.67 J	*< 0.35 UQ*	1.2 J	9.1	4.8	*< 1.6 UQ*
PCB-167	pg/g	*< 0.57 UQ*	0.75 J	2.1 J	*< 0.88 UQ*	5.2	*< 0.63 UQ*	*< 0.34 U*	*< 0.25 U*	*< 0.47 UQ*	5.0	2.8	*< 1.2 UQ*
PCB-169	pg/g	*< 0.55 U*	*< 0.30 U*	*< 0.57 UQ*	*< 0.37 U*	*< 0.88 UQ*	*< 2.5 UQ*	*< 0.48 U*	*< 0.33 U*	*< 0.30 U*	*< 0.91 UQ*	0.63 J	*< 0.38 U*
PCB-189	pg/g	*< 0.68 U*	0.73 J	1.5 J	*< 0.62 U*	7.3	*< 0.38 U*	*< 0.42 U*	*< 0.41 U*	*< 0.49 U*	4.4	2.7	0.80 J
Monochlorobiphenyls, Total	pg/g	6.8 J	4.7 J	13 J	7.6 J	25 J	13 J	4.8 J	11 J	3.8 J	19 J	12 J	8.2 J
Dichlorobiphenyls, Total	pg/g	30 J	13 J	19 J	9.4 J	*< 11 U*	*< 10 U*	40 J	13 J	8.5 J	240	20 J	34 J
Trichlorobiphenyls, Total	pg/g	21 J	7.9 J	27 J	7.3 J	26 J	8.0 J	49 J	11 J	7.0 J	350	33 J	46 J
Tetrachlorobiphenyls, Total	pg/g	35 J	26 J	52 J	21 J	72 J	19 J	48 J	16 J	12 J	520	76 J	68 J
Pentachlorobiphenyls, Total	pg/g	58 J	41 J	100 J	42 J	180 J	43 J	31 J	26 J	17 J	370	140 J	85 J
Hexachlorobiphenyls, Total	pg/g	60 J	33 J	99 J	45 J	180 J	30 J	31 J	17 J	20 J	310	140 J	120 J
Heptachlorobiphenyls, Total	pg/g	53 J	51 J	97 J	56 J	250 J	22 J	28 J	15 J	19 J	280	160 J	110 J
Octachlorobiphenyls, Total	pg/g	79 J	81 J	120 J	87 J	430	25 J	26 J	11 J	14 J	320	200 J	69 J
Nonachlorobiphenyls, Total	pg/g	150 J	170 J	260	190 J	1,000	47 J	45 J	21 J	21 J	660	420	97 J
Decachlorobiphenyl (PCB-209)	pg/g	1,100	1,200	2,200	1,800	11,000 J	270	270	140	140	4,600 J	3,100 J	460
Total PCBs	pg/g	1,600	1,600	3,000	2,300	13,000	480	570	280	260	7,600	4,300	1,100
03- Metals													
Total Aluminum	mg/kg	14,000	12,000	4,100	15,000	12,000	11,000	3,300	1,900	6,900	5,300	3,600	3,600
Total Antimony	mg/kg	0.50 J-	0.50 J-	0.42 J-	1.1 J-	0.92 J-	0.33 J-	0.49 J-	0.26 J-	0.45 J-	0.33 J-	0.26 J-	0.52 J-
Total Arsenic	mg/kg	19	20	8.9	20	11	6.5	8.6	6.6	7.1	9.6	7.9	9.1
Total Barium	mg/kg	250	290	310	260	240	250	230	190	250	240	220	210
Total Beryllium	mg/kg	0.65	0.48	0.18	0.63	0.57	0.59	0.22	0.10 J	0.41	0.25	0.17 J	0.16 J
Total Cadmium	mg/kg	0.13 J	*< 0.14 U*	0.091 J	0.14 J	0.13 J	0.18 J	*< 0.10 U*	*< 0.11 U*	0.14 J	*< 0.10 U*	*< 0.11 U*	*< 0.10 U*
Total Calcium	mg/kg	110,000	170,000	210,000	130,000	120,000	140,000	220,000	270,000	190,000	220,000	270,000	190,000
Total Chromium	mg/kg	15	12	4.9	18	13	14	4.1	2.3	8.8	6.8	4.5	4.5
Total Cobalt	mg/kg	6.3	5.2	1.9	5.4	4.8	4.7	1.4	0.90	3.0	2.2	1.5	1.5
Total Copper	mg/kg	24	12	5.1	10	11	8.8	17	2.2	8.0	30	9.8	14
Total Iron	mg/kg	14,000	12,000	4,500	15,000	12,000	9,100	3,400	1,900	8,200	5,700	3,400	3,400
Total Lead	mg/kg	11	12 J	7.2 J	17 J	12 J	7.8 J	6.7 J	6.3 J	9.7 J	16 J	14 J	9.6 J
Total Magnesium	mg/kg	36,000	34,000	31,000 J	29,000	25,000 J	29,000 J	27,000	17,000 J	36,000 J	28,000	19,000	35,000
Total Manganese	mg/kg	300	270	190	320	290	290	84	51	170	140	96	95
Total Mercury	mg/kg	0.038 J-	*< 0.011 UJ*	*< 0.011 UJ*	0.013 J-	0.013 J-	0.021 J-	*< 0.0089 U*	*< 0.0085 UJ*	0.011 J-	0.018 J	*< 0.010 UJ*	0.010 J-
Total Molybdenum	mg/kg	0.75	0.76	0.45	0.78	0.53	*< 0.18 U*	*< 0.24 UJ*	*< 0.093 U*	*< 0.36 U*	1.3 J	0.86	*< 0.32 U*
Total Nickel	mg/kg	15	12	4.4	15	12	13	3.5	2.0	7.7	6.0	4.0	3.7
Total Potassium	mg/kg	5,800	5,000	2,400	6,700	6,300	4,800	1,800 J+	1,100	3,900	2,900	1,800	1,600
Total Selenium	mg/kg	0.29 J	*< 0.27 U*	*< 0.18 U*	0.33 J	0.46	0.25 J	*< 0.21 UJ*	*< 0.23 U*	0.31 J	0.34 J-	0.28 J	*< 0.20 U*
Total Silver	mg/kg	*< 0.067 U*	*< 0.082 U*	*< 0.053 U*	*< 0.078 U*	*< 0.056 U*	*< 0.063 U*	*< 0.062 U*	*< 0.068 U*	*< 0.056 U*	*< 0.061 U*	*< 0.065 U*	*< 0.061 U*
Total Sodium	mg/kg	7,500	11,000	9,600	17,000	24,000	29,000	10,000 J+	9,400	18,000	11,000	9,100	7,300
Total Thallium	mg/kg	*< 0.11 U*	*< 0.14 U*	*< 0.089 U*	*< 0.13 U*	*< 0.093 U*	*< 0.11 U*	*< 0.10 U*	*< 0.11 U*	*< 0.094 U*	*< 0.10 U*	*< 0.11 U*	*< 0.10 U*

Table I-7
Analytical Results for Solids Samples - PRI-13
Buffer Area North and East
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

Analyte	Location Group / Location ID / Sample Date / Sample Type / Depth / Sample ID / Unit	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13
	Location ID	PRI13-009	PRI13-010	PRI13-011	PRI13-012	PRI13-013	PRI13-013	PRI13-014
	Sample Date	06-Dec-13	05-Dec-13	05-Dec-13	06-Dec-13	05-Dec-13	05-Dec-13	05-Dec-13
	Sample Type	N	N	N	N	FINE	N	N
	Depth	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in
	Sample ID	PRI13-009-SS01-120613	PRI13-010-SS01-120513	PRI13-011-SS01-120513	PRI13-012-SS01-120613	PRI13-013-SS01-120513 FINES	PRI13-013-SS01-120513	PRI13-014-SS01-120513
	Unit							
01-Dioxins and Furans								
2,3,7,8-TCDD	pg/g	< 0.020 U	< 0.030 U	< 0.034 U	< 0.053 U	< 0.032 U	< 0.040 U	< 0.051 U
1,2,3,7,8-PeCDD	pg/g	< 0.028 U	< 0.050 U	< 0.048 U	< 0.091 U	< 0.040 U	< 0.060 U	< 0.11 U
1,2,3,4,7,8-HxCDD	pg/g	< 0.037 U	< 0.079 U	< 0.038 UQ	< 0.12 U	0.075 J	< 0.055 U	< 0.16 U
1,2,3,6,7,8-HxCDD	pg/g	< 0.026 U	< 0.056 U	< 0.071 UQ	< 0.084 U	0.16 J	< 0.039 U	0.41 J
1,2,3,7,8,9-HxCDD	pg/g	0.041 J	< 0.058 U	0.14 J	< 0.087 U	0.17 J	< 0.21 U	0.42 J
1,2,3,4,6,7,8-HpCDD	pg/g	0.49 J	< 0.49 UQ	0.38 J	< 0.52 UQ	0.83 J	0.70 J	2.0 J
OCDD	pg/g	< 1.3 UJQ	< 1.1 UJQ	1.3 J	1.2 J	2.5 J	2.4 J	< 4.8 UJQ
2,3,7,8-TCDF	pg/g	0.58 J	1.1 J	< 0.83 UQ	2.5 J	1.8	1.9	4.8
1,2,3,7,8-PeCDF	pg/g	0.70 J	1.1 J	0.69 J	2.2 J	3.3 J	2.5 J	8.0
2,3,4,7,8-PeCDF	pg/g	0.36 J	0.63 J	< 0.37 UQ	1.0 J	1.5 J	1.6 J	4.0 J
1,2,3,4,7,8-HxCDF	pg/g	1.8 J	2.6 J	< 1.4 UQ	4.2 J	7.1	6.4	18
1,2,3,6,7,8-HxCDF	pg/g	< 1.3 UJQ	1.5 J	< 0.94 UQ	< 3.1 UQ	4.4 J	4.2 J	12
1,2,3,7,8,9-HxCDF	pg/g	< 0.37 UJQ	0.088 J	< 0.078 U	1.1 J	< 0.48 UQ	< 0.49 U	< 1.7 UQ
2,3,4,6,7,8-HxCDF	pg/g	1.7 J	0.73 J	< 0.35 UQ	< 2 UQ	1.8 J	< 1.2 UQ	4.0 J
1,2,3,4,6,7,8-HpCDF	pg/g	8.3 J	8.0 J	6.2	14	25	< 19 UQ	87
1,2,3,4,7,8,9-HpCDF	pg/g	2.1 J	1.9 J	< 0.98 UQ	3.4 J	5.9	< 6 UQ	27
OCDF	pg/g	35 J	18	18	55	130	120	410 J
Calculated TEQ (ND=0), Mammalian	pg/g	0.66	0.93	0.11	1.3	2.5	1.8	6.7
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	0.80	1.0	0.42	1.8	2.6	2.2	7.0
Calculated TEQ (ND=0), Avian	pg/g	1.6	2.6	34	4.4	55	4.8	14
Calculated TEQ (ND=1/2 DL), Avian	pg/g	14	17	35	36	55	18	28
02-PCBs								
PCB-81	pg/g	< 0.44 U	< 0.67 U	< 0.58 U	< 1.4 U	< 0.68 U	< 0.63 U	< 0.65 U
PCB-77	pg/g	3.4	2.7	< 1.9 UQ	< 1.5 U	4.0	< 3.2 UQ	< 5.3 UQ
PCB-105	pg/g	2.6	2.2 J	1.8 J	< 1.7 UQ	2.7	2.9	4.2
PCB-114	pg/g	< 0.35 U	< 0.50 U	< 0.37 U	< 0.94 U	< 0.44 U	< 0.53 U	0.83 J
PCB-118	pg/g	5.4	4.7 J	3.2	4.8 J	5.7	5.3	11
PCB-123	pg/g	< 0.33 U	< 0.47 U	< 0.35 U	< 0.88 U	< 0.43 U	< 0.51 U	< 0.63 U
PCB-126	pg/g	< 0.42 U	< 0.59 U	< 0.44 U	< 1.2 U	< 0.72 UQ	< 0.66 UQ	< 1.5 UQ
PCB-156 & 157	pg/g	1.0 J	0.88 J	< 0.57 UQ	< 0.76 U	1.4 J	1.4 J	2.5 J
PCB-167	pg/g	< 0.57 UQ	< 0.44 UQ	0.64 J	< 0.60 U	< 0.91 UQ	< 0.55 UQ	< 2 UQ
PCB-169	pg/g	< 0.32 U	< 0.46 U	< 0.38 U	< 0.82 U	< 0.40 U	< 0.43 U	0.73 J
PCB-189	pg/g	< 0.33 U	< 0.72 U	< 0.55 U	< 1.2 U	< 0.57 U	< 0.57 UQ	1.9 J
Monochlorobiphenyls, Total	pg/g	3.5 J	12 J	3.0 J	5.6 J	6.3 J	6.3 J	7.1 J
Dichlorobiphenyls, Total	pg/g	11 J	18 J	6.5 J	< 21 U	30 J	9.5 J	17 J
Trichlorobiphenyls, Total	pg/g	7.4 J	6.8 J	< 1.1 U	< 2.3 U	35 J	13 J	15 J
Tetrachlorobiphenyls, Total	pg/g	24 J	16 J	15 J	13 J	43 J	33 J	51 J
Pentachlorobiphenyls, Total	pg/g	43 J	41 J	32 J	28 J	43 J	53 J	99 J
Hexachlorobiphenyls, Total	pg/g	48 J	40 J	26 J	18 J	50 J	41 J	76 J
Heptachlorobiphenyls, Total	pg/g	40 J	43 J	24 J	28 J	59 J	53 J	120 J
Octachlorobiphenyls, Total	pg/g	33 J	42 J	26 J	38 J	69 J	77 J	220 J
Nonachlorobiphenyls, Total	pg/g	57 J	79 J	49 J	75 J	120 J	150 J	470
Decachlorobiphenyl (PCB-209)	pg/g	270 J	320 J	220	310	770	920	3,100 J
Total PCBs	pg/g	540	620	400	520 J	1,200	1,400	4,200
03- Metals								
Total Aluminum	mg/kg	2,100	13,000	1,200	2,500	2,700	2,400	2,800
Total Antimony	mg/kg	0.30 J-	0.40 J-	0.23 J-	< 0.57 UJ	0.28 J-	0.25 J-	0.36 J-
Total Arsenic	mg/kg	7.3	8.4	6.7	12	6.7	6.6	8.5
Total Barium	mg/kg	190	350	200	460	210	230	270
Total Beryllium	mg/kg	0.072 J	0.66	0.057 J	0.11 J	0.13 J	0.13 J	0.13 J
Total Cadmium	mg/kg	< 0.11 U	0.18 J	< 0.11 U	< 0.28 U	< 0.10 U	< 0.11 U	< 0.12 U
Total Calcium	mg/kg	280,000	150,000	280,000	880,000	240,000	280,000	210,000
Total Chromium	mg/kg	2.6	16	1.8	4.0	3.9	3.5	3.8
Total Cobalt	mg/kg	1.1	5.3	0.59	1.2	1.1	1.1	1.3
Total Copper	mg/kg	3.9	14	2.3	3.9	17	3.5	6.2
Total Iron	mg/kg	2,100	14,000	1,500	3,100	2,900	2,800	2,200
Total Lead	mg/kg	8.2 J	12 J	7.2 J	18 J	7.1 J	7.1 J	11 J
Total Magnesium	mg/kg	21,000	31,000	9,900	21,000	22,000	24,000	46,000
Total Manganese	mg/kg	63	320	37	72	70	71	80
Total Mercury	mg/kg	< 0.0095 UJ	0.017 J-	< 0.0080 UJ	< 0.025 UJ	0.013 J-	< 0.0098 UJ	0.012 J-
Total Molybdenum	mg/kg	< 0.19 U	0.86	< 0.13 U	< 0.18 U	< 0.18 U	< 0.19 U	0.51
Total Nickel	mg/kg	2.5	15	1.5	3.1	3.5	3.1	4.2
Total Potassium	mg/kg	1,000	6,000	760	1,300 J	1,600	1,800	1,800
Total Selenium	mg/kg	< 0.22 U	0.39 J	< 0.22 U	< 0.57 U	< 0.21 U	< 0.22 U	0.25 J
Total Silver	mg/kg	< 0.065 U	< 0.082 U	< 0.065 U	< 0.17 U	< 0.062 U	< 0.067 U	< 0.074 U
Total Sodium	mg/kg	7,900	22,000	6,500	13,000	11,000	16,000	17,000
Total Thallium	mg/kg	< 0.11 U	< 0.14 U	< 0.11 U	< 0.28 U	< 0.10 U	< 0.11 U	< 0.12 U

Table I-7
Analytical Results for Solids Samples - PRI-13
Buffer Area North and East
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**
	Location ID	**PRI13-001**	**PRI13-001**	**PRI13-002**	**PRI13-003**	**PRI13-004**	**PRI13-005**	**PRI13-006**	**PRI13-006**	**PRI13-007**	**PRI13-008**	**PRI13-008**	**PRI13-009**
	Sample Date	**06-Dec-13**	**06-Dec-13**	**07-Dec-13**	**06-Dec-13**	**07-Dec-13**	**07-Dec-13**	**07-Dec-13**	**07-Dec-13**	**07-Dec-13**	**06-Dec-13**	**06-Dec-13**	**06-Dec-13**
	Sample Type	**FINE**	**N**	**N**	**N**	**N**	**N**	**FINE**	**N**	**N**	**FINE**	**N**	**FINE**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**
	Sample ID	**PRI13-001-SS01-120613 FINES**	**PRI13-001-SS01-120613**	**PRI13-002-SS01-120713**	**PRI13-003-SS01-120613**	**PRI13-004-SS01-120713**	**PRI13-005-SS01-120713**	**PRI13-006-SS01-120713 FINES**	**PRI13-006-SS01-120713**	**PRI13-007-SS01-120713**	**PRI13-008-SS01-120613 FINES**	**PRI13-008-SS01-120613**	**PRI13-009-SS01-120613 FINES**
Analyte	**Unit**												
Total Vanadium	mg/kg	31	27	11	35	26	21	8.5	5.5	14	14	9.8	9.2
Total Zinc	mg/kg	110 J-	80 J-	27 J-	59 J-	44 J-	55 J-	22 J-	20 J-	32 J-	34 J-	27 J-	25 J-
05-SVOCs													
1,1'-Biphenyl	µg/kg	*< 180 U*	*< 220 UJ*	*< 220 UJ*	*< 230 U*	*< 230 UJ*	*< 230 UJ*	*< 170 U*	*< 180 UJ*	*< 210 UJ*	*< 170 U*	*< 180 U*	*< 170 U*
1,2,4,5-Tetrachlorobenzene	µg/kg	*< 28 U*	*< 35 UJ*	*< 34 UJ*	*< 36 U*	*< 37 UJ*	*< 36 UJ*	*< 26 U*	*< 29 UJ*	*< 33 UJ*	*< 26 U*	*< 29 U*	*< 26 U*
2,3,4,6-Tetrachlorophenol	µg/kg	*< 88 UJ*	*< 110 UJ*	*< 110 UJ*	*< 110 U*	*< 120 UJ*	*< 110 UJ*	*< 83 UJ*	*< 91 UJ*	*< 100 UJ*	*< 83 U*	*< 91 U*	*< 83 U*
2,4,5-Trichlorophenol	µg/kg	*< 89 UJ*	*< 110 UJ*	*< 110 UJ*	*< 110 U*	*< 120 UJ*	*< 120 UJ*	*< 84 UJ*	*< 92 UJ*	*< 110 UJ*	*< 85 U*	*< 92 U*	*< 84 U*
2,4,6-Trichlorophenol	µg/kg	*< 90 UJ*	*< 110 UJ*	*< 110 UJ*	*< 120 U*	*< 120 UJ*	*< 120 UJ*	*< 85 UJ*	*< 93 UJ*	*< 110 UJ*	*< 86 U*	*< 93 U*	*< 85 U*
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	*< 4.7 UJ*	*< 6.0 UJ*	*< 5.8 UJ*	*< 6.1 U*	*< 6.2 UJ*	*< 6.1 UJ*	*< 4.4 UJ*	*< 4.9 UJ*	*< 5.6 UJ*	*< 4.5 U*	*< 4.9 U*	*< 4.4 U*
2,2-Oxybis(1-chloropropane)	µg/kg	*< 85 U*	*< 110 UJ*	*< 100 UJ*	*< 110 U*	*< 110 UJ*	*< 110 UJ*	*< 80 U*	*< 87 UJ*	*< 100 UJ*	*< 80 U*	*< 88 U*	*< 80 UJ*
2,4-Dichlorophenol	µg/kg	*< 95 UJ*	*< 120 UJ*	*< 120 UJ*	*< 120 U*	*< 130 UJ*	*< 120 UJ*	*< 90 UJ*	*< 98 UJ*	*< 110 UJ*	*< 91 U*	*< 99 U*	*< 90 U*
2,4-Dimethylphenol	µg/kg	*< 180 UJ*	*< 230 UJ*	*< 220 UJ*	*< 230 U*	*< 230 UJ*	*< 230 UJ*	*< 170 UJ*	*< 180 UJ*	*< 210 UJ*	*< 170 U*	*< 190 U*	*< 170 U*
2,4-Dinitrophenol	µg/kg	*< 230 UJ*	*< 290 UJ*	*< 280 UJ*	*< 300 U*	*< 300 UJ*	*< 300 UJ*	*< 220 UJ*	*< 240 UJ*	*< 270 UJ*	*< 220 U*	*< 240 U*	*< 220 U*
2,4-Dinitrotoluene	µg/kg	*< 95 U*	*< 120 UJ*	*< 120 UJ*	*< 120 U*	*< 130 UJ*	*< 120 UJ*	*< 90 U*	*< 98 UJ*	*< 110 UJ*	*< 91 U*	*< 99 U*	*< 90 U*
2,6-Dinitrotoluene	µg/kg	*< 110 U*	*< 130 UJ*	*< 130 UJ*	*< 140 U*	*< 140 UJ*	*< 140 UJ*	*< 100 U*	*< 110 UJ*	*< 130 UJ*	*< 100 U*	*< 110 U*	*< 100 U*
2-Chloronaphthalene	µg/kg	*< 87 U*	*< 110 UJ*	*< 110 UJ*	*< 110 U*	*< 110 UJ*	*< 110 UJ*	*< 82 U*	*< 90 UJ*	*< 100 UJ*	*< 82 U*	*< 90 U*	*< 82 U*
2-Chlorophenol	µg/kg	*< 94 UJ*	*< 120 UJ*	*< 120 UJ*	*< 120 U*	*< 120 UJ*	*< 120 UJ*	*< 89 UJ*	*< 97 UJ*	*< 110 UJ*	*< 90 U*	*< 98 U*	*< 89 U*
2-Methylphenol	µg/kg	*< 62 UJ*	*< 78 UJ*	*< 76 UJ*	*< 80 U*	*< 82 UJ*	*< 81 UJ*	*< 58 UJ*	*< 64 UJ*	*< 74 UJ*	*< 59 U*	*< 64 U*	*< 58 U*
2-Nitroaniline	µg/kg	*< 90 U*	*< 110 UJ*	*< 110 UJ*	*< 120 U*	*< 120 UJ*	*< 120 UJ*	*< 85 U*	*< 93 UJ*	*< 110 UJ*	*< 86 U*	*< 93 U*	*< 85 U*
2-Nitrophenol	µg/kg	*< 88 UJ*	*< 110 UJ*	*< 110 UJ*	*< 110 U*	*< 120 UJ*	*< 110 UJ*	*< 83 UJ*	*< 91 UJ*	*< 100 UJ*	*< 83 U*	*< 91 U*	*< 83 U*
3,3'-Dichlorobenzidine	µg/kg	*< 100 UJ*	*< 130 UJ*	*< 120 UJ*	*< 130 U*	*< 130 UJ*	*< 130 UJ*	*< 95 UJ*	*< 100 UJ*	*< 120 UJ*	*< 96 U*	*< 100 U*	*< 95 U*
3-Nitroaniline	µg/kg	*< 180 UJ*	*< 230 UJ*	*< 220 UJ*	*< 230 U*	*< 230 UJ*	*< 230 UJ*	*< 170 UJ*	*< 180 UJ*	*< 210 UJ*	*< 170 UJ*	*< 190 U*	*< 170 U*
4,6-Dinitro-2-methylphenol	µg/kg	*< 87 UJ*	*< 110 UJ*	*< 110 UJ*	*< 110 U*	*< 110 UJ*	*< 110 UJ*	*< 82 UJ*	*< 90 UJ*	*< 100 UJ*	*< 82 U*	*< 90 U*	*< 82 U*
4-Bromophenyl-phenylether	µg/kg	*< 91 U*	*< 120 UJ*	*< 110 UJ*	*< 120 U*	*< 120 UJ*	*< 120 UJ*	*< 86 U*	*< 94 UJ*	*< 110 UJ*	*< 87 U*	*< 94 U*	*< 86 U*
4-Chloro-3-methylphenol	µg/kg	*< 99 UJ*	*< 120 UJ*	*< 120 UJ*	*< 130 U*	*< 130 UJ*	*< 130 UJ*	*< 93 UJ*	*< 100 UJ*	*< 120 UJ*	*< 94 U*	*< 100 U*	*< 93 U*
4-Chloroaniline	µg/kg	*< 62 UJ*	*< 78 UJ*	*< 76 UJ*	*< 80 UJ*	*< 82 UJ*	*< 81 UJ*	*< 58 UJ*	*< 64 UJ*	*< 74 UJ*	*< 59 UJ*	*< 64 UJ*	*< 58 UJ*
4-Chlorophenyl-phenylether	µg/kg	*< 100 U*	*< 130 UJ*	*< 120 UJ*	*< 130 U*	*< 130 UJ*	*< 130 UJ*	*< 94 U*	*< 100 UJ*	*< 120 UJ*	*< 95 U*	*< 100 U*	*< 94 U*
3 & 4 Methylphenol	µg/kg	*< 350 UJ*	*< 450 UJ*	*< 430 UJ*	*< 460 U*	*< 460 UJ*	*< 460 UJ*	*< 330 UJ*	*< 370 UJ*	*< 420 UJ*	*< 340 U*	*< 370 U*	*< 330 U*
4-Nitroaniline	µg/kg	*< 94 U*	*< 120 UJ*	*< 120 UJ*	*< 120 U*	*< 120 UJ*	*< 120 UJ*	*< 89 U*	*< 97 UJ*	*< 110 UJ*	*< 90 U*	*< 98 U*	*< 89 U*
4-Nitrophenol	µg/kg	*< 300 UJ*	*< 380 UJ*	*< 370 UJ*	*< 390 U*	*< 390 UJ*	*< 390 UJ*	*< 280 UJ*	*< 310 UJ*	*< 360 UJ*	*< 290 U*	*< 310 U*	*< 280 U*
Acetophenone	µg/kg	420	*< 34 UJ*	*< 39 UJ*	*< 35 U*	*< 35 UJ*	*< 35 UJ*	170 J	*< 28 UJ*	*< 32 UJ*	*< 51 U*	*< 28 U*	27 J
Benzaldehyde	µg/kg	360	*< 220 UJ*	*< 220 UJ*	*< 230 U*	*< 230 UJ*	*< 230 UJ*	*< 170 U*	*< 180 UJ*	*< 210 UJ*	190 J+	*< 180 U*	*< 170 U*
Benzylbutylphthalate	µg/kg	*< 100 U*	*< 130 UJ*	*< 120 UJ*	*< 130 U*	*< 130 UJ*	*< 130 UJ*	*< 96 U*	*< 110 UJ*	*< 120 UJ*	*< 97 U*	*< 110 U*	*< 96 U*
Bis(2-chloroethoxy)methane	µg/kg	*< 94 U*	*< 120 UJ*	*< 120 UJ*	*< 120 U*	*< 120 UJ*	*< 120 UJ*	*< 89 U*	*< 97 UJ*	*< 110 UJ*	*< 90 U*	*< 98 U*	*< 89 U*
bis(2-Chloroethyl) ether	µg/kg	*< 87 U*	*< 110 UJ*	*< 110 UJ*	*< 110 U*	*< 110 UJ*	*< 110 UJ*	*< 82 U*	*< 90 UJ*	*< 100 UJ*	*< 82 U*	*< 90 U*	*< 82 U*
Bis(2-ethylhexyl)phthalate	µg/kg	*< 110 U*	*< 130 UJ*	*< 130 UJ*	*< 140 U*	*< 140 UJ*	*< 140 UJ*	*< 99 U*	*< 110 UJ*	*< 120 UJ*	*< 100 U*	*< 110 U*	*< 99 U*
Carbazole	µg/kg	*< 100 U*	*< 130 UJ*	*< 120 UJ*	*< 130 U*	*< 130 UJ*	*< 130 UJ*	*< 96 U*	*< 110 UJ*	*< 120 UJ*	*< 97 U*	*< 110 U*	*< 96 U*
Dibenzofuran	µg/kg	*< 92 U*	*< 120 UJ*	*< 110 UJ*	*< 120 U*	*< 120 UJ*	*< 120 UJ*	*< 87 U*	*< 95 UJ*	*< 110 UJ*	*< 88 U*	*< 96 U*	*< 87 U*
Diethyl phthalate	µg/kg	*< 96 U*	*< 120 UJ*	*< 120 UJ*	*< 120 U*	*< 130 UJ*	*< 120 UJ*	*< 91 U*	*< 100 UJ*	*< 110 UJ*	*< 92 U*	*< 100 U*	*< 91 U*
Dimethylphthalate	µg/kg	*< 93 U*	*< 120 UJ*	*< 110 UJ*	*< 120 U*	*< 120 UJ*	*< 120 UJ*	*< 88 U*	*< 96 UJ*	*< 110 UJ*	*< 89 U*	*< 97 U*	*< 88 U*
Di-n-butylphthalate	µg/kg	*< 100 U*	*< 130 UJ*	*< 130 UJ*	*< 130 U*	*< 140 UJ*	*< 130 UJ*	*< 98 U*	*< 110 UJ*	*< 120 UJ*	190 J	*< 110 U*	*< 98 U*
Di-n-octylphthalate	µg/kg	*< 100 U*	*< 130 UJ*	*< 130 UJ*	*< 130 U*	*< 140 UJ*	*< 130 UJ*	*< 98 U*	*< 110 UJ*	*< 120 UJ*	*< 99 U*	*< 110 U*	*< 98 U*
Hexachlorobenzene	µg/kg	*< 95 U*	*< 120 UJ*	*< 120 UJ*	*< 120 U*	*< 130 UJ*	*< 120 UJ*	*< 90 U*	*< 98 UJ*	*< 110 UJ*	*< 91 U*	*< 99 U*	*< 90 U*
Hexachlorobenzene (SIM Screen)	µg/kg	14 J	*< 3.0 UJ*	*< 2.9 UJ*	3.1 J	*< 3.1 UJ*	*< 3.1 UJ*	7.3 J	*< 2.4 UJ*	*< 2.8 UJ*	46	32	8.4 J
Hexachlorobutadiene	µg/kg	*< 88 U*	*< 110 UJ*	*< 110 UJ*	*< 110 U*	*< 120 UJ*	*< 110 UJ*	*< 83 U*	*< 91 UJ*	*< 100 UJ*	*< 83 U*	*< 91 U*	*< 83 U*
Hexachlorobutadiene (SIM Screen)	µg/kg	*< 4.0 U*	*< 5.0 UJ*	*< 4.9 UJ*	*< 5.1 U*	*< 5.2 UJ*	*< 5.1 UJ*	*< 3.7 UJ*	*< 4.1 UJ*	*< 4.7 UJ*	*< 3.8 U*	*< 4.1 U*	*< 3.7 U*
Hexachlorocyclopentadiene	µg/kg	*< 66 U*	*< 84 UJ*	*< 81 UJ*	*< 86 U*	*< 87 UJ*	*< 86 UJ*	*< 62 U*	*< 69 UJ*	*< 79 UJ*	*< 63 U*	*< 69 U*	*< 62 U*
Hexachloroethane	µg/kg	*< 87 U*	*< 110 UJ*	*< 110 UJ*	*< 110 U*	*< 110 UJ*	*< 110 UJ*	*< 82 U*	*< 90 UJ*	*< 100 UJ*	*< 82 U*	*< 90 U*	*< 82 U*
Isophorone	µg/kg	*< 100 U*	*< 130 UJ*	*< 120 UJ*	*< 130 U*	*< 130 UJ*	*< 130 UJ*	*< 94 U*	*< 100 UJ*	*< 120 UJ*	*< 95 U*	*< 100 U*	*< 94 U*
Nitrobenzene	µg/kg	*< 81 U*	*< 100 UJ*	*< 100 UJ*	*< 110 U*	*< 110 UJ*	*< 110 UJ*	*< 77 U*	*< 84 UJ*	*< 97 UJ*	*< 77 U*	*< 84 U*	*< 77 U*
N-Nitrosodimethylamine	µg/kg	*< 100 U*	*< 130 UJ*	*< 130 UJ*	*< 130 U*	*< 140 UJ*	*< 130 UJ*	*< 97 U*	*< 110 UJ*	*< 120 UJ*	*< 98 U*	*< 110 U*	*< 97 U*
n-Nitrosodimethylamine (SIM Screen)	µg/kg	*< 100 UJ*	*< 130 UJ*	*< 130 UJ*	*< 130 U*	*< 140 UJ*	*< 130 UJ*	*< 97 UJ*	*< 110 UJ*	*< 120 UJ*	*< 98 U*	*< 110 U*	*< 97 U*
N-Nitroso-di-n-propylamine	µg/kg	*< 90 U*	*< 110 UJ*	*< 110 UJ*	*< 120 U*	*< 120 UJ*	*< 120 UJ*	*< 85 U*	*< 93 UJ*	*< 110 UJ*	*< 86 U*	*< 93 U*	*< 85 U*
N-Nitrosodiphenylamine	µg/kg	*< 92 U*	*< 120 UJ*	*< 110 UJ*	*< 120 U*	*< 120 UJ*	*< 120 UJ*	*< 87 U*	*< 95 UJ*	*< 110 UJ*	*< 88 U*	*< 96 U*	*< 87 U*
Pentachlorophenol	µg/kg	*< 55 UJ*	*< 69 UJ*	*< 67 UJ*	*< 71 U*	*< 72 UJ*	*< 71 UJ*	*< 51 UJ*	*< 56 UJ*	*< 65 UJ*	*< 52 U*	*< 57 U*	*< 51 U*
Pentachlorophenol (SIM Screen)	µg/kg	*< 26 UJ*	*< 32 UJ*	*< 32 UJ*	*< 33 U*	*< 34 UJ*	*< 33 UJ*	*< 24 UJ*	*< 27 UJ*	*< 31 UJ*	*< 24 U*	*< 27 U*	*< 24 U*
Phenol	µg/kg	90 J-	*< 110 UJ*	*< 110 UJ*	*< 110 U*	*< 120 UJ*	*< 120 UJ*	*< 84 UJ*	*< 92 UJ*	*< 110 UJ*	*< 85 U*	*< 92 U*	*< 84 U*
06-PAHs by SIM													
2-Methylnaphthalene	µg/kg	0.68 J	*< 0.53 U*	*< 0.56 U*	*< 0.64 U*	*< 0.58 U*	*< 0.61 U*	0.79 J	*< 0.46 U*	*< 0.57 U*	6.6	*< 0.47 U*	1.0 J
Acenaphthene	µg/kg	*< 0.52 U*	*< 0.58 U*	*< 0.62 U*	*< 0.70 U*	*< 0.63 U*	*< 0.66 U*	*< 0.51 U*	*< 0.50 U*	*< 0.62 U*	*< 0.47 U*	*< 0.52 U*	*< 0.48 U*
Acenaphthylene	µg/kg	*< 0.36 U*	*< 0.41 U*	*< 0.43 U*	*< 0.49 U*	*< 0.44 U*	*< 0.47 U*	*< 0.36 U*	*< 0.35 U*	*< 0.44 U*	*< 0.33 U*	*< 0.36 U*	*< 0.34 U*
Anthracene	µg/kg	*< 0.43 U*	*< 0.49 U*	*< 0.52 U*	*< 0.59 U*	*< 0.53 U*	*< 0.56 U*	*< 0.43 U*	*< 0.42 U*	*< 0.52 U*	*< 0.40 U*	0.63 J	*< 0.40 U*
Benzo(a)anthracene	µg/kg	*< 0.33 U*	*< 0.37 U*	*< 0.40 U*	*< 0.45 U*	*< 0.41 U*	*< 0.43 U*	*< 0.33 U*	*< 0.32 U*	*< 0.40 U*	0.60 J	*< 0.33 U*	*< 0.31 U*
Benzo(a)pyrene	µg/kg	*< 0.44 U*	*< 0.49 U*	*< 0.52 U*	*< 0.59 U*	*< 0.54 U*	*< 0.56 U*	*< 0.43 U*	*< 0.43 U*	*< 0.53 U*	*< 0.40 U*	*< 0.44 U*	*< 0.41 U*
Benzo(b)fluoranthene	µg/kg	*< 0.55 U*	*< 0.62 U*	*< 0.66 U*	*< 0.75 U*	*< 0.68 U*	*< 0.71 U*	*< 0.55 U*	*< 0.54 U*	*< 0.67 U*	1.6 J	*< 0.55 U*	0.94 J
Benzo(g,h,i)perylene	µg/kg	*< 1.1 U*	*< 1.2 U*	*< 1.3 U*	*< 1.5 U*	*< 1.3 U*	*< 1.4 U*	*< 1.1 U*	*< 1.1 U*	*< 1.3 U*	*< 1.0 U*	*< 1.1 U*	*< 1.0 U*
Benzo(k)fluoranthene	µg/kg	*< 0.83 U*	*< 0.94 U*	*< 1.0 U*	*< 1.1 U*	*< 1.0 U*	*< 1.1 U*	*< 0.82 U*	*< 0.81 U*	*< 1.0 U*	1.2 J	*< 0.83 U*	*< 0.78 U*
Chrysene	µg/kg	*< 0.38 U*	*< 0.43 U*	*< 0.46 U*	*< 0.52 U*	*< 0.47 U*	*< 0.49 U*	*< 0.38 U*	*< 0.37 U*	*< 0.46 U*	2.4 J	1.0 J	1.2 J

Table I-7
Analytical Results for Solids Samples - PRI-13
Buffer Area North and East
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13
	Location ID	PRI13-009	PRI13-010	PRI13-011	PRI13-012	PRI13-013	PRI13-013	PRI13-014
	Sample Date	06-Dec-13	05-Dec-13	05-Dec-13	06-Dec-13	05-Dec-13	05-Dec-13	05-Dec-13
	Sample Type	N	N	N	N	FINE	N	N
	Depth	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in
	Sample ID	PRI13-009-SS01-120613	PRI13-010-SS01-120513	PRI13-011-SS01-120513	PRI13-012-SS01-120613	PRI13-013-SS01-120513 FINES	PRI13-013-SS01-120513	PRI13-014-SS01-120513
Analyte	**Unit**							
Total Vanadium	mg/kg	6.0	24	5.1	11	8.8	8.9	10
Total Zinc	mg/kg	20 J-	58 J-	17 J-	38 J-	21 J-	22 J-	28 J-
05-SVOCs								
1,1'-Biphenyl	µg/kg	< 180 U	< 220 U	< 180 U	< 470 U	< 170 U	< 190 U	< 200 U
1,2,4,5-Tetrachlorobenzene	µg/kg	< 28 U	< 35 U	< 28 U	< 74 U	< 26 U	< 30 U	< 32 U
2,3,4,6-Tetrachlorophenol	µg/kg	< 88 U	< 110 U	< 87 U	< 230 U	< 82 U	< 93 U	< 100 U
2,4,5-Trichlorophenol	µg/kg	< 89 U	< 110 U	< 88 U	< 240 U	< 83 U	< 95 U	< 100 U
2,4,6-Trichlorophenol	µg/kg	< 90 U	< 110 U	< 90 U	< 240 U	< 84 U	< 96 U	< 100 U
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	< 4.7 U	< 5.9 U	< 4.7 U	< 12 U	< 4.4 U	< 5.0 U	< 5.4 U
2,2-Oxybis(1-chloropropane)	µg/kg	< 85 UJ	< 110 U	< 84 U	< 220 U	< 79 UJ	< 90 U	< 96 U
2,4-Dichlorophenol	µg/kg	< 95 U	< 120 U	< 95 U	< 250 U	< 89 U	< 100 U	< 110 U
2,4-Dimethylphenol	µg/kg	< 180 U	< 220 U	< 180 U	< 470 U	< 170 U	< 190 U	< 200 U
2,4-Dinitrophenol	µg/kg	< 230 U	< 290 U	< 230 U	< 610 U	< 210 U	< 240 U	< 260 U
2,4-Dinitrotoluene	µg/kg	< 95 U	< 120 U	< 95 U	< 250 U	< 89 U	< 100 U	< 110 U
2,6-Dinitrotoluene	µg/kg	< 110 U	< 130 U	< 110 U	< 280 U	< 99 U	< 110 U	< 120 U
2-Chloronaphthalene	µg/kg	< 87 U	< 110 U	< 86 U	< 230 U	< 81 U	< 92 U	< 99 U
2-Chlorophenol	µg/kg	< 94 U	< 120 U	< 94 U	< 250 U	< 88 U	< 100 U	< 110 U
2-Methylphenol	µg/kg	< 62 U	< 78 U	< 62 U	< 160 U	< 58 U	< 66 U	< 71 U
2-Nitroaniline	µg/kg	< 90 U	< 110 U	< 90 U	< 240 U	< 84 U	< 96 U	< 100 U
2-Nitrophenol	µg/kg	< 88 U	< 110 U	< 87 U	< 230 U	< 82 U	< 93 U	< 100 U
3,3'-Dichlorobenzidine	µg/kg	< 100 UJ	< 130 U	< 100 U	< 270 U	< 94 U	< 110 U	< 110 U
3-Nitroaniline	µg/kg	< 180 UJ	< 220 U	< 180 U	< 470 U	< 170 U	< 190 U	< 200 U
4,6-Dinitro-2-methylphenol	µg/kg	< 87 U	< 110 U	< 86 U	< 230 U	< 81 U	< 92 U	< 99 U
4-Bromophenyl-phenylether	µg/kg	< 91 U	< 110 U	< 91 U	< 240 U	< 85 U	< 97 U	< 100 U
4-Chloro-3-methylphenol	µg/kg	< 99 U	< 120 U	< 98 U	< 260 U	< 92 U	< 100 U	< 110 U
4-Chloroaniline	µg/kg	< 62 UJ	< 78 UJ	< 62 UJ	< 160 UJ	< 58 UJ	< 66 UJ	< 71 UJ
4-Chlorophenyl-phenylether	µg/kg	< 100 U	< 120 U	< 99 U	< 260 U	< 93 U	< 110 U	< 110 U
3 & 4 Methylphenol	µg/kg	< 350 U	< 440 U	< 350 U	< 940 U	< 330 U	< 380 U	< 400 U
4-Nitroaniline	µg/kg	< 94 U	< 120 U	< 94 U	< 250 U	< 88 U	< 100 U	< 110 U
4-Nitrophenol	µg/kg	< 300 U	< 380 U	< 300 U	< 790 U	< 280 U	< 320 U	< 340 U
Acetophenone	µg/kg	< 27 U	< 33 U	< 27 U	< 71 U	74 J	< 28 U	< 30 U
Benzaldehyde	µg/kg	< 180 U	< 220 U	< 180 U	< 470 U	< 170 U	< 190 U	< 200 U
Benzylbutylphthalate	µg/kg	< 100 U	< 130 U	< 100 U	< 270 U	< 95 U	< 110 U	< 120 U
Bis(2-chloroethoxy)methane	µg/kg	< 94 U	< 120 U	< 94 U	< 250 U	< 88 U	< 100 U	< 110 U
bis(2-Chloroethyl) ether	µg/kg	< 87 U	< 110 U	< 86 U	< 230 U	< 81 U	< 92 U	< 99 U
Bis(2-ethylhexyl)phthalate	µg/kg	< 110 U	< 130 U	< 100 U	< 280 U	< 98 U	< 110 U	< 120 U
Carbazole	µg/kg	< 100 U	< 130 U	< 100 U	< 270 U	< 95 U	< 110 U	< 120 U
Dibenzofuran	µg/kg	< 92 U	< 120 U	< 92 U	< 240 U	< 86 U	< 98 U	< 100 U
Diethyl phthalate	µg/kg	< 97 U	< 120 U	< 96 U	< 260 U	< 90 U	< 100 U	< 110 U
Dimethylphthalate	µg/kg	< 93 U	< 120 U	< 93 U	< 250 U	< 87 U	< 99 U	< 110 U
Di-n-butylphthalate	µg/kg	< 100 U	< 130 U	< 100 U	< 280 U	< 97 U	< 110 U	< 120 U
Di-n-octylphthalate	µg/kg	< 100 U	< 130 U	< 100 U	< 280 U	< 97 U	< 110 U	< 120 U
Hexachlorobenzene	µg/kg	< 95 U	< 120 U	< 95 U	< 250 U	< 89 U	< 100 U	< 110 U
Hexachlorobenzene (SIM Screen)	µg/kg	< 2.4 U	< 2.9 U	3.4 J	< 6.2 U	4.9 J	< 2.5 U	< 2.7 U
Hexachlorobutadiene	µg/kg	< 88 U	< 110 U	< 87 U	< 230 U	< 82 U	< 93 U	< 100 U
Hexachlorobutadiene (SIM Screen)	µg/kg	< 4.0 U	< 5.0 U	< 3.9 U	< 10 U	< 3.7 U	< 4.2 U	< 4.5 U
Hexachlorocyclopentadiene	µg/kg	< 66 U	< 83 U	< 66 U	< 180 U	< 62 U	< 71 U	< 76 U
Hexachloroethane	µg/kg	< 87 U	< 110 U	< 86 U	< 230 U	< 81 U	< 92 U	< 99 U
Isophorone	µg/kg	< 100 U	< 120 U	< 99 U	< 260 U	< 93 U	< 110 U	< 110 U
Nitrobenzene	µg/kg	< 82 U	< 100 U	< 81 U	< 220 U	< 76 U	< 87 U	< 93 U
N-Nitrosodimethylamine	µg/kg	< 100 U	< 130 U	< 100 U	< 270 U	< 96 U	< 110 U	< 120 U
n-Nitrosodimethylamine (SIM Screen)	µg/kg	< 100 U	< 130 U	< 100 U	< 270 U	< 96 U	< 110 U	< 120 U
N-Nitroso-di-n-propylamine	µg/kg	< 90 U	< 110 U	< 90 U	< 240 U	< 84 U	< 96 U	< 100 U
N-Nitrosodiphenylamine	µg/kg	< 92 U	< 120 U	< 92 U	< 240 U	< 86 U	< 98 U	< 100 U
Pentachlorophenol	µg/kg	< 55 U	< 68 U	< 54 U	< 140 U	< 51 U	< 58 U	< 62 U
Pentachlorophenol (SIM Screen)	µg/kg	< 26 U	< 32 U	< 26 U	< 68 U	< 24 U	< 27 U	< 29 U
Phenol	µg/kg	< 89 U	< 110 U	< 88 U	< 240 U	< 83 U	< 95 U	< 100 U
06-PAHs by SIM								
2-Methylnaphthalene	µg/kg	< 0.45 U	< 0.53 U	< 0.43 U	< 1.2 U	0.45 J	< 0.46 U	< 0.52 U
Acenaphthene	µg/kg	< 0.49 U	< 0.58 U	< 0.47 U	< 1.3 U	< 0.44 U	< 0.50 U	< 0.57 U
Acenaphthylene	µg/kg	< 0.34 U	< 0.41 U	< 0.33 U	< 0.93 U	< 0.31 U	< 0.35 U	< 0.40 U
Anthracene	µg/kg	< 0.41 U	< 0.49 U	< 0.40 U	< 1.1 U	< 0.37 U	< 0.42 U	< 0.48 U
Benzo(a)anthracene	µg/kg	< 0.32 U	< 0.37 U	< 0.30 U	< 0.85 U	< 0.29 U	< 0.32 U	< 0.37 U
Benzo(a)pyrene	µg/kg	< 0.42 U	< 0.49 U	< 0.40 U	< 1.1 U	< 0.38 U	< 0.42 U	< 0.48 U
Benzo(b)fluoranthene	µg/kg	< 0.53 U	< 0.62 U	< 0.51 U	< 1.4 U	< 0.48 U	< 0.54 U	< 0.61 U
Benzo(g,h,i)perylene	µg/kg	< 1.0 U	< 1.2 U	< 1.0 U	< 2.8 U	< 0.94 U	< 1.1 U	< 1.2 U
Benzo(k)fluoranthene	µg/kg	< 0.79 U	< 0.94 U	< 0.76 U	< 2.1 U	< 0.72 U	< 0.81 U	< 0.92 U
Chrysene	µg/kg	0.40 J	0.73 J	< 0.35 U	< 0.97 U	0.39 J	< 0.37 U	0.57 J

Table I-7
Analytical Results for Solids Samples - PRI-13
Buffer Area North and East
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**	**PRI-13**
	Location ID	**PRI13-001**	**PRI13-001**	**PRI13-002**	**PRI13-003**	**PRI13-004**	**PRI13-005**	**PRI13-006**	**PRI13-006**	**PRI13-007**	**PRI13-008**	**PRI13-008**	**PRI13-009**
	Sample Date	**06-Dec-13**	**06-Dec-13**	**07-Dec-13**	**06-Dec-13**	**07-Dec-13**	**07-Dec-13**	**07-Dec-13**	**07-Dec-13**	**07-Dec-13**	**06-Dec-13**	**06-Dec-13**	**06-Dec-13**
	Sample Type	**FINE**	**N**	**N**	**N**	**N**	**N**	**FINE**	**N**	**N**	**FINE**	**N**	**FINE**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**
	Sample ID	**PRI13-001-SS01-120613 FINES**	**PRI13-001-SS01-120613**	**PRI13-002-SS01-120713**	**PRI13-003-SS01-120613**	**PRI13-004-SS01-120713**	**PRI13-005-SS01-120713**	**PRI13-006-SS01-120713 FINES**	**PRI13-006-SS01-120713**	**PRI13-007-SS01-120713**	**PRI13-008-SS01-120613 FINES**	**PRI13-008-SS01-120613**	**PRI13-009-SS01-120613 FINES**
Analyte	**Unit**												
Dibenzo(a,h)anthracene	µg/kg	*< 1.3 U*	*< 1.5 U*	*< 1.6 U*	*< 1.8 U*	*< 1.6 U*	*< 1.7 U*	*< 1.3 U*	*< 1.3 U*	*< 1.6 U*	*< 1.2 U*	*< 1.3 U*	*< 1.2 U*
Fluoranthene	µg/kg	0.36 J	*< 0.36 U*	*< 0.38 U*	*< 0.44 U*	*< 0.39 U*	*< 0.41 U*	0.43 J	*< 0.31 U*	*< 0.39 U*	4.6 J	1.8 J	1.0 J
Fluorene	µg/kg	*< 0.54 U*	*< 0.60 U*	*< 0.64 U*	*< 0.73 U*	*< 0.66 U*	*< 0.69 U*	*< 0.53 U*	*< 0.52 U*	*< 0.65 U*	1.6 J	*< 0.54 U*	*< 0.50 U*
Indeno(1,2,3-cd)pyrene	µg/kg	*< 0.53 U*	*< 0.59 U*	*< 0.63 U*	*< 0.71 U*	*< 0.64 U*	*< 0.68 U*	*< 0.52 U*	*< 0.51 U*	*< 0.63 U*	*< 0.48 U*	0.53 J	*< 0.49 U*
Naphthalene	µg/kg	0.80 J	*< 0.38 U*	*< 0.40 U*	*< 0.46 U*	*< 0.41 U*	*< 0.43 U*	1.3 J	*< 0.33 U*	*< 0.41 U*	12	0.45 J	1.5 J
Phenanthrene	µg/kg	1.0 J	*< 0.43 U*	0.74 J	0.80 J	0.85 J	0.99 J	1.3 J	0.50 J	0.83 J	7.2	2.1 J	1.2 J
Pyrene	µg/kg	*< 0.38 U*	*< 0.43 U*	*< 0.46 U*	*< 0.52 U*	*< 0.47 U*	*< 0.49 U*	*< 0.38 U*	*< 0.37 U*	*< 0.46 U*	3.8 J	1.4 J	0.90 J
Low Molecular Weight PAH (ND=0)	µg/kg	2.5	*< 0.60 U*	0.74	0.80	0.85	0.99	3.4	0.50	0.83	27	3.2	3.7
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	3.4	*< 1.7 U*	2.3	2.6	2.5	2.7	4.3	1.8	2.4	28	4.1	4.6
High Molecular Weight PAH (ND=0)	µg/kg	0.36	*< 1.5 U*	*< 1.6 U*	*< 1.8 U*	*< 1.6 U*	*< 1.7 U*	0.43	*< 1.3 U*	*< 1.6 U*	14	4.7	4.0
High Molecular Weight PAH (ND=1/2DL)	µg/kg	3.3	*< 3.5 U*	*< 3.7 U*	*< 4.2 U*	*< 3.8 U*	*< 4.0 U*	3.3	*< 3.0 U*	*< 3.7 U*	16	7.0	6.1
08-General Chemistry Parameters for Solids													
Perchlorate	µg/kg		*< 26 U*	*< 25 U*	*< 53 U*	*< 53 U*	*< 54 U*		*< 21 U*	*< 25 U*		*< 22 U*	
Total Organic Carbon	g/kg		*< 3.5 U*	5.0	4.1	4.8	4.6		*< 3.1 U*	*< 3.4 U*		4.9	
pH	pH units		8.11	8.00	7.92	7.75	8.24		8.47	8.32		8.34	
Cyanide, Total	mg/kg		*< 0.26 U*	*< 0.26 U*	*< 0.29 U*	*< 0.29 U*	*< 0.29 U*		*< 0.22 U*	*< 0.27 U*		*< 0.23 U*	

Table I-7
Analytical Results for Solids Samples - PRI-13
Buffer Area North and East
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13	PRI-13
	Location ID	PRI13-009	PRI13-010	PRI13-011	PRI13-012	PRI13-013	PRI13-013	PRI13-014
	Sample Date	06-Dec-13	05-Dec-13	05-Dec-13	06-Dec-13	05-Dec-13	05-Dec-13	05-Dec-13
	Sample Type	N	N	N	N	FINE	N	N
	Depth	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in
	Sample ID	PRI13-009-SS01-120613	PRI13-010-SS01-120513	PRI13-011-SS01-120513	PRI13-012-SS01-120613	PRI13-013-SS01-120513 FINES	PRI13-013-SS01-120513	PRI13-014-SS01-120513
Analyte	**Unit**							
Dibenzo(a,h)anthracene	µg/kg	< 1.3 U	< 1.5 U	< 1.2 U	< 3.4 U	< 1.1 U	< 1.3 U	< 1.5 U
Fluoranthene	µg/kg	0.35 J	0.45 J	< 0.29 U	< 0.82 U	0.43 J	< 0.31 U	1.4 J
Fluorene	µg/kg	< 0.51 U	< 0.61 U	< 0.49 U	< 1.4 U	< 0.46 U	< 0.52 U	< 0.59 U
Indeno(1,2,3-cd)pyrene	µg/kg	< 0.50 U	< 0.59 U	< 0.48 U	< 1.3 U	< 0.45 U	< 0.51 U	< 0.58 U
Naphthalene	µg/kg	< 0.32 U	0.53 J	< 0.31 U	< 0.86 U	0.59 J	< 0.33 U	< 0.37 U
Phenanthrene	µg/kg	0.50 J	1.2 J	0.41 J	< 0.98 U	1.2 J	0.54 J	0.75 J
Pyrene	µg/kg	< 0.37 U	0.58 J	< 0.35 U	< 0.98 U	0.45 J	< 0.37 U	0.83 J
Low Molecular Weight PAH (ND=0)	µg/kg	0.50	1.7	0.41	< 1.4 U	2.2	0.54	0.75
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	1.8	3.0	1.6	< 3.9 U	3.0	1.8	2.2
High Molecular Weight PAH (ND=0)	µg/kg	0.75	1.8	< 1.2 U	< 3.4 U	1.3	< 1.3 U	2.8
High Molecular Weight PAH (ND=1/2DL)	µg/kg	3.4	4.6	< 2.8 U	< 7.9 U	3.5	< 3.0 U	5.6
08-General Chemistry Parameters for Solids								
Perchlorate	µg/kg	< 22 U	< 27 U	< 20 U	< 57 U		< 22 U	< 24 U
Total Organic Carbon	g/kg	3.9 J	5.8	3.5 J	4.0		4.0	6.4
pH	pH units	8.26	8.41	8.65	9.09		8.44	8.10
Cyanide, Total	mg/kg	< 0.22 U	< 0.21 U	< 0.22 U	< 0.60 U		< 0.22 U	< 0.25 U

Notes:
< = Compound not detected. Reportable detection limit shown.
µg/kg = micrograms per kilogram
Empty cells = Not analyzed
FINE = Fines Portion (Sieved) of Normal Sample
g/kg = grams per kilogram
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
in = inches
mg/kg = milligrams per kilogram
N = Normal Environmental Sample
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pg/g = picogram per gram (1 pg/g = 0.001 µg/kg)
pH units = pH units
SIM = Selected ion monitoring
SVOC = Semi-volatile organic compound
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence
VOC = Volatile organic compound

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample
J+ = The result is an estimated quantity, biased high. The associated numerical value is the approximate concentration of the analyte in the sample
J- = The result is an estimated quantity, biased low. The associated numerical value is the approximate concentration of the analyte in the sample
U = Compound was analyzed for, but not detected. The associated numerical value is the reporting limit
UJ = The nondetected analyte was qualified as estimated at the sample quantitation limit. The reported sample quantitation limit is approximate and may be inaccurate or imprecise
UJQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration, value is an estimate
UQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration

Table I-8
Analytical Results for Solids Samples - PRI-14
Buffer Area South
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

Location Group		PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14
Location ID		PRI14-001	PRI14-002	PRI14-003	PRI14-003	PRI14-004	PRI14-005	PRI14-005	PRI14-005	PRI14-005	PRI14-006	PRI14-006	PRI14-006	PRI14-007
Sample Date		02-Dec-13	03-Dec-13	04-Dec-13	04-Dec-13	04-Dec-13	11-Dec-13	16-Dec-13	16-Dec-13	16-Dec-13	03-Dec-13	03-Dec-13	11-Dec-13	03-Dec-13
Sample Type		N	N	FINE	N	N	N	N	N	N	FINE	N	N	N
Depth		0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0.5 - 2 FEET	2 - 4 FEET	4 - 6 FEET	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in
Sample ID		PRI14-001-SS01-120213	PRI14-002-SS01-120313	PRI14-003-SS01-120413 FINES	PRI14-003-SS01-120413	PRI14-004-SS01-120413	PRI14-005-SS01-121113	PRI14-005-SB01-0.5-121613	PRI14-005-SB02-2-121613	PRI14-005-SB03-4-121613	PRI14-006-SS01-120313 FINES	PRI14-006-SS01-120313	PRI14-006-SS01-121113	PRI14-007-SS01-120313
Analyte	**Unit**													
01-Dioxins and Furans														
2,3,7,8-TCDD	pg/g	*< 0.068 UQ*	*< 0.018 U*	*< 0.14 U*	*< 0.15 UQ*	*< 0.026 U*	*< 0.34 UQ*	*< 0.11 U*	*< 0.091 U*	*< 0.14 U*	*< 3.0 U*	0.88 J		0.42 J
1,2,3,7,8-PeCDD	pg/g	0.34 J	*< 0.030 U*	1.1 J	0.98 J	*< 0.075 U*	*< 1.6 UQ*	*< 0.34 U*	*< 0.32 U*	*< 0.36 U*	*< 12 U*	*< 4.1 UQ*		2.2 J
1,2,3,4,7,8-HxCDD	pg/g	*< 0.28 UQ*	*< 0.11 U*	0.57 J	*< 0.49 UQ*	*< 0.072 UQ*	*< 1.7 UQ*	*< 0.11 U*	*< 0.072 U*	*< 0.098 U*	*< 12 UQ*	11		*< 0.94 UQ*
1,2,3,6,7,8-HxCDD	pg/g	0.94 J	*< 0.081 U*	3.8 J	3.2 J	*< 0.2 UQ*	5.9 J	*< 0.12 UQ*	*< 0.14 UQ*	*< 0.096 U*	29	20		3.6 J
1,2,3,7,8,9-HxCDD	pg/g	1.3 J	*< 0.084 U*	5.1 J	4.4 J	0.28 J	7.3 J	0.29 J	*< 0.19 UQ*	*< 0.16 UQ*	47	28		5.2 J
1,2,3,4,6,7,8-HpCDD	pg/g	6.1	0.44 J	13	11	1.4 J	39	0.85 J	0.55 J	0.52 J	190	150		17
OCDD	pg/g	23	1.1 J	24	16 J	5.8 J	*< 68 UQ*	*< 2.4 U*	*< 1.3 U*	*< 1.3 U*	*< 540 UQ*	*< 440 UQ*		*< 49 UQ*
2,3,7,8-TCDF	pg/g	7.1	0.59 J	4.6	4.4	*< 1.1 UQ*	64	1.1 J	*< 0.67 UQ*	1.4 J	280	180		59
1,2,3,7,8-PeCDF	pg/g	15	0.63 J	13	11	2.1 J	170	3.2 J	2.7 J	*< 1.6 UQ*	870	600		100
2,3,4,7,8-PeCDF	pg/g	8.2	*< 0.35 UQ*	8.5	6.7 J	1.3 J	120	2.4 J	2.2 J	1.2 J	690	470		71
1,2,3,4,7,8-HxCDF	pg/g	49	2.0 J	41	37	5.6 J	650	12	9.6	6.6 J	4,300	2,600		270
1,2,3,6,7,8-HxCDF	pg/g	32	1.3 J	33	28	3.9 J	500	7.6	6.3 J	4.3 J	2,300	1,500		160
1,2,3,7,8,9-HxCDF	pg/g	3.7 J	0.14 J	3.5 J	2.6 J	*< 0.48 UQ*	54	1.2 J	*< 0.71 UQ*	*< 0.54 UQ*	340	160		22
2,3,4,6,7,8-HxCDF	pg/g	11	*< 0.68 UQ*	14	14	1.8 J	210	2.8 J	2.3 J	1.3 J	660	630		71
1,2,3,4,6,7,8-HpCDF	pg/g	240	9.2	280	260	41	4,600 J	56	40	38	15,000	12,000		1,300
1,2,3,4,7,8,9-HpCDF	pg/g	77	2.6 J	57	52	9.3	1,100	17	11	*< 9.8 UQ*	4,500	3,300		390
OCDF	pg/g	1,700	61	1,300	1,100	330	21,000	340	170	180	100,000 J	100,000		9,500 J
Calculated TEQ (ND=0), Mammalian	pg/g	18	0.56	19	17	2.4	270	4.2	3.2	2.2	1,300	910		110
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	18	0.71	19	17	2.5	270	4.5	3.5	2.6	1,300	910		110
Calculated TEQ (ND=0), Avian	pg/g	740	1.2	480	26	3.7	6,200	95	4.8	4.2	130,000	98,000		1,400
Calculated TEQ (ND=1/2 DL), Avian	pg/g	740	15	480	48	21	6,200	95	22	21	130,000	98,000		1,400
02-PCBs														
PCB-81	pg/g	0.90 J	*< 0.28 U*	1.8 J	*< 1.1 UQ*	*< 0.46 UQ*	58	*< 1.0 U*	*< 0.90 U*	*< 1.0 U*	330	290		26
PCB-77	pg/g	6.7	0.96 J	6.8	8.1	5.9	220	*< 1.1 U*	*< 0.95 U*	*< 1.0 U*	760	750		51
PCB-105	pg/g	24	*< 1.9 UQ*	21	21	8.9	110	*< 1.2 UQ*	*< 0.94 U*	*< 1.3 UQ*	660	550		55
PCB-114	pg/g	2.2	*< 0.28 U*	2.0 J	*< 1.9 UQ*	*< 0.63 UQ*	94	*< 0.93 U*	*< 0.62 U*	*< 0.52 U*	660	560		28
PCB-118	pg/g	34	3.6	34	33	15	460	*< 4.4 U*	*< 1.8 UQ*	*< 2.8 UQ*	1,800	1,500		98
PCB-123	pg/g	2.0 J	*< 0.28 U*	2.1 J	2.4 J	0.92 J	80	*< 0.87 U*	*< 0.59 U*	*< 0.51 U*	510	520		*< 16 UQ*
PCB-126	pg/g	3.1	*< 0.31 U*	3.5	4.3	1.5 J	93	*< 1.1 U*	*< 0.72 U*	*< 0.63 U*	*< 400 U*	460		31
PCB-156 & 157	pg/g	13	*< 0.89 UQ*	11	11	3.9 J	490	2.8 J	*< 1.4 UQ*	*< 2.1 UQ*	2,300	2,000		98
PCB-167	pg/g	8.4	*< 0.49 UQ*	6.7	7.1	2.7 J	420	2.8 J	1.8 J	1.8 J	2,400	2,100		95
PCB-169	pg/g	1.3 J	*< 0.27 U*	2.1 J	1.8 J	0.57 J	100	*< 0.78 U*	0.76 J	*< 0.32 U*	360	300		*< 17 UQ*
PCB-189	pg/g	*< 7.1 UQ*	1.2 J	9.9	9.9	2.8 J	670	3.8	2.4 J	2.6 J	2,900	2,900		120
Monochlorobiphenyls, Total	pg/g	4.8 J	3.3 J	9.7 J	24 J	11 J	200 J	32 J	16 J	9.5 J	570 J	690		58 J
Dichlorobiphenyls, Total	pg/g	35 J	*< 9.7 U*	58 J	90 J	35 J	2,000	35 J	11 J	5.9 J	8,700	7,800		700
Trichlorobiphenyls, Total	pg/g	9.6 J	3.8 J	33 J	60 J	33 J	3,800	24 J	6.3 J	9.2 J	17,000	16,000		410
Tetrachlorobiphenyls, Total	pg/g	63 J	13 J	120 J	120 J	65 J	5,000	35 J	8.6 J	21 J	25,000	20,000		830
Pentachlorobiphenyls, Total	pg/g	250	26 J	240	250 J	130 J	9,100	55 J	26 J	39 J	37,000	28,000		1,400
Hexachlorobiphenyls, Total	pg/g	290	34 J	300	270 J	120 J	12,000	91 J	44 J	56 J	58,000	51,000		2,400
Heptachlorobiphenyls, Total	pg/g	280	44 J	480	380 J	160 J	19,000	160 J	80 J	100 J	84,000	69,000		4,000
Octachlorobiphenyls, Total	pg/g	460	72 J	850	760	260 J	29,000	290 J	150 J	160 J	120,000	100,000		6,300
Nonachlorobiphenyls, Total	pg/g	960	150 J	2,200	2,300	630	59,000	530	270 J	300	200,000	180,000		11,000
Decachlorobiphenyl (PCB-209)	pg/g	9,100 J	1,300	17,000 J	17,000	5,700	230,000 J	3,200 J	1,400	1,700	670,000 J	750,000 J		80,000 J
Total PCBs	pg/g	11,000	1,700	22,000	22,000	7,200	370,000	4,500	2,000	2,400	1,200,000	760,000		110,000
03- Metals														
Total Aluminum	mg/kg	6,800	17,000	11,000	8,400	9,500	4,400	3,500	1,100	710	9,900	7,600		12,000
Total Antimony	mg/kg	0.27 J-	0.75 J-	0.42 J-	0.62 J-	0.57 J-	0.40 J-	0.61 J-	1.3 J-	0.32 J-	0.61 J-	0.63 J-		0.57 J-
Total Arsenic	mg/kg	5.6	14	17	15	17	11	7.3	19	8.9	15	11		12
Total Barium	mg/kg	150 J	220 J	130	120 J	220 J	220	490	280	380	180	170 J		260 J
Total Beryllium	mg/kg	0.31	0.71	0.46	0.41	0.42	0.20	0.17	0.065 J	0.049 J	0.41	0.34		0.49
Total Cadmium	mg/kg	0.12 J	0.22 J	*< 0.11 U*	0.11 J	0.13 J	*< 0.097 U*	0.12 J	0.37	0.13 J	*< 0.12 U*	0.10 J		0.14 J
Total Calcium	mg/kg	130,000 J	120,000 J	150,000	140,000 J	120,000 J	280,000	220,000	230,000	190,000	160,000	160,000 J		100,000 J
Total Chromium	mg/kg	7.7	18	12	12	11	9.0	5.0	2.0	1.5	15	11		15
Total Cobalt	mg/kg	2.5	6.3	3.8	3.6	4.0	2.2	2.7	1.7	1.1	4.1	3.4		5.4
Total Copper	mg/kg	5.9	14	74	8.3	9.0	7.1	4.4	2.2	1.6	11	7.0		11
Total Iron	mg/kg	7,000	14,000	12,000	9,200	9,600	12,000	4,300	2,300	910	14,000	9,900		13,000
Total Lead	mg/kg	5.8 J	14 J	13 J	12 J	10 J	8.8	5.2 J	4.1 J	3.2 J	9.8 J	8.7 J		11 J
Total Magnesium	mg/kg	22,000 J	41,000 J	32,000	27,000 J	56,000 J	16,000	30,000	29,000	40,000	22,000	17,000 J		37,000 J
Total Manganese	mg/kg	150	330	290	280	240	450	390	250	230	460	470		320
Total Mercury	mg/kg	*< 0.0092 U*	0.012 J	0.0098 J	*< 0.016 U*	0.025 J	0.054 J	*< 0.012 U*	*< 0.012 U*	*< 0.012 U*	0.015 J	*< 0.014 U*		0.022 J
Total Molybdenum	mg/kg	*< 0.23 U*	*< 0.16 U*	1.1	1.0	1.1	2.1	4.2	22	9.4	2.4	1.8		1.0
Total Nickel	mg/kg	5.8	16	10	9.4	9.6	7.2	7.7	4.1	2.6	11	8.5		13
Total Potassium	mg/kg	2,900 J	7,300 J	7,700	7,200 J	7,700 J	2,200 J+	1,700 J+	1,000 J+	1,200 J+	5,400	4,200 J		9,100 J
Total Selenium	mg/kg	*< 0.22 UJ*	*< 0.25 UJ*	0.25 J	0.22 J-	0.23 J-	*< 0.19 UJ*	0.64 J-	0.72 J-	0.30 J-	0.35 J	0.23 J-		0.32 J-
Total Silver	mg/kg	*< 0.065 U*	*< 0.074 U*	*< 0.065 U*	*< 0.059 U*	*< 0.051 U*	*< 0.058 U*	0.094 J	0.059 J	*< 0.046 U*	*< 0.070 U*	*< 0.053 U*		*< 0.045 U*
Total Sodium	mg/kg	4,700 J	5,600 J	21,000	30,000 J	11,000 J	5,400 J+	5,000 J+	8,800 J+	20,000 J+	8,700	15,000 J		22,000 J
Total Thallium	mg/kg	*< 0.11 U*	*< 0.18 U*	*< 0.11 U*	*< 0.098 U*	0.18	*< 0.097 U*	*< 0.073 U*	*< 0.14 U*	*< 0.077 U*	*< 0.12 U*	*< 0.098 U*		*< 0.14 U*
Total Vanadium	mg/kg	14	40	24	22	23	13	20	14	11	25	20		23
Total Zinc	mg/kg	26 J-	52 J-	47 J-	29 J-	35 J-	21	13	4.4	5.8	38 J-	28 J-		40 J-

Table I-8
Analytical Results for Solids Samples - PRI-14
Buffer Area South
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	**PRI-14**	**PRI-14**	**PRI-14**	**PRI-14**	**PRI-14**	**PRI-14**	**PRI-14**	**PRI-14**	**PRI-14**	**PRI-14**	**PRI-14**	**PRI-14**	**PRI-14**
	Location ID	**PRI14-007**	**PRI14-008**	**PRI14-008**	**PRI14-009**	**PRI14-009**	**PRI14-010**	**PRI14-010**	**PRI14-011**	**PRI14-012**	**PRI14-013**	**PRI14-013**	**PRI14-014**	**PRI14-015**
	Sample Date	**11-Dec-13**	**02-Dec-13**	**11-Dec-13**	**02-Dec-13**	**02-Dec-13**	**02-Dec-13**	**02-Dec-13**	**02-Dec-13**	**25-Nov-13**	**25-Nov-13**	**25-Nov-13**	**25-Nov-13**	**25-Nov-13**
	Sample Type	**N**	**N**	**N**	**FINE**	**N**	**FINE**	**N**	**N**	**N**	**FINE**	**N**	**N**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**
	Sample ID	**PRI14-007-SS01-121113**	**PRI14-008-SS01-120213**	**PRI14-008-SS01-121113**	**PRI14-009-SS01-120213 FINES**	**PRI14-009-SS01-120213**	**PRI14-010-SS01-120213 FINES**	**PRI14-010-SS01-120213**	**PRI14-011-SS01-120213**	**PRI14-012-SS01-112513**	**PRI14-013-SS01-112513 FINES**	**PRI14-013-SS01-112513**	**PRI14-014-SS01-112513**	**PRI14-015-SS01-112513**
Analyte	**Unit**													
01-Dioxins and Furans														
2,3,7,8-TCDD	pg/g		*< 0.024 U*		*< 0.16 U*	*< 0.020 U*	*< 0.14 U*	*< 0.11 UQ*	*< 0.084 UQ*	*< 0.13 U*	*< 0.10 U*	*< 0.16 U*	*< 0.13 U*	*< 0.12 U*
1,2,3,7,8-PeCDD	pg/g		*< 0.043 U*		*< 0.15 U*	*< 0.031 U*	*< 0.39 UQ*	0.47 J	0.30 J	*< 0.24 U*	*< 0.16 U*	*< 0.25 U*	*< 0.24 U*	*< 0.24 U*
1,2,3,4,7,8-HxCDD	pg/g		0.10 J		*< 0.22 U*	*< 0.039 U*	*< 0.41 UQ*	0.39 J	*< 0.17 UQ*	*< 0.17 U*	*< 0.16 U*	*< 0.12 U*	*< 0.11 UQ*	*< 0.059 U*
1,2,3,6,7,8-HxCDD	pg/g		0.19 J		*< 0.27 UQ*	*< 0.028 U*	1.5 J	1.0 J	0.52 J	*< 0.14 U*	0.28 J	*< 0.093 U*	*< 0.3 UQ*	*< 0.047 U*
1,2,3,7,8,9-HxCDD	pg/g		*< 0.19 UQ*		0.32 J	*< 0.029 U*	1.9 J	1.7 J	0.79 J	*< 0.13 U*	0.27 J	*< 0.090 U*	0.51 J	*< 0.046 U*
1,2,3,4,6,7,8-HpCDD	pg/g		1.1 J		1.9 J	0.55 J	7.7	6.4	2.9 J	0.82 J	1.6 J	0.71 J	2.0 J	*< 0.22 UQ*
OCDD	pg/g		*< 5.7 UQ*		7.6 J	1.8 J	20	22	6.6 J	*< 2.4 U*	7.5 J	*< 4.2 U*	*< 7.4 U*	*< 0.94 U*
2,3,7,8-TCDF	pg/g		1.1 J		1.3	0.76 J	10	9.9	3.0	1.1	1.3	*< 0.88 UQ*	2.4	0.55 J
1,2,3,7,8-PeCDF	pg/g		3.3 J		4.7 J	1.1 J	32	25	8.2	2.6 J	3.3 J	*< 0.84 UQ*	6.9	0.70 J
2,3,4,7,8-PeCDF	pg/g		2.4 J		2.8 J	0.69 J	20	15	5.3 J	1.6 J	2.1 J	0.75 J	4.3 J	0.43 J
1,2,3,4,7,8-HxCDF	pg/g		16		15	4.4 J	91	85	25	9.5	10	3.7 J	23	2.0 J
1,2,3,6,7,8-HxCDF	pg/g		10		12	3.2 J	70	55	19	5.7	7.9	2.8 J	16	1.2 J
1,2,3,7,8,9-HxCDF	pg/g		1.1 J		*< 1 UQ*	0.30 J	8.6	6.6	1.4 J	1.0 J	*< 1 UQ*	*< 0.34 UQ*	1.6 J	*< 0.33 U*
2,3,4,6,7,8-HxCDF	pg/g		4.1 J		3.4 J	1.2 J	19	23	8.0	1.7 J	2.7 J	*< 0.63 UQ*	4.3 J	*< 0.31 UQ*
1,2,3,4,6,7,8-HpCDF	pg/g		110		96	25	550	430	130	45	73	28	130	8.1
1,2,3,4,7,8,9-HpCDF	pg/g		30		21	*< 4.6 UQ*	160	120	33	17	21	7.4	38	2.5 J
OCDF	pg/g		830		530	140	3,500	2,900	680	310	520	180	740	40
Calculated TEQ (ND=0), Mammalian	pg/g		6.0		5.5	1.5	36	32	10	3.2	4.3	1.3	8.3	0.64
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g		6.0		5.8	1.6	36	32	10	3.5	4.5	1.7	8.5	0.90
Calculated TEQ (ND=0), Avian	pg/g		270		190	120	2,500	1,500	230	230	7.1	120	14	1.5
Calculated TEQ (ND=1/2 DL), Avian	pg/g		270		190	120	2,500	1,500	230	230	20	120	27	14
02-PCBs														
PCB-81	pg/g		1.3 J		*< 0.80 U*	*< 0.56 U*	3.7	5.5	1.9 J	*< 1.2 U*	*< 0.88 U*	*< 0.99 U*	*< 0.75 U*	*< 0.80 U*
PCB-77	pg/g		4.4		3.0	*< 0.8 UQ*	13	18	6.7	2.1 J	3.8	1.7 J	3.0	*< 0.86 U*
PCB-105	pg/g		6.4		8.9	7.6	20	24	9.8	*< 1.4 UQ*	*< 2.2 U*	1.8 J	1.6 J	*< 0.49 U*
PCB-114	pg/g		*< 1.8 UQ*		0.80 J	*< 0.54 U*	6.2	6.6	1.5 J	*< 0.64 U*	*< 0.85 U*	*< 0.76 U*	*< 0.56 U*	*< 0.45 U*
PCB-118	pg/g		14		18	12	38	49	18	3.4	7.5	*< 3.7 UQ*	4.1	1.3 J
PCB-123	pg/g		1.9 J		*< 0.64 U*	*< 0.51 U*	5.5	6.0	*< 1.3 UQ*	*< 0.64 U*	*< 0.81 U*	*< 0.73 U*	0.62 J	*< 0.47 U*
PCB-126	pg/g		2.2 J		*< 0.80 U*	*< 0.64 U*	6.1	9.5	4.1	*< 1.1 UQ*	1.2 J	*< 0.81 U*	1.1 J	*< 0.52 U*
PCB-156 & 157	pg/g		9.1		2.4 J	1.8 J	24	26	6.8	*< 2.8 UQ*	3.6 J	1.9 J	2.3 J	*< 0.50 U*
PCB-167	pg/g		8.0		*< 1.7 UQ*	*< 0.87 UQ*	22	23	4.4	2.8	3.5	*< 1.6 UQ*	2.1 J	*< 0.39 U*
PCB-169	pg/g		*< 1.8 UQ*		*< 0.68 UQ*	*< 0.42 U*	4.6	5.2	*< 1.6 UQ*	*< 0.68 U*	1.8 J	*< 0.66 U*	*< 0.68 U*	*< 0.44 U*
PCB-189	pg/g		12		2.1	*< 0.48 U*	32	31	6.9	3.8	5.6	*< 2.4 UQ*	2.5	*< 0.68 U*
Monochlorobiphenyls, Total	pg/g		24 J		5.3 J	5.2 J	9.1 J	9.3 J	6.7 J	6.0 J	13 J	9.4 J	5.2 J	4.1 J
Dichlorobiphenyls, Total	pg/g		24 J		120 J	7.2 J	64 J	74 J	31 J	*< 7.8 U*	58 J	18 J	6.6 J	*< 11 U*
Trichlorobiphenyls, Total	pg/g		48 J		160 J	*< 2.2 U*	130 J	160 J	20 J	12 J	40 J	8.3 J	5.6 J	*< 1.7 U*
Tetrachlorobiphenyls, Total	pg/g		100 J		270	33 J	250	350	77 J	16 J	76 J	21 J	21 J	2.6 J
Pentachlorobiphenyls, Total	pg/g		160 J		140 J	83 J	430	570	170 J	45 J	97 J	51 J	46 J	5.6 J
Hexachlorobiphenyls, Total	pg/g		240 J		98 J	54 J	610	760	230 J	70 J	200 J	99 J	88 J	7.5 J
Heptachlorobiphenyls, Total	pg/g		400		83 J	33 J	960	1,000	340	140 J	370	170 J	150 J	13 J
Octachlorobiphenyls, Total	pg/g		690		140 J	59 J	1,600	1,800	610	280	620	310	270	26 J
Nonachlorobiphenyls, Total	pg/g		1,500		370	150 J	3,600	3,900	1,200	580	1,400	690	560	61 J
Decachlorobiphenyl (PCB-209)	pg/g		15,000 J		2,900 J	1,200	31,000 J	29,000 J	8,200 J	5,300	10,000 J	5,400	4,300	440
Total PCBs	pg/g		18,000		4,300	1,600	39,000	38,000	11,000	6,700	13,000	7,100	5,600	560
03- Metals														
Total Aluminum	mg/kg		9,300		5,500	1,900	4,200	3,600	7,900	4,500	2,700	630	3,200	2,900
Total Antimony	mg/kg		0.77 J-		*< 0.20 UJ*	*< 0.21 UJ*	0.24 J-	0.38 J-	0.51 J-	0.37 J-	*< 0.23 UJ*	*< 0.13 UJ*	0.44 J-	0.39 J-
Total Arsenic	mg/kg		13		4.8	4.2	8.5	8.3	9.6	9.6	5.9	1.6	11	8.3
Total Barium	mg/kg		150 J		100	240 J	150	190 J	250 J	170	64	17	140	220
Total Beryllium	mg/kg		0.45		0.23	0.080 J	0.15 J	0.14 J	0.36	0.18 J	0.17 J	0.035 J	0.10 J	0.12 J
Total Cadmium	mg/kg		0.086 J		*< 0.098 U*	*< 0.10 U*	*< 0.10 U*	*< 0.076 U*	0.12 J	*< 0.11 U*	*< 0.11 U*	*< 0.067 U*	*< 0.12 U*	*< 0.11 U*
Total Calcium	mg/kg		74,000 J		120,000	280,000 J	94,000	140,000 J	130,000 J	100,000	120,000	52,000	110,000	140,000
Total Chromium	mg/kg		12		6.2	2.3	5.4	5.1	9.3	5.8	4.2	0.99	3.9	3.2
Total Cobalt	mg/kg		4.2		2.0	0.96	1.6	1.5	3.2	1.9	1.1	0.30	1.2	1.1
Total Copper	mg/kg		12		5.7	2.0	23	5.2	6.8	3.3	29	1.3	2.3	1.8
Total Iron	mg/kg		10,000		5,500	1,900	4,300	4,000	7,300	4,000	3,000	1,300	2,700	2,800
Total Lead	mg/kg		8.6 J		4.6 J	4.9 J	6.6 J	9.0 J	7.4 J	6.2 J	4.2 J	1.4 J	5.8 J	5.0 J
Total Magnesium	mg/kg		43,000 J		15,000	8,100 J	19,000	19,000 J	30,000 J	19,000	21,000	17,000	20,000	14,000
Total Manganese	mg/kg		230		120	52	98	97	200	130	94	28	72	62
Total Mercury	mg/kg		0.012 J		*< 0.0090 U*	*< 0.0087 U*	*< 0.0090 U*	0.013 J	*< 0.011 U*	*< 0.0097 U*	0.018 J	*< 0.011 U*	*< 0.0099 U*	*< 0.010 U*
Total Molybdenum	mg/kg		1.3		*< 0.071 U*	*< 0.042 U*	*< 0.38 U*	0.46	*< 0.32 U*	0.23 J	0.62	0.16 J	0.23 J	0.11 J
Total Nickel	mg/kg		10		4.7	2.0	3.3	3.0	7.6	3.8	4.9	0.79	2.5	2.3
Total Potassium	mg/kg		7,300 J		1,800	650 J	2,400	2,500 J	3,600 J	2,200	4,100	3,700	1,700	2,000
Total Selenium	mg/kg		0.40 J-		*< 0.20 U*	*< 0.21 UJ*	*< 0.20 U*	*< 0.15 UJ*	*< 0.23 UJ*	*< 0.22 UJ*	*< 0.23 U*	*< 0.13 UJ*	*< 0.23 UJ*	*< 0.22 UJ*
Total Silver	mg/kg		0.043 J		*< 0.059 U*	*< 0.063 U*	*< 0.061 U*	*< 0.045 U*	*< 0.069 U*	*< 0.066 U*	*< 0.069 U*	*< 0.040 U*	*< 0.070 U*	*< 0.067 U*
Total Sodium	mg/kg		68,000 J		1,600	3,300 J	5,400	14,000 J	20,000 J	13,000	85,000	220,000	13,000	17,000
Total Thallium	mg/kg		0.14		*< 0.098 U*	*< 0.10 U*	*< 0.10 U*	*< 0.076 U*	*< 0.12 U*	*< 0.11 U*	*< 0.11 U*	*< 0.067 U*	*< 0.12 U*	*< 0.11 U*
Total Vanadium	mg/kg		21		11	4.9	11	10	18	12	6.1	1.6	9.2	6.6
Total Zinc	mg/kg		31 J-		26 J-	17 J-	28 J-	20 J-	35 J-	17	24 J-	3.2 J	12	12

Table I-8
Analytical Results for Solids Samples - PRI-14
Buffer Area South
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

Analyte														
	Location Group	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14
	Location ID	PRI14-001	PRI14-002	PRI14-003	PRI14-003	PRI14-004	PRI14-005	PRI14-005	PRI14-005	PRI14-005	PRI14-006	PRI14-006	PRI14-006	PRI14-007
	Sample Date	02-Dec-13	03-Dec-13	04-Dec-13	04-Dec-13	04-Dec-13	11-Dec-13	16-Dec-13	16-Dec-13	16-Dec-13	03-Dec-13	03-Dec-13	11-Dec-13	03-Dec-13
	Sample Type	N	N	FINE	N	N	N	N	N	N	FINE	N	N	N
	Depth	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0.5 - 2 FEET	2 - 4 FEET	4 - 6 FEET	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in
	Sample ID	PRI14-001-SS01-120213	PRI14-002-SS01-120313	PRI14-003-SS01-120413 FINES	PRI14-003-SS01-120413	PRI14-004-SS01-120413	PRI14-005-SS01-121113	PRI14-005-SB01-0.5-121613	PRI14-005-SB02-2-121613	PRI14-005-SB03-4-121613	PRI14-006-SS01-120313 FINES	PRI14-006-SS01-120313	PRI14-006-SS01-121113	PRI14-007-SS01-120313
	Unit													
05-SVOCs														
1,1'-Biphenyl	µg/kg	*< 180 UJ*	*< 210 U*	*< 190 U*	*< 330 U*	*< 260 U*	*< 300 UJ*	*< 250 U*	*< 240 U*	*< 250 U*	*< 180 U*	*< 1,400 U*		*< 250 U*
1,2,4,5-Tetrachlorobenzene	µg/kg	*< 29 UJ*	*< 33 U*	*< 30 U*	*< 52 U*	*< 41 U*	*< 48 UJ*	*< 39 U*	*< 37 U*	*< 39 U*	110 J	*< 220 U*		*< 39 U*
2,3,4,6-Tetrachlorophenol	µg/kg	*< 91 UJ*	*< 100 U*	*< 93 U*	*< 160 U*	*< 130 U*	*< 150 UJ*	*< 120 U*	*< 120 U*	*< 120 U*	*< 92 U*	*< 700 U*		*< 120 U*
2,4,5-Trichlorophenol	µg/kg	*< 92 UJ*	*< 110 U*	*< 94 U*	*< 170 U*	*< 130 U*	*< 150 UJ*	*< 120 U*	*< 120 U*	*< 120 U*	*< 93 U*	*< 710 U*		*< 120 U*
2,4,6-Trichlorophenol	µg/kg	*< 93 UJ*	*< 110 U*	*< 95 U*	*< 170 U*	*< 130 U*	*< 150 UJ*	*< 130 U*	*< 120 U*	*< 130 U*	*< 94 U*	*< 720 U*		*< 130 U*
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	*< 4.9 UJ*	*< 5.6 U*	*< 5.0 U*	*< 8.8 U*	*< 6.9 U*	*< 8.0 UJ*	*< 6.5 U*	*< 6.3 U*	*< 6.6 U*	*< 4.9 UJ*	*< 7.5 U*		*< 6.6 U*
2,2-Oxybis(1-chloropropane)	µg/kg	*< 88 UJ*	*< 100 U*	*< 90 U*	*< 160 U*	*< 120 U*	*< 140 UJ*	*< 120 U*	*< 110 U*	*< 120 U*	*< 89 U*	*< 680 U*		*< 120 U*
2,4-Dichlorophenol	µg/kg	*< 99 UJ*	*< 110 U*	*< 100 U*	*< 180 U*	*< 140 U*	*< 160 UJ*	*< 130 U*	*< 130 U*	*< 130 U*	*< 100 U*	*< 760 U*		*< 130 U*
2,4-Dimethylphenol	µg/kg	*< 190 UJ*	*< 210 U*	*< 190 U*	*< 330 U*	*< 260 U*	*< 310 UJ*	*< 250 U*	*< 240 U*	*< 250 U*	*< 190 U*	*< 1,400 U*		*< 250 U*
2,4-Dinitrophenol	µg/kg	*< 240 UJ*	*< 270 U*	*< 240 U*	*< 430 U*	*< 330 U*	*< 390 UJ*	*< 320 U*	*< 310 U*	*< 320 U*	*< 240 U*	*< 1,800 U*		*< 320 U*
2,4-Dinitrotoluene	µg/kg	*< 99 UJ*	*< 110 U*	*< 100 U*	*< 180 U*	*< 140 U*	*< 160 UJ*	*< 130 U*	*< 130 U*	*< 130 U*	*< 100 U*	*< 760 U*		*< 130 U*
2,6-Dinitrotoluene	µg/kg	*< 110 UJ*	*< 130 U*	*< 110 U*	*< 200 U*	*< 150 U*	*< 180 UJ*	*< 150 U*	*< 140 U*	*< 150 U*	*< 110 U*	*< 850 U*		*< 150 U*
2-Chloronaphthalene	µg/kg	*< 90 UJ*	*< 100 U*	*< 92 U*	*< 160 U*	*< 130 U*	*< 150 UJ*	*< 120 U*	*< 120 U*	*< 120 U*	*< 91 U*	*< 690 U*		*< 120 U*
2-Chlorophenol	µg/kg	*< 98 UJ*	*< 110 U*	*< 100 U*	*< 180 U*	*< 140 U*	*< 160 UJ*	*< 130 U*	*< 130 U*	*< 130 U*	*< 99 U*	*< 750 U*		*< 130 U*
2-Methylphenol	µg/kg	*< 64 UJ*	*< 74 U*	*< 66 U*	*< 120 U*	*< 90 U*	*< 110 UJ*	*< 86 U*	*< 84 U*	*< 86 U*	*< 65 U*	*< 500 U*		*< 87 U*
2-Nitroaniline	µg/kg	*< 93 UJ*	*< 110 U*	*< 95 U*	*< 170 U*	*< 130 U*	*< 150 UJ*	*< 130 U*	*< 120 U*	*< 130 U*	*< 94 U*	*< 720 U*		*< 130 U*
2-Nitrophenol	µg/kg	*< 91 UJ*	*< 100 U*	*< 93 U*	*< 160 U*	*< 130 U*	*< 150 UJ*	*< 120 U*	*< 120 U*	*< 120 U*	*< 92 U*	*< 700 U*		*< 120 U*
3,3'-Dichlorobenzidine	µg/kg	*< 100 UJ*	*< 120 U*	*< 110 UJ*	*< 190 U*	*< 150 U*	*< 170 UJ*	*< 140 U*	*< 140 U*	*< 140 U*	*< 110 UJ*	*< 800 U*		*< 140 U*
3-Nitroaniline	µg/kg	*< 190 UJ*	*< 210 U*	*< 190 UJ*	*< 330 U*	*< 260 U*	*< 310 UJ*	*< 250 U*	*< 240 U*	*< 250 U*	*< 190 UJ*	*< 1,400 U*		*< 250 U*
4,6-Dinitro-2-methylphenol	µg/kg	*< 90 UJ*	*< 100 U*	*< 92 U*	*< 160 U*	*< 130 U*	*< 150 UJ*	*< 120 U*	*< 120 U*	*< 120 U*	*< 91 U*	*< 690 U*		*< 120 U*
4-Bromophenyl-phenylether	µg/kg	*< 94 UJ*	*< 110 U*	*< 97 U*	*< 170 U*	*< 130 U*	*< 160 UJ*	*< 130 U*	*< 120 U*	*< 130 U*	*< 95 U*	*< 730 U*		*< 130 U*
4-Chloro-3-methylphenol	µg/kg	*< 100 UJ*	*< 120 U*	*< 100 U*	*< 180 U*	*< 140 U*	*< 170 UJ*	*< 140 U*	*< 130 U*	*< 140 U*	*< 100 U*	*< 790 U*		*< 140 U*
4-Chloroaniline	µg/kg	*< 64 UJ*	*< 74 UJ*	*< 66 UJ*	*< 120 UJ*	*< 90 UJ*	*< 110 UJ*	*< 86 UJ*	*< 84 UJ*	*< 86 UJ*	*< 65 UJ*	*< 500 UJ*		*< 87 UJ*
4-Chlorophenyl-phenylether	µg/kg	*< 100 UJ*	*< 120 U*	*< 110 U*	*< 190 U*	*< 150 U*	*< 170 UJ*	*< 140 U*	*< 130 U*	*< 140 U*	*< 100 U*	*< 800 U*		*< 140 U*
3 & 4 Methylphenol	µg/kg	*< 370 UJ*	*< 420 U*	*< 380 U*	*< 660 U*	*< 510 U*	*< 600 UJ*	*< 490 U*	*< 480 U*	*< 490 U*	*< 370 U*	*< 2,800 U*		*< 500 U*
4-Nitroaniline	µg/kg	*< 98 UJ*	*< 110 U*	*< 100 U*	*< 180 U*	*< 140 U*	*< 160 UJ*	*< 130 UJ*	*< 130 UJ*	*< 130 UJ*	*< 99 U*	*< 750 U*		*< 130 U*
4-Nitrophenol	µg/kg	*< 310 UJ*	*< 360 U*	*< 320 U*	*< 560 U*	*< 440 U*	*< 510 UJ*	*< 420 U*	*< 400 U*	*< 420 U*	*< 310 U*	*< 2,400 U*		*< 420 U*
Acetophenone	µg/kg	*< 28 UJ*	*< 32 U*	1,300	85 J	50 J	58 J-	*< 37 U*	42 J	*< 37 U*	1,200	*< 210 U*		78 J
Benzaldehyde	µg/kg	*< 180 UJ*	*< 210 U*	820	*< 330 U*	*< 260 U*	*< 300 UJ*	*< 250 U*	*< 240 U*	*< 250 U*	470	*< 1,400 U*		*< 250 U*
Benzylbutylphthalate	µg/kg	*< 110 UJ*	*< 120 U*	*< 110 U*	*< 190 U*	*< 150 U*	*< 170 UJ*	*< 140 U*	*< 140 U*	*< 140 U*	*< 110 U*	*< 810 U*		*< 140 U*
Bis(2-chloroethoxy)methane	µg/kg	*< 98 UJ*	*< 110 U*	*< 100 U*	*< 180 U*	*< 140 U*	*< 160 UJ*	*< 130 U*	*< 130 U*	*< 130 U*	*< 99 U*	*< 750 U*		*< 130 U*
bis(2-Chloroethyl) ether	µg/kg	*< 90 UJ*	*< 100 U*	*< 92 U*	*< 160 U*	*< 130 U*	*< 150 UJ*	*< 120 U*	*< 120 U*	*< 120 U*	*< 91 U*	*< 690 U*		*< 120 U*
Bis(2-ethylhexyl)phthalate	µg/kg	*< 110 UJ*	*< 120 U*	*< 110 U*	*< 200 U*	*< 150 U*	*< 180 UJ*	*< 150 U*	*< 140 U*	*< 150 U*	*< 110 U*	*< 840 U*		*< 150 U*
Carbazole	µg/kg	*< 110 UJ*	*< 120 U*	*< 110 U*	*< 190 U*	*< 150 U*	*< 170 UJ*	*< 140 U*	*< 140 U*	*< 140 U*	*< 110 U*	*< 810 U*		*< 140 U*
Dibenzofuran	µg/kg	*< 95 UJ*	*< 110 U*	*< 98 U*	*< 170 U*	*< 130 U*	*< 160 UJ*	*< 130 U*	*< 120 U*	*< 130 U*	*< 96 U*	*< 740 U*		*< 130 U*
Diethyl phthalate	µg/kg	*< 100 UJ*	*< 110 U*	*< 100 U*	*< 180 U*	*< 140 U*	*< 160 UJ*	*< 130 U*	*< 130 U*	*< 130 U*	*< 100 U*	*< 770 U*		*< 140 U*
Dimethylphthalate	µg/kg	*< 97 UJ*	*< 110 U*	*< 99 U*	*< 170 U*	*< 140 U*	*< 160 UJ*	*< 130 U*	*< 130 U*	*< 130 U*	*< 97 U*	*< 740 U*		*< 130 U*
Di-n-butylphthalate	µg/kg	*< 110 UJ*	*< 120 U*	*< 110 U*	*< 190 U*	*< 150 U*	*< 180 UJ*	*< 140 U*	*< 140 U*	*< 140 U*	*< 110 U*	*< 830 U*		*< 150 U*
Di-n-octylphthalate	µg/kg	*< 110 UJ*	*< 120 U*	*< 110 U*	*< 190 U*	*< 150 U*	*< 180 UJ*	*< 140 U*	*< 140 U*	*< 140 U*	*< 110 U*	*< 830 U*		*< 150 U*
Hexachlorobenzene	µg/kg	*< 99 UJ*	*< 110 U*	*< 100 U*	*< 180 U*	*< 140 U*	580 J-	*< 130 U*	*< 130 U*	*< 130 U*	13,000	9,700		*< 130 U*
Hexachlorobenzene (SIM Screen)	µg/kg	71 J-	*< 2.8 U*	45	*< 4.4 U*	*< 3.4 U*	580 J	8.8 J	*< 3.2 U*	*< 3.3 U*	5,500 J			120
Hexachlorobutadiene	µg/kg	*< 91 UJ*	*< 100 U*	*< 93 U*	*< 160 U*	*< 130 U*	*< 150 UJ*	*< 120 U*	*< 120 U*	*< 120 U*	*< 92 U*	*< 700 U*		*< 120 U*
Hexachlorobutadiene (SIM Screen)	µg/kg	*< 4.1 UJ*	*< 4.7 U*	*< 4.2 U*	*< 7.4 U*	*< 5.8 U*	*< 6.8 UJ*	*< 5.5 U*	*< 5.3 U*	*< 5.5 U*	*< 4.1 UJ*	*< 6.3 U*		*< 5.6 U*
Hexachlorocyclopentadiene	µg/kg	*< 69 UJ*	*< 79 U*	*< 70 U*	*< 120 U*	*< 97 U*	*< 110 UJ*	*< 92 U*	*< 89 U*	*< 92 U*	*< 69 U*	*< 530 U*		*< 93 U*
Hexachloroethane	µg/kg	*< 90 UJ*	*< 100 U*	*< 92 U*	*< 160 U*	*< 130 U*	*< 150 UJ*	*< 120 U*	*< 120 U*	*< 120 U*	*< 91 U*	*< 690 U*		*< 120 U*
Isophorone	µg/kg	*< 100 UJ*	*< 120 U*	*< 110 U*	*< 190 U*	*< 150 U*	*< 170 UJ*	*< 140 U*	*< 130 U*	*< 140 U*	*< 100 U*	*< 800 U*		*< 140 U*
Nitrobenzene	µg/kg	*< 84 UJ*	*< 97 U*	*< 86 U*	*< 150 U*	*< 120 U*	*< 140 UJ*	*< 110 U*	*< 110 U*	*< 110 U*	*< 85 U*	*< 650 U*		*< 110 U*
N-Nitrosodimethylamine	µg/kg	*< 110 UJ*	*< 120 U*	*< 110 U*	*< 190 U*	*< 150 U*	*< 180 UJ*	*< 140 U*	*< 140 U*	*< 140 U*	*< 110 U*	*< 820 U*		*< 140 U*
n-Nitrosodimethylamine (SIM Screen)	µg/kg	*< 110 UJ*	*< 120 U*	*< 110 U*	*< 190 U*	*< 150 U*	*< 180 UJ*	*< 140 U*	*< 140 U*	*< 140 U*	*< 110 UJ*	*< 160 U*		*< 140 U*
N-Nitroso-di-n-propylamine	µg/kg	*< 93 UJ*	*< 110 U*	*< 95 U*	*< 170 U*	*< 130 U*	*< 150 UJ*	*< 130 U*	*< 120 U*	*< 130 U*	*< 94 U*	*< 720 U*		*< 130 U*
N-Nitrosodiphenylamine	µg/kg	*< 95 UJ*	*< 110 U*	*< 98 U*	*< 170 U*	*< 130 U*	*< 160 UJ*	*< 130 U*	*< 120 U*	*< 130 U*	*< 96 U*	*< 740 U*		*< 130 U*
Pentachlorophenol	µg/kg	*< 57 UJ*	*< 65 U*	*< 58 U*	*< 100 U*	*< 80 U*	*< 93 UJ*	*< 76 U*	*< 73 U*	*< 76 U*	*< 57 U*	*< 440 U*		*< 77 U*
Pentachlorophenol (SIM Screen)	µg/kg	*< 27 UJ*	*< 31 U*	*< 27 U*	*< 48 U*	*< 37 U*	*< 44 UJ*	*< 36 U*	*< 35 U*	*< 36 U*	*< 27 UJ*	*< 41 U*		*< 36 U*
Phenol	µg/kg	*< 92 UJ*	*< 110 U*	360 J	*< 170 U*	*< 130 U*	*< 150 UJ*	*< 120 U*	*< 120 U*	*< 120 U*	550	*< 710 U*		*< 120 U*
06-PAHs by SIM														
2-Methylnaphthalene	µg/kg	*< 0.44 U*	*< 0.51 U*	*< 0.47 U*	*< 1.5 U*	*< 0.89 U*	20	6.5 J	2.6 J	1.5 J	3.9 J	5.7 J		0.77 J
Acenaphthene	µg/kg	*< 0.48 U*	*< 0.56 U*	*< 0.52 U*	*< 1.3 U*	*< 1 U*	27	*< 0.69 U*	*< 0.73 U*	*< 0.68 U*	*< 0.55 U*	*< 0.78 U*		*< 0.67 U*
Acenaphthylene	µg/kg	*< 0.34 U*	*< 0.39 U*	*< 0.36 U*	*< 0.62 U*	*< 0.51 U*	11	*< 0.48 U*	*< 0.52 U*	*< 0.48 U*	*< 0.39 U*	*< 0.55 U*		*< 0.47 U*
Anthracene	µg/kg	*< 0.40 U*	*< 0.47 U*	*< 0.43 U*	*< 0.75 U*	*< 0.62 U*	*< 0.77 U*	*< 0.58 U*	0.68 J	1.5 J	*< 0.46 U*	*< 0.66 U*		*< 0.56 U*
Benzo(a)anthracene	µg/kg	*< 0.31 U*	*< 0.36 U*	*< 0.33 U*	*< 0.57 U*	*< 0.47 U*	*< 0.59 U*	*< 0.44 U*	*< 0.47 U*	*< 0.44 U*	*< 0.36 U*	*< 0.51 U*		*< 0.43 U*
Benzo(a)pyrene	µg/kg	*< 0.41 U*	*< 0.47 U*	*< 0.44 U*	*< 0.75 U*	*< 0.62 U*	*< 0.78 U*	*< 0.58 U*	*< 0.62 U*	*< 0.58 U*	*< 0.47 U*	*< 0.67 U*		*< 0.57 U*
Benzo(b)fluoranthene	µg/kg	*< 0.51 U*	*< 0.60 U*	*< 0.56 U*	*< 0.95 U*	*< 0.79 U*	*< 0.98 U*	*< 0.74 U*	*< 0.79 U*	*< 0.73 U*	*< 0.59 U*	*< 0.84 U*		*< 0.72 U*
Benzo(g,h,i)perylene	µg/kg	*< 1.0 UJ*	*< 1.2 UJ*	*< 1.1 U*	*< 1.9 U*	*< 1.6 U*	*< 1.9 U*	*< 1.5 U*	*< 1.6 U*	*< 1.5 U*	*< 1.2 U*	*< 1.7 UJ*		*< 1.4 UJ*
Benzo(k)fluoranthene	µg/kg	*< 0.77 U*	*< 0.90 U*	*< 0.84 U*	*< 1.4 U*	*< 1.2 U*	*< 1.5 U*	*< 1.1 U*	*< 1.2 U*	*< 1.1 U*	*< 0.89 U*	*< 1.3 U*		*< 1.1 U*
Chrysene	µg/kg	0.59 J	*< 0.41 U*	0.60 J	0.74 J	*< 0.54 U*	1.0 J	*< 0.51 U*	*< 0.54 U*	*< 0.50 U*	0.68 J	*< 0.58 U*		*< 0.49 U*
Dibenzo(a,h)anthracene	µg/kg	*< 1.2 U*	*< 1.4 U*	*< 1.3 U*	*< 2.3 U*	*< 1.9 U*	*< 2.3 U*	*< 1.8 U*	*< 1.9 U*	*< 1.7 U*	1.5 J	*< 2.0 U*		*< 1.7 U*
Fluoranthene	µg/kg	0.37 J	*< 0.35 U*	*< 0.32 U*	0.58 J	*< 0.46 U*	*< 0.57 U*	*< 0.43 U*	*< 0.46 U*	0.50 J	*< 0.34 U*	*< 0.49 U*		*< 0.42 U*
Fluorene	µg/kg	*< 0.50 U*	*< 0.58 U*	*< 0.54 U*	*< 0.93 U*	*< 0.76 U*	*< 0.96 U*	*< 0.72 U*	*< 0.77 U*	*< 0.71 U*	0.89 J	1.0 J		*< 0.70 U*
Indeno(1,2,3-cd)pyrene	µg/kg	*< 0.49 UJ*	*< 0.57 UJ*	*< 0.53 U*	*< 0.90 U*	*< 0.75 U*	*< 0.93 U*	*< 0.70 U*	*< 0.75 U*	*< 0.70 U*	1.5 J	*< 0.80 UJ*		*< 0.68 UJ*
Naphthalene	µg/kg	*< 0.31 U*	*< 0.37 U*	0.80 J	*< 9 U*	*< 6.2 U*	*< 0.60 U*	1.7 J	1.1 J	0.60 J	1.1 J	1.4 J		*< 0.44 U*
Phenanthrene	µg/kg	0.48 J	*< 0.42 U*	2.7 J	*< 1.6 U*	*< 1.2 U*	14	0.73 J	0.75 J	1.1 J	4.8 J	4.1 J		0.98 J
Pyrene	µg/kg	0.47 J	*< 0.42 U*	*< 0.38 U*	*< 0.66 U*	*< 0.55 U*	*< 0.68 U*	*< 0.51 U*	*< 0.55 U*	0.51 J	*< 0.41 U*	*< 0.58 U*		*< 0.50 U*
Low Molecular Weight PAH (ND=0)	µg/kg	0.48	*< 0.58 U*	3.5	*< 9.0 U*	*< 6.2 U*	72	8.9	5.1	4.7	11	12		1.8

Table I-8
Analytical Results for Solids Samples - PRI-14
Buffer Area South
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14
	Location ID	**PRI14-007**	**PRI14-008**	**PRI14-008**	**PRI14-009**	**PRI14-009**	**PRI14-010**	**PRI14-010**	**PRI14-011**	**PRI14-012**	**PRI14-013**	**PRI14-013**	**PRI14-014**	**PRI14-015**
	Sample Date	**11-Dec-13**	**02-Dec-13**	**11-Dec-13**	**02-Dec-13**	**02-Dec-13**	**02-Dec-13**	**02-Dec-13**	**02-Dec-13**	**25-Nov-13**	**25-Nov-13**	**25-Nov-13**	**25-Nov-13**	**25-Nov-13**
	Sample Type	**N**	**N**	**N**	**FINE**	**N**	**FINE**	**N**	**N**	**N**	**FINE**	**N**	**N**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**
	Sample ID	**PRI14-007-SS01-121113**	**PRI14-008-SS01-120213**	**PRI14-008-SS01-121113**	**PRI14-009-SS01-120213 FINES**	**PRI14-009-SS01-120213**	**PRI14-010-SS01-120213 FINES**	**PRI14-010-SS01-120213**	**PRI14-011-SS01-120213**	**PRI14-012-SS01-112513**	**PRI14-013-SS01-112513 FINES**	**PRI14-013-SS01-112513**	**PRI14-014-SS01-112513**	**PRI14-015-SS01-112513**
Analyte	**Unit**													
05-SVOCs														
1,1'-Biphenyl	µg/kg		< 230 U		< 160 U	< 170 U	< 170 U	< 190 U	< 190 U	< 190 U	< 190 U	< 220 U	< 190 U	< 190 U
1,2,4,5-Tetrachlorobenzene	µg/kg		< 36 U		< 25 U	< 26 U	< 27 U	< 30 U	< 30 U	< 29 U	< 31 U	< 34 U	< 30 U	< 30 U
2,3,4,6-Tetrachlorophenol	µg/kg		< 110 U		< 80 UJ	< 83 U	< 85 U	< 95 U	< 96 U	< 93 U	< 96 U	< 110 U	< 94 U	< 94 U
2,4,5-Trichlorophenol	µg/kg		< 120 U		< 81 UJ	< 84 U	< 86 U	< 96 U	< 97 U	< 94 U	< 98 U	< 110 U	< 95 U	< 95 U
2,4,6-Trichlorophenol	µg/kg		< 120 U		< 82 UJ	< 85 U	< 87 U	< 98 U	< 98 U	< 95 U	< 99 U	< 110 U	< 96 U	< 96 U
2,4,6-Trichlorophenol (SIM Screen)	µg/kg		< 6.1 U		< 4.3 UJ	< 4.5 U	< 4.6 U	< 5.1 U	< 5.1 U	< 5.0 U	< 5.2 U	< 5.7 U	< 5.0 U	< 5.0 U
2,2-Oxybis(1-chloropropane)	µg/kg		< 110 U		< 77 U	< 80 U	< 82 U	< 92 U	< 92 U	< 89 U	< 93 U	< 100 U	< 90 U	< 91 U
2,4-Dichlorophenol	µg/kg		< 120 U		< 87 UJ	< 90 U	< 92 U	< 100 U	< 100 U	< 100 U	< 100 U	< 120 U	< 100 U	< 100 U
2,4-Dimethylphenol	µg/kg		< 230 U		< 160 UJ	< 170 U	< 170 U	< 190 U	< 190 U	< 190 U	< 200 U	< 220 U	< 190 U	< 190 U
2,4-Dinitrophenol	µg/kg		< 300 U		< 210 UJ	< 220 U	< 220 U	< 250 U	< 250 U	< 240 U	< 250 U	< 280 U	< 240 U	< 250 U
2,4-Dinitrotoluene	µg/kg		< 120 U		< 87 U	< 90 U	< 92 U	< 100 U	< 100 U	< 100 U	< 100 U	< 120 U	< 100 U	< 100 U
2,6-Dinitrotoluene	µg/kg		< 140 U		< 97 U	< 100 U	< 100 U	< 110 U	< 120 U	< 110 U	< 120 U	< 130 U	< 110 U	< 110 U
2-Chloronaphthalene	µg/kg		< 110 U		< 79 U	< 82 U	< 84 U	< 94 U	< 94 U	< 92 U	< 95 U	< 110 U	< 93 U	< 93 U
2-Chlorophenol	µg/kg		< 120 U		< 86 UJ	< 89 U	< 91 U	< 100 U	< 100 U	< 99 U	< 100 U	< 110 U	< 100 U	< 100 U
2-Methylphenol	µg/kg		< 80 U		< 57 UJ	< 59 U	< 60 U	< 67 U	< 68 U	< 66 U	< 68 U	< 76 U	< 66 U	< 67 U
2-Nitroaniline	µg/kg		< 120 U		< 82 U	< 85 U	< 87 U	< 98 U	< 98 U	< 95 U	< 99 U	< 110 U	< 96 U	< 96 U
2-Nitrophenol	µg/kg		< 110 U		< 80 UJ	< 83 U	< 85 U	< 95 U	< 96 U	< 93 U	< 96 U	< 110 U	< 94 U	< 94 U
3,3'-Dichlorobenzidine	µg/kg		< 130 U		< 92 UJ	< 95 U	< 97 UJ	< 110 U	< 110 U	< 110 U	< 110 UJ	< 120 U	< 110 U	< 110 U
3-Nitroaniline	µg/kg		< 230 U		< 160 UJ	< 170 U	< 170 UJ	< 190 U	< 190 U	< 190 U	< 200 UJ	< 220 U	< 190 U	< 190 U
4,6-Dinitro-2-methylphenol	µg/kg		< 110 U		< 79 UJ	< 82 U	< 84 U	< 94 U	< 94 U	< 92 U	< 95 U	< 110 U	< 93 U	< 93 U
4-Bromophenyl-phenylether	µg/kg		< 120 U		< 83 U	< 86 U	< 88 U	< 99 U	< 99 U	< 96 U	< 100 U	< 110 U	< 97 U	< 97 U
4-Chloro-3-methylphenol	µg/kg		< 130 U		< 90 UJ	< 93 U	< 95 U	< 110 U	< 110 U	< 100 U	< 110 U	< 120 U	< 110 U	< 110 U
4-Chloroaniline	µg/kg		< 80 UJ		< 57 UJ	< 59 UJ	< 60 UJ	< 67 UJ	< 68 UJ	< 66 UJ	< 68 UJ	< 76 UJ	< 66 UJ	< 67 UJ
4-Chlorophenyl-phenylether	µg/kg		< 130 U		< 91 U	< 94 U	< 96 U	< 110 U	< 110 U	< 110 U	< 110 U	< 120 U	< 110 U	< 110 U
3 & 4 Methylphenol	µg/kg		< 460 U		< 320 UJ	< 330 U	< 340 U	< 380 U	< 380 U	< 370 U	< 390 U	< 430 U	< 380 U	< 380 U
4-Nitroaniline	µg/kg		< 120 U		< 86 U	< 89 U	< 91 U	< 100 U	< 100 U	< 99 U	< 100 U	< 110 U	< 100 U	< 100 U
4-Nitrophenol	µg/kg		< 390 U		< 270 UJ	< 280 U	< 290 U	< 330 U	< 330 U	< 320 U	< 330 U	< 370 U	< 320 U	< 320 U
Acetophenone	µg/kg		92 J		180 J	< 25 U	770	< 29 U	< 29 U	44 J	1,700	450	< 29 U	< 29 U
Benzaldehyde	µg/kg		< 230 U		< 160 U	< 170 U	640	< 190 U	< 190 U	< 190 U	1,000	< 220 U	< 190 U	< 190 U
Benzylbutylphthalate	µg/kg		< 130 U		< 93 U	< 96 U	< 98 U	< 110 U	< 110 U	< 110 U	< 110 U	< 120 U	< 110 U	< 110 U
Bis(2-chloroethoxy)methane	µg/kg		< 120 U		< 86 U	< 89 U	< 91 U	< 100 U	< 100 U	< 99 U	< 100 U	< 110 U	< 100 U	< 100 U
bis(2-Chloroethyl) ether	µg/kg		< 110 U		< 79 U	< 82 U	< 84 U	< 94 U	< 94 U	< 92 U	< 95 U	< 110 U	< 93 U	< 93 U
Bis(2-ethylhexyl)phthalate	µg/kg		< 140 U		< 96 U	< 99 U	< 100 U	< 110 U	< 110 U	< 110 U	< 120 U	< 130 U	< 110 U	< 110 U
Carbazole	µg/kg		< 130 U		< 93 U	< 96 U	< 98 U	< 110 U	< 110 U	< 110 U	< 110 U	< 120 U	< 110 U	< 110 U
Dibenzofuran	µg/kg		< 120 U		< 84 U	< 87 U	< 89 U	< 100 U	< 100 U	< 97 U	< 100 U	< 110 U	< 98 U	< 99 U
Diethyl phthalate	µg/kg		< 120 U		< 88 U	< 91 U	< 93 U	< 100 U	< 100 U	< 100 U	< 110 U	< 120 U	< 100 U	< 100 U
Dimethylphthalate	µg/kg		< 120 U		< 85 U	< 88 U	< 90 U	< 100 U	< 100 U	< 98 U	< 100 U	< 110 U	< 100 U	< 100 U
Di-n-butylphthalate	µg/kg		< 130 U		< 95 U	< 98 U	< 100 U	< 110 U	< 110 U	< 110 U	< 110 U	< 130 U	< 110 U	< 110 U
Di-n-octylphthalate	µg/kg		< 130 U		< 95 U	< 98 U	< 100 U	< 110 U	< 110 U	< 110 U	< 110 U	< 130 U	< 110 U	< 110 U
Hexachlorobenzene	µg/kg		< 120 U		< 87 U	< 90 U	200 J	< 100 U	< 100 U	< 100 U	< 100 U	< 120 U	< 100 U	< 100 U
Hexachlorobenzene (SIM Screen)	µg/kg		26		18	12 J	240	140	21	22	< 2.6 U	12 J	< 2.5 U	< 2.5 U
Hexachlorobutadiene	µg/kg		< 110 U		< 80 U	< 83 U	< 85 U	< 95 U	< 96 U	< 93 U	< 96 U	< 110 U	< 94 U	< 94 U
Hexachlorobutadiene (SIM Screen)	µg/kg		< 5.1 U		< 3.6 U	< 3.7 U	< 3.8 U	< 4.3 U	< 4.3 U	< 4.2 U	< 4.4 U	< 4.8 U	< 4.2 U	< 4.2 U
Hexachlorocyclopentadiene	µg/kg		< 86 U		< 61 U	< 63 U	< 64 U	< 72 U	< 72 U	< 70 U	< 73 U	< 81 U	< 71 U	< 71 U
Hexachloroethane	µg/kg		< 110 U		< 79 U	< 82 U	< 84 U	< 94 U	< 94 U	< 92 U	< 95 U	< 110 U	< 93 U	< 93 U
Isophorone	µg/kg		< 130 U		< 91 U	< 94 U	< 96 U	< 110 U	< 110 U	< 110 U	< 110 U	< 120 U	< 110 U	< 110 U
Nitrobenzene	µg/kg		< 110 U		< 74 U	< 77 U	< 79 U	< 88 U	< 89 U	< 86 U	< 89 U	< 99 U	< 87 U	< 87 U
N-Nitrosodimethylamine	µg/kg		< 130 U		< 94 U	< 97 U	< 99 U	< 110 U	< 110 U	< 110 U	< 110 U	< 130 U	< 110 U	< 110 U
n-Nitrosodimethylamine (SIM Screen)	µg/kg		< 130 U		< 94 U	< 97 U	< 99 U	< 110 U	< 110 U	< 110 U	< 110 UJ	< 130 U	< 110 U	< 110 U
N-Nitroso-di-n-propylamine	µg/kg		< 120 U		< 82 U	< 85 U	< 87 U	< 98 U	< 98 U	< 95 U	< 99 U	< 110 U	< 96 U	< 96 U
N-Nitrosodiphenylamine	µg/kg		< 120 U		< 84 U	< 87 U	< 89 U	< 100 U	< 100 U	< 97 U	< 100 U	< 110 U	< 98 U	< 99 U
Pentachlorophenol	µg/kg		< 71 U		< 50 UJ	< 52 U	< 53 U	< 59 U	< 59 U	< 58 U	< 60 U	< 67 U	< 58 U	< 58 U
Pentachlorophenol (SIM Screen)	µg/kg		< 33 U		< 23 UJ	< 24 U	< 25 U	< 28 U	< 28 U	< 27 U	60 J	< 31 U	< 27 U	< 28 U
Phenol	µg/kg		< 120 U		< 81 UJ	< 84 U	140 J	< 96 U	< 97 U	< 94 U	300 J	170 J	< 95 U	< 95 U
06-PAHs by SIM														
2-Methylnaphthalene	µg/kg		< 0.63 U		2.4 J	< 0.42 U	< 0.42 U	< 0.48 U	< 0.52 U	< 0.51 U	< 0.52 U	< 0.53 U	< 0.52 U	< 0.51 U
Acenaphthene	µg/kg		< 0.69 U		< 0.43 U	< 0.46 U	< 0.46 U	< 0.52 U	< 0.57 U	< 0.56 U	< 0.57 U	< 0.58 U	< 0.57 U	< 0.56 U
Acenaphthylene	µg/kg		< 0.49 U		< 0.31 U	< 0.32 U	< 0.32 U	< 0.37 U	< 0.40 U	< 0.39 U	< 0.40 U	< 0.40 U	< 0.40 U	< 0.39 U
Anthracene	µg/kg		< 0.58 U		< 0.37 U	< 0.39 U	< 0.39 U	< 0.44 U	< 0.48 U	< 0.47 U	< 0.48 U	< 0.48 U	0.56 J	< 0.47 U
Benzo(a)anthracene	µg/kg		< 0.45 U		< 0.28 U	< 0.30 U	< 0.30 U	< 0.34 U	< 0.37 U	< 0.36 U	0.73 J	< 0.37 U	< 0.37 U	< 0.36 U
Benzo(a)pyrene	µg/kg		< 0.59 U		< 0.37 U	< 0.39 U	< 0.39 U	< 0.44 U	< 0.48 U	< 0.48 U	< 0.49 U	< 0.49 U	< 0.48 U	< 0.48 U
Benzo(b)fluoranthene	µg/kg		< 0.75 U		< 0.47 U	< 0.49 U	< 0.49 U	< 0.56 U	< 0.61 U	< 0.60 U	< 0.62 U	< 0.62 U	< 0.61 U	< 0.60 U
Benzo(g,h,i)perylene	µg/kg		< 1.5 UJ		< 0.92 U	< 0.98 UJ	< 0.98 U	< 1.1 UJ	< 1.2 UJ	< 1.2 U	< 1.2 U	< 1.2 U	< 1.2 U	< 1.2 U
Benzo(k)fluoranthene	µg/kg		< 1.1 U		< 0.70 U	< 0.74 U	< 0.74 U	< 0.84 U	< 0.92 U	< 0.91 U	< 0.93 U	< 0.93 U	< 0.92 U	< 0.91 U
Chrysene	µg/kg		< 0.51 U		0.40 J	< 0.34 U	< 0.34 U	0.39 J	< 0.42 U	< 0.41 U	2.2 J	< 0.43 U	< 0.42 U	< 0.42 U
Dibenzo(a,h)anthracene	µg/kg		< 1.8 U		< 1.1 U	< 1.2 U	< 1.2 U	< 1.3 U	< 1.4 U	< 1.4 U	< 1.5 U	< 1.5 U	< 1.5 U	< 1.4 U
Fluoranthene	µg/kg		< 0.43 U		1.3 J	< 0.29 U	0.34 J	0.40 J	< 0.35 U	< 0.35 U	0.63 J	< 0.36 U	0.47 J	< 0.35 U
Fluorene	µg/kg		< 0.72 U		0.70 J	< 0.48 U	< 0.48 U	< 0.54 U	< 0.59 U	< 0.59 U	< 0.60 U	< 0.60 U	< 0.59 U	< 0.59 U
Indeno(1,2,3-cd)pyrene	µg/kg		< 0.71 UJ		< 0.44 U	< 0.47 UJ	< 0.47 U	< 0.53 UJ	< 0.58 UJ	< 0.57 U	< 0.58 U	< 0.59 U	< 0.58 U	< 0.57 U
Naphthalene	µg/kg		< 0.45 U		3.6 J	< 0.30 U	0.32 J	< 0.34 U	< 0.37 U	< 0.56 U	< 0.37 U	< 0.53 U	< 0.57 U	< 0.55 U
Phenanthrene	µg/kg		0.59 J		2.3 J	< 0.34 U	0.78 J	0.72 J	0.45 J	< 0.54 U	1.1 J	< 0.58 U	< 1.1 U	< 0.46 U
Pyrene	µg/kg		< 0.52 U		1.2 J	< 0.34 U	0.36 J	< 0.39 U	< 0.42 U	< 0.42 U	1.3 J	< 0.43 U	< 0.42 U	< 0.42 U
Low Molecular Weight PAH (ND=0)	µg/kg		0.59		9.0	< 0.48 U	1.1	0.72	0.45	< 0.59 U	1.1	< 0.60 U	0.56	< 0.59 U

Table I-8
Analytical Results for Solids Samples - PRI-14
Buffer Area South
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14
	Location ID	**PRI14-001**	**PRI14-002**	**PRI14-003**	**PRI14-003**	**PRI14-004**	**PRI14-005**	**PRI14-005**	**PRI14-005**	**PRI14-005**	**PRI14-006**	**PRI14-006**	**PRI14-006**	**PRI14-007**
	Sample Date	**02-Dec-13**	**03-Dec-13**	**04-Dec-13**	**04-Dec-13**	**04-Dec-13**	**11-Dec-13**	**16-Dec-13**	**16-Dec-13**	**16-Dec-13**	**03-Dec-13**	**03-Dec-13**	**11-Dec-13**	**03-Dec-13**
	Sample Type	**N**	**N**	**FINE**	**N**	**N**	**N**	**N**	**N**	**N**	**FINE**	**N**	**N**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0.5 - 2 FEET**	**2 - 4 FEET**	**4 - 6 FEET**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**
	Sample ID	**PRI14-001-SS01-120213**	**PRI14-002-SS01-120313**	**PRI14-003-SS01-120413 FINES**	**PRI14-003-SS01-120413**	**PRI14-004-SS01-120413**	**PRI14-005-SS01-121113**	**PRI14-005-SB01-0.5-121613**	**PRI14-005-SB02-2-121613**	**PRI14-005-SB03-4-121613**	**PRI14-006-SS01-120313 FINES**	**PRI14-006-SS01-120313**	**PRI14-006-SS01-121113**	**PRI14-007-SS01-120313**
Analyte	**Unit**													
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	1.7	*< 1.7 U*	4.7	*< 7.9 U*	*< 5.6 U*	73	10	6.1	5.6	11	13		3.2
High Molecular Weight PAH (ND=0)	µg/kg	1.4	*< 1.4 U*	0.60	1.3	*< 1.9 U*	1.0	*< 1.8 U*	*< 1.9 U*	1.0	3.7	*< 2.0 U*		*< 1.7 U*
High Molecular Weight PAH (ND=1/2DL)	µg/kg	3.8	*< 3.3 U*	3.5	6.0	*< 4.4 U*	6.1	*< 4.2 U*	*< 4.4 U*	4.6	5.8	*< 4.7 U*		*< 4.0 U*
07-VOCs														
1,4-Dioxane	µg/kg				*< 86 U*	*< 73 U*	*< 79 U*	*< 54 UJ*	*< 65 UJ*	*< 80 UJ*			*< 41 U*	
1,1-Dichloroethane	µg/kg				*< 0.64 U*	*< 0.54 U*	*< 0.59 U*	*< 0.40 U*	*< 0.48 U*	*< 0.60 U*			*< 0.31 U*	
1,1-Dichloroethene	µg/kg				*< 0.57 U*	*< 0.49 U*	*< 0.53 U*	*< 0.36 U*	*< 0.43 U*	*< 0.54 U*			*< 0.27 U*	
1,2-Dibromo-3-chloropropane	µg/kg				*< 1.9 U*	*< 1.6 U*	*< 1.8 U*	*< 1.2 U*	*< 1.5 U*	*< 1.8 U*			*< 0.93 U*	
1,2-Dibromoethane	µg/kg				*< 0.59 U*	*< 0.50 U*	*< 0.55 U*	*< 0.37 U*	*< 0.45 U*	*< 0.56 U*			*< 0.28 U*	
1,2-Dichlorobenzene	µg/kg				*< 1.4 U*	*< 1.2 U*	*< 1.3 U*	*< 0.88 U*	*< 1.1 U*	*< 1.3 U*			*< 0.68 U*	
1,2-Dichloroethane	µg/kg				*< 1.6 U*	*< 1.4 U*	*< 1.5 UJ*	*< 1.0 U*	*< 1.2 U*	*< 1.5 U*			*< 0.77 UJ*	
cis-1,2-Dichloroethene	µg/kg				*< 2.0 U*	*< 1.7 U*	*< 1.8 U*	*< 1.2 U*	*< 1.5 U*	*< 1.8 U*			*< 0.94 U*	
trans-1,2-Dichloroethene	µg/kg				*< 0.83 U*	*< 0.71 U*	*< 0.77 U*	*< 0.52 U*	*< 0.63 U*	*< 0.78 U*			*< 0.40 U*	
1,2-Dichloropropane	µg/kg				*< 1.3 U*	*< 1.1 U*	*< 1.2 U*	*< 0.83 U*	*< 1.0 U*	*< 1.2 U*			*< 0.63 U*	
1,3-Dichlorobenzene	µg/kg				*< 0.66 U*	*< 0.56 U*	*< 0.61 U*	*< 0.41 U*	*< 0.50 U*	*< 0.62 U*			*< 0.32 U*	
cis-1,3-Dichloropropene	µg/kg				*< 1.4 U*	*< 1.2 U*	*< 1.3 U*	*< 0.88 U*	*< 1.1 U*	*< 1.3 U*			*< 0.68 U*	
trans-1,3-Dichloropropene	µg/kg				*< 1.6 U*	*< 1.4 U*	*< 1.5 U*	*< 1.0 U*	*< 1.2 U*	*< 1.5 U*			*< 0.79 U*	
1,4-Dichlorobenzene	µg/kg				*< 1.7 U*	*< 1.5 U*	*< 1.6 U*	*< 1.1 U*	*< 1.3 U*	*< 1.6 U*			*< 0.82 U*	
1,1,1-Trichloroethane	µg/kg				*< 0.79 U*	*< 0.67 U*	*< 0.73 U*	*< 0.50 U*	*< 0.60 U*	*< 0.74 U*			*< 0.38 U*	
1,1,2-Trichloroethane	µg/kg				*< 0.97 U*	*< 0.82 U*	*< 0.89 U*	*< 0.61 U*	*< 0.73 U*	*< 0.91 U*			*< 0.46 U*	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	µg/kg				*< 1.8 U*	*< 1.6 U*	*< 1.7 U*	*< 1.1 U*	*< 1.4 U*	*< 1.7 U*			*< 0.88 U*	
1,2,3-Trichlorobenzene	µg/kg				*< 1.6 U*	*< 1.4 U*	*< 1.5 U*	*< 1.0 U*	*< 1.2 U*	*< 1.5 U*			*< 0.79 U*	
1,2,4-Trichlorobenzene	µg/kg				*< 1.6 U*	*< 1.4 U*	*< 1.5 U*	*< 1.0 U*	*< 1.2 U*	*< 1.5 U*			*< 0.79 U*	
1,1,2,2-Tetrachloroethane	µg/kg				*< 1.5 U*	*< 1.3 U*	*< 1.4 U*	*< 0.94 U*	*< 1.1 U*	*< 1.4 U*			*< 0.72 U*	
2-Butanone	µg/kg				24	15 J	13 J	5.9 J	*< 2.3 U*	*< 2.9 U*			7.3 J	
2-Hexanone	µg/kg				*< 1.6 U*	*< 1.4 U*	*< 1.5 U*	*< 1.0 U*	*< 1.2 U*	*< 1.5 U*			*< 0.78 U*	
4-Methyl-2-pentanone	µg/kg				*< 2.0 U*	*< 1.7 U*	*< 1.9 U*	*< 1.3 U*	*< 1.5 U*	*< 1.9 U*			*< 0.97 U*	
Acetone	µg/kg				73	56	35 J	23 J	13 J	7.3 J			17 J	
Benzene	µg/kg				*< 0.57 U*	*< 0.49 U*	*< 0.53 U*	*< 0.36 U*	*< 0.43 U*	*< 0.54 U*			*< 0.27 U*	
Bromochloromethane	µg/kg				*< 2.1 U*	*< 1.8 U*	*< 1.9 U*	*< 1.3 U*	*< 1.6 U*	*< 1.9 U*			*< 0.99 U*	
Bromodichloromethane	µg/kg				*< 1.2 U*	*< 0.99 U*	*< 1.1 U*	*< 0.73 U*	*< 0.88 U*	*< 1.1 U*			*< 0.56 U*	
Bromoform	µg/kg				*< 0.88 U*	*< 0.75 U*	*< 0.81 U*	*< 0.55 U*	*< 0.66 U*	*< 0.82 U*			*< 0.42 U*	
Bromomethane	µg/kg				*< 1.9 U*	*< 1.6 U*	*< 1.7 UJ*	*< 1.2 U*	*< 1.4 U*	*< 1.8 U*			*< 0.91 UJ*	
Carbon disulfide	µg/kg				4.0 J	2.5 J	1.4 J	1.7 J	3.4 J	5.0 J			1.6 J	
Carbon tetrachloride	µg/kg				*< 1.2 U*	*< 0.99 U*	*< 1.1 U*	*< 0.73 U*	*< 0.88 U*	*< 1.1 U*			*< 0.56 U*	
Chlorobenzene	µg/kg				*< 0.64 U*	*< 0.54 U*	*< 0.59 U*	*< 0.40 U*	*< 0.48 U*	*< 0.60 U*			*< 0.31 U*	
Cyclohexane	µg/kg				*< 5.8 U*	*< 4.9 U*	*< 5.3 U*	*< 3.6 U*	*< 4.4 U*	*< 5.4 U*			*< 2.8 U*	
Dibromochloromethane	µg/kg				*< 0.46 U*	*< 0.39 U*	*< 0.43 U*	*< 0.29 U*	*< 0.35 U*	*< 0.43 U*			*< 0.22 U*	
Chloroethane	µg/kg				*< 0.99 U*	*< 0.84 U*	*< 0.91 U*	*< 0.62 U*	*< 0.75 U*	*< 0.93 U*			*< 0.47 U*	
Chloroform	µg/kg				*< 0.57 U*	*< 0.49 U*	1.1 J	0.70 J	*< 0.43 U*	*< 0.54 U*			*< 0.27 U*	
Chloromethane	µg/kg				*< 1.1 U*	*< 0.93 U*	*< 1.0 U*	*< 0.69 U*	*< 0.83 U*	*< 1.0 U*			*< 0.53 U*	
Dichlorodifluoromethane (Freon-12)	µg/kg				*< 2.0 U*	*< 1.7 U*	*< 1.8 U*	*< 1.2 U*	*< 1.5 U*	*< 1.8 U*			*< 0.94 U*	
Ethyl benzene	µg/kg				*< 0.75 U*	*< 0.64 U*	*< 0.69 U*	*< 0.47 U*	*< 0.56 U*	*< 0.70 U*			*< 0.36 U*	
Isopropylbenzene	µg/kg				*< 1.1 U*	*< 0.97 U*	*< 1.1 U*	*< 0.72 U*	*< 0.86 U*	*< 1.1 U*			*< 0.55 U*	
Methyl tertbutyl ether (MTBE)	µg/kg				*< 1.3 U*	*< 1.1 U*	*< 1.2 U*	*< 0.83 U*	*< 1.0 U*	*< 1.2 U*			*< 0.63 U*	
Dichloromethane (Methylene chloride)	µg/kg				*< 1.8 U*	*< 1.6 U*	*< 1.7 U*	*< 1.2 U*	*< 1.4 U*	*< 1.7 U*			*< 0.89 U*	
Styrene	µg/kg				*< 0.68 U*	*< 0.58 U*	*< 0.63 U*	*< 0.43 U*	*< 0.51 U*	*< 0.64 U*			*< 0.33 U*	
Tetrachloroethene	µg/kg				*< 1.3 U*	*< 1.1 U*	*< 1.2 U*	*< 0.84 U*	*< 1.0 U*	*< 1.3 U*			*< 0.64 U*	
Toluene	µg/kg				*< 1.3 U*	*< 1.1 U*	*< 1.2 U*	*< 0.84 U*	*< 1.0 U*	*< 1.3 U*			*< 0.64 U*	
Trichloroethene	µg/kg				*< 1.3 U*	*< 1.1 U*	*< 1.2 U*	*< 0.83 U*	*< 1.0 U*	*< 1.2 U*			*< 0.63 U*	
Trichlorofluoromethane (Freon-11)	µg/kg				*< 0.75 U*	*< 0.64 U*	*< 0.69 U*	*< 0.47 U*	*< 0.56 U*	*< 0.70 U*			*< 0.36 U*	
Vinyl chloride	µg/kg				*< 0.79 U*	*< 0.67 U*	*< 0.73 U*	*< 0.50 U*	*< 0.60 U*	*< 0.74 U*			*< 0.38 U*	
o-Xylene	µg/kg				*< 0.72 U*	*< 0.62 U*	*< 0.67 U*	*< 0.46 U*	*< 0.55 U*	*< 0.68 U*			*< 0.35 U*	
m,p Xylenes	µg/kg				*< 1.8 U*	*< 1.5 U*	*< 1.6 U*	*< 1.1 U*	*< 1.3 U*	*< 1.7 U*			*< 0.85 U*	

Table I-8
Analytical Results for Solids Samples - PRI-14
Buffer Area South
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14
	Location ID	**PRI14-007**	**PRI14-008**	**PRI14-008**	**PRI14-009**	**PRI14-009**	**PRI14-010**	**PRI14-010**	**PRI14-011**	**PRI14-012**	**PRI14-013**	**PRI14-013**	**PRI14-014**	**PRI14-015**
	Sample Date	**11-Dec-13**	**02-Dec-13**	**11-Dec-13**	**02-Dec-13**	**02-Dec-13**	**02-Dec-13**	**02-Dec-13**	**02-Dec-13**	**25-Nov-13**	**25-Nov-13**	**25-Nov-13**	**25-Nov-13**	**25-Nov-13**
	Sample Type	**N**	**N**	**N**	**FINE**	**N**	**FINE**	**N**	**N**	**N**	**FINE**	**N**	**N**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**
	Sample ID	**PRI14-007-SS01-121113**	**PRI14-008-SS01-120213**	**PRI14-008-SS01-121113**	**PRI14-009-SS01-120213 FINES**	**PRI14-009-SS01-120213**	**PRI14-010-SS01-120213 FINES**	**PRI14-010-SS01-120213**	**PRI14-011-SS01-120213**	**PRI14-012-SS01-112513**	**PRI14-013-SS01-112513 FINES**	**PRI14-013-SS01-112513**	**PRI14-014-SS01-112513**	**PRI14-015-SS01-112513**
Analyte	**Unit**													
Low Molecular Weight PAH (ND=1/2DL)	µg/kg		2.4		9.6	*< 1.4 U*	2.1	2.1	1.9	*< 1.8 U*	2.6	*< 1.9 U*	2.4	*< 1.8 U*
High Molecular Weight PAH (ND=0)	µg/kg		*< 1.8 U*		2.9	*< 1.2 U*	0.70	0.79	*< 1.4 U*	*< 1.4 U*	4.9	*< 1.5 U*	0.47	*< 1.4 U*
High Molecular Weight PAH (ND=1/2DL)	µg/kg		*< 4.2 U*		5.0	*< 2.8 U*	3.2	3.5	*< 3.4 U*	*< 3.4 U*	7.5	*< 3.5 U*	3.7	*< 3.4 U*
07-VOCs														
1,4-Dioxane	µg/kg	*< 48 U*		*< 46 U*								*< 44 U*		
1,1-Dichloroethane	µg/kg	*< 0.35 U*		*< 0.34 U*								*< 0.33 U*		
1,1-Dichloroethene	µg/kg	*< 0.32 U*		*< 0.31 U*								*< 0.29 U*		
1,2-Dibromo-3-chloropropane	µg/kg	*< 1.1 U*		*< 1.0 U*								*< 0.99 U*		
1,2-Dibromoethane	µg/kg	*< 0.33 U*		*< 0.32 U*								*< 0.30 U*		
1,2-Dichlorobenzene	µg/kg	*< 0.78 U*		*< 0.75 U*								*< 0.72 U*		
1,2-Dichloroethane	µg/kg	*< 0.89 UJ*		*< 0.86 UJ*								*< 0.82 U*		
cis-1,2-Dichloroethene	µg/kg	*< 1.1 U*		*< 1.0 U*								*< 1.0 U*		
trans-1,2-Dichloroethene	µg/kg	*< 0.46 U*		*< 0.45 U*								*< 0.43 U*		
1,2-Dichloropropane	µg/kg	*< 0.73 U*		*< 0.70 U*								*< 0.68 U*		
1,3-Dichlorobenzene	µg/kg	*< 0.37 U*		*< 0.35 U*								*< 0.34 U*		
cis-1,3-Dichloropropene	µg/kg	*< 0.78 U*		*< 0.75 U*								*< 0.72 U*		
trans-1,3-Dichloropropene	µg/kg	*< 0.91 U*		*< 0.88 U*								*< 0.85 U*		
1,4-Dichlorobenzene	µg/kg	*< 0.95 U*		*< 0.92 U*								*< 0.88 U*		
1,1,1-Trichloroethane	µg/kg	*< 0.44 U*		*< 0.42 U*								*< 0.41 U*		
1,1,2-Trichloroethane	µg/kg	*< 0.54 U*		*< 0.52 U*								*< 0.50 U*		
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	µg/kg	*< 1.0 U*		*< 0.97 U*								*< 0.94 U*		
1,2,3-Trichlorobenzene	µg/kg	*< 0.91 U*		*< 0.88 U*								*< 0.85 U*		
1,2,4-Trichlorobenzene	µg/kg	*< 0.91 U*		*< 0.88 U*								*< 0.85 U*		
1,1,2,2-Tetrachloroethane	µg/kg	*< 0.83 U*		*< 0.80 U*								*< 0.77 U*		
2-Butanone	µg/kg	5.2 J		11 J								*< 1.6 U*		
2-Hexanone	µg/kg	*< 0.90 U*		1.1 J								*< 0.84 U*		
4-Methyl-2-pentanone	µg/kg	*< 1.1 U*		*< 1.1 U*								1.5 J		
Acetone	µg/kg	9.9 J		29								63		
Benzene	µg/kg	*< 0.32 U*		*< 0.31 U*								*< 0.29 U*		
Bromochloromethane	µg/kg	*< 1.1 U*		*< 1.1 U*								*< 1.1 U*		
Bromodichloromethane	µg/kg	*< 0.65 U*		*< 0.62 U*								*< 0.60 U*		
Bromoform	µg/kg	*< 0.49 U*		*< 0.47 U*								*< 0.45 U*		
Bromomethane	µg/kg	*< 1.0 UJ*		*< 1.0 UJ*								*< 0.97 U*		
Carbon disulfide	µg/kg	*< 0.60 U*		1.8 J								1.6 J		
Carbon tetrachloride	µg/kg	*< 0.65 U*		*< 0.62 U*								*< 0.60 U*		
Chlorobenzene	µg/kg	*< 0.35 U*		*< 0.34 U*								*< 0.33 U*		
Cyclohexane	µg/kg	*< 3.2 U*		*< 3.1 U*								*< 3.0 U*		
Dibromochloromethane	µg/kg	*< 0.26 U*		*< 0.25 U*								*< 0.24 U*		
Chloroethane	µg/kg	*< 0.55 U*		*< 0.53 U*								*< 0.51 U*		
Chloroform	µg/kg	*< 0.32 U*		*< 0.31 U*								*< 0.29 U*		
Chloromethane	µg/kg	*< 0.61 U*		*< 0.59 U*								*< 0.56 U*		
Dichlorodifluoromethane (Freon-12)	µg/kg	*< 1.1 U*		*< 1.0 U*								*< 1.0 U*		
Ethyl benzene	µg/kg	*< 0.41 U*		*< 0.40 U*								*< 0.38 U*		
Isopropylbenzene	µg/kg	*< 0.63 U*		*< 0.61 U*								*< 0.59 U*		
Methyl tertbutyl ether (MTBE)	µg/kg	*< 0.73 U*		*< 0.70 U*								*< 0.68 U*		
Dichloromethane (Methylene chloride)	µg/kg	*< 1.0 U*		*< 0.99 U*								*< 0.95 U*		
Styrene	µg/kg	*< 0.38 U*		*< 0.36 U*								*< 0.35 U*		
Tetrachloroethene	µg/kg	*< 0.74 U*		*< 0.72 U*								*< 0.69 U*		
Toluene	µg/kg	*< 0.74 U*		*< 0.72 U*								*< 0.69 U*		
Trichloroethene	µg/kg	*< 0.73 U*		*< 0.70 U*								*< 0.68 U*		
Trichlorofluoromethane (Freon-11)	µg/kg	*< 0.41 U*		*< 0.40 U*								*< 0.38 U*		
Vinyl chloride	µg/kg	*< 0.44 U*		*< 0.42 U*								*< 0.41 U*		
o-Xylene	µg/kg	*< 0.40 U*		*< 0.39 U*								*< 0.37 U*		
m,p Xylenes	µg/kg	*< 0.99 U*		*< 0.95 U*								*< 0.91 U*		

Table I-8
Analytical Results for Solids Samples - PRI-14
Buffer Area South
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

Location Group		PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14
Location ID		PRI14-001	PRI14-002	PRI14-003	PRI14-003	PRI14-004	PRI14-005	PRI14-005	PRI14-005	PRI14-005	PRI14-006	PRI14-006	PRI14-006	PRI14-007
Sample Date		02-Dec-13	03-Dec-13	04-Dec-13	04-Dec-13	04-Dec-13	11-Dec-13	16-Dec-13	16-Dec-13	16-Dec-13	03-Dec-13	03-Dec-13	11-Dec-13	03-Dec-13
Sample Type		N	N	FINE	N	N	N	N	N	N	FINE	N	N	N
Depth		0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in	0.5 - 2 FEET	2 - 4 FEET	4 - 6 FEET	0 - 6 in	0 - 6 in	0 - 6 in	0 - 6 in
Sample ID		PRI14-001-SS01-120213	PRI14-002-SS01-120313	PRI14-003-SS01-120413 FINES	PRI14-003-SS01-120413	PRI14-004-SS01-120413	PRI14-005-SS01-121113	PRI14-005-SB01-0.5-121613	PRI14-005-SB02-2-121613	PRI14-005-SB03-4-121613	PRI14-006-SS01-120313 FINES	PRI14-006-SS01-120313	PRI14-006-SS01-121113	PRI14-007-SS01-120313
Analyte	Unit													
08-General Chemistry Parameters for Solids														
Perchlorate	µg/kg	*< 21 U*	*< 26 U*		*< 39 U*	*< 62 U*	*< 35 U*	*< 30 U*	*< 27 U*	*< 29 U*		*< 33 U*		*< 110 U*
Total Organic Carbon	g/kg	4.8	3.7 J		6.9	4.9	4.7	*< 1.7 U*	*< 1.7 U*	*< 1.7 U*		4.4		7.6
pH	pH units	8.25	7.95		7.94	7.79	7.22	7.04	7.35	7.69		7.94		7.77
Cyanide, Total	mg/kg	*< 0.23 U*	*< 0.26 U*		*< 0.40 U*	*< 0.33 U*	*< 0.38 U*	*< 0.30 U*	*< 0.29 U*	*< 0.30 U*		*< 0.36 U*		*< 0.29 U*

Table I-8
Analytical Results for Solids Samples - PRI-14
Buffer Area South
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location Group	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14	PRI-14
	Location ID	**PRI14-007**	**PRI14-008**	**PRI14-008**	**PRI14-009**	**PRI14-009**	**PRI14-010**	**PRI14-010**	**PRI14-011**	**PRI14-012**	**PRI14-013**	**PRI14-013**	**PRI14-014**	**PRI14-015**
	Sample Date	**11-Dec-13**	**02-Dec-13**	**11-Dec-13**	**02-Dec-13**	**02-Dec-13**	**02-Dec-13**	**02-Dec-13**	**02-Dec-13**	**25-Nov-13**	**25-Nov-13**	**25-Nov-13**	**25-Nov-13**	**25-Nov-13**
	Sample Type	**N**	**N**	**N**	**FINE**	**N**	**FINE**	**N**	**N**	**N**	**FINE**	**N**	**N**	**N**
	Depth	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**	**0 - 6 in**
	Sample ID	**PRI14-007-SS01-121113**	**PRI14-008-SS01-120213**	**PRI14-008-SS01-121113**	**PRI14-009-SS01-120213 FINES**	**PRI14-009-SS01-120213**	**PRI14-010-SS01-120213 FINES**	**PRI14-010-SS01-120213**	**PRI14-011-SS01-120213**	**PRI14-012-SS01-112513**	**PRI14-013-SS01-112513 FINES**	**PRI14-013-SS01-112513**	**PRI14-014-SS01-112513**	**PRI14-015-SS01-112513**
Analyte	**Unit**													
08-General Chemistry Parameters for Solids														
Perchlorate	µg/kg		*< 100 U*			*< 20 U*		*< 23 U*	*< 45 U*	*< 23 U*		*< 260 U*	*< 22 U*	*< 23 U*
Total Organic Carbon	g/kg		5.3			3.2 J		2.6 J	3.9 J	*< 2.2 U*		*< 2.2 U*	*< 2.6 U*	*< 2.7 U*
pH	pH units		7.61			8.83		8.23	8.27	8.46		7.59	8.37	8.59
Cyanide, Total	mg/kg		*< 0.27 U*			*< 0.22 U*		*< 0.24 U*	*< 0.24 U*	*< 0.24 U*		0.79	*< 0.23 U*	*< 0.24 U*

Notes:
< = Compound not detected. Reportable detection limit shown.
µg/kg = micrograms per kilogram
Empty cells = Not analyzed
FINE = Fines Portion (Sieved) of Normal Sample
g/kg = grams per kilogram
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
in = inches
mg/kg = milligrams per kilogram
N = Normal Environmental Sample
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pg/g = picogram per gram (1 pg/g = 0.001 µg/kg)
pH units = pH units
SIM = Selected ion monitoring
SVOC = Semi-volatile organic compound
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence
VOC = Volatile organic compound

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
J- = The result is an estimated quantity, biased low. The associated numerical value is the approximate concentration of the analyte in the sample.
U = Compound was analyzed for, but not detected. The associated numerical value is the reporting limit.
UJ = The nondetected analyte was qualified as estimated at the sample quantitation limit. The reported sample quantitation limit is approximate and may be inaccurate or imprecise
UQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration.

Table I-9
Analytical Results for Solids Samples -
PRI-15 Buffer Area West
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location ID	**PRI15-001**	**PRI15-002**	**PRI15-003**	**PRI15-004**	**PRI15-005**	**PRI15-006**	**PRI15-007**	**PRI15-008**	**PRI15-009**	**PRI15-010**	**PRI15-011**	**PRI15-012**	**PRI15-013**	**PRI15-014**
	Sample Date	**23-Nov-13**	**24-Nov-13**	**23-Nov-13**	**24-Nov-13**	**22-Nov-13**	**23-Nov-13**	**22-Nov-13**	**13-Jan-14**	**23-Nov-13**	**24-Nov-13**	**23-Nov-13**	**24-Nov-13**	**24-Nov-13**	**24-Nov-13**
	Sample Type	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**
	Depth	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**
	Sample ID	**PRI15-001-SS01-112313**	**PRI15-002-SS01-112413**	**PRI15-003-SS01-112313**	**PRI15-004-SS01-112413**	**PRI15-005-SS01-112213**	**PRI15-006-SS01-112313**	**PRI15-007-SS01-112213**	**PRI15-008-SS01-011314**	**PRI15-009-SS01-112313**	**PRI15-010-SS01-112413**	**PRI15-011-SS01-112313**	**PRI15-012-SS01-112413**	**PRI15-013-SS01-112413**	**PRI15-014-SS01-112413**
Analyte	**Unit**														
01-Dioxins and Furans															
2,3,7,8-TCDD	pg/g	*< 0.020 U*	*< 0.14 U*	*< 0.021 U*	*< 0.18 U*	*< 0.2 UQ*	*< 0.033 U*	*< 0.020 U*	*< 0.091 U*	*< 0.032 U*	*< 0.13 U*	*< 0.13 U*	*< 0.11 U*	*< 0.23 U*	*< 0.092 U*
1,2,3,7,8-PeCDD	pg/g	*< 0.058 UQ*	*< 0.24 U*	*< 0.036 U*	*< 0.25 U*	*< 0.046 UQ*	*< 0.11 UQ*	*< 0.035 U*	*< 0.14 UJ*	0.15 J	*< 0.24 U*	*< 0.21 U*	*< 0.15 U*	*< 0.20 U*	*< 0.17 U*
1,2,3,4,7,8-HxCDD	pg/g	0.064 J	*< 0.11 U*	0.063 J	*< 0.14 UQ*	0.078 J	0.16 J	0.085 J	*< 0.20 UJ*	*< 0.17 UQ*	*< 0.13 U*	*< 0.12 U*	*< 0.10 U*	*< 0.11 U*	*< 0.091 U*
1,2,3,6,7,8-HxCDD	pg/g	*< 0.12 UQ*	*< 0.10 U*	0.12 J	0.31 J	0.12 J	0.32 J	*< 0.14 UQ*	*< 0.17 UJ*	0.38 J	*< 0.13 U*	*< 0.11 U*	0.24 J	*< 0.089 U*	*< 0.18 UQ*
1,2,3,7,8,9-HxCDD	pg/g	*< 0.15 UQ*	*< 0.089 U*	*< 0.12 UQ*	*< 0.23 UQ*	0.12 J	0.44 J	0.15 J	*< 0.16 UJ*	0.43 J	*< 0.11 U*	*< 0.098 U*	0.23 J	*< 0.086 U*	0.17 J
1,2,3,4,6,7,8-HpCDD	pg/g	1.1 J	*< 0.51 UQ*	0.99 J	1.8 J	1.0 J	2.8 J	1.2 J	0.74 J	2.9 J	0.98 J	1.0 J	2.1 J	0.87 J	0.97 J
OCDD	pg/g	*< 4.2 U*	*< 4.2 UQ*	*< 3.6 U*	9.7 J	5.8 J	14	*< 4.8 U*	*< 3.9 UJQ*	14	*< 5.8 UQ*	8.1 J	11	*< 5.5 U*	4.2 J
2,3,7,8-TCDF	pg/g	0.23 J	*< 0.27 U*	0.27 J	3.8	*< 0.13 UQ*	0.85 J	*< 0.22 UQ*	*< 0.18 U*	0.94 J	*< 0.34 UQ*	0.37 J	0.44 J	*< 0.28 UQ*	*< 0.4 UQ*
1,2,3,7,8-PeCDF	pg/g	0.21 J	*< 0.45 U*	0.20 J	5.7 J	0.14 J	0.97 J	0.27 J	*< 0.29 UJ*	1.1 J	*< 0.30 U*	*< 0.41 U*	*< 0.31 U*	*< 0.24 UQ*	*< 0.29 U*
2,3,4,7,8-PeCDF	pg/g	0.15 J	*< 0.47 U*	0.16 J	2.9 J	0.13 J	0.84 J	0.20 J	*< 0.31 UJ*	0.83 J	*< 0.31 U*	*< 0.43 U*	0.64 J	*< 0.17 U*	*< 0.30 U*
1,2,3,4,7,8-HxCDF	pg/g	0.70 J	0.72 J	0.70 J	10	0.73 J	4.8 J	0.96 J	0.99 J	4.2 J	1.2 J	1.4 J	3.9 J	*< 0.78 UQ*	1.1 J
1,2,3,6,7,8-HxCDF	pg/g	0.48 J	0.63 J	0.55 J	9.2	0.34 J	3.7 J	0.71 J	0.63 J	*< 3.1 UQ*	0.81 J	1.4 J	1.5 J	*< 0.54 UQ*	*< 0.77 UQ*
1,2,3,7,8,9-HxCDF	pg/g	*< 0.021 U*	*< 0.14 U*	*< 0.023 U*	0.94 J	0.030 J	*< 0.13 UQ*	0.028 J	*< 0.47 UJ*	0.16 J	*< 0.21 U*	*< 0.16 U*	*< 0.22 U*	*< 0.20 U*	*< 0.15 U*
2,3,4,6,7,8-HxCDF	pg/g	0.27 J	0.36 J	0.37 J	3.6 J	0.28 J	2.1 J	0.56 J	*< 0.43 UJ*	1.8 J	0.43 J	0.42 J	0.44 J	0.24 J	*< 0.26 UQ*
1,2,3,4,6,7,8-HpCDF	pg/g	4.8 J	5.9	6.1	61	4.7 J	54	9.8	8.2 J	40	8.8	*< 7.7 UQ*	12	4.1 J	5.2 J
1,2,3,4,7,8,9-HpCDF	pg/g	0.51 J	0.70 J	0.60 J	14	0.34 J	5.7	0.81 J	*< 0.92 UJQ*	5.0 J	0.96 J	*< 1.2 UQ*	0.77 J	0.69 J	*< 0.52 UQ*
OCDF	pg/g	35	43	49	520	24	730	71	200 J	450	98	76	72	44	46
Calculated TEQ (ND=0), Mammalian	pg/g	0.30	0.25	0.35	5.2	0.28	2.4	0.46	0.31	1.8	0.38	0.39	1.0	0.094	0.20
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	0.38	0.59	0.42	5.5	0.45	2.5	0.53	0.59	2.1	0.73	0.73	1.2	0.48	0.52
Calculated TEQ (ND=0), Avian	pg/g	0.69	0.24	0.69	360	0.46	34	0.59	0.26	35	0.35	0.80	1.8	0.13	0.26
Calculated TEQ (ND=1/2 DL), Avian	pg/g	13	12	13	360	12	34	12	13	35	13	13	14	12	13
02-PCBs															
PCB-81	pg/g	*< 0.71 U*	*< 0.44 U*	*< 0.63 U*	*< 0.97 U*	*< 0.65 U*	*< 1.1 U*	*< 0.42 U*	*< 0.39 U*	*< 0.51 U*	*< 1.2 U*	*< 0.61 U*	*< 0.92 U*	*< 0.85 U*	*< 1.1 U*
PCB-77	pg/g	1.6 J	*< 0.86 UQ*	*< 1.6 UQ*	14	2.2	2.9	*< 1.1 UQ*	*< 0.78 UJQ*	*< 2.7 UQ*	*< 1.2 U*	2.0 J	*< 1.6 UQ*	1.1 J	1.5 J
PCB-105	pg/g	2.6	1.4 J	3.0	48	2.9	3.4	2.1	1.5 J	5.8	1.7 J	*< 1.9 UQ*	3.1	1.3 J	1.7 J
PCB-114	pg/g	*< 0.71 U*	*< 0.42 U*	*< 0.63 U*	*< 2.0 U*	*< 0.67 U*	*< 0.83 U*	*< 0.46 U*	*< 0.31 U*	*< 0.56 U*	*< 1.1 U*	*< 0.42 U*	*< 0.84 U*	*< 0.54 U*	*< 0.67 U*
PCB-118	pg/g	4.6	3.9	6.9	95	4.8	7.1	4.0	2.4 J	12	*< 3.8 UQ*	5.3	6.4	3.6	5.3
PCB-123	pg/g	*< 0.75 U*	*< 0.42 U*	*< 0.68 U*	2.7	1.0 J	*< 0.90 U*	*< 0.44 U*	*< 0.29 U*	*< 0.61 U*	*< 1.1 U*	*< 0.42 U*	*< 0.86 U*	*< 0.54 U*	*< 0.66 U*
PCB-126	pg/g	*< 0.50 U*	*< 0.45 U*	*< 0.47 U*	4.7	*< 0.59 U*	*< 0.59 U*	*< 0.45 U*	*< 0.36 U*	*< 0.53 U*	*< 1.1 U*	*< 0.41 U*	*< 0.83 U*	*< 0.55 U*	*< 0.70 U*
PCB-156 & 157	pg/g	0.85 J	0.74 J	1.3 J	28	2.9 J	*< 1.7 UQ*	*< 0.56 U*	*< 0.42 UJQ*	2.7 J	*< 0.92 U*	*< 0.64 UQ*	*< 1.4 UQ*	1.1 J	1.1 J
PCB-167	pg/g	*< 0.31 U*	*< 0.42 U*	0.53 J	12	*< 0.92 UQ*	*< 0.75 UQ*	*< 0.51 U*	*< 0.23 U*	*< 1.1 UQ*	*< 0.78 U*	*< 0.52 U*	*< 0.41 U*	*< 0.31 U*	*< 0.57 U*
PCB-169	pg/g	*< 0.28 U*	*< 0.44 U*	*< 0.30 U*	*< 0.83 U*	*< 0.69 UQ*	*< 0.54 U*	*< 0.48 U*	*< 0.28 U*	*< 0.45 U*	*< 0.81 U*	*< 0.53 U*	*< 0.43 U*	*< 0.33 U*	*< 0.66 U*
PCB-189	pg/g	*< 0.52 U*	*< 0.57 U*	*< 0.55 U*	6.8	*< 0.79 UQ*	*< 1.6 U*	*< 0.37 U*	*< 0.48 U*	*< 0.51 U*	*< 1.1 U*	*< 0.56 U*	*< 1.1 U*	*< 0.53 U*	*< 0.76 U*
Monochlorobiphenyls, Total	pg/g	3.5 J	2.5 J	4.0 J	21 J	7.6 J	3.6 J	8.8 J	0.63 J	6.4 J	2.4 J	6.2 J	5.4 J	5.6 J	3.7 J
Dichlorobiphenyls, Total	pg/g	12 J+	5.0 J	12 J+	100 J	14 J+	27 J+	11 J+	*< 5.3 U*	29 J+	8.5 J	19 J	12 J	*< 20 U*	*< 14 U*
Trichlorobiphenyls, Total	pg/g	7.1 J	2.0 J	5.9 J	20 J	12 J	12 J	9.2 J	3.9 J	18 J	6.5 J	13 J	9.1 J	5.2 J	4.8 J
Tetrachlorobiphenyls, Total	pg/g	12 J	8.6 J	18 J	93 J	15 J	19 J	10 J	9.2 J	28 J	5.9 J	14 J	16 J	10 J	10 J
Pentachlorobiphenyls, Total	pg/g	25 J	25 J	43 J	590	30 J	34 J	23 J	13 J	60 J	17 J	27 J	40 J	19 J	26 J
Hexachlorobiphenyls, Total	pg/g	29 J	35 J	41 J	740	38 J	33 J	37 J	17 J	70 J	21 J	35 J	52 J	30 J	45 J
Heptachlorobiphenyls, Total	pg/g	45 J	31 J	49 J	570	45 J	57 J	55 J	15 J	81 J	21 J	31 J	47 J	23 J	30 J
Octachlorobiphenyls, Total	pg/g	27 J	37 J	31 J	960	33 J	98 J	66 J	22 J	120 J	38 J	36 J	41 J	27 J	26 J
Nonachlorobiphenyls, Total	pg/g	40 J	70 J	50 J	2,600	47 J	240	110 J	56 J	250	94 J	76 J	63 J	53 J	46 J
Decachlorobiphenyl (PCB-209)	pg/g	180	460	260	18,000	180	1,900	510	410 J	1,800	650	460	310	270	270
Total PCBs	pg/g	380	680	510	24,000	420	2,400	840	540	2,500	860	720	600	450	460
03- Metals															
Total Aluminum	mg/kg	14,000	4,800	11,000	9,200	7,800	10,000	12,000	7,300	15,000	9,800	13,000	12,000	10,000	12,000
Total Antimony	mg/kg	0.29 J-	*< 0.21 UJ*	0.32 J-	0.33 J-	0.23 J-	0.29 J-	0.26 J-	*< 0.23 UJ*	0.42 J-	0.34 J-	0.33 J-	0.33 J-	0.30 J-	0.31 J-
Total Arsenic	mg/kg	5.3	4.2	4.9	6.8	3.4	4.2	4.3	3.0	4.8	6.0	4.7	5.1	5.0	5.1
Total Barium	mg/kg	240	360	310	270	140	240	140	74	300	420	250	270	330	250
Total Beryllium	mg/kg	0.60	0.21	0.51	0.40	0.38	0.43	0.52	0.36	0.61	0.46	0.53	0.46	0.48	0.53
Total Cadmium	mg/kg	0.46	0.28	0.40	0.46	0.29	0.45	0.40	0.18 J	0.44	0.31	0.51	0.49	0.40	0.38
Total Calcium	mg/kg	77,000	200,000	70,000	160,000	40,000	68,000	50,000	25,000	92,000	83,000	68,000	73,000	85,000	64,000
Total Chromium	mg/kg	15	5.5	13	11	7.6	12	11	7.7	17	12	14	13	12	14
Total Cobalt	mg/kg	4.7	1.8	3.9	3.5	2.6	3.7	3.2	2.3	5.4	4.3	4.4	4.2	3.8	4.6
Total Copper	mg/kg	17	8.9	16	21	9.7	15	14	7.4	20	12	17	16	14	17
Total Iron	mg/kg	13,000	4,600	9,600	6,300	7,000	9,300	10,000	6,700	12,000	9,700	11,000	10,000	10,000	11,000
Total Lead	mg/kg	19 J	14 J	18 J	22 J	16 J	18 J	20 J	8.9 J	19 J	11 J	19 J	20 J	18 J	21 J
Total Magnesium	mg/kg	18,000	15,000	16,000	32,000	8,200 J+	16,000	16,000 J+	6,800	24,000	18,000	18,000	16,000	17,000	16,000
Total Manganese	mg/kg	470	210	450	290	220	450	400	160	550	330	510	480	460	500
Total Mercury	mg/kg	0.010 J	0.0088 J	0.030 J	0.041 J	0.016 J	*< 0.0085 U*	0.020 J	0.014 J	0.020 J	*< 0.0089 U*	0.012 J	0.025 J	0.014 J	0.010 J
Total Molybdenum	mg/kg	0.83	0.22 J	1.1	1.3	0.48	0.91	0.57	0.16 J	1.4	0.58	0.58	1.1	0.82	0.87
Total Nickel	mg/kg	12	4.4	9.4	9.0	5.8	8.8	7.6	5.2	14	11	11	10	8.9	11
Total Potassium	mg/kg	5,800	1,700	4,700	4,100	2,500	4,300	3,800	2,300	6,400	3,400	5,300	4,800	4,400	5,000
Total Selenium	mg/kg	0.27 J-	*< 0.21 UJ*	0.35 J-	0.27 J-	*< 0.22 UJ*	0.27 J-	*< 0.22 UJ*	*< 0.23 U*	0.30 J-	0.26 J-	0.26 J-	0.36 J-	0.34 J-	0.25 J-
Total Silver	mg/kg	0.080 J	*< 0.064 U*	0.080 J	*< 0.070 U*	*< 0.065 U*	*< 0.064 U*	*< 0.065 U*	*< 0.070 U*	0.079 J	0.065 J	*< 0.066 U*	0.085 J	*< 0.066 U*	*< 0.064 U*
Total Sodium	mg/kg	1,400	2,000	1,900	16,000	310 J	1,400	350 J	310 J	6,900	640	1,100	1,200	900	1,700
Total Thallium	mg/kg	0.12 J	*< 0.11 U*	*< 0.11 U*	*< 0.12 U*	*< 0.11 U*	*< 0.11 U*	*< 0.11 U*	*< 0.12 U*	0.13 J	*< 0.10 U*	0.11 J	*< 0.11 U*	*< 0.11 U*	*< 0.11 U*
Total Vanadium	mg/kg	23	9.7	21	19	13	20	18	13	22	20	23	21	20	22
Total Zinc	mg/kg	55	22	46	45	32	45	49	24	63	37	51	48	43	47

Table I-9
Analytical Results for Solids Samples -
PRI-15 Buffer Area West
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location ID	PRI15-001	PRI15-002	PRI15-003	PRI15-004	PRI15-005	PRI15-006	PRI15-007	PRI15-008	PRI15-009	PRI15-010	PRI15-011	PRI15-012	PRI15-013	PRI15-014
	Sample Date	23-Nov-13	24-Nov-13	23-Nov-13	24-Nov-13	22-Nov-13	23-Nov-13	22-Nov-13	13-Jan-14	23-Nov-13	24-Nov-13	23-Nov-13	24-Nov-13	24-Nov-13	24-Nov-13
	Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Depth	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in
	Sample ID	PRI15-001-SS01-112313	PRI15-002-SS01-112413	PRI15-003-SS01-112313	PRI15-004-SS01-112413	PRI15-005-SS01-112213	PRI15-006-SS01-112313	PRI15-007-SS01-112213	PRI15-008-SS01-011314	PRI15-009-SS01-112313	PRI15-010-SS01-112413	PRI15-011-SS01-112313	PRI15-012-SS01-112413	PRI15-013-SS01-112413	PRI15-014-SS01-112413
Analyte	Unit														
05-SVOCs															
1,1'-Biphenyl	µg/kg	< 180 U	< 170 U	< 180 U	< 190 U	< 170 U	< 170 U	< 170 U	< 190 U	< 180 U	< 180 U	< 180 U	< 180 U	< 180 U	< 180 U
1,2,4,5-Tetrachlorobenzene	µg/kg	< 29 U	< 27 U	< 29 U	< 31 U	< 27 U	< 27 U	< 27 U	< 29 U	< 29 U	< 28 U	< 28 U	< 28 U	< 28 U	< 28 U
2,3,4,6-Tetrachlorophenol	µg/kg	< 91 U	< 87 U	< 91 U	< 96 U	< 86 U	< 85 U	< 86 U	< 92 U	< 92 U	< 88 U	< 89 U	< 89 U	< 87 U	< 89 U
2,4,5-Trichlorophenol	µg/kg	< 92 U	< 88 U	< 92 U	< 97 U	< 87 U	< 86 U	< 87 U	< 93 U	< 93 U	< 89 U	< 90 U	< 90 U	< 88 U	< 90 U
2,4,6-Trichlorophenol	µg/kg	< 93 U	< 89 U	< 93 U	< 99 U	< 88 U	< 87 U	< 88 U	< 94 U	< 94 U	< 90 U	< 91 U	< 91 U	< 89 U	< 91 U
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	< 4.9 U	< 4.6 U	< 4.9 U	< 5.2 U	< 4.6 UJ	< 4.5 U	< 4.6 UJ	< 4.9 U	< 4.9 U	< 4.7 U	< 4.8 U	< 4.8 U	< 4.7 U	< 4.8 U
2,2-Oxybis(1-chloropropane)	µg/kg	< 87 U	< 83 U	< 87 U	< 93 U	< 83 U	< 82 U	< 83 U	< 89 U	< 88 U	< 85 U	< 86 U	< 86 U	< 84 U	< 85 U
2,4-Dichlorophenol	µg/kg	< 98 U	< 94 U	< 98 U	< 100 U	< 94 U	< 92 U	< 94 U	< 100 U	< 100 U	< 95 U	< 97 U	< 97 U	< 95 U	< 96 U
2,4-Dimethylphenol	µg/kg	< 180 U	< 180 U	< 180 U	< 200 U	< 180 U	< 170 U	< 180 U	< 190 U	< 190 U	< 180 U	< 180 U	< 180 U	< 180 U	< 180 U
2,4-Dinitrophenol	µg/kg	< 240 U	< 230 U	< 240 U	< 250 U	< 230 U	< 220 U	< 220 U	< 240 U	< 240 U	< 230 U	< 230 U	< 230 U	< 230 U	< 230 U
2,4-Dinitrotoluene	µg/kg	< 98 U	< 94 U	< 98 U	< 100 U	< 94 U	< 92 U	< 94 U	< 100 U	< 100 U	< 95 U	< 97 U	< 97 U	< 95 U	< 96 U
2,6-Dinitrotoluene	µg/kg	< 110 U	< 100 U	< 110 U	< 120 U	< 100 U	< 100 U	< 100 U	< 110 U	< 110 U	< 110 U	< 110 U	< 110 U	< 110 U	< 110 U
2-Chloronaphthalene	µg/kg	< 89 U	< 86 U	< 89 U	< 95 U	< 85 U	< 84 U	< 85 U	< 91 U	< 91 U	< 87 U	< 88 U	< 88 U	< 86 U	< 87 U
2-Chlorophenol	µg/kg	< 97 U	< 93 U	< 97 U	< 100 U	< 93 U	< 91 U	< 92 U	< 99 U	< 99 U	< 94 U	< 96 U	< 96 U	< 93 U	< 95 U
2-Methylphenol	µg/kg	< 64 U	< 61 U	< 64 U	< 68 U	< 61 U	< 60 U	< 61 U	< 65 U	< 65 U	< 62 U	< 63 U	< 63 U	< 62 U	< 63 U
2-Nitroaniline	µg/kg	< 93 U	< 89 U	< 93 U	< 99 U	< 88 U	< 87 U	< 88 U	< 94 U	< 94 U	< 90 U	< 91 U	< 91 U	< 89 U	< 91 U
2-Nitrophenol	µg/kg	< 91 U	< 87 U	< 91 U	< 96 U	< 86 U	< 85 U	< 86 U	< 92 U	< 92 U	< 88 U	< 89 U	< 89 U	< 87 U	< 89 U
3,3'-Dichlorobenzidine	µg/kg	< 100 UJ	< 99 U	< 100 U	< 110 U	< 99 U	< 97 U	< 99 U	< 110 U	< 110 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
3-Nitroaniline	µg/kg	< 180 UJ	< 180 U	< 180 U	< 200 U	< 180 U	< 170 U	< 180 U	< 190 U	< 190 U	< 180 U	< 180 U	< 180 U	< 180 U	< 180 U
4,6-Dinitro-2-methylphenol	µg/kg	< 89 U	< 86 U	< 89 U	< 95 U	< 85 U	< 84 U	< 85 U	< 91 U	< 91 U	< 87 U	< 88 U	< 88 U	< 86 U	< 87 U
4-Bromophenyl-phenylether	µg/kg	< 94 U	< 90 U	< 94 U	< 100 U	< 89 U	< 88 U	< 89 U	< 95 U	< 95 U	< 91 U	< 92 U	< 92 U	< 90 U	< 92 U
4-Chloro-3-methylphenol	µg/kg	< 100 U	< 97 U	< 100 U	< 110 U	< 97 U	< 95 U	< 97 U	< 100 U	< 100 U	< 99 U	< 100 U	< 100 U	< 98 U	< 99 U
4-Chloroaniline	µg/kg	< 64 UJ	< 61 UJ	< 64 UJ	< 68 UJ	< 61 UJ	< 60 UJ	< 61 UJ	< 65 UJ	< 65 UJ	< 62 UJ	< 63 UJ	< 63 UJ	< 62 UJ	< 63 UJ
4-Chlorophenyl-phenylether	µg/kg	< 100 U	< 98 U	< 100 U	< 110 U	< 98 U	< 96 U	< 98 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 99 U	< 100 U
3 & 4 Methylphenol	µg/kg	< 360 U	< 350 U	< 360 U	< 390 U	< 350 U	< 340 U	< 350 U	< 370 U	< 370 U	< 350 U	< 360 U	< 360 U	< 350 U	< 360 U
4-Nitroaniline	µg/kg	< 97 U	< 93 U	< 97 U	< 100 U	< 93 U	< 91 U	< 92 U	< 99 U	< 99 U	< 94 U	< 96 U	< 96 U	< 93 U	< 95 U
4-Nitrophenol	µg/kg	< 310 U	< 300 U	< 310 U	< 330 U	< 290 U	< 290 U	< 290 U	< 310 U	< 310 U	< 300 U	< 300 U	< 300 U	< 300 U	< 300 U
Acetophenone	µg/kg	< 28 U	< 26 U	< 28 U	< 29 U	< 26 UJ	< 26 U	< 26 UJ	< 28 U	< 28 U	< 27 U	< 27 U	< 27 U	< 27 U	< 27 U
Benzaldehyde	µg/kg	< 180 U	< 170 U	< 180 U	< 190 U	< 170 U	< 170 U	< 170 U	< 190 U	< 180 U	< 180 U	< 180 U	< 180 U	< 180 U	< 180 U
Benzylbutylphthalate	µg/kg	< 100 U	< 100 U	< 100 U	< 110 U	< 100 U	< 98 U	< 100 U	< 110 U	< 110 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Bis(2-chloroethoxy)methane	µg/kg	< 97 U	< 93 U	< 97 U	< 100 U	< 93 U	< 91 U	< 92 U	< 99 U	< 99 U	< 94 U	< 96 U	< 96 U	< 93 U	< 95 U
bis(2-Chloroethyl) ether	µg/kg	< 89 U	< 86 U	< 89 U	< 95 U	< 85 U	< 84 U	< 85 U	< 91 U	< 91 U	< 87 U	< 88 U	< 88 U	< 86 U	< 87 U
Bis(2-ethylhexyl)phthalate	µg/kg	< 110 U	< 100 U	< 110 U	< 120 U	< 100 U	< 100 U	< 100 U	< 110 U	< 110 U	< 110 U	< 110 U	< 110 U	< 100 U	< 110 U
Carbazole	µg/kg	< 100 U	< 100 U	< 100 U	< 110 U	< 100 U	< 98 U	< 100 U	< 110 U	< 110 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Dibenzofuran	µg/kg	< 95 U	< 91 U	< 95 U	< 100 U	< 91 U	< 89 U	< 90 U	< 96 U	< 96 U	< 92 U	< 94 U	< 93 U	< 91 U	< 93 U
Diethyl phthalate	µg/kg	< 99 U	< 95 U	< 99 U	< 110 U	< 95 U	< 93 U	< 95 U	< 100 U	< 100 U	< 96 U	< 98 U	< 98 U	< 96 U	< 97 U
Dimethylphthalate	µg/kg	< 96 U	< 92 U	< 96 U	< 100 U	< 92 U	< 90 U	< 91 U	< 98 U	< 97 U	< 93 U	< 95 U	< 95 U	< 92 U	< 94 U
Di-n-butylphthalate	µg/kg	< 110 U	< 100 U	< 110 U	< 110 U	< 100 U	< 100 U	< 100 U	< 110 U	< 110 U	< 100 U	< 110 U	< 110 U	< 100 U	< 100 U
Di-n-octylphthalate	µg/kg	< 110 U	< 100 U	< 110 U	< 110 U	< 100 U	< 100 U	< 100 U	< 110 U	< 110 U	< 100 U	< 110 U	< 110 U	< 100 U	< 100 U
Hexachlorobenzene	µg/kg	< 98 U	< 94 U	< 98 U	< 100 U	< 94 U	< 92 U	< 94 U	< 100 U	< 100 U	< 95 U	< 97 U	< 97 U	< 95 U	< 96 U
Hexachlorobenzene (SIM Screen)	µg/kg	< 2.4 U	< 2.3 U	< 2.4 U	35	< 2.3 UJ	3.0 J	< 2.3 UJ	< 2.5 U	3.2 J	< 2.4 U	< 2.4 U	< 2.4 U	< 2.3 U	< 2.4 U
Hexachlorobutadiene	µg/kg	< 91 U	< 87 U	< 91 U	< 96 U	< 86 U	< 85 U	< 86 U	< 92 U	< 92 U	< 88 U	< 89 U	< 89 U	< 87 U	< 89 U
Hexachlorobutadiene (SIM Screen)	µg/kg	< 4.1 U	< 3.9 U	< 4.1 U	< 4.3 U	< 3.9 UJ	< 3.8 U	< 3.9 UJ	< 4.1 U	< 4.1 U	< 4.0 U	< 4.0 U	< 4.0 U	< 3.9 U	< 4.0 U
Hexachlorocyclopentadiene	µg/kg	< 68 U	< 65 U	< 68 U	< 73 U	< 65 U	< 64 U	< 65 U	< 70 U	< 69 U	< 66 U	< 67 U	< 67 U	< 66 U	< 67 U
Hexachloroethane	µg/kg	< 89 U	< 86 U	< 89 U	< 95 U	< 85 U	< 84 U	< 85 U	< 91 U	< 91 U	< 87 U	< 88 U	< 88 U	< 86 U	< 87 U
Isophorone	µg/kg	< 100 U	< 98 U	< 100 U	< 110 U	< 98 U	< 96 U	< 98 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 99 U	< 100 U
Nitrobenzene	µg/kg	< 84 U	< 80 U	< 84 U	< 89 U	< 80 U	< 78 U	< 80 U	< 85 U	< 85 U	< 81 U	< 83 U	< 83 U	< 81 U	< 82 U
N-Nitrosodimethylamine	µg/kg	< 110 U	< 100 U	< 110 U	< 110 U	< 100 U	< 99 U	< 100 U	< 110 U	< 110 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
n-Nitrosodimethylamine (SIM Screen)	µg/kg	< 110 U	< 100 U	< 110 U	< 110 U	< 100 UJ	< 99 U	< 100 UJ	< 110 U	< 110 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
N-Nitroso-di-n-propylamine	µg/kg	< 93 U	< 89 U	< 93 U	< 99 U	< 88 U	< 87 U	< 88 U	< 94 U	< 94 U	< 90 U	< 91 U	< 91 U	< 89 U	< 91 U
N-Nitrosodiphenylamine	µg/kg	< 95 U	< 91 U	< 95 U	< 100 U	< 91 U	< 89 U	< 90 U	< 96 U	< 96 U	< 92 U	< 94 U	< 93 U	< 91 U	< 93 U
Pentachlorophenol	µg/kg	< 56 U	< 54 U	< 56 U	< 60 U	< 54 U	< 53 U	< 54 U	< 57 U	< 57 U	< 55 U	< 55 U	< 55 U	< 54 U	< 55 U
Pentachlorophenol (SIM Screen)	µg/kg	< 27 U	< 25 U	27 J	< 28 U	< 25 UJ	< 25 U	< 25 UJ	< 27 U	< 27 U	< 26 U	< 26 U	< 26 U	< 25 U	< 26 U
Phenol	µg/kg	< 92 U	< 88 U	< 92 U	< 97 U	< 87 U	< 86 U	< 87 U	< 93 U	< 93 U	< 89 U	< 90 U	< 90 U	< 88 U	< 90 U
06-PAHs by SIM															
2-Methylnaphthalene	µg/kg	< 0.62 U	< 0.67 U	< 0.51 U	< 1 U	0.91 J	< 0.9 U	< 0.47 U	< 0.50 U	< 0.86 U	< 0.49 U	< 0.83 U	< 0.7 U	< 0.47 U	< 0.43 U
Acenaphthene	µg/kg	< 0.52 U	< 0.92 U	< 0.6 U	< 1.1 U	< 0.47 U	< 1.1 U	< 0.51 U	< 0.54 U	< 1.1 U	< 0.54 U	< 1 U	< 0.88 U	< 0.52 U	< 0.47 U
Acenaphthylene	µg/kg	< 0.36 U	< 0.34 U	< 0.34 U	< 0.40 U	< 0.33 U	< 0.33 U	< 0.36 U	< 0.38 U	< 0.37 U	< 0.38 U	< 0.37 U	< 0.38 U	< 0.36 U	< 0.33 U
Anthracene	µg/kg	< 0.43 U	< 0.41 U	< 0.40 U	< 0.48 U	< 0.39 U	< 0.39 U	< 0.43 U	< 0.46 U	0.47 J	< 0.45 U	< 0.45 U	< 0.46 U	< 0.43 U	< 0.40 U
Benzo(a)anthracene	µg/kg	0.44 J	< 0.32 U	0.32 J	0.59 J	< 0.30 U	< 0.30 U	< 0.33 U	< 0.35 U	0.67 J	< 0.35 U	0.40 J	< 0.35 U	0.37 J	0.32 J
Benzo(a)pyrene	µg/kg	< 0.44 U	< 0.42 U	< 0.41 U	0.62 J	< 0.40 UJ	< 0.40 U	< 0.44 UJ	< 0.46 U	0.51 J	< 0.45 U	< 0.45 U	< 0.46 U	< 0.44 U	< 0.40 U
Benzo(b)fluoranthene	µg/kg	0.55 J	0.57 J	< 0.52 U	1.0 J	< 0.50 U	< 0.50 U	< 0.55 U	< 0.58 U	0.61 J	< 0.58 U	< 0.57 U	< 0.58 U	< 0.56 U	< 0.51 U
Benzo(g,h,i)perylene	µg/kg	< 1.1 U	< 1.0 U	< 1.0 U	< 1.2 U	< 1.0 U	< 1.0 U	< 1.1 U	< 1.2 U	< 1.1 U	< 1.1 U	< 1.1 U	< 1.2 U	< 1.1 U	< 1.0 U
Benzo(k)fluoranthene	µg/kg	< 0.83 U	< 0.79 U	< 0.78 U	1.0 J	< 0.76 U	< 0.76 U	< 0.83 U	< 0.88 U	< 0.85 U	< 0.87 U	< 0.86 U	< 0.88 U	< 0.84 U	< 0.76 U
Chrysene	µg/kg	1.3 J	0.81 J	1.1 J	2.0 J	0.82 J	1.0 J	0.88 J	< 0.40 U	1.5 J	< 0.40 U	1.2 J	1.2 J	1.0 J	0.89 J
Dibenzo(a,h)anthracene	µg/kg	< 1.3 U	< 1.2 U	< 1.2 U	< 1.4 U	< 1.2 U	< 1.2 U	< 1.3 U	< 1.4 U	< 1.3 U	< 1.4 U	< 1.4 U	< 1.4 U	< 1.3 U	< 1.2 U
Fluoranthene	µg/kg	1.0 J	0.66 J	0.57 J	1.5 J	< 0.29 U	0.58 J	0.90 J	< 0.34 U	1.4 J	< 0.33 U	0.64 J	0.66 J	0.51 J	0.48 J
Fluorene	µg/kg	< 0.54 U	< 0.51 U	< 0.50 U	< 0.59 U	< 0.49 U	< 0.49 U	< 0.53 U	< 0.57 U	0.73 J	< 0.56 U	< 0.55 U	< 0.57 U	< 0.54 U	< 0.49 U
Indeno(1,2,3-cd)pyrene	µg/kg	< 0.53 U	< 0.50 U	< 0.49 U	0.76 J	< 0.48 U	< 0.48 U	< 0.52 U	< 0.55 U	< 0.53 U	< 0.55 U	< 0.54 U	< 0.55 U	< 0.53 U	< 0.48 U
Naphthalene	µg/kg	< 4.7 U	< 5.1 U	< 3.7 U	6.0	0.69 J	7.0	0.95 J	< 0.36 U	5.7	< 0.5 U	6.6	< 4.6 U	< 0.61 U	< 0.53 U
Phenanthrene	µg/kg	< 1.1 U	< 1.1 U	< 0.88 U	< 1.5 U	< 0.35 U	< 1.2 U	1.7 J	0.62 J	< 2.1 U	< 0.51 U	< 1.2 U	< 1.2 U	< 0.72 U	< 0.66 U
Pyrene	µg/kg	0.79 J	0.49 J	0.42 J	1.3 J	< 0.35 U	0.38 J	0.83 J	< 0.41 U	1.0 J	< 0.40 U	0.47 J	0.46 J	0.41 J	0.41 J
Low Molecular Weight PAH (ND=0)	µg/kg	< 4.7 U	< 5.1 U	< 3.7 U	6.0	1.6	7.0	2.7	0.62	6.9	< 0.56 U	6.6	< 4.6 U	< 0.72 U	< 0.66 U
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	< 4.1 U	< 4.5 U	< 3.5 U	8.5	2.6	9.2	3.8	2.0	9.1	< 1.7 U	8.8	< 4.4 U	< 1.8 U	< 1.7 U

Table I-9
Analytical Results for Solids Samples -
PRI-15 Buffer Area West
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location ID	**PRI15-001**	**PRI15-002**	**PRI15-003**	**PRI15-004**	**PRI15-005**	**PRI15-006**	**PRI15-007**	**PRI15-008**	**PRI15-009**	**PRI15-010**	**PRI15-011**	**PRI15-012**	**PRI15-013**	**PRI15-014**
	Sample Date	**23-Nov-13**	**24-Nov-13**	**23-Nov-13**	**24-Nov-13**	**22-Nov-13**	**23-Nov-13**	**22-Nov-13**	**13-Jan-14**	**23-Nov-13**	**24-Nov-13**	**23-Nov-13**	**24-Nov-13**	**24-Nov-13**	**24-Nov-13**
	Sample Type	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**
	Depth	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**
	Sample ID	**PRI15-001-SS01-112313**	**PRI15-002-SS01-112413**	**PRI15-003-SS01-112313**	**PRI15-004-SS01-112413**	**PRI15-005-SS01-112213**	**PRI15-006-SS01-112313**	**PRI15-007-SS01-112213**	**PRI15-008-SS01-011314**	**PRI15-009-SS01-112313**	**PRI15-010-SS01-112413**	**PRI15-011-SS01-112313**	**PRI15-012-SS01-112413**	**PRI15-013-SS01-112413**	**PRI15-014-SS01-112413**
Analyte	**Unit**														
High Molecular Weight PAH (ND=0)	µg/kg	4.1	2.5	2.4	8.8	0.82	2.0	2.6	*< 1.4 U*	5.7	*< 1.4 U*	2.7	2.3	2.3	2.1
High Molecular Weight PAH (ND=1/2DL)	µg/kg	6.2	4.6	4.6	10	3.5	4.3	5.1	*< 3.3 U*	7.6	*< 3.2 U*	5.2	5.0	4.7	4.3
08-General Chemistry Parameters for Solids															
Perchlorate	µg/kg					*< 20 U*		*< 21 U*	*< 22 U*						
Total Organic Carbon	g/kg	9.9	12	8.5	14	10	12	18	*< 1.7 U*	9.2	5.0	6.5	9.3	8.4	7.4
pH	pH units	8.37	8.18	8.26	7.39	8.18	8.55	8.11	8.63	8.46	9.10	8.64	8.90	8.55	8.35
Cyanide, Total	mg/kg	*< 0.23 U*	*< 0.22 U*	*< 0.22 U*	*< 0.24 U*	0.21 J	*< 0.21 U*	0.23 J	*< 0.23 U*	*< 0.23 U*	*< 0.22 U*	*< 0.22 U*	*< 0.23 U*	*< 0.22 U*	*< 0.23 U*

Notes:
< = Compound not detected. Reportable detection limit shown.
µg/kg = micrograms per kilogram
Empty cells = Not analyzed
g/kg = grams per kilogram
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
in = inches
mg/kg = milligrams per kilogram
N = Normal Environmental Sample
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pg/g = picogram per gram (1 pg/g = 0.001 µg/kg)
pH units = pH units
SIM = Selected ion monitoring
SVOC = Semi-volatile organic compound
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence
VOC = Volatile organic compound

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity, biased high. The associated numerical value is the approximate concentration of the analyte in the sample.
U = Compound was analyzed for, but not detected. The associated numerical value is the reporting limit.
UJ = The nondetected analyte was qualified as estimated at the sample quantitation limit. The reported sample quantitation limit is approximate and may be inaccurate or imprecise
UJQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration, value is an estimate.
UQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration.

Table I-10
Analytical Results for Solids Samples -
PRI-16 Lakeside Mountains Buffer Area
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location ID	PRI16-001	PRI16-002	PRI16-003	PRI16-004	PRI16-005	PRI16-006	PRI16-007	PRI16-008	PRI16-009	PRI16-010	PRI16-011	PRI16-012	PRI16-013	PRI16-014
	Sample Date	22-Nov-13	22-Nov-13	20-Nov-13	20-Nov-13	20-Nov-13	19-Nov-13	19-Nov-13	20-Nov-13	19-Nov-13	19-Nov-13	23-Nov-13	19-Nov-13	22-Nov-13	21-Nov-13
	Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Depth	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in
	Sample ID	PRI16-001-SS01-112213	PRI16-002-SS01-112213	PRI16-003-SS01-112013	PRI16-004-SS01-112013	PRI16-005-SS01-112013	PRI16-006-SS01-111913	PRI16-007-SS01-111913	PRI16-008-SS01-112013	PRI16-009-SS01-111913	PRI16-010-SS01-111913	PRI16-011-SS01-112313	PRI16-012-SS01-111913	PRI16-013-SS01-112213	PRI16-014-SS01-112113
Analyte	**Unit**														
01-Dioxins and Furans															
2,3,7,8-TCDD	pg/g	*< 0.020 U*	*< 0.021 U*	*< 0.019 U*	*< 0.016 U*	*< 0.016 U*	*< 0.017 U*	*< 0.018 U*	*< 0.017 U*	*< 0.032 U*	*< 0.016 U*	*< 0.13 U*	*< 0.019 U*	*< 0.026 U*	*< 0.026 U*
1,2,3,7,8-PeCDD	pg/g	*< 0.035 U*	*< 0.035 U*	*< 0.034 UQ*	*< 0.031 U*	*< 0.030 U*	*< 0.027 U*	*< 0.059 UQ*	0.053 J	*< 0.030 U*	*< 0.048 UQ*	*< 0.20 U*	*< 0.029 U*	*< 0.036 U*	*< 0.042 U*
1,2,3,4,7,8-HxCDD	pg/g	*< 0.028 U*	*< 0.045 UQ*	*< 0.011 U*	0.054 J	*< 0.012 U*	*< 0.022 U*	*< 0.082 UQ*	0.12 J	0.078 J	0.085 J	*< 0.16 U*	*< 0.015 U*	*< 0.022 U*	0.088 J
1,2,3,6,7,8-HxCDD	pg/g	*< 0.084 UQ*	0.090 J	*< 0.0097 U*	0.12 J	*< 0.010 U*	*< 0.020 U*	0.19 J	0.16 J	0.19 J	0.17 J	*< 0.16 U*	*< 0.11 UQ*	*< 0.093 UQ*	*< 0.14 UQ*
1,2,3,7,8,9-HxCDD	pg/g	0.099 J	0.11 J	0.14 J	*< 0.088 UQ*	*< 0.044 UQ*	0.062 J	*< 0.2 UQ*	0.16 J	*< 0.17 UQ*	*< 0.18 UQ*	*< 0.14 U*	*< 0.075 UQ*	0.097 J	*< 0.17 UQ*
1,2,3,4,6,7,8-HpCDD	pg/g	1.1 J	*< 0.66 U*	1.1 J	1.2 J	*< 0.37 U*	0.59 J	2.1 J	1.7 J	2.0 J	1.9 J	0.55 J	0.78 J	*< 0.71 U*	1.5 J
OCDD	pg/g	8.8 J	*< 2.4 U*	6.1 J	6.2 J	2.2 J	2.9 J	9.7 J	8.2 J	14	8.8 J	*< 2.1 UQ*	4.7 J	*< 3.4 U*	8.3 J
2,3,7,8-TCDF	pg/g	*< 0.098 UQ*	0.17 J	0.22 J	*< 0.22 UQ*	*< 0.056 UQ*	0.12 J	0.46 J	*< 0.33 UQ*	0.41 J	*< 0.31 UQ*	0.38 J	0.19 J	0.17 J	0.22 J
1,2,3,7,8-PeCDF	pg/g	0.10 J	0.14 J	0.21 J	0.20 J	*< 0.016 U*	0.10 J	0.40 J	*< 0.33 UQ*	0.32 J	*< 0.33 UQ*	*< 0.35 U*	0.15 J	0.19 J	*< 0.021 U*
2,3,4,7,8-PeCDF	pg/g	0.088 J	*< 0.098 UQ*	0.13 J	0.16 J	0.039 J	0.060 J	0.24 J	0.28 J	*< 0.19 UQ*	0.22 J	*< 0.36 U*	0.11 J	*< 0.028 U*	*< 0.022 U*
1,2,3,4,7,8-HxCDF	pg/g	0.53 J	0.57 J	0.63 J	0.82 J	0.18 J	0.39 J	1.3 J	1.6 J	1.1 J	1.3 J	0.58 J	0.53 J	0.70 J	0.56 J
1,2,3,6,7,8-HxCDF	pg/g	*< 0.21 UQ*	0.33 J	0.37 J	*< 0.5 UQ*	0.097 J	0.32 J	0.96 J	1.1 J	0.66 J	0.95 J	0.72 J	0.31 J	0.44 J	*< 0.27 UQ*
1,2,3,7,8,9-HxCDF	pg/g	*< 0.028 UQ*	*< 0.042 UQ*	0.090 J	*< 0.017 U*	*< 0.012 U*	0.047 J	*< 0.022 U*	0.054 J	*< 0.020 U*	*< 0.026 U*	*< 0.14 U*	*< 0.066 U*	*< 0.058 UQ*	*< 0.020 U*
2,3,4,6,7,8-HxCDF	pg/g	0.22 J	0.21 J	0.37 J	0.46 J	0.11 J	0.20 J	0.74 J	0.86 J	0.57 J	0.72 J	0.32 J	0.21 J	0.33 J	*< 0.2 UQ*
1,2,3,4,6,7,8-HpCDF	pg/g	2.7 J	3.2 J	4.8 J	6.7	*< 1.4 U*	2.8 J	9.8	14	8.0	12	2.4 J	2.8 J	4.6 J	3.8 J
1,2,3,4,7,8,9-HpCDF	pg/g	0.19 J	0.32 J	0.37 J	0.70 J	0.12 J	0.31 J	0.89 J	1.3 J	0.58 J	1.0 J	0.35 J	0.23 J	0.61 J	0.36 J
OCDF	pg/g	11	14	27	61	6.9 J	14	97	130	58	74	16	16	30	19
Calculated TEQ (ND=0), Mammalian	pg/g	0.16	0.19	0.30	0.31	0.054	0.18	0.61	0.75	0.44	0.63	0.24	0.21	0.24	0.18
Calculated TEQ (ND=1/2 DL), Mammalian	pg/g	0.24	0.27	0.35	0.38	0.10	0.21	0.69	0.80	0.55	0.70	0.53	0.27	0.31	0.31
Calculated TEQ (ND=0), Avian	pg/g	0.22	0.34	0.70	0.49	0.08	0.35	1.3	1.0	0.94	0.82	0.57	0.45	0.47	0.55
Calculated TEQ (ND=1/2 DL), Avian	pg/g	12	11	13	12	12	11	13	13	13	13	13	14	13	13
02-PCBs															
PCB-81	pg/g	*< 0.34 U*	*< 0.52 U*	*< 0.15 U*	*< 0.16 U*	*< 0.15 U*	*< 0.11 U*	*< 0.29 U*	*< 0.16 U*	*< 0.52 U*	*< 0.39 U*	*< 0.64 U*	*< 0.41 U*	*< 0.38 U*	0.77 J
PCB-77	pg/g	*< 1.6 UQ*	*< 0.53 U*	2.3	2.0 J	*< 0.38 UQ*	0.59 J	3.5	2.2	3.3	1.8 J	*< 0.67 U*	*< 1.9 UQ*	1.3 J	2.9
PCB-105	pg/g	3.9	*< 1.4 UQ*	5.1	3.6	*< 0.87 UQ*	1.5 J	4.8	3.6	10	5.2	1.3 J	*< 6.3 UQ*	2.3	5.7
PCB-114	pg/g	*< 0.46 U*	*< 0.52 U*	0.29 J	*< 0.19 U*	*< 0.12 U*	*< 0.13 U*	*< 0.35 U*	*< 0.24 U*	*< 0.60 U*	*< 0.40 U*	*< 0.50 U*	*< 0.74 UQ*	*< 0.43 U*	*< 0.46 U*
PCB-118	pg/g	8.1	3.7	9.9	5.7	1.9 J	2.9	11	7.8	15	11	2.6	7.3	5.4	9.7
PCB-123	pg/g	*< 0.45 U*	*< 0.50 U*	0.25 J	*< 0.18 U*	*< 0.12 U*	*< 0.13 U*	*< 0.36 U*	*< 0.24 U*	*< 0.58 U*	*< 0.38 U*	*< 0.49 U*	*< 0.38 U*	*< 0.43 U*	1.1 J
PCB-126	pg/g	*< 0.46 U*	*< 0.49 U*	*< 0.42 UQ*	*< 0.22 U*	*< 0.14 U*	*< 0.17 U*	*< 0.38 U*	*< 0.32 UQ*	*< 0.70 U*	0.66 J	*< 0.53 U*	*< 0.44 U*	*< 0.39 U*	*< 1.1 UQ*
PCB-156 & 157	pg/g	*< 1.1 UQ*	*< 0.56 U*	*< 1.8 UQ*	1.4 J	0.38 J	*< 0.47 UQ*	2.1 J	1.7 J	3.9 J	2.1 J	0.59 J	2.9 J	*< 0.92 UQ*	3.6 J
PCB-167	pg/g	*< 0.83 UQ*	*< 0.47 U*	1.0 J	0.71 J	0.12 J	0.35 J	*< 1.1 UQ*	0.97 J	1.9 J	1.3 J	*< 0.42 U*	0.99 J	*< 0.30 U*	1.8 J
PCB-169	pg/g	*< 0.28 U*	*< 0.48 U*	*< 0.13 U*	*< 0.12 U*	*< 0.11 U*	*< 0.11 U*	*< 0.26 U*	*< 0.12 U*	*< 0.34 U*	*< 0.26 U*	*< 0.43 U*	*< 0.31 U*	*< 0.29 U*	0.85 J
PCB-189	pg/g	*< 0.42 U*	*< 0.44 U*	0.43 J	*< 0.34 UQ*	*< 0.11 U*	0.16 J	0.43 J	0.39 J	*< 0.64 UQ*	0.41 J	*< 0.58 U*	0.63 J	*< 0.37 U*	*< 1.1 UQ*
Monochlorobiphenyls, Total	pg/g	5.0 J	7.6 J	13 J	6.6 J	3.6 J	9.5 J	7.9 J	11 J	44 J	19 J	5.2 J	13 J	12 J	20 J
Dichlorobiphenyls, Total	pg/g	11 J	9.8 J	25 J	11 J	4.0 J	21 J	*< 8.1 U*	24 J	*< 10 U*	*< 15 U*	3.1 J	*< 12 U*	22 J	12 J
Trichlorobiphenyls, Total	pg/g	13 J	11 J	25 J	13 J	4.9 J	13 J	15 J	18 J	16 J	19 J	2.1 J	9.5 J	18 J	18 J
Tetrachlorobiphenyls, Total	pg/g	32 J+	15 J+	40 J	23 J	9.4 J	14 J	30 J	30 J	38 J	37 J	6.0 J	18 J	22 J+	31 J+
Pentachlorobiphenyls, Total	pg/g	81 J	19 J	67 J	38 J	11 J	20 J	66 J	56 J	110 J	67 J	14 J	49 J	33 J	57 J
Hexachlorobiphenyls, Total	pg/g	60 J	25 J	71 J	51 J	10 J	23 J	99 J	65 J	170 J	93 J	27 J	73 J	31 J	66 J
Heptachlorobiphenyls, Total	pg/g	34 J	24 J	65 J	45 J	8.8 J	19 J	79 J	58 J	130 J	78 J	23 J	52 J	37 J	60 J
Octachlorobiphenyls, Total	pg/g	16 J	15 J	42 J	35 J	7.0 J	16 J	66 J	54 J	91 J	71 J	25 J	34 J	28 J	37 J
Nonachlorobiphenyls, Total	pg/g	19 J	24 J	67 J	62 J	14 J	31 J	110 J	120 J	130 J	120 J	36 J	45 J	42 J	48 J
Decachlorobiphenyl (PCB-209)	pg/g	67	86	240	280	54	120	560	610	510	460	150	190	190	180
Total PCBs	pg/g	340	240	650	560	130 J	290	1,000	1,000	1,200	960	290	480	430	520
03- Metals															
Total Aluminum	mg/kg	9,200	13,000	14,000	13,000	6,200	5,100	16,000	11,000	12,000	12,000	12,000	14,000	11,000	7,700
Total Antimony	mg/kg	0.21 J-	0.32 J-	0.30 J-	0.33 J-	*< 0.21 UJ*	*< 0.21 UJ*	0.38 J-	0.28 J-	0.37 J-	0.33 J-	0.27 J-	0.33 J-	0.30 J-	0.30 J-
Total Arsenic	mg/kg	3.6	5.3	5.8	6.1	2.5	2.9	7.1	5.1	5.3	6.9	5.2	7.2	5.4	4.0
Total Barium	mg/kg	130	180	180	160	69	73	210	170	150	150	150	160	190	110
Total Beryllium	mg/kg	0.37	0.57	0.65	0.63	0.24	0.23	0.74	0.54	0.53	0.59	0.60	0.58	0.58	0.37
Total Cadmium	mg/kg	0.26	0.43	0.48	0.37	0.12 J	0.14 J	0.49	0.47	0.51	0.41	0.36	0.42	0.32	0.31
Total Calcium	mg/kg	58,000	43,000	59,000	110,000	39,000	39,000	59,000	83,000	56,000	100,000	72,000	75,000	170,000	85,000
Total Chromium	mg/kg	8.7	12	13	12	6.2	5.0	18	11	11	12	13	13	12	8.9
Total Cobalt	mg/kg	2.7	4.2	4.6	4.3	2.2	1.7	5.5	3.7	4.2	4.1	4.3	4.8	3.7	3.2
Total Copper	mg/kg	8.8	16	19	16	5.1	4.7	20	15	20	15	13	17	12	11
Total Iron	mg/kg	7,600	12,000	14,000	13,000	7,500	6,000	17,000	11,000	9,000	12,000	10,000	15,000	10,000	8,900
Total Lead	mg/kg	12 J	23 J	22 J	18 J	8.9 J	23 J	25 J	19 J	28 J	20 J	14 J	18 J	13 J	15 J
Total Magnesium	mg/kg	18,000 J+	14,000 J+	16,000	22,000	11,000	8,000	21,000	18,000	23,000	45,000	28,000	36,000	14,000 J+	29,000 J+
Total Manganese	mg/kg	260	420	480	380	110	130	500	360	380	380	390	390	340	240
Total Mercury	mg/kg	0.015 J	0.027 J	0.038 J	0.029 J	0.010 J	*< 0.0084 U*	0.024 J	0.024 J	0.043 J	0.021 J	0.027 J	0.038 J	0.021 J	0.024 J
Total Molybdenum	mg/kg	0.44	0.50	0.73	0.56	0.12 J	0.20 J	1.1	0.66	0.60	0.66	0.62	0.72	0.52	0.42 J
Total Nickel	mg/kg	6.0	9.3	11	9.8	4.3	3.5	12	8.4	9.6	9.2	9.9	11	9.1	7.8
Total Potassium	mg/kg	2,600	3,600	4,400	3,600	1,500	1,600	4,900	3,800	2,500	3,200	3,600	4,600	3,000	2,200
Total Selenium	mg/kg	*< 0.20 UJ*	0.22 J-	0.24 J-	0.29 J-	*< 0.21 UJ*	*< 0.21 UJ*	0.31 J-	0.22 J-	0.27 J-	0.25 J-	*< 0.21 UJ*	0.34 J-	0.23 J-	*< 0.23 UJ*
Total Silver	mg/kg	*< 0.061 U*	0.063 J	0.075 J	*< 0.062 U*	*< 0.063 U*	*< 0.062 U*	0.073 J	0.075 J	0.073 J	*< 0.062 U*	*< 0.064 U*	*< 0.078 U*	*< 0.067 U*	*< 0.068 U*
Total Sodium	mg/kg	300 J	360 J	330 J	390 J	260 J	230 J	470 J	510	210 J	330 J	320 J	320 J	380 J	240 J
Total Thallium	mg/kg	*< 0.10 U*	0.10 J	*< 0.11 U*	*< 0.10 U*	*< 0.10 U*	*< 0.10 U*	0.15 J	0.12 J	*< 0.10 U*	*< 0.10 U*	0.11 J	*< 0.13 U*	*< 0.11 U*	*< 0.11 U*
Total Vanadium	mg/kg	16	22	21	20	13	11	26	19	19	21	21	24	17	18
Total Zinc	mg/kg	35	47	61	48	26	27	62	49	53	44	44	54	38	38

Table I-10
Analytical Results for Solids Samples -
PRI-16 Lakeside Mountains Buffer Area
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location ID	PRI16-001	PRI16-002	PRI16-003	PRI16-004	PRI16-005	PRI16-006	PRI16-007	PRI16-008	PRI16-009	PRI16-010	PRI16-011	PRI16-012	PRI16-013	PRI16-014
	Sample Date	22-Nov-13	22-Nov-13	20-Nov-13	20-Nov-13	20-Nov-13	19-Nov-13	19-Nov-13	20-Nov-13	19-Nov-13	19-Nov-13	23-Nov-13	19-Nov-13	22-Nov-13	21-Nov-13
	Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Depth	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in	0 - 2 in
	Sample ID	PRI16-001-SS01-112213	PRI16-002-SS01-112213	PRI16-003-SS01-112013	PRI16-004-SS01-112013	PRI16-005-SS01-112013	PRI16-006-SS01-111913	PRI16-007-SS01-111913	PRI16-008-SS01-112013	PRI16-009-SS01-111913	PRI16-010-SS01-111913	PRI16-011-SS01-112313	PRI16-012-SS01-111913	PRI16-013-SS01-112213	PRI16-014-SS01-112113
Analyte	Unit														
05-SVOCs															
1,1'-Biphenyl	µg/kg	< 170 U	< 170 U	< 180 U	< 180 U	< 180 U	< 170 U	< 180 U	< 170 U	< 180 U	< 170 U	< 180 U	< 200 U	< 190 U	< 190 U
1,2,4,5-Tetrachlorobenzene	µg/kg	< 27 U	< 27 U	< 29 U	< 28 U	< 28 U	< 26 U	< 28 U	< 27 U	< 28 U	< 28 U	< 29 U	< 32 U	< 30 U	< 30 U
2,3,4,6-Tetrachlorophenol	µg/kg	< 86 U	< 84 U	< 90 U	< 88 U	< 87 U	< 83 U	< 88 U	< 85 U	< 89 U	< 87 U	< 90 U	< 100 U	< 93 U	< 93 U
2,4,5-Trichlorophenol	µg/kg	< 87 U	< 85 U	< 91 U	< 89 U	< 88 U	< 84 U	< 90 U	< 86 U	< 90 U	< 88 U	< 91 U	< 100 U	< 94 U	< 95 U
2,4,6-Trichlorophenol	µg/kg	< 88 U	< 86 U	< 92 U	< 90 U	< 90 U	< 85 U	< 91 U	< 87 U	< 91 U	< 89 U	< 92 U	< 100 U	< 95 U	< 96 U
2,4,6-Trichlorophenol (SIM Screen)	µg/kg	< 4.6 UJ	< 4.5 UJ	< 4.8 U	< 4.7 U	< 4.7 U	< 4.4 U	< 4.7 U	< 4.6 U	< 4.8 U	< 4.7 U	< 4.8 U	< 5.5 U	< 5.0 UJ	< 5.0 UJ
2,2-Oxybis(1-chloropropane)	µg/kg	< 83 UJ	< 81 U	< 87 UJ	< 84 UJ	< 84 UJ	< 80 UJ	< 85 UJ	< 82 UJ	< 85 UJ	< 84 UJ	< 87 U	< 98 UJ	< 90 U	< 90 U
2,4-Dichlorophenol	µg/kg	< 93 U	< 91 U	< 98 U	< 95 U	< 95 U	< 90 U	< 96 U	< 93 U	< 96 U	< 94 U	< 98 U	< 110 U	< 100 U	< 100 U
2,4-Dimethylphenol	µg/kg	< 180 U	< 170 U	< 180 U	< 180 U	< 180 U	< 170 U	< 180 U	< 170 U	< 180 U	< 180 U	< 180 U	< 210 U	< 190 U	< 190 U
2,4-Dinitrophenol	µg/kg	< 220 U	< 220 U	< 240 U	< 230 U	< 230 U	< 220 U	< 230 U	< 220 U	< 230 U	< 230 U	< 230 U	< 270 U	< 240 U	< 240 U
2,4-Dinitrotoluene	µg/kg	< 93 U	< 91 U	< 98 U	< 95 U	< 95 U	< 90 U	< 96 U	< 93 U	< 96 U	< 94 U	< 98 U	< 110 U	< 100 U	< 100 U
2,6-Dinitrotoluene	µg/kg	< 100 U	< 100 U	< 110 U	< 110 U	< 110 U	< 100 U	< 110 U	< 100 U	< 110 U	< 100 U	< 110 U	< 120 U	< 110 U	< 110 U
2-Chloronaphthalene	µg/kg	< 85 U	< 83 U	< 89 U	< 86 U	< 86 U	< 82 U	< 87 U	< 84 U	< 88 U	< 86 U	< 89 U	< 100 U	< 92 U	< 92 U
2-Chlorophenol	µg/kg	< 92 U	< 90 U	< 97 U	< 94 U	< 94 U	< 89 U	< 95 U	< 92 U	< 95 U	< 93 U	< 97 U	< 110 U	< 100 U	< 100 U
2-Methylphenol	µg/kg	< 61 U	< 59 U	< 64 U	< 62 U	< 62 U	< 58 U	< 63 U	< 60 U	< 63 U	< 61 U	< 64 U	< 72 U	< 66 U	< 66 U
2-Nitroaniline	µg/kg	< 88 U	< 86 U	< 92 U	< 90 U	< 90 U	< 85 U	< 91 U	< 87 U	< 91 U	< 89 U	< 92 U	< 100 U	< 95 U	< 96 U
2-Nitrophenol	µg/kg	< 86 U	< 84 U	< 90 U	< 88 U	< 87 U	< 83 U	< 88 U	< 85 U	< 89 U	< 87 U	< 90 U	< 100 U	< 93 U	< 93 U
3,3'-Dichlorobenzidine	µg/kg	< 99 UJ	< 96 U	< 100 U	< 100 U	< 100 U	< 95 U	< 100 U	< 98 U	< 100 U	< 100 U	< 100 U	< 120 U	< 110 U	< 110 U
3-Nitroaniline	µg/kg	< 180 U	< 170 U	< 180 U	< 180 U	< 180 U	< 170 U	< 180 U	< 170 U	< 180 U	< 180 U	< 180 U	< 210 U	< 190 U	< 190 U
4,6-Dinitro-2-methylphenol	µg/kg	< 85 U	< 83 U	< 89 U	< 86 U	< 86 U	< 82 U	< 87 U	< 84 U	< 88 U	< 86 U	< 89 U	< 100 U	< 92 U	< 92 U
4-Bromophenyl-phenylether	µg/kg	< 89 U	< 87 U	< 94 U	< 91 U	< 91 U	< 86 U	< 92 U	< 88 U	< 92 U	< 90 U	< 93 U	< 110 U	< 97 U	< 97 U
4-Chloro-3-methylphenol	µg/kg	< 97 U	< 94 U	< 100 U	< 98 U	< 98 U	< 93 U	< 99 U	< 96 U	< 99 U	< 98 U	< 100 U	< 110 U	< 100 U	< 100 U
4-Chloroaniline	µg/kg	< 61 UJ	< 59 UJ	< 64 UJ	< 62 UJ	< 62 UJ	< 58 UJ	< 63 UJ	< 60 UJ	< 63 UJ	< 61 UJ	< 64 UJ	< 72 UJ	< 66 UJ	< 66 UJ
4-Chlorophenyl-phenylether	µg/kg	< 98 U	< 95 U	< 100 U	< 99 U	< 99 U	< 94 U	< 100 U	< 97 U	< 100 U	< 99 U	< 100 U	< 120 U	< 110 U	< 110 U
3 & 4 Methylphenol	µg/kg	< 350 U	< 340 U	< 360 U	< 350 U	< 350 U	< 330 U	< 360 U	< 340 U	< 360 U	< 350 U	< 360 U	< 410 U	< 380 U	< 380 U
4-Nitroaniline	µg/kg	< 92 U	< 90 U	< 97 U	< 94 U	< 94 U	< 89 U	< 95 U	< 92 U	< 95 U	< 93 U	< 97 U	< 110 U	< 100 U	< 100 U
4-Nitrophenol	µg/kg	< 290 U	< 290 U	< 310 U	< 300 U	< 300 U	< 280 U	< 300 U	< 290 U	< 300 U	< 300 U	< 310 U	< 350 U	< 320 U	< 320 U
Acetophenone	µg/kg	< 26 UJ	< 26 UJ	< 28 U	< 27 U	< 27 U	< 25 U	< 27 U	< 26 U	< 27 U	< 27 U	< 27 U	< 31 U	< 28 UJ	< 28 UJ
Benzaldehyde	µg/kg	< 170 U	< 170 U	< 180 U	< 180 U	< 180 U	< 170 U	< 180 U	< 170 U	< 180 U	< 170 U	< 180 U	< 200 U	< 190 U	< 190 U
Benzylbutylphthalate	µg/kg	< 100 U	< 97 U	< 100 U	< 100 U	< 100 U	< 96 U	< 100 U	< 99 U	< 100 U	< 100 U	< 100 U	< 120 U	< 110 U	< 110 U
Bis(2-chloroethoxy)methane	µg/kg	< 92 U	< 90 U	< 97 U	< 94 U	< 94 U	< 89 U	< 95 U	< 92 U	< 95 U	< 93 U	< 97 U	< 110 U	< 100 U	< 100 U
bis(2-Chloroethyl) ether	µg/kg	< 85 U	< 83 U	< 89 U	< 86 U	< 86 U	< 82 U	< 87 U	< 84 U	< 88 U	< 86 U	< 89 U	< 100 U	< 92 U	< 92 U
Bis(2-ethylhexyl)phthalate	µg/kg	< 100 U	< 100 U	< 110 U	< 100 U	< 100 U	< 99 U	< 110 U	< 100 U	< 110 U	< 100 U	< 110 U	< 120 U	< 110 U	< 110 U
Carbazole	µg/kg	< 100 U	< 97 U	< 100 U	< 100 U	< 100 U	< 96 U	< 100 U	< 99 U	< 100 U	< 100 U	< 100 U	< 120 U	< 110 U	< 110 U
Dibenzofuran	µg/kg	< 90 U	< 88 U	< 95 U	< 92 U	< 92 U	< 87 U	< 93 U	< 90 U	< 93 U	< 91 U	< 94 U	< 110 U	< 98 U	< 98 U
Diethyl phthalate	µg/kg	< 95 U	< 92 U	< 99 U	< 96 U	< 96 U	< 91 U	< 97 U	< 94 U	< 97 U	< 95 U	< 99 U	< 110 U	< 100 U	< 100 U
Dimethylphthalate	µg/kg	< 91 U	< 89 U	< 96 U	< 93 U	< 93 U	< 88 U	< 94 U	< 91 U	< 94 U	< 92 U	< 95 U	< 110 U	< 99 U	< 99 U
Di-n-butylphthalate	µg/kg	< 100 U	< 99 U	< 110 U	< 100 U	< 100 U	< 98 U	< 100 U	< 100 U	< 100 U	< 100 U	< 110 U	< 120 U	< 110 U	< 110 U
Di-n-octylphthalate	µg/kg	< 100 U	< 99 U	< 110 U	< 100 U	< 100 U	< 98 U	< 100 U	< 100 U	< 100 U	< 100 U	< 110 U	< 120 U	< 110 U	< 110 U
Hexachlorobenzene	µg/kg	< 93 U	< 91 U	< 98 U	< 95 U	< 95 U	< 90 U	< 96 U	< 93 U	< 96 U	< 94 U	< 98 U	< 110 U	< 100 U	< 100 U
Hexachlorobenzene (SIM Screen)	µg/kg	< 2.3 UJ	< 2.2 UJ	< 2.4 U	< 2.3 U	< 2.3 U	< 2.2 U	< 2.4 U	< 2.3 U	< 2.4 U	< 2.3 U	< 2.4 U	< 2.7 U	< 2.5 UJ	< 2.5 UJ
Hexachlorobutadiene	µg/kg	< 86 U	< 84 U	< 90 U	< 88 U	< 87 U	< 83 U	< 88 U	< 85 U	< 89 U	< 87 U	< 90 U	< 100 U	< 93 U	< 93 U
Hexachlorobutadiene (SIM Screen)	µg/kg	< 3.9 UJ	< 3.8 UJ	< 4.1 U	< 3.9 U	< 3.9 U	< 3.7 U	< 4.0 U	< 3.9 U	< 4.0 U	< 3.9 U	< 4.1 U	< 4.6 U	< 4.2 UJ	< 4.2 UJ
Hexachlorocyclopentadiene	µg/kg	< 65 U	< 63 U	< 68 U	< 66 U	< 66 U	< 62 U	< 67 U	< 65 U	< 67 U	< 66 U	< 68 U	< 77 U	< 70 U	< 71 U
Hexachloroethane	µg/kg	< 85 U	< 83 U	< 89 U	< 86 U	< 86 U	< 82 U	< 87 U	< 84 U	< 88 U	< 86 U	< 89 U	< 100 U	< 92 U	< 92 U
Isophorone	µg/kg	< 98 U	< 95 U	< 100 U	< 99 U	< 99 U	< 94 U	< 100 U	< 97 U	< 100 U	< 99 U	< 100 U	< 120 U	< 110 U	< 110 U
Nitrobenzene	µg/kg	< 80 U	< 78 U	< 84 U	< 81 U	< 81 U	< 76 U	< 82 U	< 79 U	< 82 U	< 81 U	< 83 U	< 94 U	< 86 U	< 87 U
N-Nitrosodimethylamine	µg/kg	< 100 U	< 98 U	< 110 U	< 100 U	< 100 U	< 97 U	< 100 U	< 100 U	< 100 U	< 100 U	< 110 U	< 120 U	< 110 U	< 110 U
n-Nitrosodimethylamine (SIM Screen)	µg/kg	< 100 UJ	< 98 UJ	< 110 U	< 100 U	< 100 U	< 97 U	< 100 U	< 100 U	< 100 U	< 100 U	< 110 U	< 120 U	< 110 UJ	< 110 UJ
N-Nitroso-di-n-propylamine	µg/kg	< 88 U	< 86 U	< 92 U	< 90 U	< 90 U	< 85 U	< 91 U	< 87 U	< 91 U	< 89 U	< 92 U	< 100 U	< 95 U	< 96 U
N-Nitrosodiphenylamine	µg/kg	< 90 U	< 88 U	< 95 U	< 92 U	< 92 U	< 87 U	< 93 U	< 90 U	< 93 U	< 91 U	< 94 U	< 110 U	< 98 U	< 98 U
Pentachlorophenol	µg/kg	< 54 UJ	< 52 U	< 56 U	< 54 U	< 54 U	< 51 U	< 55 U	< 53 U	< 55 U	< 54 U	< 56 U	< 63 U	< 58 U	< 58 U
Pentachlorophenol (SIM Screen)	µg/kg	< 25 UJ	< 25 UJ	< 26 U	< 26 U	< 26 U	< 24 U	< 26 U	< 25 U	< 26 U	< 25 U	< 26 U	< 30 U	< 27 UJ	< 27 UJ
Phenol	µg/kg	< 87 U	< 85 U	< 91 U	< 89 U	< 88 U	< 84 U	< 90 U	< 86 U	< 90 U	< 88 U	< 91 U	< 100 U	< 94 U	< 95 U
06-PAHs by SIM															
2-Methylnaphthalene	µg/kg	< 0.46 U	< 0.47 U	1.4 J	< 0.44 U	< 0.44 U	< 0.41 U	< 0.43 U	< 0.43 U	< 0.45 U	0.55 J	< 0.79 U	< 0.50 U	< 0.50 U	< 0.47 U
Acenaphthene	µg/kg	< 0.50 U	< 0.51 U	< 0.50 U	< 0.49 U	< 0.48 U	< 0.45 U	< 0.47 U	< 0.47 U	< 0.49 U	< 0.48 U	< 0.99 U	< 0.55 U	< 0.55 U	< 0.51 U
Acenaphthylene	µg/kg	< 0.35 U	< 0.36 U	< 0.35 U	< 0.34 U	< 0.34 U	< 0.32 U	< 0.33 U	< 0.33 U	< 0.35 U	< 0.34 U	< 0.37 U	< 0.39 U	< 0.39 U	< 0.36 U
Anthracene	µg/kg	< 0.42 U	< 0.43 U	< 0.42 U	< 0.41 U	< 0.40 U	< 0.38 U	< 0.40 U	< 0.39 U	< 0.42 U	< 0.40 U	< 0.44 U	< 0.46 U	< 0.46 U	< 0.43 U
Benzo(a)anthracene	µg/kg	< 0.32 U	< 0.33 U	< 0.32 U	< 0.31 U	< 0.31 U	< 0.29 U	< 0.31 U	< 0.30 U	0.62 J	0.33 J	< 0.34 U	< 0.35 U	< 0.35 U	< 0.33 U
Benzo(a)pyrene	µg/kg	< 0.43 UJ	< 0.43 UJ	< 0.42 UJ	< 0.41 UJ	< 0.41 UJ	< 0.38 UJ	< 0.40 UJ	< 0.40 UJ	0.72 J-	< 0.41 UJ	< 0.44 U	< 0.47 UJ	< 0.47 UJ	< 0.43 UJ
Benzo(b)fluoranthene	µg/kg	< 0.54 U	< 0.55 U	< 0.53 U	< 0.52 U	< 0.51 U	< 0.48 U	< 0.51 U	< 0.50 U	1.4 J	< 0.51 U	< 0.56 U	< 0.59 U	< 0.59 U	< 0.55 U
Benzo(g,h,i)perylene	µg/kg	< 1.1 U	< 1.1 U	< 1.1 U	< 1.0 U	< 1.0 U	< 0.96 U	< 1.0 U	< 0.99 U	< 1.1 U	< 1.0 U	< 1.1 U	< 1.2 U	< 1.2 U	< 1.1 U
Benzo(k)fluoranthene	µg/kg	< 0.81 U	< 0.82 U	< 0.80 U	< 0.79 U	< 0.77 U	< 0.73 U	< 0.77 U	< 0.75 U	0.85 J	< 0.77 U	< 0.84 U	< 0.89 U	< 0.89 U	< 0.83 U
Chrysene	µg/kg	< 0.37 U	0.93 J	1.1 J	0.41 J	< 0.35 U	< 0.33 U	1.2 J	1.0 J	1.9 J	0.69 J	0.77 J	0.91 J	< 0.40 U	0.82 J
Dibenzo(a,h)anthracene	µg/kg	< 1.3 U	< 1.3 U	< 1.3 U	< 1.2 U	< 1.2 U	< 1.2 U	< 1.2 U	< 1.2 U	< 1.3 U	< 1.2 U	< 1.3 U	< 1.4 U	< 1.4 U	< 1.3 U
Fluoranthene	µg/kg	< 0.31 U	< 0.32 U	1.6 J	0.34 J	< 0.30 U	< 0.28 U	1.0 J	0.76 J	2.0 J	0.92 J	0.65 J	0.91 J	< 0.34 U	0.92 J
Fluorene	µg/kg	< 0.52 U	< 0.53 U	< 0.52 U	< 0.51 U	< 0.50 U	< 0.47 U	< 0.49 U	< 0.49 U	< 0.52 U	< 0.50 U	< 0.54 U	< 0.57 U	< 0.57 U	< 0.53 U
Indeno(1,2,3-cd)pyrene	µg/kg	< 0.51 U	< 0.52 U	< 0.51 U	< 0.50 U	< 0.49 U	< 0.46 U	< 0.48 U	< 0.48 U	1.0 J	< 0.49 U	< 0.53 U	< 0.56 U	< 0.56 U	< 0.52 U
Naphthalene	µg/kg	< 0.33 U	< 0.33 U	4.4 J	0.61 J	0.75 J	< 0.29 U	0.84 J	0.70 J	2.0 J	1.3 J	5.8	1.8 J	0.96 J	1.3 J
Phenanthrene	µg/kg	< 0.37 U	0.83 J	3.0 J	0.46 J	0.78 J	< 0.34 U	1.2 J	0.98 J	2.2 J	1.5 J	< 1.2 U	1.2 J	1.0 J	1.5 J
Pyrene	µg/kg	< 0.37 U	< 0.38 U	1.3 J	< 0.36 U	< 0.36 U	< 0.34 U	0.97 J	0.70 J	1.9 J	0.79 J	0.44 J	0.84 J	< 0.41 U	0.84 J
Low Molecular Weight PAH (ND=0)	µg/kg	< 0.52 U	0.83	8.8	1.1	1.5	< 0.47 U	2.0	1.7	4.2	3.4	5.8	3.0	2.0	2.8
Low Molecular Weight PAH (ND=1/2DL)	µg/kg	< 1.5 U	2.1	9.7	2.2	2.6	< 1.3 U	3.1	2.7	5.3	4.2	8.0	4.2	3.2	4.0

Table I-10
Analytical Results for Solids Samples -
PRI-16 Lakeside Mountains Buffer Area
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location ID	**PRI16-001**	**PRI16-002**	**PRI16-003**	**PRI16-004**	**PRI16-005**	**PRI16-006**	**PRI16-007**	**PRI16-008**	**PRI16-009**	**PRI16-010**	**PRI16-011**	**PRI16-012**	**PRI16-013**	**PRI16-014**
	Sample Date	**22-Nov-13**	**22-Nov-13**	**20-Nov-13**	**20-Nov-13**	**20-Nov-13**	**19-Nov-13**	**19-Nov-13**	**20-Nov-13**	**19-Nov-13**	**19-Nov-13**	**23-Nov-13**	**19-Nov-13**	**22-Nov-13**	**21-Nov-13**
	Sample Type	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**
	Depth	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**	**0 - 2 in**
	Sample ID	**PRI16-001-SS01-112213**	**PRI16-002-SS01-112213**	**PRI16-003-SS01-112013**	**PRI16-004-SS01-112013**	**PRI16-005-SS01-112013**	**PRI16-006-SS01-111913**	**PRI16-007-SS01-111913**	**PRI16-008-SS01-112013**	**PRI16-009-SS01-111913**	**PRI16-010-SS01-111913**	**PRI16-011-SS01-112313**	**PRI16-012-SS01-111913**	**PRI16-013-SS01-112213**	**PRI16-014-SS01-112113**
Analyte	**Unit**														
High Molecular Weight PAH (ND=0)	µg/kg	*< 1.3 U*	0.93	4.0	0.75	*< 1.2 U*	*< 1.2 U*	3.2	2.5	10	2.7	1.9	2.7	*< 1.4 U*	2.6
High Molecular Weight PAH (ND=1/2DL)	µg/kg	*< 3.0 U*	3.8	6.5	3.3	*< 2.9 U*	*< 2.7 U*	5.5	4.8	12	4.9	4.4	5.4	*< 3.3 U*	5.1
08-General Chemistry Parameters for Solids															
Perchlorate	µg/kg	*< 21 U*	*< 21 U*	*< 21 U*	*< 21 U*	*< 21 U*	*< 20 U*	*< 21 U*	*< 21 U*	*< 22 U*	*< 20 U*		*< 24 U*	*< 22 U*	*< 22 U*
Total Organic Carbon	g/kg	11	11	36	14	4.7	7.1	14	15	54	13	10	28	12	13
pH	pH units	8.05	8.07	7.40	8.14	7.52	8.16	8.04	7.02	7.96	7.71	8.28	8.02	7.78	7.76
Cyanide, Total	mg/kg	0.30 J	*< 0.21 U*	0.28 J	*< 0.22 U*	*< 0.21 U*	*< 0.21 U*	*< 0.21 U*	*< 0.22 U*	0.46 J	*< 0.22 U*	*< 0.22 U*	0.36 J	*< 0.23 U*	*< 0.23 U*

Notes:
< = Compound not detected. Reportable detection limit shown.
µg/kg = micrograms per kilogram
Empty cells = Not analyzed
g/kg = grams per kilogram
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
in = inches
mg/kg = milligrams per kilogram
N = Normal Environmental Sample
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pg/g = picogram per gram (1 pg/g = 0.001 µg/kg)
pH units = pH units
SIM = Selected ion monitoring
SVOC = Semi-volatile organic compound
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence
VOC = Volatile organic compound

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity, biased high. The associated numerical value is the approximate concentration of the analyte in the sample.
J- = The result is an estimated quantity, biased low. The associated numerical value is the approximate concentration of the analyte in the sample.
U = Compound was analyzed for, but not detected. The associated numerical value is the reporting limit.
UJ = The nondetected analyte was qualified as estimated at the sample quantitation limit. The reported sample quantitation limit is approximate and may be inaccurate or imprecise
UQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration.

Table I-11
Analytical Results for Water Samples -
PRI-17 Site-Wide Groundwater
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location ID	MW-20A	MW-20A	MW-20B	MW-20B	PZ-6	PZ-6	PZ-16	PZ-16	PZ-18	PZ-18	PZ-22	PZ-22	MW-13A	MW-13A	MW-13B	MW-13B	PZ-1
	Sample Date	31-Jan-14	31-Jan-14	31-Jan-14	31-Jan-14	31-Jan-14	31-Jan-14	03-Feb-14	03-Feb-14	03-Feb-14	03-Feb-14	03-Feb-14	03-Feb-14	04-Feb-14	04-Feb-14	04-Feb-14	04-Feb-14	04-Feb-14
	Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Sample ID	MW-20A-01-013114	MW-20A-01-013114-FF	MW-20B-01-013114	MW-20B-01-013114-FF	PZ-06-01-013114	PZ-06-01-013114-FF	PZ-16-01-020314	PZ-16-01-020314-FF	PZ-18-01-020314	PZ-18-01-020314-FF	PZ-22-01-020314	PZ-22-01-020314-FF	MW-13A-01-020414	MW-13A-01-020414-FF	MW-13B-01-020414	MW-13B-01-020414-FF	PZ-01-01-020414
Analyte	Unit																	
01-Dioxins and Furans																		
2,3,7,8-TCDD	pg/l	*< 0.27 U*		*< 0.26 U*		*< 0.31 U*		*< 0.31 U*		*< 0.31 U*		*< 0.39 U*		*< 0.32 U*		*< 0.34 U*		*< 0.29 U*
1,2,3,7,8-PeCDD	pg/l	*< 0.40 U*		*< 0.42 U*		*< 0.45 U*		*< 0.39 U*		*< 0.35 U*		*< 0.48 U*		*< 0.59 U*		*< 0.50 U*		*< 0.37 U*
1,2,3,4,7,8-HxCDD	pg/l	*< 0.33 U*		*< 0.29 U*		*< 0.32 U*		*< 0.25 U*		*< 0.29 U*		*< 0.28 U*		*< 0.49 U*		*< 0.26 U*		*< 0.30 U*
1,2,3,6,7,8-HxCDD	pg/l	*< 0.23 U*		*< 0.20 U*		*< 0.23 U*		*< 0.18 U*		*< 0.20 U*		*< 0.20 U*		*< 0.35 U*		*< 0.19 U*		*< 0.21 U*
1,2,3,7,8,9-HxCDD	pg/l	*< 0.24 U*		*< 0.21 U*		*< 0.24 U*		*< 0.19 U*		*< 0.21 U*		*< 0.21 U*		*< 0.36 U*		*< 0.19 U*		*< 0.22 U*
1,2,3,4,6,7,8-HpCDD	pg/l	*< 0.39 U*		*< 0.33 U*		*< 0.29 U*		*< 0.36 U*		*< 0.31 U*		*< 0.26 U*		*< 0.30 U*		*< 0.32 U*		*< 0.26 U*
OCDD	pg/l	*< 0.39 U*		*< 0.88 UQ*		*< 1.2 UQ*		*< 0.35 U*		*< 0.34 U*		*< 1.4 UQ*		*< 1.7 U*		*< 1.1 UQ*		*< 0.47 UQ*
2,3,7,8-TCDF	pg/l	*< 0.20 U*		*< 0.21 U*		*< 0.94 UQ*		*< 0.19 U*		*< 0.20 U*		*< 0.26 U*		*< 0.28 U*		*< 0.24 U*		*< 0.24 U*
1,2,3,7,8-PeCDF	pg/l	*< 0.21 U*		*< 0.25 U*		*< 0.32 U*		*< 0.24 U*		*< 0.25 U*		*< 0.25 U*		*< 0.34 U*		*< 0.25 U*		*< 0.24 U*
2,3,4,7,8-PeCDF	pg/l	*< 0.21 U*		*< 0.26 U*		*< 0.34 U*		*< 0.25 U*		*< 0.26 U*		*< 0.27 U*		*< 0.35 U*		*< 0.26 U*		*< 0.25 U*
1,2,3,4,7,8-HxCDF	pg/l	*< 0.23 U*		*< 0.63 UQ*		*< 0.32 U*		*< 0.20 U*		*< 0.19 U*		*< 0.25 U*		*< 0.90 U*		*< 1.3 UQ*		*< 0.24 U*
1,2,3,6,7,8-HxCDF	pg/l	*< 0.17 U*		*< 0.26 U*		*< 0.24 U*		*< 0.15 U*		*< 0.14 U*		*< 0.18 U*		*< 0.26 U*		*< 0.18 U*		*< 0.18 U*
1,2,3,7,8,9-HxCDF	pg/l	*< 0.22 U*		*< 0.22 U*		*< 0.31 U*		*< 0.19 U*		*< 0.18 U*		*< 0.24 U*		*< 0.34 U*		*< 0.23 U*		*< 0.23 U*
2,3,4,6,7,8-HxCDF	pg/l	*< 0.20 U*		*< 0.20 U*		*< 0.28 U*		*< 0.17 U*		*< 0.16 U*		*< 0.21 U*		*< 0.31 U*		*< 0.21 U*		*< 0.21 U*
1,2,3,4,6,7,8-HpCDF	pg/l	*< 0.19 U*		1.7 J		*< 3.9 UQ*		1.2 J		*< 1.2 UQ*		*< 0.79 UQ*		*< 4.7 U*		*< 4.5 UQ*		*< 0.82 UQ*
1,2,3,4,7,8,9-HpCDF	pg/l	*< 0.22 U*		*< 0.26 U*		*< 0.38 U*		*< 0.23 U*		*< 0.22 U*		*< 0.19 U*		*< 1.1 U*		*< 0.25 U*		*< 0.22 U*
OCDF	pg/l	0.67 J		1.6 J		*< 18 UQ*		1.6 J		6.5 J		*< 4.2 UQ*		*< 66 U*		*< 5.3 UQ*		*< 3.6 U*
Calculated TEQ (ND=0), Mammalian	pg/l	0.00020		0.018		0.00018		0.012		0.002		*< 0.0013 U*		0.000027		*< 0.0016 U*		*< 0.00021 U*
Calculated TEQ (ND=1/2 DL), Mammalian	pg/l	0.76		0.76		0.84		0.74		0.64		*< 0.78 U*		0.84		*< 0.73 U*		*< 0.78 U*
Calculated TEQ (ND=0), Avian	pg/l	0.000067		0.017		0.000060		0.012		0.00068		*< 600 U*		0.0000091		*< 680 U*		*< 560 U*
Calculated TEQ (ND=1/2 DL), Avian	pg/l	320		310		320		330		320		*< 300 U*		320		*< 340 U*		*< 280 U*
02-PCBs																		
PCB-81	pg/l	*< 3.9 U*		*< 4.5 U*		*< 3.5 U*		*< 4.8 U*		*< 4.3 U*		*< 3.7 U*		*< 2.1 U*		*< 2.2 U*		*< 4.1 U*
PCB-77	pg/l	*< 4.1 U*		*< 4.8 U*		*< 3.8 U*		*< 5.2 U*		*< 4.7 U*		*< 3.9 U*		*< 2.1 U*		*< 2.3 U*		*< 4.3 U*
PCB-105	pg/l	*< 3.3 U*		*< 2.9 U*		*< 3.1 U*		*< 3.0 U*		*< 2.0 U*		*< 2.3 U*		*< 2.1 U*		*< 1.7 U*		*< 3.2 U*
PCB-114	pg/l	*< 3.0 U*		*< 2.7 U*		*< 2.8 U*		*< 2.8 U*		*< 1.9 U*		*< 2.1 U*		*< 2.0 U*		*< 1.6 U*		*< 2.9 U*
PCB-118	pg/l	*< 2.8 U*		3.2 J		6.0 J		*< 2.6 U*		2.5 J		*< 2.0 U*		*< 3.9 UQ*		*< 2.3 UQ*		*< 2.7 U*
PCB-123	pg/l	*< 2.9 U*		*< 2.6 U*		*< 2.7 U*		*< 2.6 U*		*< 1.8 U*		*< 2.0 U*		*< 2.0 U*		*< 1.6 U*		*< 2.8 U*
PCB-126	pg/l	*< 4.4 U*		*< 3.7 U*		*< 3.9 U*		*< 3.9 U*		*< 2.6 U*		*< 3.0 U*		*< 2.3 U*		*< 1.9 U*		*< 4.5 U*
PCB-156 & 157	pg/l	*< 3.8 U*		*< 3.3 U*		*< 2.3 U*		*< 3.9 U*		*< 2.6 U*		*< 2.9 U*		*< 1.1 UQ*		*< 0.42 U*		*< 4.1 U*
PCB-167	pg/l	*< 2.7 U*		*< 2.3 U*		*< 1.7 U*		*< 2.8 U*		*< 1.9 U*		*< 2.2 U*		0.91 J		*< 0.26 U*		*< 2.8 U*
PCB-169	pg/l	*< 4.6 U*		*< 3.7 U*		*< 2.6 U*		*< 4.4 U*		*< 3.0 U*		*< 3.4 U*		*< 0.35 U*		*< 0.33 U*		*< 5.3 U*
PCB-189	pg/l	*< 5.2 U*		*< 5.9 U*		*< 3.1 U*		*< 4.4 U*		*< 6.8 U*		*< 4.1 U*		*< 0.50 U*		*< 0.43 U*		*< 7.1 U*
Monochlorobiphenyls, Total	pg/l	5.6 J		*< 1.2 U*		210 J		*< 1.3 U*		*< 1.2 U*		*< 1.1 U*		1,800 J		2,300		*< 2.6 U*
Dichlorobiphenyls, Total	pg/l	*< 13 U*		*< 11 U*		99 J		*< 18 U*		*< 10 U*		*< 17 U*		1,500 J		1,100 J		*< 46 U*
Trichlorobiphenyls, Total	pg/l	*< 4.0 U*		23 J		22 J		*< 5.4 U*		*< 5.2 U*		*< 5.5 U*		280 J		210 J		*< 6.9 U*
Tetrachlorobiphenyls, Total	pg/l	120 J		110 J		98 J		48 J		65 J		14 J		350 J		520 J		39 J
Pentachlorobiphenyls, Total	pg/l	3.2 J		19 J		53 J		4.3 J		16 J		3.7 J		71 J		37 J		14 J
Hexachlorobiphenyls, Total	pg/l	*< 4.6 U*		16 J		46 J		*< 6.0 U*		2.8 J		*< 3.4 U*		14 J		3.2 J		10 J
Heptachlorobiphenyls, Total	pg/l	*< 5.2 U*		33 J		25 J		*< 4.4 U*		2.0 J		*< 4.1 U*		5.8 J		13 J		*< 7.1 U*
Octachlorobiphenyls, Total	pg/l	*< 3.5 U*		*< 4.1 U*		73 J		*< 3.9 U*		*< 4.1 U*		*< 2.7 U*		25 J		1.2 J		*< 4.3 U*
Nonachlorobiphenyls, Total	pg/l	*< 4.3 U*		*< 4.4 U*		480 J		*< 3.3 U*		*< 5.1 U*		*< 3.1 U*		64 J		5.8 J		*< 5.8 U*
Decachlorobiphenyl (PCB-209)	pg/l	3.3 J		4.0		2,400		22		92 J		51 J		2,500		140 J		*< 33 U*
Total PCBs	pg/l	130 J		210 J		3,500		74 J		180 J		68 J		6,700		4,300		96 J
03- Metals																		
Total Aluminum	mg/L	*< 0.050 U*		*< 0.25 U*		*< 0.050 U*		*< 0.050 U*		*< 0.050 U*		*< 0.06 U*		6.3		5.4		*< 0.050 U*
Dissolved Aluminum	mg/L		*< 0.050 U*		*< 0.25 U*		*< 0.050 U*		*< 0.050 U*		*< 0.050 U*		*< 0.050 U*		6.1		5.6	
Total Antimony	mg/L	0.00080 J		*< 0.0020 U*		0.0020 J		0.0012 J		0.00093 J		0.0014 J		0.0013 J		0.00090 J		0.0086
Dissolved Antimony	mg/L		0.00092 J		*< 0.0020 U*		0.0019 J		0.00056 J		0.00074 J		0.0014 J		0.00098 J		0.00075 J	
Total Arsenic	mg/L	0.050		0.037		0.030		0.055		0.019		0.069		0.014		0.030		0.13
Dissolved Arsenic	mg/L		0.048		0.035		0.028		0.054		0.017		0.064		0.015		0.028	
Total Barium	mg/L	0.23		1.9		0.24		0.095		0.046		0.020		0.19		0.35		0.018
Dissolved Barium	mg/L		0.23		2.1		0.24		0.098		0.055		0.017		0.18		0.33	
Total Beryllium	mg/L	*< 0.00020 UJ*		*< 0.0010 UJ*		*< 0.00020 UJ*		0.00062 J-		*< 0.00020 UJ*		*< 0.00020 UJ*		0.0022 J-		0.0025 J-		*< 0.00020 UJ*
Dissolved Beryllium	mg/L		*< 0.00020 U*		*< 0.0010 U*		*< 0.00020 U*		*< 0.00020 U*		*< 0.00020 U*		*< 0.00020 U*		0.0025		0.0025	
Total Cadmium	mg/L	*< 0.0010 UJ*		*< 0.0050 UJ*		*< 0.0010 UJ*		0.0010 J-		*< 0.0010 UJ*		*< 0.0010 UJ*		0.0046 J-		0.0019 J-		0.0026 J-
Dissolved Cadmium	mg/L		*< 0.0010 UJ*		*< 0.0050 UJ*		*< 0.0010 UJ*		*< 0.0010 UJ*		*< 0.0010 UJ*		*< 0.0010 UJ*		0.0046 J-		0.0015 J-	
Total Calcium	mg/L	6,300		50,000		9,400		6,900		1,900		620		7,900		7,500		590
Dissolved Calcium	mg/L		6,300		48,000		9,600		6,900		1,800		770		7,600		7,300	
Total Chromium	mg/L	*< 0.0020 UJ*		*< 0.010 UJ*		*< 0.0020 UJ*		*< 0.0020 UJ*		*< 0.0020 UJ*		*< 0.0020 UJ*		0.0052 J-		*< 0.0020 UJ*		*< 0.0020 UJ*
Dissolved Chromium	mg/L		*< 0.0020 U*		*< 0.010 U*		*< 0.0020 U*		*< 0.0020 U*		*< 0.0020 U*		0.0021 J		*< 0.0020 U*		*< 0.0020 U*	
Chromium, Hexavalent	µg/L	0.231 J		*< 0.073 U*		0.129 J		0.158 J		0.400 J		0.379 J		0.490 J		0.377 J		*< 0.077 U*
Total Cobalt	mg/L	0.011 J-		*< 0.0060 UJ*		*< 0.0012 UJ*		0.017 J-		*< 0.0012 UJ*		0.023 J-		0.098 J-		0.047 J-		0.022 J-
Dissolved Cobalt	mg/L		0.011 J-		*< 0.0060 UJ*		*< 0.0012 UJ*		0.016 J-		*< 0.0012 UJ*		0.021 J-		0.098 J-		0.052 J-	
Total Copper	mg/L	*< 0.0020 UJ*		*< 0.010 UJ*		*< 0.0020 UJ*		*< 0.0020 UJ*		*< 0.0020 UJ*		0.0023 J-		0.053 J-		*< 0.0020 UJ*		0.0067 J-
Dissolved Copper	mg/L		*< 0.0020 UJ*		*< 0.010 UJ*		*< 0.0020 UJ*		*< 0.0020 UJ*		*< 0.0020 UJ*		0.0020 J-		0.047 J-		*< 0.0020 UJ*	
Total Iron	mg/L	680 J-		78 J-		1.5 J-		1.5 J-		2.8 J-		0.75 J-		32 J-		67 J-		1.7 J-
Dissolved Iron	mg/L		670 J-		82 J-		1.4		1.5		2.3		0.69		31 J-		69 J-	
Total Lead	mg/L	*< 0.0012 UJ*		*< 0.0060 UJ*		*< 0.0012 UJ*		*< 0.0012 UJ*		*< 0.0012 UJ*		*< 0.0012 UJ*		*< 0.0012 UJ*		*< 0.0012 UJ*		0.051 J-
Dissolved Lead	mg/L		*< 0.0012 UJ*		*< 0.0060 UJ*		*< 0.0012 UJ*		*< 0.0012 UJ*		*< 0.0012 UJ*		*< 0.0012 UJ*		*< 0.0012 UJ*		*< 0.0012 UJ*	
Total Magnesium	mg/L	10,000		24,000		7,400		5,100		4,900		19,000		3,400		4,100		51,000
Dissolved Magnesium	mg/L		10,000		22,000		7,500		4,900		4,700		22,000		3,200		3,800	
Total Manganese	mg/L	4.4		11		1.2		8.3		0.81		5.4		11		8.0		4.9
Dissolved Manganese	mg/L		4.1		12		1.2		8.1		0.78		5.5		11		8.2	
Total Mercury	mg/L	*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*

Table I-11
Analytical Results for Water Samples -
PRI-17 Site-Wide Groundwater
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

Analyte	Location ID / Sample Date / Sample Type / Sample ID / Unit	PZ-1	PZ-10	PZ-10	PZ-12	PZ-12	MW-14	MW-14	MW-15A	MW-15A	MW-15B	MW-15B	MW-17	MW-17	MW-4A	MW-4A	PZ-26	PZ-26	PZ-8
	Sample Date	04-Feb-14	04-Feb-14	04-Feb-14	04-Feb-14	04-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14
	Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Sample ID	PZ-01-01-020414-FF	PZ-10-01-020414	PZ-10-01-020414-FF	PZ-12-01-020414	PZ-12-01-020414-FF	MW-14-01-020514	MW-14-01-020514-FF	MW-15A-01-020514	MW-15A-01-020514-FF	MW-15B-01-020514	MW-15B-01-020514-FF	MW-17-01-020514	MW-17-01-020514-FF	MW-4A-01-020514	MW-4A-01-020514-FF	PZ-26-01-020514	PZ-26-01-020514-FF	PZ-08-01-020514
01-Dioxins and Furans																			
2,3,7,8-TCDD	pg/l		< 0.30 U		< 0.40 U		< 0.42 U		< 0.38 U		< 0.33 U		< 0.33 U		< 0.36 U		< 0.44 U		< 0.36 U
1,2,3,7,8-PeCDD	pg/l		< 0.42 U		< 0.36 U		< 0.77 U		< 0.50 U		< 0.46 U		< 0.43 U		< 0.45 U		< 0.93 U		< 0.49 U
1,2,3,4,7,8-HxCDD	pg/l		< 0.25 U		< 0.33 U		< 0.30 U		< 0.33 U		< 0.33 U		< 0.26 U		< 0.29 U		< 0.41 U		< 0.31 U
1,2,3,6,7,8-HxCDD	pg/l		< 0.17 U		< 0.23 U		< 0.29 U		< 0.23 U		< 0.23 U		< 0.18 U		< 0.20 U		< 0.40 U		< 0.22 U
1,2,3,7,8,9-HxCDD	pg/l		< 0.18 U		< 0.24 U		0.69 J		< 0.24 U		< 0.24 U		< 0.19 U		< 0.21 U		< 0.52 U		< 0.23 U
1,2,3,4,6,7,8-HpCDD	pg/l		< 0.36 U		< 1.9 UQ		1.3 J		< 0.32 U		< 0.34 U		< 0.32 U		< 0.28 U		< 0.95 UQ		< 0.33 U
OCDD	pg/l		< 0.74 UQ		15 J		< 3.5 U		< 1.2 UQ		< 0.38 U		< 1.7 U		< 0.82 U		< 3 U		< 1.7 UQ
2,3,7,8-TCDF	pg/l		< 0.20 U		< 0.23 U		< 0.33 U		< 0.33 U		< 0.28 U		< 0.24 U		< 0.28 U		< 1.2 UQ		< 0.36 U
1,2,3,7,8-PeCDF	pg/l		< 0.21 U		< 0.25 U		< 0.54 U		< 0.32 U		< 0.30 U		< 0.29 U		< 0.30 U		< 0.62 U		< 0.34 U
2,3,4,7,8-PeCDF	pg/l		< 0.22 U		< 0.26 U		< 0.59 U		< 0.33 U		< 0.31 U		< 0.31 U		< 0.31 U		< 0.68 U		< 0.36 U
1,2,3,4,7,8-HxCDF	pg/l		< 0.20 U		< 1.5 UQ		< 0.61 UQ		< 0.28 U		< 0.24 U		< 0.43 UQ		< 0.24 U		1.2 J		< 0.31 U
1,2,3,6,7,8-HxCDF	pg/l		< 0.15 U		0.67 J		0.74 J		< 0.21 U		< 0.18 U		< 0.15 U		< 0.18 U		< 0.66 UQ		< 0.23 U
1,2,3,7,8,9-HxCDF	pg/l		< 0.19 U		< 0.22 U		0.78 J		< 0.27 U		< 0.23 U		< 0.19 U		< 0.23 U		1.2 J		< 0.30 U
2,3,4,6,7,8-HxCDF	pg/l		< 0.17 U		< 0.20 U		< 0.4 UQ		< 0.24 U		< 0.21 U		< 0.17 U		< 0.21 U		< 0.30 U		< 0.27 U
1,2,3,4,6,7,8-HpCDF	pg/l		< 0.17 U		< 5.3 U		1.2 J		< 0.61 UQ		< 0.63 UQ		< 0.36 UQ		< 0.23 U		3.2 J		< 0.65 UQ
1,2,3,4,7,8,9-HpCDF	pg/l		< 0.20 U		< 1.1 U		< 0.61 UQ		< 0.25 U		< 0.25 U		< 0.20 U		< 0.27 U		< 1.3 UQ		< 0.25 U
OCDF	pg/l		< 0.53 U		< 19 U		4.8 J		< 2.9 U		< 5.7 U		< 0.52 U		< 2 UQ		40 J		< 2.1 UQ
Calculated TEQ (ND=0), Mammalian	pg/l		0.000093		0.072		0.30		< 0.42 U		< 0.0017		< 0.00013 U		0.00017		0.28		0.00014
Calculated TEQ (ND=1/2 DL), Mammalian	pg/l		0.72		0.84		1.2		< 0.88 U		< 0.73		< 0.57 U		0.66		1.4		0.87
Calculated TEQ (ND=0), Avian	pg/l		0.000031		0.069		0.24		< 710 U		< 670		< 620 U		0.000057		0.28		0.000047
Calculated TEQ (ND=1/2 DL), Avian	pg/l		320		320		340		< 360 U		< 340		< 310 U		330		330		330
02-PCBs																			
PCB-81	pg/l		< 3.1 U		< 3.5 U		< 2.3 U		< 2.9 U		< 2.4 U		< 0.92 U		< 1.6 U		< 4.2 U		< 3.3 U
PCB-77	pg/l		< 3.3 U		< 3.5 U		< 2.2 U		< 3.3 U		< 2.3 U		< 0.90 U		< 1.7 U		< 4.1 U		< 3.6 U
PCB-105	pg/l		< 2.8 U		< 2.8 U		< 1.9 U		< 3.0 U		< 2.8 U		< 2.3 UQ		< 1.8 U		3.8 J		< 3.0 U
PCB-114	pg/l		< 2.5 U		< 2.7 U		< 1.8 U		< 2.5 U		< 2.8 U		< 0.66 U		< 1.7 U		< 2.6 U		< 2.7 U
PCB-118	pg/l		3.1 J		7.1 J		5.8 J		< 2.4 U		< 2.7 UQ		< 4.4 UQ		5.7 J		6.9 J		4.7 J
PCB-123	pg/l		< 2.4 U		< 2.7 U		< 1.8 U		< 2.3 U		< 2.7 U		< 0.64 U		< 1.7 U		< 2.5 U		< 2.5 U
PCB-126	pg/l		< 3.8 U		< 3.0 U		< 2.0 U		< 4.2 U		< 3.1 U		< 0.75 U		< 2.0 U		< 2.9 U		< 4.3 U
PCB-156 & 157	pg/l		< 2.6 U		< 0.77 UQ		2.2 J		< 3.1 U		< 1.5 UQ		< 0.39 U		< 0.95 UQ		1.3 J		< 3.0 U
PCB-167	pg/l		< 1.9 U		0.66 J		< 0.32 U		< 2.4 U		< 0.59 U		< 0.24 U		< 0.62 UQ		0.83 J		< 2.2 U
PCB-169	pg/l		< 3.4 U		< 0.30 U		1.9 J		< 3.8 U		< 1.3 UQ		< 0.31 U		< 0.44 U		< 0.50 U		< 3.5 U
PCB-189	pg/l		< 4.1 U		< 0.38 U		< 1.4 UQ		< 4.0 U		< 0.46 U		< 0.36 U		< 0.46 U		< 0.68 U		< 4.3 U
Monochlorobiphenyls, Total	pg/l		170 J		3,900		2,800		4,000		10,000		8.5 J		550 J		13,000		1,900
Dichlorobiphenyls, Total	pg/l		< 24 U		9,900		780 J		2,100		3,600		16 J		1,800 J		17,000 J-		400 J
Trichlorobiphenyls, Total	pg/l		17 J		630 J		350 J		84 J		65 J		6.4 J		300 J		3,400		< 73 U
Tetrachlorobiphenyls, Total	pg/l		110 J		800 J		300 J		320 J		170 J		61 J		290 J		2,100		510 J
Pentachlorobiphenyls, Total	pg/l		30 J		150 J		24 J		52 J		19 J		28 J		210 J		170 J		44 J
Hexachlorobiphenyls, Total	pg/l		8.0 J		13 J		15 J		< 3.8 U		12 J		11 J		27 J		25 J		3.9 J
Heptachlorobiphenyls, Total	pg/l		< 4.1 U		24 J		18 J		< 4.0 U		< 4.0 U		1.3 J		5.4 J		290 J		< 4.3 U
Octachlorobiphenyls, Total	pg/l		< 3.2 U		5.7 J		< 0.45 U		< 3.5 U		< 16 U		< 0.28 U		7.8 J		14 J		< 3.4 U
Nonachlorobiphenyls, Total	pg/l		< 4.0 U		8.3 J		< 0.54 U		< 4.3 U		7.2 J		2.0 J		19 J		32 J		< 4.1 U
Decachlorobiphenyl (PCB-209)	pg/l		7.2		89 J		50 J		87 J		< 150 U		< 19 U		290		1,500 J+		22
Total PCBs	pg/l		340 J		15,000		4,400		6,700		14,000		150 J		3,500		38,000		2,900
03- Metals																			
Total Aluminum	mg/L		0.051 J		3.6		0.19		1.5		6.2		< 0.050 U		< 0.050 U		0.70		0.056 J
Dissolved Aluminum	mg/L	< 0.050 U		< 0.050 U		3.6		0.20		1.1		6.0		< 0.050 U		< 0.050 U		0.63	
Total Antimony	mg/L		< 0.00040 U		0.00085 J		0.00097 J		0.00090 J		0.00078 J		< 0.00040 U		0.00065 J		0.00089 J		0.00070 J
Dissolved Antimony	mg/L	0.0090		< 0.00040 U		0.00076 J		0.0010 J		0.00091 J		0.00073 J		< 0.00040 U		0.00054 J		0.00097 J	
Total Arsenic	mg/L		0.053		0.049		0.025		0.020		0.042		0.028		0.046		0.062		0.13
Dissolved Arsenic	mg/L	0.13		0.053		0.046		0.024		0.020		0.043		0.026		0.046		0.056	
Total Barium	mg/L		0.11		0.21		0.33		0.23		0.33		0.072		0.54		0.25		0.16
Dissolved Barium	mg/L	0.018		0.11		0.20		0.32		0.22		0.32		0.069		0.54		0.24	
Total Beryllium	mg/L		0.00039 J-		0.0023 J-		< 0.00095 U		< 0.00045 U		0.0025		< 0.00020 U		< 0.00020 U		0.00078 J		< 0.001 U
Dissolved Beryllium	mg/L	< 0.00020 U		0.00037 J		0.0018 J		0.00085 J		0.00076 J		0.0021		< 0.00020 U		< 0.00020 U		0.00085 J	
Total Cadmium	mg/L		< 0.0010 UJ		< 0.0010 UJ		< 0.0010 U		0.0047		< 0.0010 U		< 0.0010 U		< 0.0010 U		< 0.0010 U		< 0.0010 U
Dissolved Cadmium	mg/L	0.0025 J-		< 0.0010 UJ		< 0.0010 UJ		< 0.0010 U		0.0040		< 0.0010 U		< 0.0010 U		< 0.0010 U		< 0.0010 U	
Total Calcium	mg/L		7,000		7,600		8,800		7,300		7,500		1,100		6,300		7,500		6,800
Dissolved Calcium	mg/L	470		7,800		7,700		8,500		7,100		7,400		1,300		6,200		8,300	
Total Chromium	mg/L		< 0.0020 UJ		< 0.0020 UJ		< 0.0020 U		< 0.0020 U		0.0029 J		< 0.0020 U		< 0.0020 U		< 0.0020 U		< 0.0020 U
Dissolved Chromium	mg/L	< 0.0020 U		< 0.0020 U		< 0.0020 U		< 0.0020 U		< 0.0020 U		0.0027 J		< 0.0020 U		< 0.0020 U		< 0.0020 U	
Chromium, Hexavalent	µg/L		0.159 J		0.251 J		0.543 J-		0.558		0.634		< 0.287 U		< 0.051 U		< 0.279 UJ		0.671
Total Cobalt	mg/L		0.028 J-		0.081 J-		0.073		0.14		0.085		< 0.0012 U		0.056		0.034		0.065
Dissolved Cobalt	mg/L	0.022 J-		0.029 J-		0.081 J-		0.070		0.13		0.084		< 0.0012 U		0.060		0.032	
Total Copper	mg/L		< 0.0020 UJ		< 0.0020 UJ		< 0.0020 U		0.030		0.0035 J		< 0.0020 U		0.0044		< 0.0020 U		0.0027 J
Dissolved Copper	mg/L	0.0064 J-		0.0021 J-		< 0.0020 UJ		0.0025 J		0.042		< 0.0020 U		< 0.0020 U		< 0.0020 U		< 0.0020 U	
Total Iron	mg/L		240 J-		160 J-		60		27		93		1.5		170		290		83
Dissolved Iron	mg/L	1.6		240 J-		160 J-		59		27		91		1.6		160		290	
Total Lead	mg/L		< 0.0012 UJ		< 0.0012 UJ		< 0.0012 U		< 0.0012 U		< 0.0012 U		< 0.0012 U		< 0.0012 U		< 0.0012 U		< 0.0012 U
Dissolved Lead	mg/L	0.051 J-		< 0.0012 UJ		< 0.0012 UJ		< 0.0012 U		< 0.0012 U		< 0.0012 U		< 0.0012 U		< 0.0012 U		< 0.0012 U	
Total Magnesium	mg/L		3,800		3,400		3,900		3,100		3,500		10,000		3,200		3,600		2,900
Dissolved Magnesium	mg/L	38,000		4,200		3,300		3,800		3,000		3,400		13,000		3,100		4,100	
Total Manganese	mg/L		16		12		11		16		11		1.6		5.0		15		9.5
Dissolved Manganese	mg/L	4.9		16		12		10		16		11		1.6		5.2		14	
Total Mercury	mg/L		< 0.00010 U		< 0.00010 U		< 0.00010 U		< 0.00010 U		< 0.00010 U		0.00053		< 0.00010 U		< 0.00010 U		< 0.00010 U

Table I-11
Analytical Results for Water Samples -
PRI-17 Site-Wide Groundwater
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location ID	PZ-8	MW-7	MW-7	MW-5A	MW-5A	MW-6	MW-6	PZ-24	PZ-24	MW-18	MW-18	PZ-4	PZ-4	MW-19A	MW-19A
	Sample Date	05-Feb-14	06-Feb-14	06-Feb-14	07-Feb-14	07-Feb-14	07-Feb-14	07-Feb-14	07-Feb-14	07-Feb-14	13-Feb-14	13-Feb-14	13-Feb-14	13-Feb-14	14-Feb-14	14-Feb-14
	Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Sample ID	PZ-08-01-020514-FF	MW-7-01-020614	MW-7-01-020614-FF	MW-5A-01-02071	MW-5A-01-020714-FI	MW-6-01-020714	MW-6-01-020714-FF	PZ-24-01-020714	PZ-24-01-020714-FF	MW-18-01-021314	MW-18-01-021314-FF	PZ-04-01-021314	PZ-04-01-021314-FF	MW-19A-01-021414	MW-19A-01-021414-FF
Analyte	**Unit**															
01-Dioxins and Furans																
2,3,7,8-TCDD	pg/l		*< 0.47 U*		*< 0.99 U*		*< 0.45 U*		*< 2.0 U*		*< 1.0 U*		*< 0.79 U*		*< 0.97 U*	
1,2,3,7,8-PeCDD	pg/l		*< 0.44 U*		*< 1.7 U*		*< 0.51 U*		*< 4.5 U*		*< 1.7 U*		*< 1.4 U*		*< 3.1 U*	
1,2,3,4,7,8-HxCDD	pg/l		*< 0.23 U*		*< 0.43 U*		*< 0.30 U*		*< 0.99 U*		*< 0.73 U*		*< 0.58 U*		*< 1.0 U*	
1,2,3,6,7,8-HxCDD	pg/l		*< 0.16 U*		*< 0.42 U*		*< 0.21 U*		*< 0.96 U*		*< 0.63 U*		*< 0.49 U*		*< 0.75 U*	
1,2,3,7,8,9-HxCDD	pg/l		*< 0.17 U*		*< 0.75 UQ*		*< 0.22 U*		*< 0.88 U*		*< 1 UQ*		*< 0.48 U*		*< 0.72 U*	
1,2,3,4,6,7,8-HpCDD	pg/l		*< 0.44 U*		*< 1.3 UQ*		0.45 J		*< 1.2 U*		1.9 J		1.2 J		*< 0.67 U*	
OCDD	pg/l		*< 1.1 U*		*< 6.2 U*		*< 2.3 U*		*< 3.1 U*		5.3 J		*< 4.3 UQ*		*< 2.7 U*	
2,3,7,8-TCDF	pg/l		1.1 J		*< 0.82 U*		*< 0.30 U*		*< 1.5 U*		*< 0.86 U*		*< 0.73 U*		*< 1.5 U*	
1,2,3,7,8-PeCDF	pg/l		*< 0.34 U*		*< 1.2 U*		*< 0.37 U*		*< 4.4 U*		*< 1.7 U*		*< 1.6 U*		*< 2.5 U*	
2,3,4,7,8-PeCDF	pg/l		*< 0.35 U*		*< 1.3 U*		*< 0.38 U*		*< 4.8 U*		*< 1.8 U*		*< 1.7 U*		*< 2.6 U*	
1,2,3,4,7,8-HxCDF	pg/l		*< 0.29 U*		1.4 J		2.8 J		*< 1.1 U*		*< 1.3 U*		*< 0.74 U*		*< 0.72 U*	
1,2,3,6,7,8-HxCDF	pg/l		*< 0.22 U*		*< 0.78 UQ*		1.7 J		*< 1.0 U*		*< 1.1 UQ*		*< 0.34 U*		*< 0.54 U*	
1,2,3,7,8,9-HxCDF	pg/l		*< 0.28 U*		*< 0.73 U*		*< 0.33 U*		*< 1.2 U*		1.4 J		*< 0.40 U*		*< 0.70 U*	
2,3,4,6,7,8-HxCDF	pg/l		*< 0.25 U*		*< 0.67 U*		*< 0.30 U*		*< 1.1 U*		0.94 J		*< 0.37 U*		*< 0.62 U*	
1,2,3,4,6,7,8-HpCDF	pg/l		*< 1.5 UQ*		*< 4.3 U*		6.6 J		*< 2.2 U*		*< 1.9 UQ*		1.1 J		*< 1.1 UQ*	
1,2,3,4,7,8,9-HpCDF	pg/l		*< 0.34 U*		2.2 J		1.7 J		*< 0.92 U*		2.1 J		*< 0.48 U*		*< 0.66 U*	
OCDF	pg/l		99		66 J		34 J		*< 6.3 U*		*< 5.6 U*		*< 0.92 U*		*< 0.75 U*	
Calculated TEQ (ND=0), Mammalian	pg/l		0.14		0.18		0.55		0.00019		0.28		0.023		*< 0.00013 U*	
Calculated TEQ (ND=1/2 DL), Mammalian	pg/l		0.83		2.1		1.3		4.7		2.5		1.8		*< 2.9 U*	
Calculated TEQ (ND=0), Avian	pg/l		1.1		0.17		0.54		0.000062		0.26		0.012		*< 600 U*	
Calculated TEQ (ND=1/2 DL), Avian	pg/l		330		320		340		350		330		310		*< 300 U*	
02-PCBs																
PCB-81	pg/l		*< 1.4 U*		*< 2.1 U*		*< 1.4 U*		*< 3.0 U*		*< 3.7 U*		*< 3.3 U*		*< 1.6 U*	
PCB-77	pg/l		*< 1.4 U*		*< 2.1 U*		*< 1.4 U*		*< 3.1 U*		*< 4.0 U*		*< 3.4 U*		*< 1.6 U*	
PCB-105	pg/l		*< 3.7 UQ*		*< 2.4 U*		*< 7.1 UQ*		*< 2.3 UQ*		*< 3.0 U*		*< 2.4 U*		*< 1.5 U*	
PCB-114	pg/l		*< 1.2 U*		*< 2.4 U*		*< 1.3 U*		*< 1.7 U*		*< 2.6 U*		*< 2.3 U*		*< 1.4 U*	
PCB-118	pg/l		6.8 J		9.0 J		13 J		6.2 J		*< 2.5 U*		*< 3.8 U*		*< 4.2 UQ*	
PCB-123	pg/l		*< 1.2 U*		*< 2.3 U*		*< 1.3 U*		*< 1.6 U*		*< 2.5 U*		*< 2.1 U*		*< 1.4 U*	
PCB-126	pg/l		*< 1.5 U*		*< 2.8 U*		*< 1.5 U*		*< 2.7 U*		*< 4.0 U*		*< 3.3 U*		*< 1.7 U*	
PCB-156 & 157	pg/l		*< 0.60 U*		*< 1.2 UQ*		*< 1.6 UQ*		*< 2.3 U*		*< 2.7 U*		*< 2.7 U*		*< 2.7 UQ*	
PCB-167	pg/l		*< 0.37 U*		1.9 J		2.1 J		*< 1.9 U*		*< 2.1 U*		*< 2.1 U*		*< 1.1 UQ*	
PCB-169	pg/l		*< 0.49 U*		*< 0.41 U*		*< 0.47 U*		*< 2.9 U*		*< 3.3 U*		*< 3.3 U*		*< 2.7 UQ*	
PCB-189	pg/l		*< 0.65 U*		*< 0.47 U*		*< 0.48 U*		*< 2.9 U*		*< 4.7 U*		*< 4.5 U*		*< 0.85 U*	
Monochlorobiphenyls, Total	pg/l		3,400		46,000		59,000		1,200 J		12 J		*< 1.2 U*		*< 2.3 U*	
Dichlorobiphenyls, Total	pg/l		81 J		34,000		780 J		290 J		*< 23 U*		*< 17 U*		*< 25 U*	
Trichlorobiphenyls, Total	pg/l		26 J		990 J		64 J		8.5 J		*< 6.0 U*		*< 3.9 U*		*< 7.8 U*	
Tetrachlorobiphenyls, Total	pg/l		150 J		210 J		200 J		100 J		84 J		29 J		35 J	
Pentachlorobiphenyls, Total	pg/l		50 J		520 J		100 J		39 J		12 J		6.8 J		15 J	
Hexachlorobiphenyls, Total	pg/l		22 J		47 J		51 J		13 J		*< 4.2 U*		*< 3.4 U*		18 J	
Heptachlorobiphenyls, Total	pg/l		4.9 J		20 J		32 J		*< 2.9 U*		*< 4.7 U*		*< 4.5 U*		3.7 J	
Octachlorobiphenyls, Total	pg/l		8.0 J		44 J		38 J		*< 2.5 U*		*< 3.5 U*		*< 2.9 U*		*< 0.49 U*	
Nonachlorobiphenyls, Total	pg/l		35 J		100 J		64 J		11 J		*< 4.5 U*		*< 2.9 U*		1.1 J	
Decachlorobiphenyl (PCB-209)	pg/l		3,400		6,900		710		*< 96 U*		*< 14 U*		10		5.1	
Total PCBs	pg/l		7,200		88,000		61,000		1,700 J		120 J		46 J		84 J	
03- Metals																
Total Aluminum	mg/L		*< 0.050 U*		*< 0.050 U*		*< 0.050 U*		*< 0.050 U*		*< 0.050 U*		0.062 J		*< 0.050 U*	
Dissolved Aluminum	mg/L	*< 0.050 U*		*< 0.050 U*		*< 0.050 U*		*< 0.050 U*		*< 0.050 U*		0.054 J		*< 0.050 U*		*< 0.050 U*
Total Antimony	mg/L		*< 0.00040 U*		0.0012 J		*< 0.00040 U*		0.00071 J		0.0020 J		0.0020 J		0.0014 J	
Dissolved Antimony	mg/L	0.00067 J		*< 0.00040 U*		0.0012 J		*< 0.00040 U*		0.00063 J		0.0021 J		0.0023 J		0.0014 J
Total Arsenic	mg/L		0.0043		0.028		0.0021 J		0.040		0.066		0.17		0.037	
Dissolved Arsenic	mg/L	0.12		0.0041		0.027		0.0021 J		0.036		0.066		0.17		0.038
Total Barium	mg/L		3.0		0.24		1.2		0.084		0.12		0.52		0.055	
Dissolved Barium	mg/L	0.16		3.4		0.24		1.2		0.085		0.13		0.52		0.054
Total Beryllium	mg/L		*< 0.00020 U*		*< 0.00020 U*		*< 0.00020 U*		*< 0.00020 U*		*< 0.00020 U*		*< 0.00020 U*		*< 0.00020 U*	
Dissolved Beryllium	mg/L	0.00095 J		*< 0.00020 U*		*< 0.00020 U*		*< 0.00020 U*		*< 0.00020 U*		0.00037 J		0.00076 J		*< 0.00020 U*
Total Cadmium	mg/L		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		0.017		*< 0.0010 U*	
Dissolved Cadmium	mg/L	*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		0.018		*< 0.0010 U*
Total Calcium	mg/L		4,000		9,700		2,900		4,500		1,200		19,000		2,200	
Dissolved Calcium	mg/L	6,800		4,300		8,300		2,400		3,900		1,300		20,000		2,200
Total Chromium	mg/L		*< 0.0020 U*		*< 0.0020 U*		*< 0.0020 U*		*< 0.0020 U*		*< 0.0020 U*		*< 0.0020 U*		*< 0.0020 U*	
Dissolved Chromium	mg/L	*< 0.0020 U*		*< 0.0020 U*		*< 0.0020 U*		*< 0.0020 U*		*< 0.0020 U*		0.0021 J		*< 0.0020 U*		*< 0.0020 U*
Chromium, Hexavalent	µg/L		1.06		*< 0.403 U*		1.36		*< 0.24 U*		1.76		*< 0.077 U*		*< 0.165 U*	
Total Cobalt	mg/L		*< 0.0012 U*		*< 0.0012 U*		*< 0.0012 U*		0.0081		0.0028		*< 0.0012 U*		0.0025	
Dissolved Cobalt	mg/L	0.060		*< 0.0012 U*		*< 0.0012 U*		*< 0.0012 U*		0.0084		0.0030		*< 0.0012 U*		0.0027
Total Copper	mg/L		*< 0.0020 U*		*< 0.0020 U*		*< 0.0020 U*		*< 0.0020 U*		*< 0.0020 UJ*		*< 0.0020 UJ*		*< 0.0020 U*	
Dissolved Copper	mg/L	0.0025 J		*< 0.0020 U*		*< 0.0020 U*		*< 0.0020 U*		0.0032 J		0.0027 J-		0.0036 J-		*< 0.0020 UJ*
Total Iron	mg/L		*< 0.050 U*		90		1.1		70		*< 0.050 UJ*		*< 0.050 UJ*		0.49	
Dissolved Iron	mg/L	80		*< 0.050 U*		88		0.88		70		0.49 J-		*< 0.050 UJ*		0.49 J-
Total Lead	mg/L		*< 0.0012 U*		*< 0.0012 U*		*< 0.0012 U*		*< 0.0012 U*		*< 0.0012 U*		0.0031		*< 0.0012 U*	
Dissolved Lead	mg/L	*< 0.0012 U*		*< 0.0012 U*		*< 0.0012 U*		*< 0.0012 U*		*< 0.0012 U*		*< 0.0012 U*		0.0031		*< 0.0012 U*
Total Magnesium	mg/L		3,000		4,600		2,300		9,500		1,500		6,200		20,000	
Dissolved Magnesium	mg/L	2,900		3,200		3,800		1,900		8,100		1,500		6,500		21,000
Total Manganese	mg/L		1.3		3.3		0.50		6.0		1.5		0.60		3.0	
Dissolved Manganese	mg/L	9.0		1.2		3.2		0.52		6.2		1.5		0.61		3.0
Total Mercury	mg/L		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*	

Table I-11
Analytical Results for Water Samples -
PRI-17 Site-Wide Groundwater
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location ID	MW-19B	MW-19B	LF-01	LF-01	LF-03	LF-03	MW-8A	MW-8A	MW-8B	MW-8B
	Sample Date	14-Feb-14	14-Feb-14	17-Feb-14	17-Feb-14	17-Feb-14	17-Feb-14	18-Feb-14	18-Feb-14	18-Feb-14	18-Feb-14
	Sample Type	N	N	N	N	N	N	N	N	N	N
	Sample ID	MW-19B-01-021414	MW-19B-01-021414-FF	LF-01-01-021714	LF-01-01-021714-FF	LF-03-01-021714	LF-03-01-021714-FF	MW-8A-01-021814	MW-8A-01-021814-FF	MW-8B-01-021814	MW-8B-01-021814-FF
Analyte	**Unit**										
01-Dioxins and Furans											
2,3,7,8-TCDD	pg/l	< 1.3 U		< 2.3 U		< 0.67 U		< 1.2 U		< 0.81 U	
1,2,3,7,8-PeCDD	pg/l	< 2.0 U		< 1.5 U		< 2.3 U		< 2.9 U		< 2.0 U	
1,2,3,4,7,8-HxCDD	pg/l	< 6.0 U		< 1.3 U		< 0.99 U		< 0.62 U		< 1.5 U	
1,2,3,6,7,8-HxCDD	pg/l	< 4.4 U		< 0.94 U		< 0.73 U		< 0.53 U		< 1.1 U	
1,2,3,7,8,9-HxCDD	pg/l	< 4.2 U		< 0.90 U		< 0.70 U		< 0.51 U		< 1.0 U	
1,2,3,4,6,7,8-HpCDD	pg/l	< 0.68 U		< 0.41 U		< 0.81 UQ		< 0.50 U		< 0.78 U	
OCDD	pg/l	< 1.4 U		< 0.84 U		< 2.5 UQ		< 0.47 U		< 1.3 U	
2,3,7,8-TCDF	pg/l	< 2.7 U		< 1.4 U		< 2.1 U		9.1 J		< 1.8 U	
1,2,3,7,8-PeCDF	pg/l	< 4.1 U		< 3.0 U		< 4.2 U		< 2.0 U		< 2.9 U	
2,3,4,7,8-PeCDF	pg/l	< 4.2 U		< 3.1 U		< 4.3 U		< 2.2 U		< 3.0 U	
1,2,3,4,7,8-HxCDF	pg/l	< 4.4 U		< 0.71 U		< 0.77 U		< 0.53 U		< 1.1 U	
1,2,3,6,7,8-HxCDF	pg/l	< 3.3 U		< 0.53 U		< 0.58 U		< 0.47 U		< 0.84 U	
1,2,3,7,8,9-HxCDF	pg/l	< 4.3 U		< 0.70 U		< 0.76 U		< 0.56 U		< 1.1 U	
2,3,4,6,7,8-HxCDF	pg/l	< 3.8 U		< 0.62 U		< 0.67 U		< 0.51 U		< 0.98 U	
1,2,3,4,6,7,8-HpCDF	pg/l	< 1.7 UQ		< 4.1 U		< 3.2 U		1.2 J		< 4.5 U	
1,2,3,4,7,8,9-HpCDF	pg/l	< 0.98 U		< 0.96 U		< 1.0 U		< 0.43 U		< 1.1 U	
OCDF	pg/l	< 1.0 U		< 4.4 U		< 18 U		< 17 UQ		< 12 UQ	
Calculated TEQ (ND=0), Mammalian	pg/l	< 0.6 U		< 0.0013 U		< 0.0054 U		0.92		< 0.0036 U	
Calculated TEQ (ND=1/2 DL), Mammalian	pg/l	< 4.1 U		< 2.9 U		< 2.7 U		5.6		< 2.6 U	
Calculated TEQ (ND=0), Avian	pg/l	< 650 U		< 650 U		< 630 U		20,000		< 670 U	
Calculated TEQ (ND=1/2 DL), Avian	pg/l	< 330 U		< 330 U		< 320 U		20,000		< 340 U	
02-PCBs											
PCB-81	pg/l	< 1.8 U		< 1.6 U		< 1.8 U		< 45 U		< 2.6 U	
PCB-77	pg/l	< 1.9 U		< 1.6 U		< 1.7 U		< 48 U		< 2.6 U	
PCB-105	pg/l	< 1.1 U		< 1.2 U		< 1.1 U		< 38 U		< 3.9 UQ	
PCB-114	pg/l	< 1.1 U		< 1.2 U		< 1.1 U		< 36 U		< 2.0 U	
PCB-118	pg/l	< 4.5 UQ		< 3.9 UQ		< 5.1 UQ		< 35 U		< 7.1 UQ	
PCB-123	pg/l	< 1.1 U		< 1.2 U		< 1.1 U		< 34 U		< 1.9 U	
PCB-126	pg/l	< 1.2 U		< 1.4 U		< 1.2 U		< 41 U		< 2.4 U	
PCB-156 & 157	pg/l	< 1.3 U		< 0.50 U		< 1 UQ		< 1.6 U		< 5.1 U	
PCB-167	pg/l	< 0.34 U		< 0.30 U		< 0.30 U		< 0.97 U		< 2.6 U	
PCB-169	pg/l	< 0.43 U		< 0.39 U		< 0.37 U		< 1.2 U		< 3.9 UQ	
PCB-189	pg/l	< 0.84 U		< 0.81 U		< 0.74 U		< 0.72 U		< 3.3 UQ	
Monochlorobiphenyls, Total	pg/l	< 2.2 U		30 J		5,100		170,000		130 J	
Dichlorobiphenyls, Total	pg/l	< 36 U		< 26 U		330 J		130,000		250 J	
Trichlorobiphenyls, Total	pg/l	17 J		< 6.2 U		< 6.9 U		5,400 J		20 J	
Tetrachlorobiphenyls, Total	pg/l	58 J		77 J		27 J		29,000		180 J	
Pentachlorobiphenyls, Total	pg/l	26 J		26 J		24 J		1,300		34 J	
Hexachlorobiphenyls, Total	pg/l	12 J		12 J		12 J		100		34 J	
Heptachlorobiphenyls, Total	pg/l	< 1.1 U		< 1.2 U		< 1.2 U		16		7.8 J	
Octachlorobiphenyls, Total	pg/l	< 0.45 U		< 0.50 U		< 0.43 U		23		37 J	
Nonachlorobiphenyls, Total	pg/l	0.79 J		1.5 J		3.3 J		11		99 J	
Decachlorobiphenyl (PCB-209)	pg/l	< 13 U		< 14 U		< 46 U		360 J		1,200	
Total PCBs	pg/l	130 J		160 J		5,500		340,000		2,000	
03- Metals											
Total Aluminum	mg/L	< 0.050 U		< 0.050 U		< 0.050 U		0.080 J		< 0.050 U	
Dissolved Aluminum	mg/L		< 0.050 U		< 0.050 U		< 0.050 U		0.070 J		< 0.050 U
Total Antimony	mg/L	0.0067		< 0.00040 U		< 0.00040 U		< 0.00040 U		< 0.00040 U	
Dissolved Antimony	mg/L		0.0050		< 0.00040 U		< 0.00040 U		< 0.00040 U		< 0.00040 U
Total Arsenic	mg/L	0.078		0.011		0.011		0.029		0.0055	
Dissolved Arsenic	mg/L		0.085		0.0098		0.0098		0.028		0.0054
Total Barium	mg/L	0.053		0.042		0.099		0.20		0.054	
Dissolved Barium	mg/L		0.050		0.040		0.097		0.19		0.052
Total Beryllium	mg/L	0.00054 J		< 0.00020 U		< 0.00020 U		0.00038 J		< 0.00020 U	
Dissolved Beryllium	mg/L		< 0.00020 U		< 0.00020 U		< 0.00020 U		0.00029 J		< 0.00020 U
Total Cadmium	mg/L	< 0.0010 U		< 0.0010 U		< 0.0010 U		< 0.0010 U		< 0.0010 U	
Dissolved Cadmium	mg/L		< 0.0010 U		< 0.0010 U		< 0.0010 U		< 0.0010 U		< 0.0010 U
Total Calcium	mg/L	490		1,300		4,500		4,800		1,200	
Dissolved Calcium	mg/L		510		1,200		3,000		4,400		1,200
Total Chromium	mg/L	< 0.0020 U		< 0.0020 U		< 0.0020 U		< 0.0020 U		0.0021 J	
Dissolved Chromium	mg/L		< 0.0020 U		< 0.0020 U		< 0.0020 U		< 0.0020 U		< 0.0020 UJ
Chromium, Hexavalent	µg/L	< 0.069 U		< 0.069 U		< 0.17 U		< 0.099 U		< 0.073 U	
Total Cobalt	mg/L	< 0.0012 U		< 0.0012 U		0.0014 J		0.010		< 0.0012 U	
Dissolved Cobalt	mg/L		< 0.0012 U		< 0.0012 U		0.0014 J		0.0085		< 0.0012 U
Total Copper	mg/L	< 0.0020 U		< 0.0020 U		< 0.0020 U		< 0.0020 U		< 0.0020 UJ	
Dissolved Copper	mg/L		< 0.0020 UJ		< 0.0020 UJ		< 0.0020 UJ		0.0059 J-		< 0.0020 UJ
Total Iron	mg/L	< 0.050 U		4.9		18		160		< 0.050 U	
Dissolved Iron	mg/L		< 0.050 UJ		4.8		18		160		< 0.050 U
Total Lead	mg/L	< 0.0012 U		< 0.0012 U		< 0.0012 U		< 0.0012 U		< 0.0012 U	
Dissolved Lead	mg/L		< 0.0012 U		< 0.0012 U		< 0.0012 U		< 0.0012 U		< 0.0012 U
Total Magnesium	mg/L	1,800		5,000		15,000		5,500		8,500	
Dissolved Magnesium	mg/L		1,900		4,900		9,200		5,200 J		8,700
Total Manganese	mg/L	0.21		2.2		5.4		5.9		0.066	
Dissolved Manganese	mg/L		0.19		2.2		5.4		5.5		0.043 J
Total Mercury	mg/L	< 0.00010 U		< 0.00010 U		< 0.00010 U		< 0.00010 U		< 0.00010 U	

Table I-11
Analytical Results for Water Samples -
PRI-17 Site-Wide Groundwater
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location ID	MW-20A	MW-20A	MW-20B	MW-20B	PZ-6	PZ-6	PZ-16	PZ-16	PZ-18	PZ-18	PZ-22	PZ-22	MW-13A	MW-13A	MW-13B	MW-13B	PZ-1
	Sample Date	31-Jan-14	31-Jan-14	31-Jan-14	31-Jan-14	31-Jan-14	31-Jan-14	03-Feb-14	03-Feb-14	03-Feb-14	03-Feb-14	03-Feb-14	03-Feb-14	04-Feb-14	04-Feb-14	04-Feb-14	04-Feb-14	04-Feb-14
	Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Sample ID	MW-20A-01-013114	MW-20A-01-013114-FF	MW-20B-01-013114	MW-20B-01-013114-FF	PZ-06-01-013114	PZ-06-01-013114-FF	PZ-16-01-020314	PZ-16-01-020314-FF	PZ-18-01-020314	PZ-18-01-020314-FF	PZ-22-01-020314	PZ-22-01-020314-FF	MW-13A-01-020414	MW-13A-01-020414-FF	MW-13B-01-020414	MW-13B-01-020414-FF	PZ-01-01-020414
Analyte	**Unit**																	
Dissolved Mercury	mg/L		< 0.00010 U		< 0.00010 U		< 0.00010 U		< 0.00010 U		< 0.00010 U		< 0.00010 U		< 0.00010 U		< 0.00010 U	
Total Molybdenum	mg/L	0.0022 J		< 0.0060 U		0.031		0.011		0.0014 J		0.12		0.015		0.023		0.11
Dissolved Molybdenum	mg/L		< 0.0016 U		< 0.007 U		0.027		0.010		< 0.0012 U		0.11		0.015		0.017	
Total Nickel	mg/L	0.070 J-		< 0.010 UJ		0.0059 J-		0.045 J-		0.0020 J-		0.066 J-		0.31 J-		0.16 J-		0.078 J-
Dissolved Nickel	mg/L		0.068 J-		< 0.010 UJ		0.0051 J-		0.044 J-		< 0.0020 UJ		0.062 J-		0.30 J-		0.18 J-	
Total Potassium	mg/L	740		1,800		720		670		1,700		6,100		170		340		7,900
Dissolved Potassium	mg/L		730		1,700		750		670		1,700		7,400		160		320	
Total Selenium	mg/L	0.0022 J-		< 0.010 UJ		< 0.0020 UJ		0.0022 J-		< 0.0020 UJ		0.0040 J-		0.0040 J-		0.0027 J-		0.0057 J-
Dissolved Selenium	mg/L		< 0.0020 UJ		< 0.010 UJ		< 0.0020 UJ		< 0.0020 UJ		< 0.0020 UJ		0.0024 J-		0.0035 J-		0.0028 J-	
Total Silver	mg/L	< 0.00060 UJ		< 0.0030 UJ		< 0.00060 UJ		< 0.00060 UJ		< 0.00060 UJ		< 0.00060 UJ		< 0.00060 UJ		< 0.00060 UJ		0.00061 J-
Dissolved Silver	mg/L		< 0.00060 U		< 0.0030 U		< 0.00060 U		< 0.00060 U		< 0.00060 U		< 0.00060 U		< 0.00060 U		< 0.00060 U	
Total Sodium	mg/L	1,800 J		5,800 J		5,700 J		4,500 J		18,000 J		11,000 J		1,700 J		4,800 J		8,900 J
Dissolved Sodium	mg/L		1,800		5,600		6,200		4,500		17,000		16,000		1,600		4,500	
Total Thallium	mg/L	< 0.0010 UJ		< 0.0050 UJ		< 0.0010 UJ		< 0.0010 UJ		< 0.0010 UJ		< 0.0010 UJ		0.0021 J-		< 0.0010 UJ		0.0016 J-
Dissolved Thallium	mg/L		< 0.0010 UJ		< 0.0050 UJ		< 0.0010 UJ		< 0.0010 UJ		< 0.0010 UJ		< 0.0010 UJ		0.0013 J-		< 0.0010 UJ	
Total Vanadium	mg/L	< 0.0060 UJ		< 0.030 UJ		< 0.0060 UJ		< 0.0060 UJ		< 0.0060 UJ		0.0073 J-		< 0.0060 UJ		0.0073 J-		0.017 J-
Dissolved Vanadium	mg/L		< 0.0060 U		< 0.030 U		< 0.0060 U		< 0.0060 U		< 0.0060 U		0.0073 J		< 0.0060 U		< 0.0060 U	
Total Zinc	mg/L	0.017 J-		0.63 J-		0.0099 J-		< 0.0080 UJ		< 0.0080 UJ		< 0.0080 UJ		0.46 J-		0.35 J-		0.10 J-
Dissolved Zinc	mg/L		0.018 J-		0.69 J-		< 0.0080 UJ		< 0.0080 UJ		< 0.0080 UJ		< 0.0080 UJ		0.47 J-		0.35 J-	
05-SVOCs																		
1,1'-Biphenyl	µg/L	< 4.5 U		< 4.4 U		< 4.5 U		< 4.7 U		< 4.5 U		< 4.3 U		< 4.6 U		< 4.8 U		< 4.0 U
1,2,4,5-Tetrachlorobenzene	µg/L	< 0.49 U		< 0.47 U		< 0.49 U		< 0.50 U		< 0.48 U		< 0.46 U		< 0.50 U		< 0.52 U		< 0.43 U
2,3,4,6-Tetrachlorophenol	µg/L	< 2.3 U		< 2.2 U		< 2.3 U		< 2.3 U		< 2.2 U		< 2.1 U		< 2.3 U		< 2.4 U		< 2.0 U
2,4,5-Trichlorophenol	µg/L	< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.6 U
2,4,6-Trichlorophenol	µg/L	< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.6 U
2,4,6-Trichlorophenol (SIM Screen)	µg/L	< 0.17 U		< 0.17 U		< 0.17 U		< 0.18 U		< 0.17 U		< 0.16 U		< 0.17 U		< 0.18 U		< 0.15 U
2,2-Oxybis(1-chloropropane)	µg/L	< 1.2 U		< 1.1 U		< 1.2 U		< 1.2 U		< 1.2 U		< 1.1 U		< 1.2 U		< 1.3 U		< 1.0 U
2,4-Dichlorophenol	µg/L	< 2.3 U		< 2.3 U		< 2.3 U		< 2.4 U		< 2.3 U		< 2.2 U		< 2.4 U		< 2.5 U		< 2.1 U
2,4-Dimethylphenol	µg/L	< 2.0 U		< 1.9 U		< 2.0 U		< 2.0 U		< 2.0 U		< 1.9 U		< 2.0 U		< 2.1 U		< 1.7 U
2,4-Dinitrophenol	µg/L	< 18 U		< 17 U		< 18 U		< 19 U		< 18 U		< 17 U		< 18 U		< 19 U		< 16 U
2,4-Dinitrotoluene	µg/L	< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.6 U
2,6-Dinitrotoluene	µg/L	< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.6 U
2-Chloronaphthalene	µg/L	< 1.2 U		< 1.1 U		< 1.2 U		< 1.2 U		< 1.2 U		< 1.1 U		< 1.2 U		< 1.3 U		< 1.0 U
2-Chlorophenol	µg/L	< 1.4 U		< 1.4 U		< 1.4 U		< 1.5 U		< 1.4 U		< 1.4 U		< 1.5 U		< 1.5 U		< 1.3 U
2-Methylphenol	µg/L	< 0.84 U		< 0.81 U		< 0.84 U		< 0.87 U		< 0.83 U		< 0.79 U		< 0.85 U		< 0.90 U		< 0.74 U
2-Nitroaniline	µg/L	< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.6 U
2-Nitrophenol	µg/L	< 1.7 U		< 1.7 U		< 1.7 U		< 1.8 U		< 1.7 U		< 1.6 U		< 1.7 U		< 1.8 U		< 1.5 U
3,3'-Dichlorobenzidine	µg/L	< 0.86 U		< 0.84 U		< 0.86 U		< 0.89 U		< 0.86 U		< 0.82 U		< 0.88 U		< 0.93 U		< 0.76 U
3-Nitroaniline	µg/L	< 1.3 U		< 1.2 U		< 1.3 U		< 1.3 U		< 1.3 U		< 1.2 U		< 1.3 U		< 1.4 U		< 1.1 U
4,6-Dinitro-2-methylphenol	µg/L	< 2.0 U		< 1.9 U		< 2.0 U		< 2.0 U		< 2.0 U		< 1.9 U		< 2.0 U		< 2.1 U		< 1.7 U
4-Bromophenyl-phenylether	µg/L	< 0.99 U		< 0.96 U		< 0.99 U		< 1.0 U		< 0.98 U		< 0.94 U		< 1.0 U		< 1.1 U		< 0.87 U
4-Chloro-3-methylphenol	µg/L	< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.6 U
4-Chloroaniline	µg/L	< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.6 U
4-Chlorophenyl-phenylether	µg/L	< 0.99 U		< 0.96 U		< 0.99 U		< 1.0 U		< 0.98 U		< 0.94 U		< 1.0 U		< 1.1 U		< 0.87 U
3 & 4 Methylphenol	µg/L	< 1.0 U		< 1.0 U		< 1.0 U		< 1.1 U		< 1.0 U		< 0.98 U		< 1.1 U		1.2 J		< 0.91 U
4-Nitroaniline	µg/L	< 1.3 U		< 1.3 U		< 1.4 U		< 1.4 U		< 1.3 U		< 1.3 U		< 1.4 U		< 1.4 U		< 1.2 U
4-Nitrophenol	µg/L	< 5.5 U		< 5.3 U		< 5.5 U		< 5.7 U		< 5.5 U		< 5.2 U		< 5.6 U		< 5.9 U		< 4.9 U
Acetophenone	µg/L	0.95 J		< 0.68 U		< 0.70 U		< 0.73 U		< 0.70 U		< 0.66 U		1.0 J		< 0.75 U		< 0.62 U
Benzaldehyde	µg/L	< 7.5 U		< 7.3 U		< 7.5 U		< 7.8 U		< 7.5 U		< 7.1 U		< 7.7 U		< 8.1 U		< 6.6 U
Benzylbutylphthalate	µg/L	< 1.3 U		< 1.2 U		< 1.3 U		< 1.3 U		< 1.3 U		< 1.2 U		< 1.3 U		< 1.4 U		< 1.1 U
Bis(2-chloroethoxy)methane	µg/L	< 0.90 U		< 0.87 U		< 0.90 U		< 0.93 U		< 0.90 U		< 0.85 U		< 0.92 U		< 0.96 U		< 0.80 U
bis(2-Chloroethyl) ether	µg/L	< 1.3 U		< 1.3 U		< 1.4 U		< 1.4 U		< 1.3 U		< 1.3 U		< 1.4 U		< 1.4 U		< 1.2 U
Bis(2-ethylhexyl)phthalate	µg/L	< 0.90 U		2.1 J		< 0.90 U		2.7 J		2.4 J		2.1 J		2.4 J		2.5 J		1.9 J
Carbazole	µg/L	< 1.1 U		< 1.0 U		< 1.1 U		< 1.1 U		< 1.1 U		< 1.0 U		< 1.1 U		< 1.2 U		< 0.95 U
Dibenzofuran	µg/L	< 0.99 U		< 0.96 U		< 0.99 U		< 1.0 U		< 0.98 U		< 0.94 U		< 1.0 U		< 1.1 U		< 0.87 U
Diethyl phthalate	µg/L	< 0.84 U		< 0.81 U		< 0.84 U		< 0.87 U		< 0.83 U		< 0.79 U		< 0.85 U		< 0.90 U		< 0.74 U
Dimethylphthalate	µg/L	< 0.79 U		< 0.77 U		< 0.79 U		< 0.82 U		< 0.79 U		< 0.75 U		< 0.81 U		< 0.85 U		< 0.70 U
Di-n-butylphthalate	µg/L	< 0.99 U		< 0.96 U		< 0.99 U		< 1.0 U		< 0.98 U		< 0.94 U		< 1.0 U		< 1.1 U		< 0.87 U
Di-n-octylphthalate	µg/L	< 1.3 U		< 1.3 U		< 1.4 U		< 1.4 U		< 1.3 U		< 1.3 U		< 1.4 U		< 1.4 U		< 1.2 U
Hexachlorobenzene	µg/L	< 1.3 U		< 1.2 U		< 1.3 U		< 1.3 U		< 1.3 U		< 1.2 U		< 1.3 U		< 1.4 U		< 1.1 U
Hexachlorobenzene (SIM Screen)	µg/L	< 0.063 UJ		< 0.061 UJ		< 0.063 UJ		< 0.065 UJ		< 0.063 UJ		< 0.060 UJ		< 0.064 UJ		< 0.068 UJ		< 0.056 UJ
Hexachlorobutadiene	µg/L	< 1.2 U		< 1.1 U		< 1.2 U		< 1.2 UJ		< 1.2 UJ		< 1.1 UJ		< 1.2 UJ		< 1.3 UJ		< 1.0 UJ
Hexachlorobutadiene (SIM Screen)	µg/L	< 0.072 U		< 0.070 U		< 0.072 U		< 0.074 UJ		< 0.072 UJ		< 0.068 UJ		< 0.073 UJ		< 0.077 UJ		< 0.064 UJ
Hexachlorocyclopentadiene	µg/L	< 4.5 U		< 4.4 U		< 4.5 U		< 4.7 U		< 4.5 U		< 4.3 U		< 4.6 U		< 4.8 U		< 4.0 U
Hexachloroethane	µg/L	< 1.3 U		< 1.2 U		< 1.3 U		< 1.3 UJ		< 1.3 UJ		< 1.2 UJ		< 1.3 UJ		< 1.4 UJ		< 1.1 UJ
Isophorone	µg/L	< 0.90 U		< 0.87 U		< 0.90 U		< 0.93 U		< 0.90 U		< 0.85 U		< 0.92 U		< 0.96 U		< 0.80 U
Nitrobenzene	µg/L	< 1.4 U		< 1.4 U		< 1.4 U		< 1.5 U		< 1.4 U		< 1.4 U		< 1.5 U		< 1.5 U		< 1.3 U
N-Nitrosodimethylamine	µg/L	< 0.86 U		< 0.84 U		< 0.86 U		< 0.89 U		< 0.86 U		< 0.82 U		< 0.88 U		< 0.93 U		< 0.76 U
n-Nitrosodimethylamine (SIM Screen)	µg/L	< 0.063 U		< 0.061 U		< 0.063 U		< 0.065 U		< 0.063 U		< 0.060 U		< 0.064 U		< 0.068 U		< 0.056 U
N-Nitroso-di-n-propylamine	µg/L	< 1.3 U		< 1.2 U		< 1.3 U		< 1.3 U		< 1.3 U		< 1.2 U		< 1.3 U		< 1.4 U		< 1.1 U
N-Nitrosodiphenylamine	µg/L	< 0.49 U		< 0.47 U		< 0.49 U		< 0.50 U		< 0.48 U		< 0.46 U		< 0.50 U		< 0.52 U		< 0.43 U
Pentachlorophenol	µg/L	< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.6 U
Pentachlorophenol (SIM Screen)	µg/L	< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.8 U		< 1.7 U		< 1.8 U		< 1.9 U		< 1.6 U
Phenol	µg/L	< 0.99 U		< 0.96 U		< 0.99 U		< 1.0 U		< 0.98 U		< 0.94 U		< 1.0 U		< 1.1 U		< 0.87 U
06-PAHs by SIM																		
2-Methylnaphthalene	ng/l	1,400		45		760		< 5.1 U		18 J		< 4.9 U		3,800		1,700		< 4.4 U

Table I-11
Analytical Results for Water Samples -
PRI-17 Site-Wide Groundwater
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

Analyte	Location ID / Sample Date / Sample Type / Sample ID / Unit	PZ-1	PZ-10	PZ-10	PZ-12	PZ-12	MW-14	MW-14	MW-15A	MW-15A	MW-15B	MW-15B	MW-17	MW-17	MW-4A	MW-4A	PZ-26	PZ-26	PZ-8
	Sample Date	04-Feb-14	04-Feb-14	04-Feb-14	04-Feb-14	04-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14
	Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Sample ID	PZ-01-01-020414-FF	PZ-10-01-020414	PZ-10-01-020414-FF	PZ-12-01-020414	PZ-12-01-020414-FF	MW-14-01-020514	MW-14-01-020514-FF	MW-15A-01-02051	MW-15A-01-020514-F	MW-15B-01-020514	MW-15B-01-020514-FF	MW-17-01-020514	MW-17-01-020514-FF	MW-4A-01-020514	MW-4A-01-020514-FF	PZ-26-01-020514	PZ-26-01-020514-FF	PZ-08-01-020514
Dissolved Mercury	mg/L	< 0.00010 U		< 0.00010 U		< 0.00010 U		< 0.00010 U		< 0.00010 U		< 0.00010 U		< 0.00010 U		< 0.00010 U		< 0.00010 U	
Total Molybdenum	mg/L		0.0024 J		0.013		0.011		0.20		0.050		0.0046		0.021		0.014		0.0084
Dissolved Molybdenum	mg/L	0.11		< 0.0016 U		0.0084		0.0095		0.19		0.044		0.0030 J		0.020		0.0089	
Total Nickel	mg/L		0.045 J-		0.20 J-		0.21		0.31		0.26		0.0049		0.13		0.064		0.18
Dissolved Nickel	mg/L	0.078 J-		0.046 J-		0.19 J-		0.20		0.30		0.25		0.0045		0.13		0.061	
Total Potassium	mg/L		320		160		190		140		150		2,600		250		200		100
Dissolved Potassium	mg/L	6,300		360		160		190		130		150		3,300		240		230	
Total Selenium	mg/L		< 0.0020 UJ		0.0026 J-		0.0028 J		0.0030 J		0.0024 J		< 0.0020 U		0.0021 J		< 0.0020 U		0.0062
Dissolved Selenium	mg/L	0.0062 J-		0.0044 J-		0.0032 J-		0.0030 J		0.0032 J		< 0.0020 U		< 0.0020 U		< 0.0020 U		0.0021 J	
Total Silver	mg/L		< 0.00060 UJ		< 0.00060 UJ		< 0.00060 U		< 0.00060 U		< 0.00060 U		< 0.00060 U		< 0.00060 U		< 0.00060 U		< 0.00060 U
Dissolved Silver	mg/L	< 0.00060 U		< 0.00060 U		< 0.00060 U		< 0.00060 U		< 0.00060 U		< 0.00060 U		< 0.00060 U		< 0.00060 U		< 0.00060 U	
Total Sodium	mg/L		2,400 J		1,700 J		2,100		1,400		1,600		7,500		2,900		1,900		1,300
Dissolved Sodium	mg/L	9,200		2,700		1,700		2,000		1,400		1,600		9,500		2,800		2,100	
Total Thallium	mg/L		< 0.0010 UJ		< 0.0010 UJ		< 0.0010 U		< 0.0010 U		< 0.0010 U		< 0.0010 U		< 0.0010 U		< 0.0010 U		< 0.0010 U
Dissolved Thallium	mg/L	0.0018 J-		< 0.0010 UJ		< 0.0010 UJ		< 0.0010 U		< 0.0010 U		< 0.0010 U		< 0.0010 U		< 0.0010 U		< 0.0010 U	
Total Vanadium	mg/L		< 0.0060 UJ		< 0.0060 UJ		< 0.0060 U		< 0.0060 U		0.0085 J		< 0.0060 U		< 0.0060 U		0.0099 J		0.0065 J
Dissolved Vanadium	mg/L	0.018 J		< 0.0060 U		< 0.0060 U		< 0.0060 U		< 0.0060 U		0.0082 J		< 0.0060 U		< 0.0060 U		0.0086 J	
Total Zinc	mg/L		0.011 J-		0.069 J-		0.11		0.071		0.37		0.013		0.056		0.011		0.015
Dissolved Zinc	mg/L	0.10 J-		< 0.0080 UJ		0.070 J-		0.094		0.076		0.36		0.011		0.054		0.012	
05-SVOCs																			
1,1'-Biphenyl	µg/L		< 4.6 U		< 4.6 U		< 4.9 U		< 5.0 U		< 4.8 U		< 4.5 U		< 4.6 U		< 4.6 U		< 4.6 U
1,2,4,5-Tetrachlorobenzene	µg/L		< 0.50 U		< 0.50 U		< 0.52 U		< 0.54 U		< 0.52 U		< 0.48 U		1.5 J		< 0.50 U		< 0.50 U
2,3,4,6-Tetrachlorophenol	µg/L		< 2.3 U		< 2.3 U		< 2.4 UJ		< 2.5 U		< 2.4 U		< 2.2 U		< 2.3 U		< 2.3 UJ		< 2.3 UJ
2,4,5-Trichlorophenol	µg/L		< 1.8 U		< 1.8 U		< 1.9 UJ		< 2.0 U		< 1.9 U		< 1.8 U		< 1.8 U		< 1.8 UJ		< 1.8 UJ
2,4,6-Trichlorophenol	µg/L		< 1.8 U		< 1.8 U		< 1.9 UJ		< 2.0 U		< 1.9 U		< 1.8 U		< 1.8 U		< 1.8 UJ		< 1.8 UJ
2,4,6-Trichlorophenol (SIM Screen)	µg/L		< 0.17 U		0.47 J+		< 0.18 U		< 0.19 U		< 0.18 U		< 0.17 U		0.26 J+		< 0.18 U		< 0.18 U
2,2-Oxybis(1-chloropropane)	µg/L		< 1.2 U		< 1.2 U		< 1.3 U		< 1.3 U		< 1.2 U		< 1.2 U		< 1.2 U		< 1.2 U		< 1.2 U
2,4-Dichlorophenol	µg/L		< 2.4 U		< 2.4 U		< 2.5 UJ		< 2.6 U		< 2.5 U		< 2.3 U		< 2.4 U		< 2.4 UJ		< 2.4 UJ
2,4-Dimethylphenol	µg/L		< 2.0 U		< 2.0 U		< 2.1 UJ		< 2.2 U		< 2.1 U		< 2.0 U		< 2.0 U		< 2.0 UJ		< 2.0 UJ
2,4-Dinitrophenol	µg/L		< 18 U		< 18 U		< 19 UJ		< 20 U		< 19 U		< 18 U		< 18 U		< 18 UJ		< 18 UJ
2,4-Dinitrotoluene	µg/L		< 1.8 U		< 1.8 U		< 1.9 U		< 2.0 U		< 1.9 U		< 1.8 U		< 1.8 U		< 1.8 U		< 1.8 U
2,6-Dinitrotoluene	µg/L		< 1.8 U		< 1.8 U		< 1.9 U		< 2.0 U		< 1.9 U		< 1.8 U		< 1.8 U		< 1.8 U		< 1.8 U
2-Chloronaphthalene	µg/L		< 1.2 U		< 1.2 U		< 1.3 U		< 1.3 U		< 1.2 U		< 1.2 U		< 1.2 U		< 1.2 U		< 1.2 U
2-Chlorophenol	µg/L		< 1.5 U		< 1.5 U		< 1.6 UJ		< 1.6 U		< 1.5 U		< 1.4 U		< 1.5 U		< 1.5 UJ		< 1.5 UJ
2-Methylphenol	µg/L		< 0.85 U		< 0.86 U		< 0.90 UJ		< 0.94 U		< 0.89 U		< 0.83 U		< 0.86 U		< 0.86 UJ		< 0.86 UJ
2-Nitroaniline	µg/L		< 1.8 U		< 1.8 U		< 1.9 U		< 2.0 U		< 1.9 U		< 1.8 U		< 1.8 U		< 1.8 U		< 1.8 U
2-Nitrophenol	µg/L		< 1.7 U		< 1.8 U		< 1.8 UJ		< 1.9 U		< 1.8 U		< 1.7 U		< 1.8 U		< 1.8 UJ		< 1.8 UJ
3,3'-Dichlorobenzidine	µg/L		< 0.88 U		< 0.88 U		< 0.93 U		< 0.97 U		< 0.92 U		< 0.86 U		< 0.89 U		< 0.89 UJ		< 0.89 U
3-Nitroaniline	µg/L		< 1.3 U		< 1.3 U		< 1.4 U		< 1.4 U		< 1.3 U		< 1.2 U		< 1.3 U		< 1.3 UJ		< 1.3 U
4,6-Dinitro-2-methylphenol	µg/L		< 2.0 U		< 2.0 U		< 2.1 UJ		< 2.2 U		< 2.1 U		< 2.0 U		< 2.0 U		< 2.0 UJ		< 2.0 UJ
4-Bromophenyl-phenylether	µg/L		< 1.0 U		< 1.0 U		< 1.1 U		< 1.1 U		< 1.1 U		< 0.98 U		< 1.0 U		< 1.0 U		< 1.0 U
4-Chloro-3-methylphenol	µg/L		< 1.8 U		< 1.8 U		< 1.9 UJ		< 2.0 U		< 1.9 U		< 1.8 U		< 1.8 U		< 1.8 UJ		< 1.8 UJ
4-Chloroaniline	µg/L		< 1.8 U		< 1.8 U		< 1.9 U		< 2.0 U		< 1.9 U		< 1.8 U		< 1.8 U		< 1.8 U		< 1.8 U
4-Chlorophenyl-phenylether	µg/L		< 1.0 U		< 1.0 U		< 1.1 U		< 1.1 U		< 1.1 U		< 0.98 U		< 1.0 U		< 1.0 U		< 1.0 U
3 & 4 Methylphenol	µg/L		2.9 J+		7.8 J		< 1.1 UJ		< 1.2 U		< 1.1 U		< 1.0 U		1.9 J		4.5 J		1.3 J-
4-Nitroaniline	µg/L		< 1.4 U		< 1.4 U		< 1.5 U		< 1.5 U		< 1.4 U		< 1.3 U		< 1.4 U		< 1.4 U		< 1.4 U
4-Nitrophenol	µg/L		< 5.6 U		< 5.6 U		< 5.9 UJ		< 6.1 U		< 5.8 U		< 5.4 U		< 5.6 U		< 5.6 UJ		< 5.6 UJ
Acetophenone	µg/L		0.75 J		0.97 J		< 0.76 U		< 0.79 U		0.84 J		< 0.69 U		< 0.72 U		1.7 J		1.2 J
Benzaldehyde	µg/L		< 7.7 U		< 7.7 U		< 8.1 U		< 8.4 U		< 8.0 U		< 7.4 U		< 7.7 U		< 7.7 U		< 7.7 U
Benzylbutylphthalate	µg/L		< 1.3 U		< 1.3 U		< 1.4 U		< 1.4 U		< 1.3 U		< 1.2 U		< 1.3 U		< 1.3 U		< 1.3 U
Bis(2-chloroethoxy)methane	µg/L		< 0.92 U		< 0.92 U		< 0.97 U		< 1.0 U		< 0.96 U		< 0.89 U		< 0.92 U		< 0.92 U		< 0.92 U
bis(2-Chloroethyl) ether	µg/L		< 1.4 U		< 1.4 U		< 1.5 U		< 1.5 U		< 1.4 U		< 1.3 U		< 1.4 U		< 1.4 U		< 1.4 U
Bis(2-ethylhexyl)phthalate	µg/L		2.8 J		2.4 J		2.9 J		5.6 J		2.6 J		2.4 J		2.2 J		2.7 J		2.6 J
Carbazole	µg/L		< 1.1 U		< 1.1 U		< 1.2 U		< 1.2 U		< 1.2 U		< 1.1 U		< 1.1 U		< 1.1 U		< 1.1 U
Dibenzofuran	µg/L		< 1.0 U		< 1.0 U		< 1.1 U		< 1.1 U		< 1.1 U		< 0.98 U		< 1.0 U		< 1.0 U		< 1.0 U
Diethyl phthalate	µg/L		< 0.85 U		< 0.86 U		< 0.90 U		< 0.94 U		< 0.89 U		< 0.83 U		< 0.86 U		< 0.86 U		< 0.86 U
Dimethylphthalate	µg/L		< 0.81 U		< 0.81 U		< 0.86 U		< 0.89 U		< 0.84 U		< 0.78 U		< 0.81 U		< 0.81 U		< 0.81 U
Di-n-butylphthalate	µg/L		< 1.0 U		< 1.0 U		< 1.1 U		< 1.1 U		< 1.1 U		< 0.98 U		< 1.0 U		< 1.0 U		< 1.0 U
Di-n-octylphthalate	µg/L		< 1.4 U		< 1.4 U		< 1.5 U		< 1.5 U		< 1.4 U		< 1.3 U		< 1.4 U		< 1.4 U		< 1.4 U
Hexachlorobenzene	µg/L		< 1.3 U		< 1.3 U		< 1.4 U		< 1.4 U		< 1.3 U		< 1.2 U		< 1.3 U		< 1.3 U		< 1.3 U
Hexachlorobenzene (SIM Screen)	µg/L		< 0.064 UJ		< 0.064 UJ		< 0.068 UJ		< 0.071 UJ		< 0.067 UJ		< 0.062 UJ		< 0.065 UJ		< 0.065 UJ		< 0.065 UJ
Hexachlorobutadiene	µg/L		< 1.2 UJ		< 1.2 UJ		< 1.3 UJ		< 1.3 UJ		< 1.2 UJ		< 1.2 UJ		< 1.2 UJ		< 1.2 UJ		< 1.2 UJ
Hexachlorobutadiene (SIM Screen)	µg/L		< 0.073 UJ		< 0.074 UJ		< 0.078 UJ		< 0.081 UJ		< 0.077 UJ		< 0.071 UJ		0.19 J-		< 0.074 UJ		< 0.074 UJ
Hexachlorocyclopentadiene	µg/L		< 4.6 U		< 4.6 U		< 4.9 U		< 5.0 U		< 4.8 U		< 4.5 U		< 4.6 U		< 4.6 U		< 4.6 U
Hexachloroethane	µg/L		< 1.3 UJ		< 1.3 UJ		< 1.4 UJ		< 1.4 UJ		< 1.3 UJ		< 1.2 UJ		< 1.3 UJ		< 1.3 UJ		< 1.3 UJ
Isophorone	µg/L		< 0.92 U		< 0.92 U		< 0.97 U		< 1.0 U		< 0.96 U		< 0.89 U		< 0.92 U		< 0.92 U		< 0.92 U
Nitrobenzene	µg/L		< 1.5 U		< 1.5 U		< 1.6 U		< 1.6 U		< 1.5 U		< 1.4 U		< 1.5 U		< 1.5 U		< 1.5 U
N-Nitrosodimethylamine	µg/L		< 0.88 U		< 0.88 U		< 0.93 U		< 0.97 U		< 0.92 U		< 0.86 U		< 0.89 U		< 0.89 U		< 0.89 U
n-Nitrosodimethylamine (SIM Screen)	µg/L		< 0.064 U		< 0.064 U		< 0.068 U		< 0.071 U		< 0.067 U		< 0.062 U		< 0.065 U		< 0.065 U		< 0.065 U
N-Nitroso-di-n-propylamine	µg/L		< 1.3 U		< 1.3 U		< 1.4 U		< 1.4 U		< 1.3 U		< 1.2 U		< 1.3 U		< 1.3 U		< 1.3 U
N-Nitrosodiphenylamine	µg/L		< 0.50 U		< 0.50 U		< 0.52 U		< 0.54 U		< 0.52 U		< 0.48 U		< 0.50 U		< 0.50 U		< 0.50 U
Pentachlorophenol	µg/L		< 1.8 U		< 1.8 U		< 1.9 UJ		< 2.0 U		< 1.9 U		< 1.8 U		< 1.8 U		< 1.8 UJ		< 1.8 UJ
Pentachlorophenol (SIM Screen)	µg/L		< 1.8 U		< 1.8 U		< 1.9 U		< 2.0 U		< 1.9 U		< 1.8 U		< 1.8 U		< 1.8 U		< 1.8 U
Phenol	µg/L		< 1.0 U		< 1.0 U		< 1.1 UJ		< 1.1 U		< 1.1 U		< 0.98 U		< 1.0 U		2.2 J		< 1.0 UJ
06-PAHs by SIM																			
2-Methylnaphthalene	ng/l		330		140		94 J		170 J		460 J		12 J		49		640		540

Table I-11
Analytical Results for Water Samples -
PRI-17 Site-Wide Groundwater
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location ID	PZ-8	MW-7	MW-7	MW-5A	MW-5A	MW-6	MW-6	PZ-24	PZ-24	MW-18	MW-18	PZ-4	PZ-4	MW-19A	MW-19A
	Sample Date	05-Feb-14	06-Feb-14	06-Feb-14	07-Feb-14	07-Feb-14	07-Feb-14	07-Feb-14	07-Feb-14	07-Feb-14	13-Feb-14	13-Feb-14	13-Feb-14	13-Feb-14	14-Feb-14	14-Feb-14
	Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Sample ID	PZ-08-01-020514-FF	MW-7-01-020614	MW-7-01-020614-FF	MW-5A-01-02071	MW-5A-01-020714-FI	MW-6-01-020714	MW-6-01-020714-FF	PZ-24-01-020714	PZ-24-01-020714-FF	MW-18-01-021314	MW-18-01-021314-FF	PZ-04-01-021314	PZ-04-01-021314-FF	MW-19A-01-021414	MW-19A-01-021414-FF
Analyte	**Unit**															
Dissolved Mercury	mg/L	*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*
Total Molybdenum	mg/L		0.0052		0.042		0.0017 J		*< 0.0012 U*		0.074		0.096		0.043	
Dissolved Molybdenum	mg/L	0.0054		0.0028 J		0.040		*< 0.0012 U*		*< 0.0012 U*		0.066		0.094		0.044
Total Nickel	mg/L		*< 0.0020 U*		0.0020 J		*< 0.0020 U*		0.034		0.024		0.021		0.019	
Dissolved Nickel	mg/L	0.16		*< 0.0020 U*		0.0022 J		*< 0.0020 U*		0.036		0.022		0.021		0.019
Total Potassium	mg/L		230		700		340		2,900		510		1,800		4,500	
Dissolved Potassium	mg/L	100		240		570		290		2,500		540		1,900		4,600
Total Selenium	mg/L		*< 0.0020 U*		*< 0.0020 UJ*		*< 0.0020 UJ*		*< 0.0020 UJ*		*< 0.0020 UJ*		0.0022 J-		*< 0.0020 U*	
Dissolved Selenium	mg/L	0.0064		*< 0.0020 U*		*< 0.0020 UJ*		*< 0.0020 UJ*		*< 0.0020 UJ*		0.0020 J-		0.0023 J-		*< 0.0020 UJ*
Total Silver	mg/L		*< 0.00060 U*		*< 0.00060 U*		*< 0.00060 U*		*< 0.00060 U*		*< 0.00060 U*		0.0016 J		*< 0.00060 U*	
Dissolved Silver	mg/L	*< 0.00060 U*		*< 0.00060 U*		*< 0.00060 U*		*< 0.00060 U*		*< 0.00060 U*		*< 0.00060 U*		0.0015 J		*< 0.00060 U*
Total Sodium	mg/L		2,300		7,600		3,300		6,000		2,300		6,100		13,000	
Dissolved Sodium	mg/L	1,300		2,500		6,100		2,700		5,000		2,500		6,500		13,000
Total Thallium	mg/L		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		0.0051		*< 0.0010 U*	
Dissolved Thallium	mg/L	*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		0.0053		*< 0.0010 U*
Total Vanadium	mg/L		*< 0.0060 U*		*< 0.0060 U*		*< 0.0060 U*		*< 0.0060 U*		0.018 J		0.014 J		*< 0.0060 U*	
Dissolved Vanadium	mg/L	0.0067 J		*< 0.0060 U*		*< 0.0060 U*		*< 0.0060 U*		*< 0.0060 U*		0.019 J		0.014 J		*< 0.0060 U*
Total Zinc	mg/L		0.078		*< 0.0080 U*		*< 0.0080 U*		0.015		*< 0.0080 U*		*< 0.0080 U*		*< 0.0080 U*	
Dissolved Zinc	mg/L	0.019		0.091		*< 0.0080 U*		*< 0.0080 U*		*< 0.0080 U*		*< 0.0080 U*		*< 0.0080 U*		*< 0.0080 U*
05-SVOCs																
1,1'-Biphenyl	µg/L		*< 4.7 U*		*< 4.6 U*		*< 4.8 U*		*< 4.8 U*		*< 4.7 U*		*< 4.4 U*		*< 4.3 U*	
1,2,4,5-Tetrachlorobenzene	µg/L		*< 0.50 U*		10		*< 0.51 U*		*< 0.52 U*		*< 0.50 U*		*< 0.47 U*		*< 0.46 U*	
2,3,4,6-Tetrachlorophenol	µg/L		*< 2.3 U*		*< 2.3 U*		*< 2.4 U*		*< 2.4 U*		*< 2.3 U*		*< 2.2 U*		*< 2.1 U*	
2,4,5-Trichlorophenol	µg/L		*< 1.9 U*		*< 1.8 U*		*< 1.9 U*		*< 1.9 U*		*< 1.9 U*		*< 1.8 U*		*< 1.7 U*	
2,4,6-Trichlorophenol	µg/L		*< 1.9 U*		*< 1.8 U*		*< 1.9 U*		*< 1.9 U*		*< 1.9 U*		*< 1.8 U*		*< 1.7 U*	
2,4,6-Trichlorophenol (SIM Screen)	µg/L		*< 0.18 U*		0.85 J+		*< 0.18 UJ*		*< 0.18 U*		*< 0.18 U*		*< 0.17 U*		*< 0.16 U*	
2,2-Oxybis(1-chloropropane)	µg/L		*< 1.2 U*		*< 1.2 U*		*< 1.2 U*		*< 1.3 U*		*< 1.2 U*		*< 1.1 U*		*< 1.1 U*	
2,4-Dichlorophenol	µg/L		*< 2.4 U*		*< 2.4 U*		*< 2.5 U*		*< 2.5 U*		*< 2.4 U*		*< 2.3 U*		*< 2.2 U*	
2,4-Dimethylphenol	µg/L		*< 2.0 U*		*< 2.0 U*		*< 2.1 U*		*< 2.1 U*		*< 2.0 U*		*< 1.9 U*		*< 1.9 U*	
2,4-Dinitrophenol	µg/L		*< 19 U*		*< 18 U*		*< 19 U*		*< 19 U*		*< 19 U*		*< 18 U*		*< 17 U*	
2,4-Dinitrotoluene	µg/L		*< 1.9 U*		*< 1.8 UJ*		*< 1.9 UJ*		*< 1.9 UJ*		*< 1.9 U*		*< 1.8 U*		*< 1.7 U*	
2,6-Dinitrotoluene	µg/L		*< 1.9 U*		*< 1.8 U*		*< 1.9 U*		*< 1.9 U*		*< 1.9 U*		*< 1.8 U*		*< 1.7 U*	
2-Chloronaphthalene	µg/L		*< 1.2 U*		*< 1.2 U*		*< 1.2 U*		*< 1.3 U*		*< 1.2 UJ*		*< 1.1 UJ*		*< 1.1 UJ*	
2-Chlorophenol	µg/L		*< 1.5 U*		*< 1.5 U*		*< 1.5 U*		*< 1.5 U*		*< 1.5 U*		*< 1.4 U*		*< 1.4 U*	
2-Methylphenol	µg/L		*< 0.87 U*		*< 0.85 U*		*< 0.89 U*		*< 0.90 U*		*< 0.87 U*		*< 0.82 U*		*< 0.79 U*	
2-Nitroaniline	µg/L		*< 1.9 U*		*< 1.8 U*		*< 1.9 U*		*< 1.9 U*		*< 1.9 U*		*< 1.8 U*		*< 1.7 U*	
2-Nitrophenol	µg/L		*< 1.8 U*		*< 1.7 U*		*< 1.8 U*		*< 1.8 U*		*< 1.8 U*		*< 1.7 U*		*< 1.6 U*	
3,3'-Dichlorobenzidine	µg/L		*< 0.89 U*		*< 0.88 U*		*< 0.92 U*		*< 0.93 U*		*< 0.89 U*		*< 0.84 U*		*< 0.82 U*	
3-Nitroaniline	µg/L		*< 1.3 U*		*< 1.3 U*		*< 1.3 U*		*< 1.4 U*		*< 1.3 U*		*< 1.2 U*		*< 1.2 U*	
4,6-Dinitro-2-methylphenol	µg/L		*< 2.0 U*		*< 2.0 U*		*< 2.1 U*		*< 2.1 U*		*< 2.0 U*		*< 1.9 U*		*< 1.9 U*	
4-Bromophenyl-phenylether	µg/L		*< 1.0 U*		*< 1.0 U*		*< 1.0 U*		*< 1.1 U*		*< 1.0 U*		*< 0.97 U*		*< 0.94 U*	
4-Chloro-3-methylphenol	µg/L		*< 1.9 U*		*< 1.8 U*		*< 1.9 U*		*< 1.9 U*		*< 1.9 U*		*< 1.8 U*		*< 1.7 U*	
4-Chloroaniline	µg/L		*< 1.9 U*		*< 1.8 U*		*< 1.9 U*		*< 1.9 U*		*< 1.9 U*		*< 1.8 U*		*< 1.7 U*	
4-Chlorophenyl-phenylether	µg/L		*< 1.0 U*		*< 1.0 U*		*< 1.0 U*		*< 1.1 U*		*< 1.0 U*		*< 0.97 U*		*< 0.94 U*	
3 & 4 Methylphenol	µg/L		*< 1.1 U*		*< 1.1 U*		*< 1.1 U*		*< 1.1 U*		*< 1.1 U*		*< 1.0 U*		*< 0.98 U*	
4-Nitroaniline	µg/L		*< 1.4 U*		*< 1.4 U*		*< 1.4 U*		*< 1.5 U*		*< 1.4 U*		*< 1.3 U*		*< 1.3 U*	
4-Nitrophenol	µg/L		*< 5.7 U*		*< 5.6 U*		*< 5.8 U*		*< 5.9 U*		*< 5.7 U*		*< 5.4 U*		*< 5.2 U*	
Acetophenone	µg/L		1.7 J		1.8 J		2.0 J		1.8 J		*< 0.73 U*		*< 0.69 U*		*< 0.67 U*	
Benzaldehyde	µg/L		*< 7.8 U*		*< 7.6 U*		*< 8.0 U*		*< 8.1 U*		*< 7.8 U*		*< 7.3 U*		*< 7.1 U*	
Benzylbutylphthalate	µg/L		*< 1.3 U*		*< 1.3 U*		*< 1.3 U*		*< 1.4 U*		*< 1.3 U*		*< 1.2 U*		*< 1.2 U*	
Bis(2-chloroethoxy)methane	µg/L		*< 0.93 U*		*< 0.92 U*		*< 0.95 U*		*< 0.97 U*		*< 0.93 U*		*< 0.88 U*		*< 0.85 U*	
bis(2-Chloroethyl) ether	µg/L		*< 1.4 U*		*< 1.4 U*		*< 1.4 U*		*< 1.5 U*		*< 1.4 U*		*< 1.3 U*		*< 1.3 U*	
Bis(2-ethylhexyl)phthalate	µg/L		2.5 J		*< 0.92 UJ*		*< 0.95 UJ*		*< 0.97 UJ*		*< 0.93 U*		*< 0.88 U*		*< 0.85 U*	
Carbazole	µg/L		*< 1.1 U*		*< 1.1 U*		*< 1.1 U*		*< 1.2 U*		*< 1.1 U*		*< 1.1 U*		*< 1.0 U*	
Dibenzofuran	µg/L		*< 1.0 U*		*< 1.0 U*		*< 1.0 U*		*< 1.1 U*		*< 1.0 U*		*< 0.97 U*		*< 0.94 U*	
Diethyl phthalate	µg/L		*< 0.87 U*		*< 0.85 U*		*< 0.89 U*		*< 0.90 U*		*< 0.87 U*		*< 0.82 U*		*< 0.79 U*	
Dimethylphthalate	µg/L		*< 0.82 U*		*< 0.81 U*		*< 0.84 U*		*< 0.85 U*		*< 0.82 U*		*< 0.77 U*		*< 0.75 U*	
Di-n-butylphthalate	µg/L		*< 1.0 U*		*< 1.0 U*		*< 1.0 U*		*< 1.1 U*		*< 1.0 U*		*< 0.97 U*		*< 0.94 U*	
Di-n-octylphthalate	µg/L		*< 1.4 U*		*< 1.4 U*		*< 1.4 U*		*< 1.5 U*		*< 1.4 U*		*< 1.3 U*		*< 1.3 U*	
Hexachlorobenzene	µg/L		*< 1.3 U*		*< 1.3 U*		*< 1.3 U*		*< 1.4 U*		*< 1.3 U*		*< 1.2 U*		*< 1.2 U*	
Hexachlorobenzene (SIM Screen)	µg/L		*< 0.065 UJ*		*< 0.064 UJ*		*< 0.067 UJ*		*< 0.068 UJ*		*< 0.065 UJ*		*< 0.062 UJ*		*< 0.060 UJ*	
Hexachlorobutadiene	µg/L		*< 1.2 UJ*		*< 1.2 UJ*		*< 1.2 UJ*		*< 1.3 UJ*		*< 1.2 UJ*		*< 1.1 UJ*		*< 1.1 UJ*	
Hexachlorobutadiene (SIM Screen)	µg/L		*< 0.075 UJ*		*< 0.073 UJ*		*< 0.076 UJ*		*< 0.077 UJ*		*< 0.074 UJ*		*< 0.070 UJ*		*< 0.068 UJ*	
Hexachlorocyclopentadiene	µg/L		*< 4.7 U*		*< 4.6 U*		*< 4.8 U*		*< 4.8 U*		*< 4.7 UJ*		*< 4.4 UJ*		*< 4.3 UJ*	
Hexachloroethane	µg/L		*< 1.3 UJ*		*< 1.3 UJ*		*< 1.3 UJ*		*< 1.4 UJ*		*< 1.3 UJ*		*< 1.2 UJ*		*< 1.2 UJ*	
Isophorone	µg/L		*< 0.93 U*		*< 0.92 U*		*< 0.95 U*		*< 0.97 U*		*< 0.93 U*		*< 0.88 U*		*< 0.85 U*	
Nitrobenzene	µg/L		*< 1.5 U*		*< 1.5 U*		*< 1.5 U*		*< 1.5 U*		*< 1.5 U*		*< 1.4 U*		*< 1.4 U*	
N-Nitrosodimethylamine	µg/L		*< 0.89 U*		*< 0.88 U*		*< 0.92 U*		*< 0.93 U*		*< 0.89 U*		*< 0.84 U*		*< 0.82 U*	
n-Nitrosodimethylamine (SIM Screen)	µg/L		*< 0.065 U*		*< 0.064 U*		*< 0.067 U*		*< 0.068 U*		*< 0.065 U*		*< 0.062 U*		*< 0.060 U*	
N-Nitroso-di-n-propylamine	µg/L		*< 1.3 U*		*< 1.3 U*		*< 1.3 U*		*< 1.4 U*		*< 1.3 U*		*< 1.2 U*		*< 1.2 U*	
N-Nitrosodiphenylamine	µg/L		*< 0.50 U*		*< 0.49 U*		*< 0.51 U*		*< 0.52 U*		*< 0.50 U*		*< 0.47 U*		*< 0.46 U*	
Pentachlorophenol	µg/L		*< 1.9 U*		*< 1.8 U*		*< 1.9 U*		*< 1.9 U*		*< 1.9 U*		*< 1.8 U*		*< 1.7 U*	
Pentachlorophenol (SIM Screen)	µg/L		*< 1.9 U*		*< 1.8 U*		*< 1.9 U*		*< 1.9 U*		*< 1.9 U*		*< 1.8 U*		*< 1.7 U*	
Phenol	µg/L		*< 1.0 U*		*< 1.0 U*		*< 1.0 U*		*< 1.1 U*		*< 1.0 U*		*< 0.97 U*		*< 0.94 U*	
06-PAHs by SIM																
2-Methylnaphthalene	ng/l		2,700		5,000		140 J		190 J		*< 5.2 U*		*< 4.8 U*		*< 4.7 U*	

Table I-11
Analytical Results for Water Samples -
PRI-17 Site-Wide Groundwater
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location ID	MW-19B	MW-19B	LF-01	LF-01	LF-03	LF-03	MW-8A	MW-8A	MW-8B	MW-8B
	Sample Date	14-Feb-14	14-Feb-14	17-Feb-14	17-Feb-14	17-Feb-14	17-Feb-14	18-Feb-14	18-Feb-14	18-Feb-14	18-Feb-14
	Sample Type	N	N	N	N	N	N	N	N	N	N
	Sample ID	MW-19B-01-021414	MW-19B-01-021414-FF	LF-01-01-021714	LF-01-01-021714-FF	LF-03-01-021714	LF-03-01-021714-FF	MW-8A-01-021814	MW-8A-01-021814-FF	MW-8B-01-021814	MW-8B-01-021814-FF
Analyte	Unit										
Dissolved Mercury	mg/L		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*		*< 0.00010 U*
Total Molybdenum	mg/L	*< 0.0012 U*		0.012		0.0055		0.0081		*< 0.0012 U*	
Dissolved Molybdenum	mg/L		*< 0.0012 U*		0.012		0.0056		0.0063		*< 0.0012 U*
Total Nickel	mg/L	*< 0.0020 U*		0.0030 J		0.0072		0.021		0.0020 J-	
Dissolved Nickel	mg/L		*< 0.0020 U*		0.0031 J		0.0074		0.017 J-		*< 0.0020 U*
Total Potassium	mg/L	1,100		1,700		5,000		1,300		1,700	
Dissolved Potassium	mg/L		1,200		1,600		3,200		1,200 J		1,700
Total Selenium	mg/L	*< 0.0020 U*		0.0029 J-		0.0063 J-		*< 0.0020 UJ*		*< 0.0020 UJ*	
Dissolved Selenium	mg/L		0.0035 J-		*< 0.0020 UJ*		0.0029 J-		*< 0.0020 UJ*		*< 0.0020 UJ*
Total Silver	mg/L	*< 0.00060 U*		*< 0.00060 U*		*< 0.00060 U*		*< 0.00060 U*		*< 0.00060 U*	
Dissolved Silver	mg/L		*< 0.00060 U*		*< 0.00060 U*		*< 0.00060 U*		*< 0.00060 U*		*< 0.00060 U*
Total Sodium	mg/L	19,000		2,700		7,700		3,600		13,000	
Dissolved Sodium	mg/L		22,000		2,500		5,100		3,400 J		12,000
Total Thallium	mg/L	*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*	
Dissolved Thallium	mg/L		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*		*< 0.0010 U*
Total Vanadium	mg/L	*< 0.0060 U*		*< 0.0060 U*		*< 0.0060 U*		*< 0.0060 U*		*< 0.0060 U*	
Dissolved Vanadium	mg/L		*< 0.0060 U*		*< 0.0060 U*		*< 0.0060 U*		*< 0.0060 U*		*< 0.0060 U*
Total Zinc	mg/L	*< 0.0080 U*		*< 0.0080 UJ*		*< 0.0080 UJ*		0.025 J-		0.023 J-	
Dissolved Zinc	mg/L		*< 0.0080 U*		*< 0.0080 U*		0.0091 J		0.025 J-		*< 0.0080 U*
05-SVOCs											
1,1'-Biphenyl	µg/L	*< 4.6 U*		*< 4.6 U*		*< 4.5 U*		*< 4.6 U*		*< 48 U*	
1,2,4,5-Tetrachlorobenzene	µg/L	*< 0.50 U*		*< 0.50 U*		*< 0.49 U*		0.52 J		*< 5.2 U*	
2,3,4,6-Tetrachlorophenol	µg/L	*< 2.3 U*		*< 2.3 U*		*< 2.3 U*		*< 2.3 U*		*< 24 U*	
2,4,5-Trichlorophenol	µg/L	*< 1.9 U*		*< 1.8 U*		*< 1.8 U*		*< 1.9 U*		*< 19 U*	
2,4,6-Trichlorophenol	µg/L	*< 1.9 U*		*< 1.8 U*		*< 1.8 U*		3.5 J+		*< 19 U*	
2,4,6-Trichlorophenol (SIM Screen)	µg/L	*< 0.18 U*		0.22 J+		0.20 J+		2.7 J+		*< 0.18 U*	
2,2-Oxybis(1-chloropropane)	µg/L	*< 1.2 U*		*< 1.2 U*		*< 1.2 U*		*< 1.2 UJ*		*< 12 U*	
2,4-Dichlorophenol	µg/L	*< 2.4 U*		*< 2.4 U*		*< 2.3 U*		*< 2.4 U*		*< 25 U*	
2,4-Dimethylphenol	µg/L	*< 2.0 U*		*< 2.0 U*		*< 2.0 U*		*< 2.0 U*		*< 21 U*	
2,4-Dinitrophenol	µg/L	*< 19 U*		*< 18 U*		*< 18 U*		*< 19 U*		*< 190 U*	
2,4-Dinitrotoluene	µg/L	*< 1.9 U*		*< 1.8 U*		*< 1.8 U*		*< 1.9 U*		*< 19 U*	
2,6-Dinitrotoluene	µg/L	*< 1.9 U*		*< 1.8 U*		*< 1.8 U*		*< 1.9 U*		*< 19 U*	
2-Chloronaphthalene	µg/L	*< 1.2 UJ*		*< 1.2 UJ*		*< 1.2 UJ*		*< 1.2 U*		*< 12 U*	
2-Chlorophenol	µg/L	*< 1.5 U*		*< 1.5 U*		*< 1.4 U*		*< 1.5 U*		*< 15 U*	
2-Methylphenol	µg/L	*< 0.86 U*		*< 0.86 U*		*< 0.84 U*		*< 0.86 U*		*< 8.9 U*	
2-Nitroaniline	µg/L	*< 1.9 U*		*< 1.8 U*		*< 1.8 U*		*< 1.9 U*		*< 19 U*	
2-Nitrophenol	µg/L	*< 1.8 U*		*< 1.8 U*		*< 1.7 U*		*< 1.8 U*		*< 18 U*	
3,3'-Dichlorobenzidine	µg/L	*< 0.89 U*		*< 0.89 U*		*< 0.86 U*		*< 0.89 UJ*		*< 9.2 U*	
3-Nitroaniline	µg/L	*< 1.3 U*		*< 1.3 U*		*< 1.3 U*		*< 1.3 UJ*		*< 13 U*	
4,6-Dinitro-2-methylphenol	µg/L	*< 2.0 U*		*< 2.0 U*		*< 2.0 U*		6.8 J+		*< 21 U*	
4-Bromophenyl-phenylether	µg/L	*< 1.0 U*		*< 1.0 U*		*< 0.99 U*		*< 1.0 U*		*< 10 U*	
4-Chloro-3-methylphenol	µg/L	*< 1.9 U*		*< 1.8 U*		*< 1.8 U*		*< 1.9 U*		*< 19 U*	
4-Chloroaniline	µg/L	*< 1.9 U*		*< 1.8 U*		*< 1.8 U*		*< 1.9 U*		*< 19 U*	
4-Chlorophenyl-phenylether	µg/L	*< 1.0 U*		*< 1.0 U*		*< 0.99 U*		*< 1.0 U*		*< 10 U*	
3 & 4 Methylphenol	µg/L	*< 1.1 U*		*< 1.1 U*		*< 1.0 U*		3.0 J+		*< 11 U*	
4-Nitroaniline	µg/L	*< 1.4 U*		*< 1.4 U*		*< 1.3 U*		*< 1.4 UJ*		*< 14 U*	
4-Nitrophenol	µg/L	*< 5.6 U*		*< 5.6 U*		*< 5.5 U*		*< 5.6 U*		*< 58 U*	
Acetophenone	µg/L	*< 0.72 U*		*< 0.72 U*		*< 0.70 U*		2.5 J		*< 7.4 U*	
Benzaldehyde	µg/L	*< 7.7 U*		*< 7.7 U*		*< 7.5 U*		*< 7.7 U*		*< 80 U*	
Benzylbutylphthalate	µg/L	*< 1.3 U*		*< 1.3 U*		*< 1.3 U*		*< 1.3 U*		*< 13 U*	
Bis(2-chloroethoxy)methane	µg/L	*< 0.93 U*		*< 0.92 U*		*< 0.90 U*		*< 0.93 U*		*< 9.5 U*	
bis(2-Chloroethyl) ether	µg/L	*< 1.4 U*		*< 1.4 U*		*< 1.3 U*		*< 1.4 U*		*< 14 U*	
Bis(2-ethylhexyl)phthalate	µg/L	*< 0.97 U*		*< 0.92 U*		*< 1 U*		*< 0.93 U*		*< 9.5 U*	
Carbazole	µg/L	*< 1.1 U*		*< 1.1 U*		*< 1.1 U*		*< 1.1 U*		*< 11 U*	
Dibenzofuran	µg/L	*< 1.0 U*		*< 1.0 U*		*< 0.99 U*		*< 1.0 U*		*< 10 U*	
Diethyl phthalate	µg/L	*< 0.86 U*		*< 0.86 U*		*< 0.84 U*		*< 0.86 U*		*< 8.9 U*	
Dimethylphthalate	µg/L	*< 0.81 U*		*< 0.81 U*		*< 0.79 U*		*< 0.82 U*		*< 8.4 U*	
Di-n-butylphthalate	µg/L	*< 1.0 U*		*< 1.0 U*		*< 0.99 U*		*< 1.0 U*		*< 10 U*	
Di-n-octylphthalate	µg/L	*< 1.4 U*		*< 1.4 U*		*< 1.3 U*		*< 1.4 U*		*< 14 U*	
Hexachlorobenzene	µg/L	*< 1.3 U*		*< 1.3 U*		*< 1.3 U*		2.0 J		*< 13 U*	
Hexachlorobenzene (SIM Screen)	µg/L	*< 0.065 UJ*		*< 0.065 UJ*		*< 0.063 UJ*		1.8 J		*< 0.067 UJ*	
Hexachlorobutadiene	µg/L	*< 1.2 UJ*		*< 1.2 UJ*		*< 1.2 UJ*		*< 1.2 U*		*< 12 U*	
Hexachlorobutadiene (SIM Screen)	µg/L	*< 0.074 UJ*		*< 0.074 UJ*		*< 0.072 UJ*		*< 0.074 U*		*< 0.076 U*	
Hexachlorocyclopentadiene	µg/L	*< 4.6 UJ*		*< 4.6 UJ*		*< 4.5 UJ*		*< 4.6 U*		*< 48 U*	
Hexachloroethane	µg/L	*< 1.3 UJ*		*< 1.3 UJ*		*< 1.3 UJ*		*< 1.3 U*		*< 13 U*	
Isophorone	µg/L	*< 0.93 U*		*< 0.92 U*		*< 0.90 U*		*< 0.93 U*		*< 9.5 U*	
Nitrobenzene	µg/L	*< 1.5 U*		*< 1.5 U*		*< 1.4 U*		*< 1.5 U*		*< 15 U*	
N-Nitrosodimethylamine	µg/L	*< 0.89 U*		*< 0.89 U*		*< 0.86 U*		*< 0.89 U*		*< 9.2 U*	
n-Nitrosodimethylamine (SIM Screen)	µg/L	*< 0.065 U*		*< 0.065 U*		*< 0.063 U*		*< 0.065 U*		*< 0.067 U*	
N-Nitroso-di-n-propylamine	µg/L	*< 1.3 U*		*< 1.3 U*		*< 1.3 U*		*< 1.3 U*		*< 13 U*	
N-Nitrosodiphenylamine	µg/L	*< 0.50 U*		*< 0.50 U*		*< 0.49 U*		*< 0.50 U*		*< 5.2 U*	
Pentachlorophenol	µg/L	*< 1.9 U*		*< 1.8 U*		*< 1.8 U*		5.5 J+		*< 19 U*	
Pentachlorophenol (SIM Screen)	µg/L	*< 1.9 U*		*< 1.8 U*		*< 1.8 U*		*< 1.9 U*		*< 1.9 U*	
Phenol	µg/L	*< 1.0 U*		*< 1.0 U*		*< 0.99 U*		*< 1.0 U*		*< 10 U*	
06-PAHs by SIM											
2-Methylnaphthalene	ng/l	*< 5.0 U*		43 J		2,900		1,500		*< 5.4 U*	

Table I-11
Analytical Results for Water Samples -
PRI-17 Site-Wide Groundwater
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location ID	**MW-20A**	**MW-20A**	**MW-20B**	**MW-20B**	**PZ-6**	**PZ-6**	**PZ-16**	**PZ-16**	**PZ-18**	**PZ-18**	**PZ-22**	**PZ-22**	**MW-13A**	**MW-13A**	**MW-13B**	**MW-13B**	**PZ-1**
	Sample Date	**31-Jan-14**	**31-Jan-14**	**31-Jan-14**	**31-Jan-14**	**31-Jan-14**	**31-Jan-14**	**03-Feb-14**	**03-Feb-14**	**03-Feb-14**	**03-Feb-14**	**03-Feb-14**	**03-Feb-14**	**04-Feb-14**	**04-Feb-14**	**04-Feb-14**	**04-Feb-14**	**04-Feb-14**
	Sample Type	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**
	Sample ID	**MW-20A-01-013114**	**MW-20A-01-013114-FF**	**MW-20B-01-013114**	**MW-20B-01-013114-FF**	**PZ-06-01-013114**	**PZ-06-01-013114-FF**	**PZ-16-01-020314**	**PZ-16-01-020314-FF**	**PZ-18-01-020314**	**PZ-18-01-020314-FF**	**PZ-22-01-020314**	**PZ-22-01-020314-FF**	**MW-13A-01-020414**	**MW-13A-01-020414-FF**	**MW-13B-01-020414**	**MW-13B-01-020414-FF**	**PZ-01-01-020414**
Analyte	**Unit**																	
Acenaphthene	ng/l	270		13 J		57		< 2.9 U		< 2.8 U		< 2.8 U		< 2.9 U		< 3.0 U		< 2.5 U
Acenaphthylene	ng/l	< 2.8 U		< 2.5 U		< 2.7 U		< 2.8 U		< 2.8 U		< 2.7 U		< 2.8 U		< 2.9 U		< 2.4 U
Anthracene	ng/l	6.2 J		13 J		< 4.0 U		< 4.1 U		< 4.0 U		< 4.0 U		29 J		< 4.2 U		< 3.5 U
Benzo(a)anthracene	ng/l	< 4.1 U		< 3.8 U		< 4.1 U		< 4.2 U		< 4.1 U		< 4.1 U		< 4.2 U		36 J		< 3.7 U
Benzo(a)pyrene	ng/l	< 4.0 U		< 3.6 U		< 3.9 U		< 4.1 U		< 4.0 U		< 3.9 U		< 4.0 U		17 J		< 3.5 U
Benzo(b)fluoranthene	ng/l	< 11 U		< 10 U		< 11 U		< 11 U		< 11 U		< 11 U		< 11 U		93		< 9.8 U
Benzo(g,h,i)perylene	ng/l	< 5.0 U		< 4.6 U		6.0 J		< 5.1 U		< 4.9 U		< 4.9 U		< 5.1 U		58		< 4.4 U
Benzo(k)fluoranthene	ng/l	< 7.0 U		< 6.5 U		< 7.0 U		< 7.2 U		< 7.0 U		< 7.0 U		< 7.2 U		83		< 6.2 U
Chrysene	ng/l	< 3.6 U		< 3.3 U		< 3.6 U		< 3.7 U		< 3.6 U		< 3.6 U		< 3.7 U		71		< 3.2 U
Dibenzo(a,h)anthracene	ng/l	< 13 U		< 12 U		< 13 U		< 13 U		< 13 U		< 13 U		< 13 U		71		< 12 U
Fluoranthene	ng/l	< 3.9 U		7.1 J		< 3.8 U		< 4.0 U		< 3.9 U		< 3.8 U		39 J		37 J		< 3.4 U
Fluorene	ng/l	110		19 J		85		< 3.7 U		< 3.6 U		< 3.6 U		24 J		< 3.8 U		< 3.2 U
Indeno(1,2,3-cd)pyrene	ng/l	< 13 U		< 12 U		< 13 U		< 13 U		< 13 U		< 13 U		< 13 U		62		< 11 U
Naphthalene	ng/l	3,500		870		590		< 3.4 U		< 3.3 U		7.0 J		3,200		1,900		< 2.9 U
Phenanthrene	ng/l	9.9 J		14 J		160		< 5.8 U		< 5.7 U		< 5.6 U		32 J		< 6.0 U		< 5.0 U
Pyrene	ng/l	< 3.8 U		6.5 J		< 3.8 U		< 3.9 U		< 3.8 U		< 3.7 U		12 J		< 4.0 U		< 3.3 U
07-VOCs																		
1,4-Dioxane	µg/L	< 25 UJ		< 25 UJ		< 25 UJ		< 25 UJ		< 25 UJ		< 25 UJ		< 25 UJ		< 25 UJ		< 25 UJ
1,1-Dichloroethane	µg/L	1.7		1.4		< 0.10 U		0.38 J		< 0.10 U		1.7		1.0		0.52 J		1.5
1,1-Dichloroethene	µg/L	0.35 J		0.27 J		< 0.14 U		0.33 J		< 0.14 U		< 0.14 U		0.31 J		0.25 J		0.14 J
1,2-Dibromo-3-chloropropane	µg/L	< 0.32 U		< 0.32 U		< 0.32 U		< 0.32 U		< 0.32 U		< 0.32 U		< 0.32 U		< 0.32 U		< 0.32 U
1,2-Dibromoethane	µg/L	< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U
1,2-Dichlorobenzene	µg/L	< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U
1,2-Dichloroethane	µg/L	< 0.22 U		< 0.22 U		< 0.22 U		0.29 J		< 0.22 U		< 0.22 U		0.29 J		< 0.22 U		< 0.22 U
cis-1,2-Dichloroethene	µg/L	21		2.8		< 0.10 U		< 0.10 U		< 0.10 U		1.7		< 0.10 U		< 0.10 U		< 0.10 U
trans-1,2-Dichloroethene	µg/L	7.3		0.38 J		< 0.11 U		< 0.11 U		< 0.11 U		0.17 J		< 0.11 U		< 0.11 U		< 0.11 U
1,2-Dichloropropane	µg/L	< 0.15 U		< 0.15 U		< 0.15 U		0.23 J		< 0.15 U		< 0.15 U		0.35 J		0.19 J		< 0.15 U
1,3-Dichlorobenzene	µg/L	< 0.11 U		< 0.11 U		< 0.11 U		< 0.11 U		< 0.11 U		< 0.11 U		< 0.11 U		< 0.11 U		< 0.11 U
cis-1,3-Dichloropropene	µg/L	< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U
trans-1,3-Dichloropropene	µg/L	< 0.080 U		< 0.080 U		< 0.080 U		< 0.080 U		< 0.080 U		< 0.080 U		< 0.080 U		< 0.080 U		< 0.080 U
1,4-Dichlorobenzene	µg/L	< 0.13 U		< 0.13 U		< 0.13 U		< 0.13 U		< 0.13 U		< 0.13 U		0.13 J		< 0.13 U		< 0.13 U
1,1,1-Trichloroethane	µg/L	< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U
1,1,2-Trichloroethane	µg/L	< 0.31 U		< 0.31 U		< 0.31 U		< 0.31 U		< 0.31 U		< 0.31 U		< 0.31 U		< 0.31 U		< 0.31 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	µg/L	< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U
1,2,3-Trichlorobenzene	µg/L	< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U
1,2,4-Trichlorobenzene	µg/L	< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 U
1,1,2,2-Tetrachloroethane	µg/L	< 0.090 U		< 0.18 U		< 0.090 U		< 0.090 U		< 0.090 U		< 0.090 U		< 0.45 U		< 0.090 U		< 0.090 U
2-Butanone	µg/L	1.8 J		17		< 0.35 U		0.35 J		0.88 J		< 0.35 U		22		26		3.1
2-Hexanone	µg/L	0.53 J		< 0.17 U		< 0.17 U		< 0.17 U		< 0.17 U		< 0.17 U		1.3 J-		0.89 J-		< 0.17 UJ
4-Methyl-2-pentanone	µg/L	6.3		4.7		< 0.18 U		0.31 J		< 0.18 U		< 0.18 U		39 J-		20 J-		0.65 J-
Acetone	µg/L	4.8 J		79		< 2.1 U		2.9 J		5.1 J		2.3 J		110		150		31
Benzene	µg/L	1.1		< 0.13 U		< 0.13 U		0.36 J		0.34 J		< 0.13 U		< 0.13 U		< 0.13 U		< 0.13 U
Bromochloromethane	µg/L	< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		0.83 J		< 0.14 U		1.5		4.7		< 0.14 U
Bromodichloromethane	µg/L	< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		0.92 J		< 0.14 U		130		44		< 0.14 U
Bromoform	µg/L	< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 U		0.71 J		< 0.10 U		300		78		< 0.10 U
Bromomethane	µg/L	< 0.29 U		< 0.29 U		< 0.29 U		< 0.29 U		< 0.29 U		< 0.29 U		1.5		0.49 J		< 0.29 U
Carbon disulfide	µg/L	0.29 J		0.27 J		< 0.16 U		< 0.16 U		1.7 J		0.34 J		5.0		27		< 0.77 U
Carbon tetrachloride	µg/L	< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U		2.6		0.28 J		< 0.15 U
Chlorobenzene	µg/L	< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U
Cyclohexane	µg/L	0.43 J		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U
Dibromochloromethane	µg/L	< 0.13 U		< 0.13 U		< 0.13 U		< 0.13 U		0.95 J		< 0.13 U		240		75		< 0.13 U
Chloroethane	µg/L	< 0.34 U		< 0.34 U		< 0.34 U		< 0.34 U		< 0.34 U		< 0.34 U		3.4		1.6		< 0.34 U
Chloroform	µg/L	0.13 J		0.13 J		< 0.12 U		7.2		5.1		0.77 J		100		61		1.4
Chloromethane	µg/L	< 0.25 U		1.4		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U		11 J-		4.5 J-		0.97 J-
Dichlorodifluoromethane (Freon-12)	µg/L	0.29 J		< 0.16 U		< 0.16 U		< 0.16 U		< 0.16 U		< 0.16 U		< 0.16 U		< 0.16 U		< 0.16 U
Ethyl benzene	µg/L	2.6		< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 U
Isopropylbenzene	µg/L	0.97 J		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U
Methyl tertbutyl ether (MTBE)	µg/L	< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U
Dichloromethane (Methylene chloride)	µg/L	< 0.35 U		0.43 J		< 0.35 U		< 0.35 U		0.99 J		< 0.35 U		2.4		5.5		0.64 J
Styrene	µg/L	< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U
Tetrachloroethene	µg/L	8.5		1.0		< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 U		0.27 J		< 0.10 U		< 0.10 U
Toluene	µg/L	3.4		0.38 J		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U
Trichloroethene	µg/L	24		7.9		< 0.13 U		0.13 J		< 0.13 U		1.4		0.23 J		0.24 J		< 0.13 U
Trichlorofluoromethane (Freon-11)	µg/L	< 0.23 U		< 0.23 U		< 0.23 U		< 0.23 U		< 0.23 U		< 0.23 U		< 0.23 U		< 0.23 U		< 0.23 U
Vinyl chloride	µg/L	13		0.43 J		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U
o-Xylene	µg/L	2.1		0.35 J		< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 U		0.24 J		0.17 J		< 0.10 U
m,p Xylenes	µg/L	1.7		< 0.18 U		< 0.18 U		< 0.18 U		< 0.18 U		< 0.18 U		0.46 J		0.31 J		< 0.18 U
09-General Water Quality Parameters																		
Total Dissolved Solids	mg/L	70,000		280,000		82,000		60,000 J		92,000		180,000		53,000		64,000		300,000
Bromide	mg/L	72 J		100 J		< 18 U		< 8.8 U		< 18 U		120 J		< 8.8 U		< 8.8 U		400
Chloride	mg/L	45,000		170,000		49,000		34,000		51,000		100,000		26,000		33,000		180,000
Chlorine, Field	mg/L	0.02		0.14		0.02		0.02		0		0.11		0.05		0.04		0.06
Total Cyanide	mg/L	< 0.0050 U		< 0.0050 U		< 0.0050 U		< 0.0050 UJ		< 0.0050 UJ		< 0.0050 UJ		**0.032**		**0.030**		< 0.0050 U
Dissolved Cyanide	mg/L		< 0.0050 UJ		< 0.0050 UJ		< 0.0050 U		**0.0073 J**		< 0.0050 UJ		< 0.0050 UJ		**0.031**		**0.028**	
Fluoride	mg/L	6.4 J		13 J		3.8 J		4.8 J		1.9 J		3.4 J		16		18		11 J
Nitrate as N	mg/L	< 0.44 U		1.4 J		< 0.44 U		2.2 J+		< 0.44 U		< 0.55 U		1.7 J+		0.29 J+		< 1.1 U

Table I-11
Analytical Results for Water Samples -
PRI-17 Site-Wide Groundwater
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

	Location ID	PZ-1	PZ-10	PZ-10	PZ-12	PZ-12	MW-14	MW-14	MW-15A	MW-15A	MW-15B	MW-15B	MW-17	MW-17	MW-4A	MW-4A	PZ-26	PZ-26	PZ-8
	Sample Date	04-Feb-14	04-Feb-14	04-Feb-14	04-Feb-14	04-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14	05-Feb-14
	Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Sample ID	PZ-01-01-020414-FF	PZ-10-01-020414	PZ-10-01-020414-FF	PZ-12-01-020414	PZ-12-01-020414-FF	MW-14-01-020514	MW-14-01-020514-FF	MW-15A-01-020514	MW-15A-01-020514-FF	MW-15B-01-020514	MW-15B-01-020514-FF	MW-17-01-020514	MW-17-01-020514-FF	MW-4A-01-020514	MW-4A-01-020514-FF	PZ-26-01-020514	PZ-26-01-020514-FF	PZ-08-01-020514
Analyte	**Unit**																		
Acenaphthene	ng/l		*< 2.9 U*		*< 2.9 U*		*< 31 U*		*< 31 U*		*< 31 U*		*< 2.9 U*		*< 2.9 U*		*< 29 U*		*< 29 U*
Acenaphthylene	ng/l		*< 2.8 U*		*< 2.8 U*		*< 30 U*		*< 30 U*		*< 30 U*		*< 2.9 U*		*< 2.8 U*		*< 28 U*		*< 29 U*
Anthracene	ng/l		*< 4.1 U*		*< 4.1 U*		*< 44 U*		*< 43 U*		*< 44 U*		*< 4.1 U*		*< 4.1 U*		*< 41 U*		*< 41 U*
Benzo(a)anthracene	ng/l		*< 4.2 U*		*< 4.2 U*		*< 45 U*		*< 44 U*		*< 45 U*		*< 4.3 U*		*< 4.3 U*		*< 42 U*		*< 43 U*
Benzo(a)pyrene	ng/l		*< 4.1 U*		*< 4.0 U*		*< 43 U*		*< 43 U*		*< 43 U*		*< 4.1 U*		*< 4.1 U*		*< 40 U*		*< 41 U*
Benzo(b)fluoranthene	ng/l		*< 11 U*		*< 11 U*		*< 120 U*		*< 120 U*		*< 120 U*		*< 11 U*		*< 11 U*		*< 110 U*		*< 110 U*
Benzo(g,h,i)perylene	ng/l		*< 5.1 U*		*< 5.0 U*		*< 54 U*		*< 53 U*		*< 54 U*		*< 5.1 U*		*< 5.1 U*		*< 50 U*		*< 51 U*
Benzo(k)fluoranthene	ng/l		*< 7.2 U*		*< 7.2 U*		*< 77 U*		*< 75 U*		*< 77 U*		*< 7.3 U*		*< 7.2 U*		*< 71 U*		*< 72 U*
Chrysene	ng/l		*< 3.7 U*		*< 3.7 U*		*< 39 U*		*< 39 U*		*< 39 U*		*< 3.7 U*		*< 3.7 U*		*< 37 U*		*< 37 U*
Dibenzo(a,h)anthracene	ng/l		*< 13 U*		*< 13 U*		*< 140 U*		*< 140 U*		*< 140 U*		*< 13 U*		*< 13 U*		*< 130 U*		*< 130 U*
Fluoranthene	ng/l		7.1 J		21 J		*< 42 U*		*< 42 U*		*< 42 U*		*< 4.0 U*		*< 4.0 U*		*< 39 U*		*< 40 U*
Fluorene	ng/l		*< 3.7 U*		*< 3.7 U*		*< 40 U*		*< 39 U*		*< 40 U*		*< 3.8 U*		6.9 J		71 J		39 J
Indeno(1,2,3-cd)pyrene	ng/l		*< 13 U*		*< 13 U*		*< 140 U*		*< 140 U*		*< 140 U*		*< 13 U*		*< 13 U*		*< 130 U*		*< 130 U*
Naphthalene	ng/l		100		54		100 J		88 J		120 J		140		83		400 J		320 J
Phenanthrene	ng/l		*< 5.8 U*		*< 5.8 U*		*< 62 U*		*< 61 U*		*< 62 U*		*< 5.9 U*		*< 5.9 U*		*< 58 U*		*< 59 U*
Pyrene	ng/l		*< 3.9 U*		*< 3.9 U*		*< 41 U*		*< 41 U*		*< 41 U*		*< 3.9 U*		*< 3.9 U*		*< 38 U*		*< 39 U*
07-VOCs																			
1,4-Dioxane	µg/L		*< 25 UJ*		*< 25 UJ*		*< 25 UJ*		*< 25 UJ*		*< 25 UJ*		*< 25 UJ*		*< 25 UJ*		*< 25 UJ*		*< 25 UJ*
1,1-Dichloroethane	µg/L		0.56 J		1.1		0.80 J		1.7		1.3		5.8		0.15 J		0.84 J		1.8
1,1-Dichloroethene	µg/L		0.26 J		0.43 J		0.35 J		0.32 J		0.39 J		3.7		0.17 J		0.44 J		0.47 J
1,2-Dibromo-3-chloropropane	µg/L		*< 0.32 U*		*< 0.32 U*		*< 0.32 U*		*< 0.32 U*		*< 0.32 U*		*< 0.32 U*		*< 0.32 UJ*		*< 0.32 U*		*< 0.32 U*
1,2-Dibromoethane	µg/L		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*
1,2-Dichlorobenzene	µg/L		*< 0.14 U*		*< 0.14 U*		*< 0.14 U*		*< 0.14 U*		*< 0.14 U*		*< 0.14 U*		*< 0.14 U*		*< 0.14 U*		*< 0.14 U*
1,2-Dichloroethane	µg/L		0.29 J		0.36 J		*< 0.22 U*		0.40 J		0.37 J		*< 0.22 U*		*< 0.22 U*		0.41 J		0.53 J
cis-1,2-Dichloroethene	µg/L		*< 0.10 U*		*< 0.10 U*		*< 0.10 U*		*< 0.10 U*		*< 0.10 U*		9.4		0.38 J		0.18 J		*< 0.10 U*
trans-1,2-Dichloroethene	µg/L		*< 0.11 U*		*< 0.11 U*		*< 0.11 U*		*< 0.11 U*		*< 0.11 U*		2.5		*< 0.11 U*		*< 0.11 U*		*< 0.11 U*
1,2-Dichloropropane	µg/L		0.35 J		0.44 J		0.32 J		0.57 J		0.54 J		*< 0.15 U*		*< 0.15 U*		0.40 J		0.61 J
1,3-Dichlorobenzene	µg/L		*< 0.11 U*		*< 0.11 U*		*< 0.11 U*		*< 0.11 U*		*< 0.11 U*		*< 0.11 U*		0.12 J		*< 0.11 U*		*< 0.11 U*
cis-1,3-Dichloropropene	µg/L		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*
trans-1,3-Dichloropropene	µg/L		*< 0.080 U*		*< 0.080 U*		*< 0.080 U*		*< 0.080 U*		*< 0.080 U*		*< 0.080 U*		*< 0.080 U*		*< 0.080 U*		*< 0.080 U*
1,4-Dichlorobenzene	µg/L		*< 0.13 U*		*< 0.13 U*		*< 0.13 U*		*< 0.13 U*		*< 0.13 U*		*< 0.13 U*		0.15 J		*< 0.13 U*		*< 0.13 U*
1,1,1-Trichloroethane	µg/L		*< 0.19 U*		*< 0.19 U*		*< 0.19 U*		0.28 J		*< 0.19 U*		*< 0.19 U*		*< 0.19 U*		*< 0.19 U*		*< 0.19 U*
1,1,2-Trichloroethane	µg/L		*< 0.31 U*		*< 0.31 U*		*< 0.31 U*		*< 0.31 U*		*< 0.31 U*		*< 0.31 U*		*< 0.31 U*		*< 0.31 U*		*< 0.31 U*
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	µg/L		*< 0.25 U*		*< 0.25 U*		*< 0.25 U*		*< 0.25 U*		*< 0.25 U*		*< 0.25 U*		*< 0.25 U*		*< 0.25 U*		*< 0.25 U*
1,2,3-Trichlorobenzene	µg/L		*< 0.14 U*		*< 0.14 U*		*< 0.14 U*		*< 0.14 U*		*< 0.14 U*		*< 0.14 U*		*< 0.14 U*		*< 0.14 U*		*< 0.14 U*
1,2,4-Trichlorobenzene	µg/L		*< 0.10 U*		*< 0.10 U*		*< 0.10 U*		*< 0.10 U*		*< 0.10 U*		*< 0.10 U*		0.66 J		*< 0.10 U*		*< 0.10 U*
1,1,2,2-Tetrachloroethane	µg/L		*< 0.090 U*		*< 0.18 U*		*< 0.27 U*		*< 0.63 U*		*< 0.45 U*		*< 0.090 U*		*< 0.090 U*		*< 0.090 U*		*< 0.45 U*
2-Butanone	µg/L		*< 0.35 U*		22		30		24		22		*< 0.35 U*		*< 0.35 U*		14		26
2-Hexanone	µg/L		*< 0.17 UJ*		1.0 J-		0.71 J		0.94 J		1.1 J		*< 0.17 U*		*< 0.17 U*		2.0		2.0
4-Methyl-2-pentanone	µg/L		1.6 J-		18 J-		12		*< 0.18 U*		35		0.42 J		*< 0.18 U*		2.0		5.9
Acetone	µg/L		*< 2.1 U*		110		110		140		130		*< 2.1 U*		6.4 J		67		100
Benzene	µg/L		0.30 J		0.15 J		*< 0.13 U*		0.15 J		0.13 J		0.51 J		*< 0.13 U*		0.33 J		*< 0.13 U*
Bromochloromethane	µg/L		*< 0.14 U*		15		5.7		2.1		2.8		*< 0.14 U*		*< 0.14 U*		7.7		18
Bromodichloromethane	µg/L		*< 0.14 U*		57		74		120		79		*< 0.14 U*		*< 0.14 U*		*< 0.14 U*		79
Bromoform	µg/L		0.31 J		110		97		180		120		0.25 J		0.34 J		0.29 J		120
Bromomethane	µg/L		*< 0.29 U*		0.84 J		0.56 J		1.9		0.72 J		*< 0.29 U*		*< 0.29 U*		*< 0.29 U*		*< 0.29 U*
Carbon disulfide	µg/L		*< 0.54 U*		88		28		22		53		0.30 J		0.80 J		4.9		71
Carbon tetrachloride	µg/L		*< 0.15 U*		1.7		0.79 J		4.2		1.9		*< 0.15 U*		*< 0.15 U*		*< 0.15 U*		1.3
Chlorobenzene	µg/L		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*
Cyclohexane	µg/L		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*
Dibromochloromethane	µg/L		*< 0.13 U*		95		100		180		120		*< 0.13 U*		*< 0.13 U*		*< 0.13 U*		99
Chloroethane	µg/L		0.37 J		3.0		2.0		6.1		4.2		*< 0.34 U*		*< 0.34 U*		1.2		5.9
Chloroform	µg/L		19		74		83		90		76		0.14 J		4.8		74 J-		100
Chloromethane	µg/L		*< 0.25 UJ*		9.7 J-		6.4 J-		20 J-		11 J-		*< 0.25 UJ*		*< 0.25 U*		0.96 J-		14 J-
Dichlorodifluoromethane (Freon-12)	µg/L		*< 0.16 U*		*< 0.16 U*		*< 0.16 U*		*< 0.16 U*		*< 0.16 U*		*< 0.16 U*		*< 0.16 U*		*< 0.16 U*		*< 0.16 U*
Ethyl benzene	µg/L		*< 0.10 U*		*< 0.10 U*		*< 0.10 U*		*< 0.10 U*		*< 0.10 U*		0.16 J		*< 0.10 U*		*< 0.10 U*		*< 0.10 U*
Isopropylbenzene	µg/L		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*		*< 0.12 U*
Methyl tertbutyl ether (MTBE)	µg/L		*< 0.19 U*		*< 0.19 U*		*< 0.19 U*		*< 0.19 U*		*< 0.19 U*		*< 0.19 U*		*< 0.19 U*		*< 0.19 U*		*< 0.19 U*
Dichloromethane (Methylene chloride)	µg/L		0.41 J		9.9		4.7		3.7		3.7		*< 0.35 U*		*< 0.35 U*		11		13
Styrene	µg/L		*< 0.15 U*		*< 0.15 U*		*< 0.15 U*		*< 0.15 U*		*< 0.15 U*		*< 0.15 U*		*< 0.15 U*		*< 0.15 U*		*< 0.15 U*
Tetrachloroethene	µg/L		0.11 J		0.31 J		0.15 J		0.39 J		0.28 J		*< 0.10 U*		0.50 J		0.47 J		0.59 J
Toluene	µg/L		0.27 J		*< 0.25 U*		*< 0.25 U*		*< 0.25 U*		*< 0.25 U*		0.28 J		*< 0.25 U*		0.28 J		*< 0.25 U*
Trichloroethene	µg/L		0.30 J		0.29 J		0.45 J		0.27 J		0.38 J		21		0.53 J		0.86 J		0.38 J
Trichlorofluoromethane (Freon-11)	µg/L		*< 0.23 U*		*< 0.23 U*		*< 0.23 U*		*< 0.23 U*		*< 0.23 U*		*< 0.23 U*		*< 0.23 U*		*< 0.23 U*		*< 0.23 U*
Vinyl chloride	µg/L		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*
o-Xylene	µg/L		0.13 J		*< 0.10 U*		*< 0.10 U*		*< 0.10 U*		*< 0.10 U*		0.54 J		*< 0.10 U*		0.14 J		*< 0.10 U*
m,p Xylenes	µg/L		0.30 J		*< 0.18 U*		*< 0.18 U*		*< 0.18 U*		*< 0.18 U*		*< 0.18 U*		*< 0.18 U*		0.28 J		*< 0.18 U*
09-General Water Quality Parameters																			
Total Dissolved Solids	mg/L		56,000		190,000		64,000		53,000		58,000		100,000		54,000		63,000		51,000
Bromide	mg/L		*< 8.8 U*		*< 8.8 U*		*< 18 UJ*		*< 8.8 UJ*		*< 8.8 UJ*		71 J-		*< 8.8 UJ*		*< 18 UJ*		*< 8.8 UJ*
Chloride	mg/L		28,000		26,000		32,000		26,000		29,000		65,000		27,000		32,000		25,000
Chlorine, Field	mg/L		0		0.10		0.03		0.01		0		0.11		0		0		0
Total Cyanide	mg/L		**0.023**		**0.0095 J**		**0.030 J-**		**0.040 J-**		**0.047 J-**		*< 0.0050 UJ*		**0.012 J-**		**0.0057 J-**		**0.026 J-**
Dissolved Cyanide	mg/L	*< 0.0050 U*		**0.0053 J**		**0.015**		**0.018 J**		**0.035**		**0.056**		*< 0.0050 U*		**0.014**		*< 0.0050 U*	
Fluoride	mg/L		16		15		16		9.7		20		2.8 J		6.7		17		13
Nitrate as N	mg/L		*< 0.22 U*		*< 0.22 U*		*< 0.22 U*		1.7 J+		0.36 J+		*< 0.44 U*		0.50 J+		*< 0.22 U*		*< 0.22 U*

Table I-11
Analytical Results for Water Samples -
PRI-17 Site-Wide Groundwater
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

Location ID		PZ-8	MW-7	MW-7	MW-5A	MW-5A	MW-6	MW-6	PZ-24	PZ-24	MW-18	MW-18	PZ-4	PZ-4	MW-19A	MW-19A
Sample Date		05-Feb-14	06-Feb-14	06-Feb-14	07-Feb-14	07-Feb-14	07-Feb-14	07-Feb-14	07-Feb-14	07-Feb-14	13-Feb-14	13-Feb-14	13-Feb-14	13-Feb-14	14-Feb-14	14-Feb-14
Sample Type		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sample ID		PZ-08-01-020514-FF	MW-7-01-020614	MW-7-01-020614-FF	MW-5A-01-02071	MW-5A-01-020714-FI	MW-6-01-020714	MW-6-01-020714-FF	PZ-24-01-020714	PZ-24-01-020714-FF	MW-18-01-021314	MW-18-01-021314-FF	PZ-04-01-021314	PZ-04-01-021314-FF	MW-19A-01-021414	MW-19A-01-021414-FF
Analyte	**Unit**															
Acenaphthene	ng/l		64		< 29 U		89 J		< 30 U		< 3.0 U		< 2.8 U		< 2.7 U	
Acenaphthylene	ng/l		25 J		< 28 U		< 30 U		< 30 U		< 2.9 U		< 2.7 U		< 2.6 U	
Anthracene	ng/l		29 J		< 40 U		< 43 U		< 43 U		< 4.2 U		< 3.9 U		< 3.8 U	
Benzo(a)anthracene	ng/l		< 4.3 U		< 42 U		< 44 U		< 44 U		< 4.3 U		< 4.0 U		< 4.0 U	
Benzo(a)pyrene	ng/l		< 4.1 U		< 40 U		< 42 U		< 42 U		< 4.1 U		< 3.9 U		< 3.8 U	
Benzo(b)fluoranthene	ng/l		< 11 U		< 110 U		< 120 U		< 120 U		< 12 U		< 11 U		< 11 U	
Benzo(g,h,i)perylene	ng/l		< 5.1 U		< 50 U		< 53 U		< 53 U		< 5.2 U		< 4.8 U		< 4.7 U	
Benzo(k)fluoranthene	ng/l		< 7.2 U		< 71 U		< 75 U		< 75 U		< 7.3 U		< 6.8 U		< 6.7 U	
Chrysene	ng/l		< 3.7 U		< 36 U		< 39 U		< 38 U		< 3.7 U		< 3.5 U		< 3.4 U	
Dibenzo(a,h)anthracene	ng/l		< 13 U		< 130 U		< 140 U		< 140 U		< 14 U		< 13 U		< 12 U	
Fluoranthene	ng/l		< 4.0 U		< 39 U		< 41 U		< 41 U		< 4.0 U		< 3.8 U		4.0 J	
Fluorene	ng/l		180		< 37 U		400 J		< 39 U		< 3.8 U		< 3.5 U		< 3.5 U	
Indeno(1,2,3-cd)pyrene	ng/l		< 13 U		< 130 U		< 140 U		< 140 U		< 13 U		< 12 U		< 12 U	
Naphthalene	ng/l		20,000		7,000		730		1,300		< 3.8 U		< 3.2 U		< 7.2 U	
Phenanthrene	ng/l		69		< 57 U		130 J		< 61 U		< 5.9 U		< 5.5 U		< 5.4 U	
Pyrene	ng/l		< 3.9 U		< 38 U		< 41 U		< 40 U		< 3.9 U		< 3.7 U		3.8 J	
07-VOCs																
1,4-Dioxane	µg/L		< 25 UJ		< 25 UJ		< 25 UJ		< 25 UJ		< 25 UJ		< 25 UJ		< 25 UJ	
1,1-Dichloroethane	µg/L		0.39 J		13		1.0		7.2		< 0.10 U		0.18 J		2.0	
1,1-Dichloroethene	µg/L		0.28 J		0.26 J		< 0.14 U		8.2		< 0.14 U		0.31 J		0.36 J	
1,2-Dibromo-3-chloropropane	µg/L		< 0.32 UJ		< 0.32 UJ		< 0.32 UJ		< 0.32 UJ		< 0.32 U		< 0.32 U		< 0.32 U	
1,2-Dibromoethane	µg/L		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U	
1,2-Dichlorobenzene	µg/L		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U	
1,2-Dichloroethane	µg/L		< 0.22 U		< 0.22 U		< 0.22 U		0.27 J		< 0.22 U		< 0.22 U		< 0.22 U	
cis-1,2-Dichloroethene	µg/L		18		4.0		7.5		16		1.7		0.29 J		4.1	
trans-1,2-Dichloroethene	µg/L		7.2		0.54 J		1.5		3.3		< 0.11 U		< 0.11 U		0.65 J	
1,2-Dichloropropane	µg/L		< 0.15 U		< 0.15 U		< 0.15 U		0.23 J		< 0.15 U		< 0.15 U		< 0.15 U	
1,3-Dichlorobenzene	µg/L		< 0.11 U		< 0.11 U		< 0.11 U		< 0.11 U		0.28 J		< 0.11 U		< 0.11 U	
cis-1,3-Dichloropropene	µg/L		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U	
trans-1,3-Dichloropropene	µg/L		< 0.080 U		< 0.080 U		< 0.080 U		< 0.080 U		< 0.080 U		< 0.080 U		< 0.080 U	
1,4-Dichlorobenzene	µg/L		< 0.13 U		< 0.13 U		< 0.13 U		< 0.13 U		< 0.13 U		< 0.13 U		< 0.13 U	
1,1,1-Trichloroethane	µg/L		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U	
1,1,2-Trichloroethane	µg/L		< 0.31 U		< 0.31 U		< 0.31 U		< 0.31 U		< 0.31 U		< 0.31 U		< 0.31 U	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	µg/L		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U	
1,2,3-Trichlorobenzene	µg/L		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U	
1,2,4-Trichlorobenzene	µg/L		0.28 J		4.4		< 0.10 U		< 0.10 U		1.0		< 0.10 U		< 0.10 U	
1,1,2,2-Tetrachloroethane	µg/L		< 0.090 U		< 0.090 U		< 0.090 U		< 0.090 U		< 0.090 U		< 0.090 U		< 0.090 U	
2-Butanone	µg/L		< 0.35 U		< 0.35 U		< 0.35 U		4.0		< 0.35 U		< 0.35 U		< 0.35 U	
2-Hexanone	µg/L		< 0.17 U		< 0.17 U		< 0.17 U		0.71 J		< 0.17 U		< 0.17 U		< 0.17 U	
4-Methyl-2-pentanone	µg/L		3.2		1.7 J		2.0		2.3		< 0.18 U		< 0.18 U		1.3 J	
Acetone	µg/L		< 2.1 U		< 2.1 U		< 2.1 U		20		< 2.1 U		< 2.1 U		23	
Benzene	µg/L		0.48 J		0.40 J		0.61 J		0.43 J		< 0.13 U		< 0.13 U		< 0.13 U	
Bromochloromethane	µg/L		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U	
Bromodichloromethane	µg/L		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		9.9		< 0.14 U	
Bromoform	µg/L		< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 U		16		< 0.10 U	
Bromomethane	µg/L		< 0.29 U		< 0.29 U		< 0.29 U		< 0.29 U		< 0.29 U		< 0.29 U		< 0.29 U	
Carbon disulfide	µg/L		4.3		< 1.3 U		< 1.9 U		< 0.97 U		< 0.26 U		< 0.32 U		< 0.24 U	
Carbon tetrachloride	µg/L		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U	
Chlorobenzene	µg/L		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U	
Cyclohexane	µg/L		< 0.12 U		< 0.12 U		0.13 J		0.50 J		< 0.12 U		< 0.12 U		< 0.12 U	
Dibromochloromethane	µg/L		< 0.13 U		< 0.13 U		< 0.13 U		< 0.13 U		< 0.13 U		17		< 0.13 U	
Chloroethane	µg/L		< 0.34 U		< 0.34 U		< 0.34 U		0.54 J		< 0.34 U		< 0.34 U		< 0.34 U	
Chloroform	µg/L		< 0.12 U		2.5		< 0.12 U		23		0.33 J		5.5		1.4	
Chloromethane	µg/L		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U		0.85 J		< 0.25 U	
Dichlorodifluoromethane (Freon-12)	µg/L		< 0.16 U		< 0.16 U		< 0.16 U		< 0.16 U		< 0.16 U		< 0.16 U		< 0.16 U	
Ethyl benzene	µg/L		6.3		1.5		4.9		1.4		< 0.10 U		< 0.10 U		< 0.10 U	
Isopropylbenzene	µg/L		2.0		0.88 J		1.5		0.15 J		< 0.12 U		< 0.12 U		< 0.12 U	
Methyl tertbutyl ether (MTBE)	µg/L		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U	
Dichloromethane (Methylene chloride)	µg/L		< 0.35 U		< 0.35 U		< 0.35 U		< 0.35 U		< 0.35 U		< 0.35 U		< 0.35 U	
Styrene	µg/L		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U	
Tetrachloroethene	µg/L		< 0.10 U		< 0.10 U		< 0.10 U		0.66 J		0.69 J		1.2		0.27 J	
Toluene	µg/L		4.5		0.80 J		1.4		0.66 J		< 0.25 U		< 0.25 U		< 0.25 U	
Trichloroethene	µg/L		4.0		1.2		< 0.13 U		26		0.42 J		0.88 J		8.8	
Trichlorofluoromethane (Freon-11)	µg/L		< 0.23 U		< 0.23 U		< 0.23 U		< 0.23 U		< 0.23 U		< 0.23 U		< 0.23 U	
Vinyl chloride	µg/L		1.0		1.4		13		0.27 J		< 0.22 U		< 0.22 U		< 0.22 U	
o-Xylene	µg/L		6.7		2.2		0.65 J		2.5		< 0.10 U		< 0.10 U		< 0.10 U	
m,p Xylenes	µg/L		9.6		3.6		4.5		2.2		< 0.18 U		< 0.18 U		< 0.18 U	
09-General Water Quality Parameters																
Total Dissolved Solids	mg/L		39,000		78,000		29,000		77,000		22,000		130,000		130,000	
Bromide	mg/L		< 8.8 UJ		< 18 UJ		< 8.8 UJ		28 J-		22 J		84 J		340	
Chloride	mg/L		20,000		41,000		15,000		45,000		12,000		74,000		88,000	
Chlorine, Field	mg/L		0		0		0		0		0.07		0.06		0.08	
Total Cyanide	mg/L		**0.035 J-**		< 0.0050 UJ		< 0.0050 UJ		**0.0066 J-**		< 0.0050 UJ		**0.0055 J-**		< 0.0050 UJ	
Dissolved Cyanide	mg/L	**0.029**		**0.097 J-**		< 0.0050 UJ		< 0.0050 UJ		**0.0093 J-**		< 0.0050 UJ		**0.0057 J-**		< 0.0050 UJ
Fluoride	mg/L		11		12		5.1		13		4.7		2.9 J		4.5 J	
Nitrate as N	mg/L		< 0.22 U		< 0.44 U		< 0.11 U		< 0.44 U		1.7 J+		1.5 J+		1.0 J+	

Table I-11
Analytical Results for Water Samples -
PRI-17 Site-Wide Groundwater
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Analyte	Location ID / Sample Date / Sample Type / Sample ID / Unit	MW-19B / 14-Feb-14 / N / MW-19B-01-021414	MW-19B / 14-Feb-14 / N / MW-19B-01-021414-FF	LF-01 / 17-Feb-14 / N / LF-01-01-021714	LF-01 / 17-Feb-14 / N / LF-01-01-021714-FF	LF-03 / 17-Feb-14 / N / LF-03-01-021714	LF-03 / 17-Feb-14 / N / LF-03-01-021714-FF	MW-8A / 18-Feb-14 / N / MW-8A-01-021814	MW-8A / 18-Feb-14 / N / MW-8A-01-021814-FF	MW-8B / 18-Feb-14 / N / MW-8B-01-021814	MW-8B / 18-Feb-14 / N / MW-8B-01-021814-FF
Acenaphthene	ng/l	< 2.9 U		9.3 J		< 29 U		< 29 U		< 3.1 U	
Acenaphthylene	ng/l	< 2.8 U		< 2.9 U		< 28 U		< 28 U		< 3.0 U	
Anthracene	ng/l	< 4.0 U		< 4.1 U		< 40 U		< 41 U		< 4.4 U	
Benzo(a)anthracene	ng/l	< 4.2 U		< 4.3 U		< 41 U		< 42 U		< 4.5 U	
Benzo(a)pyrene	ng/l	< 4.0 U		< 4.1 U		< 40 U		< 40 U		< 4.3 U	
Benzo(b)fluoranthene	ng/l	< 11 U		< 12 U		< 110 U		< 110 U		< 12 U	
Benzo(g,h,i)perylene	ng/l	< 5.0 U		< 5.1 U		< 50 U		< 50 U		< 5.4 U	
Benzo(k)fluoranthene	ng/l	< 7.0 U		< 7.3 U		< 70 U		< 71 U		< 7.7 U	
Chrysene	ng/l	< 3.6 U		< 3.7 U		< 36 U		< 37 U		< 4.0 U	
Dibenzo(a,h)anthracene	ng/l	< 13 U		< 14 U		< 130 U		< 130 U		< 14 U	
Fluoranthene	ng/l	< 3.9 U		< 4.0 U		< 39 U		< 39 U		< 4.2 U	
Fluorene	ng/l	< 3.7 U		< 3.8 U		54 J		83 J		< 4.0 U	
Indeno(1,2,3-cd)pyrene	ng/l	< 13 U		< 13 U		< 130 U		< 130 U		< 14 U	
Naphthalene	ng/l	< 5.9 U		180		11,000		13,000		< 3.7 U	
Phenanthrene	ng/l	< 5.7 U		< 5.9 U		< 57 U		< 58 U		< 6.2 U	
Pyrene	ng/l	< 3.8 U		< 3.9 U		< 38 U		< 38 U		< 4.2 U	
07-VOCs											
1,4-Dioxane	µg/L	< 25 UJ		< 25 UJ		< 25 UJ		< 25 UJ		< 25 UJ	
1,1-Dichloroethane	µg/L	< 0.10 U		< 0.10 U		2.6		1.9		1.5	
1,1-Dichloroethene	µg/L	< 0.14 U		< 0.14 U		1.6		1.4		< 0.14 U	
1,2-Dibromo-3-chloropropane	µg/L	< 0.32 U		< 0.32 U		< 0.32 U		< 0.32 U		< 0.32 U	
1,2-Dibromoethane	µg/L	< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U	
1,2-Dichlorobenzene	µg/L	< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U	
1,2-Dichloroethane	µg/L	< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 U	
cis-1,2-Dichloroethene	µg/L	< 0.10 U		7.5		15		29		1.4	
trans-1,2-Dichloroethene	µg/L	< 0.11 U		0.81 J		2.9		5.0		< 0.11 U	
1,2-Dichloropropane	µg/L	< 0.15 U		< 0.15 U		< 0.15 U		0.22 J		< 0.15 U	
1,3-Dichlorobenzene	µg/L	< 0.11 U		< 0.11 U		< 0.11 U		< 0.11 U		< 0.11 U	
cis-1,3-Dichloropropene	µg/L	< 0.22 U		< 0.22 U		< 0.22 U		< 0.22 UJ		< 0.22 UJ	
trans-1,3-Dichloropropene	µg/L	< 0.080 U		< 0.080 U		< 0.080 U		< 0.080 UJ		< 0.080 UJ	
1,4-Dichlorobenzene	µg/L	< 0.13 U		< 0.13 U		< 0.13 U		< 0.13 U		< 0.13 U	
1,1,1-Trichloroethane	µg/L	< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U	
1,1,2-Trichloroethane	µg/L	< 0.31 U		< 0.31 U		< 0.31 U		< 0.31 U		< 0.31 U	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	µg/L	< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U	
1,2,3-Trichlorobenzene	µg/L	< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U	
1,2,4-Trichlorobenzene	µg/L	< 0.10 U		< 0.10 U		0.55 J		0.45 J		< 0.10 U	
1,1,2,2-Tetrachloroethane	µg/L	< 0.090 U		< 0.090 U		< 0.090 U		< 0.090 U		< 0.090 U	
2-Butanone	µg/L	< 0.35 U		< 0.35 U		< 0.35 U		1.2 J		< 0.35 U	
2-Hexanone	µg/L	< 0.17 U		< 0.17 U		< 0.17 U		0.64 J		< 0.17 U	
4-Methyl-2-pentanone	µg/L	< 0.18 U		0.26 J		2.4		4.7		6.5	
Acetone	µg/L	< 2.1 U		< 2.1 U		2.7 J		7.9 J		2.4 J	
Benzene	µg/L	0.60 J		< 0.13 U		0.26 J		0.75 J		0.23 J	
Bromochloromethane	µg/L	< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U	
Bromodichloromethane	µg/L	< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U		< 0.14 U	
Bromoform	µg/L	< 0.10 U		< 0.10 U		< 0.10 U		< 0.10 UJ		< 0.10 UJ	
Bromomethane	µg/L	< 0.29 U		< 0.29 U		< 0.29 U		< 0.29 U		< 0.29 U	
Carbon disulfide	µg/L	< 0.54 U		< 0.19 U		< 0.22 U		< 0.33 U		< 0.59 U	
Carbon tetrachloride	µg/L	< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U	
Chlorobenzene	µg/L	< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U		< 0.12 U	
Cyclohexane	µg/L	< 0.12 U		< 0.12 U		2.4		1.6 J		< 0.12 U	
Dibromochloromethane	µg/L	< 0.13 U		< 0.13 U		< 0.13 U		< 0.13 U		< 0.13 U	
Chloroethane	µg/L	< 0.34 U		< 0.34 U		< 0.34 U		0.75 J		< 0.34 U	
Chloroform	µg/L	< 0.12 U		< 0.12 U		2.0		24		< 0.12 U	
Chloromethane	µg/L	< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 U		< 0.25 UJ	
Dichlorodifluoromethane (Freon-12)	µg/L	< 0.16 U		< 0.16 U		< 0.16 U		< 0.16 U		< 0.16 U	
Ethyl benzene	µg/L	< 0.10 U		0.54 J		1.9		9.3		< 0.10 U	
Isopropylbenzene	µg/L	< 0.12 U		0.84 J		0.94 J		0.80 J		< 0.12 U	
Methyl tertbutyl ether (MTBE)	µg/L	< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U		< 0.19 U	
Dichloromethane (Methylene chloride)	µg/L	< 0.35 U		< 0.35 U		< 0.35 U		0.82 J		< 0.35 U	
Styrene	µg/L	< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U		< 0.15 U	
Tetrachloroethene	µg/L	< 0.10 U		< 0.10 U		< 0.10 U		0.46 J		< 0.10 U	
Toluene	µg/L	< 0.25 U		0.78 J		0.69 J		2.4		< 0.25 U	
Trichloroethene	µg/L	< 0.13 U		3.5		14		32 J		0.33 J	
Trichlorofluoromethane (Freon-11)	µg/L	< 0.23 U		< 0.23 U		< 0.23 U		< 0.23 U		< 0.23 U	
Vinyl chloride	µg/L	< 0.22 U		0.80 J		0.29 J		0.39 J		< 0.22 U	
o-Xylene	µg/L	< 0.10 U		0.19 J		2.1		18		< 0.10 U	
m,p Xylenes	µg/L	< 0.18 U		1.4		2.3		22		< 0.18 U	
09-General Water Quality Parameters											
Total Dissolved Solids	mg/L	72,000		33,000		77,000		57,000		77,000	
Bromide	mg/L	40 J		76		100		70		150	
Chloride	mg/L	38,000		20,000		46,000		31,000		47,000	
Chlorine, Field	mg/L	0.02		0		0		0		0	
Total Cyanide	mg/L	< 0.025 UJ		< 0.0050 UJ		< 0.0050 UJ		< 0.0050 U		< 0.0050 UJ	
Dissolved Cyanide	mg/L		< 0.025 UJ		< 0.0050 UJ		< 0.0050 UJ		**0.0091 J-**		< 0.0050 UJ
Fluoride	mg/L	0.77 J		2.2 J		5.9 J		16		< 1.2 U	
Nitrate as N	mg/L	< 0.22 U		< 0.22 U		< 0.44 U		< 0.22 UJ		< 0.44 UJ	

Table I-11
Analytical Results for Water Samples -
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Analyte	Location ID	MW-20A	MW-20A	MW-20B	MW-20B	PZ-6	PZ-6	PZ-16	PZ-16	PZ-18	PZ-18	PZ-22	PZ-22	MW-13A	MW-13A	MW-13B	MW-13B	PZ-1
	Sample Date	31-Jan-14	31-Jan-14	31-Jan-14	31-Jan-14	31-Jan-14	31-Jan-14	03-Feb-14	03-Feb-14	03-Feb-14	03-Feb-14	03-Feb-14	03-Feb-14	04-Feb-14	04-Feb-14	04-Feb-14	04-Feb-14	04-Feb-14
	Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Sample ID	MW-20A-01-013114	MW-20A-01-013114-FF	MW-20B-01-013114	MW-20B-01-013114-FF	PZ-06-01-013114	PZ-06-01-013114-FF	PZ-16-01-020314	PZ-16-01-020314-FF	PZ-18-01-020314	PZ-18-01-020314-FF	PZ-22-01-020314	PZ-22-01-020314-FF	MW-13A-01-020414	MW-13A-01-020414-FF	MW-13B-01-020414	MW-13B-01-020414-FF	PZ-01-01-020414
Analyte	**Unit**																	
Nitrite as N	mg/L	*< 0.32 U*		*< 0.80 U*		*< 0.32 U*		*< 0.16 UJ*		*< 0.32 UJ*		*< 0.40 UJ*		*< 0.16 UJ*		*< 0.16 UJ*		*< 0.80 UJ*
Sulfate	mg/L	2,000		460 J		1,400		1,800		8,500		26,000		1,200		1,900		11,000
Perchlorate	µg/L	*< 0.082 U*		*< 0.082 U*		*< 0.082 UJ*		*< 0.082 U*		*< 0.082 U*		*< 0.082 UJ*		1.1		0.49 J		*< 0.82 UJ*
Monochloroacetic Acid	µg/L	*< 4.0 U*		*< 4.0 U*		*< 4.0 U*		*< 4.0 U*		13		*< 4.0 U*		360		300		19
Monobromoacetic acid	µg/L	*< 7.5 U*		*< 7.5 U*		*< 7.5 U*		*< 7.5 U*		*< 7.5 U*		*< 7.5 U*		13 J		7.7 J		*< 7.5 U*
Dichloroacetic Acid	µg/L	9.9 J		21		*< 9.8 U*		*< 9.8 U*		14		*< 9.8 U*		1,500		980		21
Dibromoacetic acid	µg/L	*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		1,100		330		*< 3.8 U*
Trichloroacetic acid	µg/L	*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		13		18		*< 3.8 U*		1,300		420		*< 3.8 U*
Total Organic Carbon	mg/L	65		80		37		23 J		23		66		49		47		190
Total Alkalinity	mg/L	290		64		180		410		350		600		870		760		680
Orthophosphate as P	mg/L	*< 1.5 U*		*< 3.9 U*		*< 1.5 U*		*< 0.77 U*		*< 1.5 U*		*< 1.9 U*		*< 0.77 U*		*< 0.77 U*		*< 3.9 U*
pH, Field	pH units	6.22		5.30		7.42		6.61		7.78		7.24		5.73		5.87		6.32
10-Water Field Parameters																		
Specific Conductivity, Field	mS/cm	73.8		414		83.2		74.4		150.0		253		58.9		69.5		358
Dissolved Oxygen (DO), Field	mg/L	0		0.36		0		0		1.15		0		0		0.01		3.75
Turbidity, Field	NTU	7.1		121		0.3		0.2		10.9		0		9.8		206		0
Temperature, Field	deg C	18.24		14.88		11.12		12.09		14.08		12.59		4.60		10.22		13.59
Oxidation-Reduction Potential, Field	mV	-117		69		-238		-97		-371		-245		97		26		14

Table I-11
Analytical Results for Water Samples -
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US Magnesium RI/FS
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	Location ID	**PZ-1**	**PZ-10**	**PZ-10**	**PZ-12**	**PZ-12**	**MW-14**	**MW-14**	**MW-15A**	**MW-15A**	**MW-15B**	**MW-15B**	**MW-17**	**MW-17**	**MW-4A**	**MW-4A**	**PZ-26**	**PZ-26**	**PZ-8**
	Sample Date	**04-Feb-14**	**04-Feb-14**	**04-Feb-14**	**04-Feb-14**	**04-Feb-14**	**05-Feb-14**	**05-Feb-14**	**05-Feb-14**	**05-Feb-14**	**05-Feb-14**	**05-Feb-14**	**05-Feb-14**	**05-Feb-14**	**05-Feb-14**	**05-Feb-14**	**05-Feb-14**	**05-Feb-14**	**05-Feb-14**
	Sample Type	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**
	Sample ID	**PZ-01-01-020414-FF**	**PZ-10-01-020414**	**PZ-10-01-020414-FF**	**PZ-12-01-020414**	**PZ-12-01-020414-FF**	**MW-14-01-020514**	**MW-14-01-020514-FF**	**MW-15A-01-02051**	**MW-15A-01-020514-F**	**MW-15B-01-020514**	**MW-15B-01-020514-FF**	**MW-17-01-020514**	**MW-17-01-020514-FF**	**MW-4A-01-020514**	**MW-4A-01-020514-FF**	**PZ-26-01-020514**	**PZ-26-01-020514-FF**	**PZ-08-01-020514**
Analyte	**Unit**																		
Nitrite as N	mg/L		*< 0.16 UJ*		*< 0.16 UJ*		*< 0.16 UJ*		*< 0.16 UJ*		*< 0.16 UJ*		*< 0.32 UJ*		*< 0.16 UJ*		*< 0.16 UJ*		*< 0.16 UJ*
Sulfate	mg/L		1,500		1,300		1,200		1,400		1,300		9,100		890		1,400		1,300
Perchlorate	µg/L		*< 0.082 U*		0.42 J		0.48 J		1.1		0.61		*< 0.082 UJ*		0.11 J		*< 0.082 U*		0.55
Monochloroacetic Acid	µg/L		*< 4.0 U*		170		220		290		220		*< 4.0 U*		*< 4.0 U*		*< 4.0 U*		170
Monobromoacetic acid	µg/L		*< 7.5 U*		7.7 J		9.2 J		20		14 J		*< 7.5 U*		*< 7.5 U*		*< 7.5 U*		9.2 J
Dichloroacetic Acid	µg/L		*< 9.8 U*		470		730		1,400		990		*< 9.8 U*		*< 9.8 U*		*< 9.8 U*		500
Dibromoacetic acid	µg/L		*< 3.8 U*		230		400		900		560		*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		200
Trichloroacetic acid	µg/L		*< 3.8 U*		540		570		960		590		*< 3.8 U*		*< 3.8 U*		23		410
Total Organic Carbon	mg/L		32		46		54		43		45		40		14		48		47
Total Alkalinity	mg/L		790		800		850		1,100		830		460		480		810		1,000
Orthophosphate as P	mg/L		*< 0.77 U*		*< 0.77 U*		*< 0.77 UJ*		*< 0.77 UJ*		*< 0.77 UJ*		*< 1.5 UJ*		*< 0.77 UJ*		*< 0.77 UJ*		*< 0.77 UJ*
pH, Field	pH units		6.24		5.91		5.34		5.5		5.34		6.41		6.02		5.73		5.74
10-Water Field Parameters																			
Specific Conductivity, Field	mS/cm		52.2		48.3		61.7		51.1		56.0		156		51.0		55.3		44.4
Dissolved Oxygen (DO), Field	mg/L		0		0		0		0		0		0		0		0		0
Turbidity, Field	NTU		0		0		2.6		96.7		130		0		2.5		4.5		0
Temperature, Field	deg C		13.62		12.85		11.35		5.76		9.21		12.79		14.10		13.11		12.09
Oxidation-Reduction Potential, Field	mV		-125		-58		-8		77		-12		-253		-24		-50		-25

Table I-11
Analytical Results for Water Samples -
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	Location ID	PZ-8	MW-7	MW-7	MW-5A	MW-5A	MW-6	MW-6	PZ-24	PZ-24	MW-18	MW-18	PZ-4	PZ-4	MW-19A	MW-19A
	Sample Date	**05-Feb-14**	**06-Feb-14**	**06-Feb-14**	**07-Feb-14**	**07-Feb-14**	**07-Feb-14**	**07-Feb-14**	**07-Feb-14**	**07-Feb-14**	**13-Feb-14**	**13-Feb-14**	**13-Feb-14**	**13-Feb-14**	**14-Feb-14**	**14-Feb-14**
	Sample Type	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**
	Sample ID	**PZ-08-01-020514-FF**	**MW-7-01-020614**	**MW-7-01-020614-FF**	**MW-5A-01-02071**	**MW-5A-01-020714-FI**	**MW-6-01-020714**	**MW-6-01-020714-FF**	**PZ-24-01-020714**	**PZ-24-01-020714-FF**	**MW-18-01-021314**	**MW-18-01-021314-FF**	**PZ-04-01-021314**	**PZ-04-01-021314-FF**	**MW-19A-01-021414**	**MW-19A-01-021414-FF**
Analyte	**Unit**															
Nitrite as N	mg/L		*< 0.16 UJ*		*< 0.32 UJ*		*< 0.080 UJ*		*< 0.32 UJ*		*< 0.080 UJ*		*< 0.32 UJ*		*< 0.40 UJ*	
Sulfate	mg/L		790		1,900		670		2,700		680		950		10,000	
Perchlorate	µg/L		*< 0.082 U*		*< 0.082 U*		*< 0.082 U*		*< 0.082 UJ*		0.65		0.57 J		0.12 J	
Monochloroacetic Acid	µg/L		*< 4.0 U*		*< 4.0 U*		*< 4.0 U*		*< 4.0 U*		*< 4.0 U*		*< 4.0 U*		*< 4.0 U*	
Monobromoacetic acid	µg/L		*< 7.5 U*		*< 7.5 U*		*< 7.5 U*		*< 7.5 U*		*< 7.5 U*		*< 7.5 U*		*< 7.5 U*	
Dichloroacetic Acid	µg/L		*< 9.8 U*		*< 9.8 U*		*< 9.8 U*		*< 9.8 U*		*< 9.8 U*		*< 9.8 U*		*< 9.8 U*	
Dibromoacetic acid	µg/L		*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		*< 3.8 U*	
Trichloroacetic acid	µg/L		*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		130		*< 3.8 U*	
Total Organic Carbon	mg/L		41		32		28		45		3.5		7.9		52	
Total Alkalinity	mg/L		1,100		220		850		570		330		71		470	
Orthophosphate as P	mg/L		*< 0.77 U*		*< 1.5 U*		*< 0.39 U*		*< 1.5 U*		*< 0.39 U*		*< 1.5 U*		*< 1.9 U*	
pH, Field	pH units		5.31		6.95		7.16		6.40		7.40		7.20		7.07	
10-Water Field Parameters																
Specific Conductivity, Field	mS/cm		145		82.0		36.1		87.3		28.8		164		171	
Dissolved Oxygen (DO), Field	mg/L		0.26		0		0		0		0		3.32		0	
Turbidity, Field	NTU		0		9.8		0		9.4		8.0		0		0	
Temperature, Field	deg C		15.69		15.12		15.17		12.29		17.03		17.98		13.01	
Oxidation-Reduction Potential, Field	mV		-387		-171		-217		-64		103		184		-250	

Table I-11
Analytical Results for Water Samples -
PRI-17 Site-Wide Groundwater
Phase 1A Data Report for PRI Areas 2 and 8-17
US Magnesium RI/FS
Rowley, Utah

Analyte	Location ID	MW-19B	MW-19B	LF-01	LF-01	LF-03	LF-03	MW-8A	MW-8A	MW-8B	MW-8B
	Sample Date	14-Feb-14	14-Feb-14	17-Feb-14	17-Feb-14	17-Feb-14	17-Feb-14	18-Feb-14	18-Feb-14	18-Feb-14	18-Feb-14
	Sample Type	N	N	N	N	N	N	N	N	N	N
	Sample ID	MW-19B-01-021414	MW-19B-01-021414-FF	LF-01-01-021714	LF-01-01-021714-FF	LF-03-01-021714	LF-03-01-021714-FF	MW-8A-01-021814	MW-8A-01-021814-FF	MW-8B-01-021814	MW-8B-01-021814-FF
	Unit										
Nitrite as N	mg/L	*< 0.16 UJ*		*< 0.16 UJ*		*< 0.32 UJ*		*< 0.16 UJ*		*< 0.32 UJ*	
Sulfate	mg/L	5,600		2,900		2,800		1,700		5,100	
Perchlorate	µg/L	*< 0.082 U*		*< 0.082 U*		*< 0.082 UJ*		*< 0.082 UJ*		*< 0.082 U*	
Monochloroacetic Acid	µg/L	*< 4.0 U*		*< 4.0 U*		*< 4.0 U*		*< 4.0 U*		*< 4.0 U*	
Monobromoacetic acid	µg/L	*< 7.5 U*		*< 7.5 U*		*< 7.5 U*		*< 7.5 U*		*< 7.5 U*	
Dichloroacetic Acid	µg/L	*< 9.8 U*		*< 9.8 U*		*< 9.8 U*		*< 9.8 U*		*< 9.8 U*	
Dibromoacetic acid	µg/L	*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		*< 3.8 U*	
Trichloroacetic acid	µg/L	*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		*< 3.8 U*		*< 3.8 U*	
Total Organic Carbon	mg/L	23		32		38		51		31	
Total Alkalinity	mg/L	410		490		450		450		240	
Orthophosphate as P	mg/L	*< 0.77 U*		*< 0.77 U*		*< 1.5 U*		*< 0.77 R*		*< 1.5 UJ*	
pH, Field	pH units	8.21		7.17		6.89		6.51		7.39	
10-Water Field Parameters											
Specific Conductivity, Field	mS/cm	83.3		44.0		84.5		67.5		94.4	
Dissolved Oxygen (DO), Field	mg/L	0		0		0		0		2.95	
Turbidity, Field	NTU	0		5.1		7.6		0		0	
Temperature, Field	deg C	15.89		14.48		14.52		16.12		17.43	
Oxidation-Reduction Potential, Field	mV	-409		-97		-121		-124		-364	

Notes:
< = Compound not detected. Reportable detection limit shown
µg/L = µg/L
µg/L = micrograms per liter
deg C = degrees Celsius
Empty cells = Not analyzed
HpCDD = Heptachlorodibenzo-p-dioxin
HpCDF = Heptachlorodibenzofuran
HxCDD = Hexachlorodibenzo-p-dioxin
HxCDF = Hexachlorodienzofuran
mg/L = milligrams per liter
mS/cm = milliSiemens per centimeter
mV = millivolts
N = Normal Environmental Sample
ng/l = nanogram per liter
NTU = nephelometric turbidity units
OCDD = Octachlorodibenzo-p-dioxin
OCDF = Octachlorodienzofuran
PAH = Polycyclic aromatic hydrocarbon
PCB = Polychlorinated biphenyl
PeCDD = Pentachlorodibenzo-p-dioxin
PeCDF = Pentachlorodienzofuran
pg/l = picogram per liter
pH units = pH units
SIM = Selected ion monitoring
SVOC = Semi-volatile organic compound
TCDD = Tetrachlorodibenzodioxin
TCDF = Tetrachlorodienzofuran
TEQ = Toxicity equivalence
VOC = Volatile organic compound

Qualifiers - Organic:
J = The analyte was positively identified; associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity, biased high. The associated numerical value is the approximate concentration of the analyte in the sample.
J- = The result is an estimated quantity, biased low. The associated numerical value is the approximate concentration of the analyte in the sample.
U = Compound was analyzed for, but not detected. The associated numerical value is the reporting limit.
UJ = The nondetected analyte was qualified as estimated at the sample quantitation limit. The reported sample quantitation limit is approximate and may be inaccurate or imprecise.
UJQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration, value is an estimate.
UQ = The result was qualified as a non-detected at the listed concentration due to an estimated maximum possible concentration.

Appendix J
Evaluation of Bulk versus Fines Fraction Soil Analyses

Memorandum

Environmental
Resources
Management

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To: Ken Wangerud, USEPA
Wendy O'Brien, USEPA
Dan Wall, USEPA

From: Mark Shibata, ERM
David Abranovic, ERM

Date: 08 May 2015

Subject: Fine vs. Bulk Evaluation

INTRODUCTION

Samples of soil commonly contain substrate that ranges in size from very fine to coarse. This variation in grain size may be important in a risk assessment for two reasons:

1. The fine-grained fraction[1] is more likely to adhere to hands and be incidentally ingested as compared to coarse-grained particles.
2. For some constituents, concentrations may be higher in the fine-grained fraction than the bulk sample (United States Environmental Protection Agency [USEPA] 2001).

Because the concentration in the fine-grained (fine) fraction is relevant for characterizing potential exposures from adherence to skin and subsequent incidental ingestion of soil, USEPA guidance (2000) encourages sampling and laboratory analysis of the fine fraction to ensure health-protective estimates of exposure—particularly for contaminants that tend to sorb strongly to such fine-grained materials (USEPA 2013a).

In accordance with the *Phase 1A Remedial Investigation Sampling and Analysis Plan to Identify Chemicals of Potential Concern in Soils, Sediment, Solid Waste, Water and Air, and Receptor Surveys* (Phase 1A SAP) (USEPA 2013a), an investigation was conducted to:

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[1] As per Phase 1A SAP Worksheet 11 (as modified by SAP Modification 14-C-2-7), "fine-grained fraction" is defined as grain size of less than 0.250 millimeters (0.0098 inches) in diameter; "coarse-grained fraction" is defined as grain size of greater or equal to 0.250 millimeters (0.0098 inches) in diameter (USEPA 2013a).

1. Determine which Preliminary Remedial Investigation (PRI) Areas have a low-enough fine fraction to merit analyzing bulk and fine fractions separately.
2. Evaluate the relationship between the paired results of the bulk sample and corresponding fine fractions using regression analysis.

This approach allows development of a quantitative relationship between the bulk fraction and the fine fraction, so that if a meaningful difference is evident, the concentration in the fine-grained fraction may be calculated from the bulk fraction."

Methods described in this technical memorandum are consistent with USEPA guidance listed below and the Phase 1A SAP that outlines the approach for evaluating the relationship between the bulk sample and fine fraction:

- USEPA's *Short Sheet: TRW Recommendations for Sampling and Analysis of Soil at Lead (Pb) Sites* (USEPA 2000);
- Montana Department of Environmental Quality (MDEQ) State Superfund Unit Guidance (MDEQ 2014); and
- USEPA's *Denver Front Range Study of Dioxins in Surface Soil* (USEPA 2002).

In addition, note that relationships and methods used to adjust bulk concentrations to account for concentrations in the fine fraction as described herein are intended for use in selection of human health COPCs for the Outer PRIs. Method and findings used herein may or may not be considered adequate for use in subsequent selection of COPCs and/or characterizations of exposure or risk that may be conducted at a later date.

DATA USED IN EVALUATION

Analytical solids (soil and sediment) data from Phase 1A were used for the bulk sample-fine fraction evaluation. The identification of PRI Areas where fines fraction analysis was required and the selection of sampling locations for fines analysis were based on reconnaissance sieve sampling, per Phase 1A SAP Worksheet 11, as modified by SAP Modification 14-C-2-7. Analysis of fines fraction samples at PRI Areas 15 and 16 was not required because reconnaissance sieving found that those PRI Areas had solids with greater than 75 percent fines in at least six out of eight screening samples. Fines fraction analysis was required in the other Outer PRI Areas (PRI Areas 2 and 8 through 14). The reconnaissance sieve sample collection procedures and results are provided in Table 1 and Appendix A of the *Draft Phase 1A RI Data Report for PRI Areas 2 and 8 through 17* (Phase 1A RI Data Report; ERM, 2014).

Fines fraction analysis was done on five surface soil samples selected from each PRI Area, and both the fine fraction and the bulk samples were analyzed for select Phase 1A RI constituents. Table 2 provides descriptive statistics of the fines content of the samples from each PRI Area. Field duplicates for bulk and fine samples were excluded from this evaluation.

All data used have been validated by a third party and deemed usable, as described in Section 7.2 of the Phase 1A RI Data Report. Method quality objectives for precision, accuracy, representativeness, completeness, and comparability were met for the Phase 1A RI Data. Additional detail can be found in the data validation reports included in Appendix H.

The following constituent groups were included in this evaluation:

- Semi-volatile organic compounds (SVOCs);
- Metals;
- Total polychlorinated biphenyls (PCBs);
- Individual polycyclic aromatic hydrocarbons (PAHs);
- Low molecular weight (LMW) and high molecular weight (HMW) PAHs; and
- Dioxin toxicity equivalence (Calculated TEQs)[2].

Perchlorate and cyanide were not analyzed in the fine fraction. Although volatile organic compounds (VOCs) were analyzed in some bulk samples, these compounds were not analyzed in the fine fraction. Sample drying and physical sieving of the bulk sample that is required to attain the fine fraction was determined to result in loss of VOCs and an inaccurate characterization of concentrations for these compounds in the fine fraction. As agreed with the USEPA and agency partners, VOCs were not included in this bulk sample-fine fraction evaluation.

Further, as agreed with the USEPA and agency partners, individual PCB congeners and homologs, as well as individual dioxins/furans/ coplanar

[2] Calculated TEQ is the sum of TEF_i x DLC_i, where *TEF* is the dioxin toxicity equivalency factor, *DLC* is a dioxin-like compound, and where the term *dioxin* refers to the compound in this group considered to be the most toxic—i.e., 2,3,7,8-tetrachlorodibenzo-para-dioxin (TCDD) (USEPA 2013a).

PCBs, were not evaluated, because these compounds are accounted for in the Total PCB and Calculated TEQ, respectively, and will not be individually screened in the SLRA.

The solids dataset had two results for five SVOCs analytes reported with the full scan (SW 8270C) and SIM methods (SIM; SW 8270C-SIM) in most samples:

- Hexachlorobenzene;
- n-Nitrosodimethylamine;
- Hexachlorobutadiene;
- Pentachlorophenol; and
- 2,4,6-Trichlorophenol.

When two results were reported for the same SVOC in a sample due to the use of two analytical methods (SCAN and SIM), the value used in the bulk-fines dataset for that sample was selected based on the following:

- If an SVOC was detected in a sample by both regular (SCAN) and confirmation (SIM) analyses, select the maximum value;
- If an SVOC was detected in a sample by only one analysis (SIM or SCAN), select the detected value; or
- If an SVOC was not detected in a sample by either analysis (SIM or SCAN), then the associated bulk-fines sample pair would not be included in the bulk-fines dataset as only analytes detected in both the paired bulk and fine fractions were used in this assessment.

The raw data used to construct the datasets for the bulk-fines evaluation are available in the EQuIS database and have been provided to USEPA in Scribe format.

DATA ANALYSIS/APPROACH

The Phase 1A SAP Worksheet 11 specifies: "The relationship between the paired results of the bulk and corresponding fine fractions will be evaluated using regression analysis." This approach was supported by developing descriptive statistics and scatterplots. Data were graphed and a visual examination was performed to see if there were important differences between PRI areas (e.g., see Appendix A plots using color codes to stratify by PRI areas). After discussions with USEPA and agency partners, it was concluded that any differences that may exist between PRI areas are sufficiently minor that data from all PRI areas may be combined to increase the number of data points and to improve the statistical power of the analysis.

Descriptive Statistics

To provide a sense of the dataset for all PRI Areas combined, descriptive statistics were developed for each analyte for both the bulk sample and fine fraction and include:

- Sample size;
- Number/percent of detected concentrations;
- Minimum concentration;
- Maximum concentration;
- Median concentration;
- Mean concentration;
- Standard deviation;
- Coefficient of variation; and
- Distribution type (e.g., normal, lognormal).

Descriptive statistics for all PRI Areas combined are provided in Table 2.

Scatterplots

To provide a visualization of the relationship between bulk sample and their associated fine fraction, concentrations in each of the paired bulk and fine samples were plotted against each other in a scatterplot (see Attachment A). For convenience, the graphs show a one-to-one line that indicates equal concentrations in the fine fraction and the bulk sample. Quantitative evaluation of the fine vs. bulk concentration relationships were conducted using regression analysis.

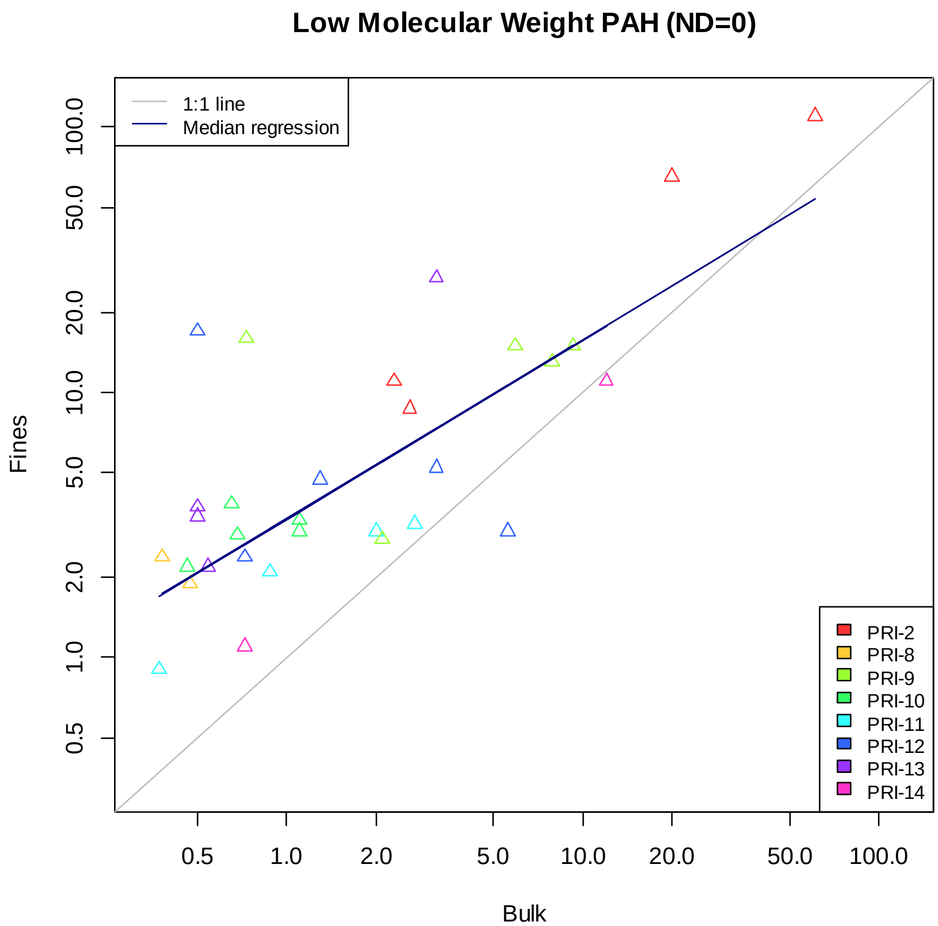

Figure 1. Example Scatterplot Comparing Bulk Sample and Fine Fraction Concentrations

Characterizing Relationship between Bulk Sample and Fine Fraction

The Phase 1A SAP specifies that a regression analysis should be used to evaluate the concentration relationship between the bulk samples and fine fraction. In support of regression analysis, the analysis needs to include handling of non-detected values and selection of a defensible regression model needs to be both robust and flexible so that it could be readily applied to bulk samples.

Handling of Non-Detected Values

With respect to regression analysis, the USEPA (2006) notes that no general procedures exist for the statistical analyses of datasets with censored data. Concentrations for non-detected values are not precisely known and thus do not contribute meaningfully to a regression in which the measured concentration in the bulk sample is used to predict the concentration in the fine fraction. For that reason, a sample was included in this evaluation only if the analyte was detected in both the bulk sample and fine fraction. As agreed with the USEPA and agency partners for the purposes of this evaluation, a minimum of eight detect-detect pairs were required to perform a regression analysis for a given analyte. A detect-detect pair is a sample wherein a detected concentration (including J-qualified concentration) was reported for the analyte in both the bulk sample and the fine fraction. The number of detect-detect pairs for each analyte is listed in Table 3.

Evaluation and Selection of Regression Methods

Regression analysis is a statistical process for estimating the relationships among variables. Regression includes many techniques for modeling several variables, when the focus is on the relationship between a dependent variable and one or more independent variables. The key features of the different linear trend tests are summarized in Table 4.

<u>Parametric Regression Methods</u>

Simple Linear Regression

The most common method to characterize a relationship is to compute a simple linear regression (SLR) having the well-known mathematical model of:

$$y = \beta 1\, x + \beta 0$$

where y is the response variable (i.e., concentration in fine fraction), x is the explanatory variable (i.e., concentration in bulk sample), $\beta 1$ is the slope (also known as the regression coefficient), and $\beta 0$ is the y-intercept (Zar 1999). Note that SLR is a parametric statistical technique; there are nonparametric techniques that often have similar power to detect relationships, but have fewer restrictions/assumptions. SLR is sensitive to outliers and skew (Helsel & Hirsch 1991). Coefficients for slopes and intercept cannot be computed without values for the censored observations, and substituting surrogate values is likely to produce coefficients strongly dependent on the values substituted. Finally, SLR assumes that regression residuals[3] are approximately normally distributed, homoscedastic[4], and statistically independent (Zar 1999; USEPA 2009).

Log-Linear Regression

A log- linear regression can be used when both the explanatory variable and response variable are lognormally distributed. The mathematical model is:

$\mathrm{Ln}(y) = \beta 1\, Ln(x) + \beta 0$

The same model can be used for the log-linear regression and the SLR as long as both the x and y variables are first log-transformed. Log-linear regression has all the same assumptions and limitations of the SLR. However, because the data are log-transformed, this method cannot handle a regression model through the origin (zero values) without producing an error.

Nonparametric Regression Methods

When the data do not follow a discernible distribution, the use of parametric methods (e.g., SLR) may lead to inaccurate conclusions (USEPA 2013b). Nonparametric regressions are not dependent on specific assumptions about the underlying distribution of the data and are preferred over the parametric SLR or log-linear regression when datasets have left-censored results (USEPA 2009; Helsel & Hirsch 1991). Further, nonparametric tests handle skewed data more appropriately than parametric methods without a substantial loss of power (Helsel & Hirsch 1991). Finally, in a practical sense, non-parametric tests facilitate multiple analyses of datasets with different distribution types.

Mann-Kendall Test and Sen's Slope Estimator

Guidance recommends the use of the nonparametric Mann-Kendall test to evaluate trends (relationship between two variables) of nonparametric data (USEPA 2009). The Mann-Kendall test is directly analogous to Person's correlation, where the test for significance of the correlation coefficient r is also the significance test for a simple linear regression (Helsel & Hirsch 1991). Further, the Mann-Kendall test possesses the

---

[3] A residual is the difference between each concentration measurement and its predicted value from the regression equation.
[4] Homoscedastic means that the data are equal in variance at different x and for different mean concentrations.

useful property of other nonparametric tests in that it is invariant to (monotonic) power transformations and is less influenced by outliers (Helsel & Hirsch 1991). In the case of no ties in the x and y variables, Kendall's rank correlation coefficient, *tau* (τ), may be expressed as

$\tau = S/D$

where (Kendall 1976):

$$S = \sum_{i<j} (sign(x[j] - x[i]) * sign(y[j] - y[i]))$$

and

$$D = n(n-1)/2$$

S is called the score and D, the denominator, is the maximum possible value of S. When there are ties, the formula for D is more complicated (Kendall 1976).

Unfortunately, Mann-Kendall statistic *S* does not indicate the *magnitude* of the slope or estimate the trend line itself even when a trend is present. To estimate the slope of the line itself, a Theil-Sens slope estimator is needed (USEPA 2009). The Theil-Sens method is nonparametric because instead of taking an arithmetic average of the pairwise slopes, the median slope value is determined. The USEPA (2009) provides some computer code for the execution of Theil-Sens slopes in R, but its implementation is cumbersome.

Median Regression

Instead of looking at the mean trend in the concentrations, the median regression examines the trend of the median for a response variable and produces the median line under which 50 percent of the observed responses are located. Like SLR, a common functional form that is assumed for a median regression analysis is:

$y_{50} = \beta_1 x + \beta_0$

where y_τ denotes the 50th quantile of y, β_1 is the median regression slope, β_0 is the median intercept, and x is the explanatory variable.

Median regression is more robust to non-normal errors (is semi-parametric as it avoids assumptions about the parametric distribution of the error) and outliers than SLR.

Selected Regression Method

The parametric methods, SLR and log-linear regression, were considered to evaluate the relationship between bulk sample and fine fraction; however, use of these methods is prohibited when the dataset includes left-censored (non-detect) data (Helsel & Hirsch 1991). Further, these methods are sensitive to outliers and skew. Alternatively, the nonparametric Mann-Kendall determines whether a relationship exists between two variables, but does not quantify the relationship (i.e., does not provide the magnitude of the slope).

Given its ability to handle skewed non-normal data and non-detected concentrations, the median regression method was selected to quantify the relationship between concentrations in the bulk sample and in the associated fine fraction. The median regression model was applied to all analytes with at least eight detect-detect pairs[5]. As noted in *Handling of Non-Detected Values* (p. 7 of this memo), only detect-detect pairs are used—detect-ND or ND-ND pairs are not used. This approach greatly simplifies the application of the model and avoids the problematic debate about whether a "meaningful difference is evident"[6]. Note that for those analytes in which the fines concentrations are not "meaningfully" different, the median regression slope and intercept should be close to one and zero respectively, thus providing a "null" adjustment to these compounds.

RESULTS/CONCLUSIONS

The median regression method will be used to characterize the relationship between concentrations in bulk samples and associated fine fraction and adjust bulk sample concentrations to account for the fine fraction. Median regression results for each analyte with at least eight detect-detect pairs are shown in Table 5. Note that the calculated totals (TEQ mammalian and avian, Total PCBs, and HMW/LMW PAHs) are shown with substitutions of both of zero and of one-half the method detection limit for individual non-detect congeners.

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[5] See the "Summary" section for a list of analytes with insufficient detects.

[6] See excerpt from Phase 1A SAP in Section 1.

Analytes Excluded from Regression Analysis

Analytes that had fewer than eight detect-detect pairs are listed in Attachment B and include most SVOCs, as well as 10 PAHs and two metals:

<u>*PAHs*</u>

- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Dibenzo(a,h)anthracene
- Fluorene
- Indeno(1,2,3-cd)pyrene

<u>*Metals*</u>

- Silver
- Thallium

Most SVOCs had no detect-detect pairs and many SVOCs (including several PAHs) did not have sufficient detect-detect pairs to run a median regression. Where at least one detect-detect pair existed for these constituents, a ratio was calculated between the fines and bulk concentrations for each detect-detect pair and the median of these ratios is reported in Table 6. The USEPA and agency partners carefully examined both the median fine-to-bulk ratios and the median regression slopes for SVOCs (including PAHs) with sufficient detect-detect pairs and, with the exception of acetophenone, these values ranged from 0.9 to 1.9. Because the range was relatively narrow across different analytes, for simplicity, it was decided that use of a conservative value of 2.0 for SVOCs (including PAHs) would be useful in the initial evaluation of the data.

For silver and thallium, it was concluded that fine and bulk concentrations were similar (ratio = 0.9 in Table 6), and no adjustment factor was applied.

Summary

For the purposes of the SLRA for the Outer PRI Areas, the USEPA and agency partners concluded that the median regression was the best approach for adjusting maximum concentrations in bulk samples to account for concentrations in the fine fraction. However, the USEPA and agency partners recognized that this approach also had some limitations. First, not all of the median regression models explained a large portion of the variance in the data. The *tau*^{2} ranged from 0.14 for mercury to 0.71 for Calculated TEQs.[7] For those analytes with poor-fitting regression models, it is recognized that the model will also add a portion of linear error when adjusting concentrations in the bulk sample. Similarly, for analytes whose fine fraction concentrations are not significantly different from the bulk sample, the regression model may add an overly conservative adjustment to the data. Nevertheless, for the majority of analytes, the median regression model fit reasonably well and explained well over 50 percent of the variance in the data.

For this evaluation, the intended use of the model (including the y-intercept) is to 'best fit' the data for the purposes of predicting concentrations in the fine fraction using bulk fraction data. To attain the 'best fit' for estimation purposes, the regression was not 'forced' through the origin. Given specified goals and latitudes of this evaluation, future assessments may use a different approach to identify and characterize relationships between bulk and fine fractions.

Overall, for the purposes of a SLRA, the median regression and median ratio adjustment factors provide a flexible, robust, and health-protective approach to adjust bulk sample concentrations based on fine fraction concentrations. Adjustments proposed herein are appropriate for use with the maximum concentrations used for screening purposes in the SLRA for the Outer PRI Areas only. Bulk-fine relationships may or may not be considered adequate for use in subsequent characterizations of exposure or risk that may be conducted at a later date.

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[7] The *tau*^{2} is analogous to the parametric r^2 (coefficient of determination), which is derived from Pearson's coefficient from a correlation test.

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Tables

Table 1. Percent Fines less than 0.25 mm for each PRI

PRI	Number of Samples	Minimum	Median	Mean	Maximum	Standard Deviation
PRI-02	5	18.1	40.1	37.4	56.3	18.1
PRI-08	5	20.5	42.1	39	61.4	15.7
PRI-09	5	21.3	31.4	35	52.9	12.2
PRI-10	5	35.1	36	37.7	41.2	2.8
PRI-11	5	27.5	49.2	46.3	61.1	14.2
PRI-12	5	38.3	58.6	58.9	82.1	16.7
PRI-13	5	21.9	33.8	30.4	39.6	7.8
PRI-14	5	13.5	43	34.9	53.3	18.8

Table 2. Descriptive Statistics for the Bulk and Fine Fraction of Soils

Analyte	CAS	Result unit	Fraction	Number of Samples Analyzed	Number Detects	Percent Detected	Minimum Detection Limit	Maximum Detection Limit	Minimum Detect	Median	Mean	Maximum Detect	Standard Deviation	Percent Coefficient of variation	Distribution
Calculated TEQ (ND=0), Mammals	CALC_DX_0	pg/g	Bulk	40	40	100%	--	--	0.026	4.2	168.6	2400	517.2	307%	Lognormal
Calculated TEQ (ND=0), Mammals	CALC_DX_0	pg/g	Fines	40	40	100%	--	--	0.13	6.3	221.9	3300	690.8	311%	Nonparametric
Calculated TEQ (ND=1/2 DL), Mammals	CALC_DX_2	pg/g	Bulk	40	40	100%	--	--	0.14	4.4	171.6	2400	527.1	307%	Nonparametric
Calculated TEQ (ND=1/2 DL), Mammals	CALC_DX_2	pg/g	Fines	40	40	100%	--	--	0.28	6.75	224.9	3400	702.4	312%	Nonparametric
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	pg/g	Bulk	40	40	100%	--	--	0.16	79.5	10240	1.00E+05	28700	280%	Lognormal
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	pg/g	Fines	40	40	100%	--	--	0.4	145	12980	130000	36010	277%	Nonparametric
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	pg/g	Bulk	40	40	100%	--	--	13	80.5	10250	1.00E+05	28700	280%	Nonparametric
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	pg/g	Fines	40	40	100%	--	--	13	150	12980	130000	36010	277%	Nonparametric
Total PCBs	1336-36-3	pg/g	Bulk	40	40	100%	--	--	280	4600	112600	1500000	314600	279%	Nonparametric
Total PCBs	1336-36-3	pg/g	Fines	40	40	100%	--	--	350	6100	168500	2300000	497400	295%	Nonparametric
Aluminum	7429-90-5	mg/kg	Bulk	40	40	100%	--	--	270	4900	6238	19000	4462	72%	Lognormal
Aluminum	7429-90-5	mg/kg	Fines	40	40	100%	--	--	820	6500	7630	19000	4355	57%	Normal
Antimony	7440-36-0	mg/kg	Bulk	40	19	48%	0.13	0.45	0.19	0.205	0.2862	0.84	0.2135	75%	Nonparametric
Antimony	7440-36-0	mg/kg	Fines	40	21	53%	0.19	0.37	0.24	0.245	0.3278	1.3	0.2857	87%	Nonparametric
Arsenic	7440-38-2	mg/kg	Bulk	40	40	100%	--	--	0.34	6.1	6.196	20	3.644	59%	Nonparametric
Arsenic	7440-38-2	mg/kg	Fines	40	40	100%	--	--	0.64	6.25	6.886	19	3.873	56%	Nonparametric
Barium	7440-39-3	mg/kg	Bulk	40	40	100%	--	--	17	215	207.1	460	102.4	49%	Normal
Barium	7440-39-3	mg/kg	Fines	40	40	100%	--	--	49	190	179.8	330	76.16	42%	Normal
Beryllium	7440-41-7	mg/kg	Bulk	40	40	100%	--	--	0.035	0.27	3.132	60	12.43	397%	Nonparametric
Beryllium	7440-41-7	mg/kg	Fines	40	40	100%	--	--	0.09	0.37	4.684	110	19.74	421%	Nonparametric
Cadmium	7440-43-9	mg/kg	Bulk	40	23	58%	0.066	0.14	0.078	0.11	0.1453	0.47	0.1106	76%	Nonparametric
Cadmium	7440-43-9	mg/kg	Fines	40	22	55%	0.097	0.12	0.11	0.125	0.1509	0.44	0.1092	72%	Nonparametric
Calcium	7440-70-2	mg/kg	Bulk	40	40	100%	--	--	41000	135000	151200	370000	82710	55%	Lognormal
Calcium	7440-70-2	mg/kg	Fines	40	40	100%	--	--	46000	89500	117200	340000	69160	59%	Lognormal
Chromium	7440-47-3	mg/kg	Bulk	40	40	100%	--	--	0.86	7.8	10.16	59	9.759	96%	Lognormal
Chromium	7440-47-3	mg/kg	Fines	40	40	100%	--	--	2.2	12	11.68	59	9.119	78%	Lognormal
Cobalt	7440-48-4	mg/kg	Bulk	40	40	100%	--	--	0.3	2.4	3.442	24	3.934	114%	Lognormal
Cobalt	7440-48-4	mg/kg	Fines	40	40	100%	--	--	0.89	3.4	4.022	24	4.237	105%	Lognormal
Copper	7440-50-8	mg/kg	Bulk	40	40	100%	--	--	1.2	9.2	16.7	220	35.02	210%	Lognormal
Copper	7440-50-8	mg/kg	Fines	40	40	100%	--	--	5.7	21.5	39.48	230	49.77	126%	Lognormal
Iron	7439-89-6	mg/kg	Bulk	40	40	100%	--	--	1300	8550	10270	54000	10350	101%	Lognormal
Iron	7439-89-6	mg/kg	Fines	40	40	100%	--	--	2300	11000	12360	57000	11400	92%	Lognormal
Lead	7439-92-1	mg/kg	Bulk	40	40	100%	--	--	1.1	8.55	8.625	22	4.407	51%	Normal
Lead	7439-92-1	mg/kg	Fines	40	40	100%	--	--	2.1	8.45	8.93	30	4.852	54%	Lognormal
Magnesium	7439-95-4	mg/kg	Bulk	40	40	100%	--	--	2100	22000	32480	180000	37330	115%	Nonparametric
Magnesium	7439-95-4	mg/kg	Fines	40	40	100%	--	--	2300	24000	35690	180000	40810	114%	Nonparametric
Manganese	7439-96-5	mg/kg	Bulk	40	40	100%	--	--	28	170	267	1800	323.6	121%	Lognormal
Manganese	7439-96-5	mg/kg	Fines	40	40	100%	--	--	64	220	332.4	2600	501.1	151%	Nonparametric
Mercury	7439-97-6	mg/kg	Bulk	40	13	33%	0.0085	0.027	0.01	0.00575	0.01453	0.16	0.02637	181%	Nonparametric
Mercury	7439-97-6	mg/kg	Fines	40	26	65%	0.0081	0.053	0.0092	0.0115	0.01703	0.22	0.0337	198%	Nonparametric
Molybdenum	7439-98-7	mg/kg	Bulk	40	32	80%	0.042	0.44	0.047	0.54	1.902	29	4.8	252%	Lognormal
Molybdenum	7439-98-7	mg/kg	Fines	40	33	83%	0.071	0.38	0.12	0.71	2.007	23	4.017	200%	Lognormal
Nickel	7440-02-0	mg/kg	Bulk	40	40	100%	--	--	0.79	7	21.5	190	47.56	221%	Nonparametric
Nickel	7440-02-0	mg/kg	Fines	40	40	100%	--	--	3.3	9.15	29.55	350	72.96	247%	Nonparametric
Potassium	7440-09-7	mg/kg	Bulk	40	39	98%	130	130	650	3900	7068	72000	11770	167%	Lognormal
Potassium	7440-09-7	mg/kg	Fines	40	40	100%	--	--	240	4800	6389	49000	7997	125%	Lognormal

Table 2. Descriptive Statistics for the Bulk and Fine Fraction of Soils

Analyte	CAS	Result unit	Fraction	Number of Samples Analyzed	Number Detects	Percent Detected	Minimum Detection Limit	Maximum Detection Limit	Minimum Detect	Median	Mean	Maximum Detect	Standard Deviation	Percent Coefficient of variation	Distribution
Selenium	7782-49-2	mg/kg	Bulk	40	13	33%	0.13	0.3	0.17	0.115	0.1585	0.36	0.08315	52%	Nonparametric
Selenium	7782-49-2	mg/kg	Fines	40	18	45%	0.19	0.24	0.21	0.1175	0.189	0.39	0.1007	53%	Nonparametric
Silver	7440-22-4	mg/kg	Bulk	40	2	5%	0.04	0.091	0.077	0.03325	0.03381	0.088	0.01286	38%	Nonparametric
Silver	7440-22-4	mg/kg	Fines	40	1	3%	0.058	0.073	0.064	0.03125	0.0323	0.064	0.005482	17%	Nonparametric
Sodium	7440-23-5	mg/kg	Bulk	40	40	100%	--	--	63	7950	14620	220000	35390	242%	Lognormal
Sodium	7440-23-5	mg/kg	Fines	40	40	100%	--	--	68	4350	8789	85000	16040	183%	Lognormal
Thallium	7440-28-0	mg/kg	Bulk	40	2	5%	0.066	0.16	0.082	0.055	0.05686	0.15	0.01881	33%	Nonparametric
Thallium	7440-28-0	mg/kg	Fines	40	4	10%	0.096	0.12	0.12	0.055	0.06531	0.24	0.04054	62%	Nonparametric
Vanadium	7440-62-2	mg/kg	Bulk	40	40	100%	--	--	1.6	14.5	16.5	43	9.349	57%	Normal
Vanadium	7440-62-2	mg/kg	Fines	40	40	100%	--	--	4.8	18	20.07	71	12.25	61%	Lognormal
Zinc	7440-66-6	mg/kg	Bulk	40	40	100%	--	--	3.2	27.5	32.38	88	19.67	61%	Nonparametric
Zinc	7440-66-6	mg/kg	Fines	40	40	100%	--	--	7.5	39	44.11	120	27.57	63%	Lognormal
Biphenyl	92-52-4	ug/kg	Bulk	40	0	0%	170	1900	--	95	194	--	254.3	131%	Nonparametric
Biphenyl	92-52-4	ug/kg	Fines	40	0	0%	160	1800	--	85	145.4	--	193.1	133%	Nonparametric
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/kg	Bulk	40	0	0%	26	300	--	15.25	30.61	--	40.15	131%	Nonparametric
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/kg	Fines	40	1	3%	25	290	110	13.5	25.19	110	33.25	132%	Nonparametric
2,3,4,6-Tetrachlorophenol	58-90-2	ug/kg	Bulk	40	0	0%	83	960	--	48.25	96.61	--	127.1	132%	Nonparametric
2,3,4,6-Tetrachlorophenol	58-90-2	ug/kg	Fines	40	0	0%	80	920	--	42.5	72.08	--	96.12	133%	Nonparametric
2,4,5-Trichlorophenol	95-95-4	ug/kg	Bulk	40	0	0%	84	970	--	48.75	97.7	--	128.3	131%	Nonparametric
2,4,5-Trichlorophenol	95-95-4	ug/kg	Fines	40	0	0%	81	930	--	43	72.79	--	96.92	133%	Nonparametric
2,4,6-Trichlorophenol	88-06-2	ug/kg	Bulk	40	0	0%	4.5	51	--	2.575	4.798	--	6.417	134%	Nonparametric
2,4,6-Trichlorophenol	88-06-2	ug/kg	Fines	40	0	0%	4.3	49	--	2.275	4.374	--	5.945	136%	Nonparametric
2,2-Oxybis(1-chloropropane)	108-60-1	ug/kg	Bulk	40	0	0%	80	920	--	46.25	93.31	--	122.1	131%	Nonparametric
2,2-Oxybis(1-chloropropane)	108-60-1	ug/kg	Fines	40	0	0%	77	880	--	41	69.28	--	92.04	133%	Nonparametric
2,4-Dichlorophenol	120-83-2	ug/kg	Bulk	40	0	0%	90	1000	--	52.5	103.9	--	135.2	130%	Nonparametric
2,4-Dichlorophenol	120-83-2	ug/kg	Fines	40	0	0%	87	990	--	46	77.8	--	103.3	133%	Nonparametric
2,4-Dimethylphenol	105-67-9	ug/kg	Bulk	40	0	0%	170	2000	--	97.5	196.8	--	257.7	131%	Nonparametric
2,4-Dimethylphenol	105-67-9	ug/kg	Fines	40	0	0%	160	1900	--	85	147.5	--	198.1	134%	Nonparametric
2,4-Dinitrophenol	51-28-5	ug/kg	Bulk	40	2	5%	220	2500	260	127.5	261.1	330	332.1	127%	Nonparametric
2,4-Dinitrophenol	51-28-5	ug/kg	Fines	40	0	0%	210	2400	--	110	187.6	--	250.3	133%	Nonparametric
2,4-Dinitrotoluene	121-14-2	ug/kg	Bulk	40	0	0%	90	1000	--	52.5	103.9	--	135.2	130%	Nonparametric
2,4-Dinitrotoluene	121-14-2	ug/kg	Fines	40	0	0%	87	990	--	46	77.8	--	103.3	133%	Nonparametric
2,6-Dinitrotoluene	606-20-2	ug/kg	Bulk	40	0	0%	100	1200	--	60	116.8	--	153.9	132%	Nonparametric
2,6-Dinitrotoluene	606-20-2	ug/kg	Fines	40	0	0%	97	1100	--	50	86.59	--	115.4	133%	Nonparametric
2-Chloronaphthalene	91-58-7	ug/kg	Bulk	40	0	0%	82	950	--	47.75	95.4	--	125.2	131%	Nonparametric
2-Chloronaphthalene	91-58-7	ug/kg	Fines	40	0	0%	79	910	--	42	71.24	--	94.97	133%	Nonparametric
2-Chlorophenol	95-57-8	ug/kg	Bulk	40	0	0%	89	1000	--	50	103	--	134.5	131%	Nonparametric
2-Chlorophenol	95-57-8	ug/kg	Fines	40	0	0%	86	980	--	45.5	77.14	--	102.5	133%	Nonparametric
o-Cresol	95-48-7	ug/kg	Bulk	40	0	0%	59	680	--	34	68.45	--	89.91	131%	Nonparametric
o-Cresol	95-48-7	ug/kg	Fines	40	0	0%	57	650	--	30	50.91	--	67.82	133%	Nonparametric
2-Nitroaniline	88-74-4	ug/kg	Bulk	40	0	0%	85	980	--	49.25	98.74	--	129.7	131%	Nonparametric
2-Nitroaniline	88-74-4	ug/kg	Fines	40	0	0%	82	940	--	43.5	73.75	--	98.18	133%	Nonparametric
2-Nitrophenol	88-75-5	ug/kg	Bulk	40	0	0%	83	960	--	48.25	96.61	--	127.1	132%	Nonparametric
2-Nitrophenol	88-75-5	ug/kg	Fines	40	0	0%	80	920	--	42.5	72.08	--	96.12	133%	Nonparametric
3,3'-Dichlorobenzidine	91-94-1	ug/kg	Bulk	40	0	0%	95	1100	--	55	110.5	--	144.7	131%	Nonparametric
3,3'-Dichlorobenzidine	91-94-1	ug/kg	Fines	40	0	0%	92	1100	--	48.5	83.12	--	112.4	135%	Nonparametric

Table 2. Descriptive Statistics for the Bulk and Fine Fraction of Soils

Analyte	CAS	Result unit	Fraction	Number of Samples Analyzed	Number Detects	Percent Detected	Minimum Detection Limit	Maximum Detection Limit	Minimum Detect	Median	Mean	Maximum Detect	Standard Deviation	Percent Coefficient of variation	Distribution
3-Nitroaniline	99-09-2	ug/kg	Bulk	40	0	0%	170	2000	--	97.5	196.8	--	257.7	131%	Nonparametric
3-Nitroaniline	99-09-2	ug/kg	Fines	40	0	0%	160	1900	--	85	147.5	--	198.1	134%	Nonparametric
Dinitro-o-cresol	534-52-1	ug/kg	Bulk	40	0	0%	82	950	--	47.75	95.4	--	125.2	131%	Nonparametric
Dinitro-o-cresol	534-52-1	ug/kg	Fines	40	0	0%	79	910	--	42	71.24	--	94.97	133%	Nonparametric
4-Bromophenyl phenyl ether	101-55-3	ug/kg	Bulk	40	0	0%	86	990	--	49.75	100	--	131.2	131%	Nonparametric
4-Bromophenyl phenyl ether	101-55-3	ug/kg	Fines	40	0	0%	83	950	--	44	74.59	--	99.33	133%	Nonparametric
4-Chloro-3-methylphenol	59-50-7	ug/kg	Bulk	40	0	0%	93	1100	--	55	108.8	--	144.4	133%	Nonparametric
4-Chloro-3-methylphenol	59-50-7	ug/kg	Fines	40	0	0%	90	1000	--	47.5	80.25	--	105.9	132%	Nonparametric
p-Chloroaniline	106-47-8	ug/kg	Bulk	40	0	0%	59	680	--	34	68.45	--	89.91	131%	Nonparametric
p-Chloroaniline	106-47-8	ug/kg	Fines	40	0	0%	57	650	--	30	50.91	--	67.82	133%	Nonparametric
4-Chlorophenyl phenyl ether	7005-72-3	ug/kg	Bulk	40	0	0%	94	1100	--	55	110.1	--	144.5	131%	Nonparametric
4-Chlorophenyl phenyl ether	7005-72-3	ug/kg	Fines	40	0	0%	91	1000	--	48	81.14	--	106.5	131%	Nonparametric
3 & 4 Methylphenol	15831-10-4	ug/kg	Bulk	40	0	0%	330	3900	--	195	388.8	--	509.5	131%	Nonparametric
3 & 4 Methylphenol	15831-10-4	ug/kg	Fines	40	0	0%	320	3700	--	170	289.1	--	383.6	133%	Nonparametric
p-Nitroaniline	100-01-6	ug/kg	Bulk	40	0	0%	89	1000	--	50	103	--	134.5	131%	Nonparametric
p-Nitroaniline	100-01-6	ug/kg	Fines	40	0	0%	86	980	--	45.5	77.14	--	102.5	133%	Nonparametric
4-Nitrophenol	100-02-7	ug/kg	Bulk	40	0	0%	280	3300	--	165	330.8	--	434.4	131%	Nonparametric
4-Nitrophenol	100-02-7	ug/kg	Fines	40	0	0%	270	3100	--	145	245.4	--	326.6	133%	Nonparametric
Acetophenone	98-86-2	ug/kg	Bulk	40	3	8%	25	290	38	15	42.66	450	76.92	180%	Nonparametric
Acetophenone	98-86-2	ug/kg	Fines	40	33	83%	25	280	27	130	295.6	1700	401.8	136%	Lognormal
Benzaldehyde	100-52-7	ug/kg	Bulk	40	0	0%	170	1900	--	95	194	--	254.3	131%	Nonparametric
Benzaldehyde	100-52-7	ug/kg	Fines	40	17	43%	160	1800	180	185	332.8	1600	343.1	103%	Nonparametric
Benzyl butyl phthalate	85-68-7	ug/kg	Bulk	40	1	3%	96	1100	1100	55	137.7	1100	212.8	155%	Nonparametric
Benzyl butyl phthalate	85-68-7	ug/kg	Fines	40	1	3%	93	1100	98	49.25	85.06	98	112.6	132%	Nonparametric
Bis(2-chloroethoxy)methane	111-91-1	ug/kg	Bulk	40	0	0%	89	1000	--	50	103	--	134.5	131%	Nonparametric
Bis(2-chloroethoxy)methane	111-91-1	ug/kg	Fines	40	0	0%	86	980	--	45.5	77.14	--	102.5	133%	Nonparametric
Dichloroethyl ether	111-44-4	ug/kg	Bulk	40	0	0%	82	950	--	47.75	95.4	--	125.2	131%	Nonparametric
Dichloroethyl ether	111-44-4	ug/kg	Fines	40	0	0%	79	910	--	42	71.24	--	94.97	133%	Nonparametric
Bis(2-ethylhexyl)phthalate	117-81-7	ug/kg	Bulk	40	4	10%	99	1100	120	60	122.5	140	148.3	121%	Nonparametric
Bis(2-ethylhexyl)phthalate	117-81-7	ug/kg	Fines	40	6	15%	96	1100	100	52.5	98.41	160	114.5	116%	Nonparametric
Carbazole	86-74-8	ug/kg	Bulk	40	0	0%	96	1100	--	55	111.4	--	145	130%	Nonparametric
Carbazole	86-74-8	ug/kg	Fines	40	0	0%	93	1100	--	49	83.84	--	112.7	134%	Nonparametric
Dibenzofuran	132-64-9	ug/kg	Bulk	40	0	0%	87	1000	--	50	101.4	--	132.9	131%	Nonparametric
Dibenzofuran	132-64-9	ug/kg	Fines	40	0	0%	84	960	--	44.5	75.53	--	100.5	133%	Nonparametric
Diethyl Phthalate	84-66-2	ug/kg	Bulk	40	0	0%	91	1100	--	55	106.1	--	139.8	132%	Nonparametric
Diethyl Phthalate	84-66-2	ug/kg	Fines	40	0	0%	88	1000	--	46.5	78.82	--	104.5	133%	Nonparametric
Dimethylphthalate	131-11-3	ug/kg	Bulk	40	0	0%	88	1000	--	50	102.2	--	133.8	131%	Nonparametric
Dimethylphthalate	131-11-3	ug/kg	Fines	40	0	0%	85	970	--	45	76.32	--	101.3	133%	Nonparametric
Dibutyl Phthalate	84-74-2	ug/kg	Bulk	40	0	0%	98	1100	--	55	113.8	--	149.4	131%	Nonparametric
Dibutyl Phthalate	84-74-2	ug/kg	Fines	40	2	5%	95	1100	120	50	90.18	190	115.1	128%	Nonparametric
Di-n-octyl phthalate	117-84-0	ug/kg	Bulk	40	1	3%	98	1100	140	55	115.7	140	149.2	129%	Nonparametric
Di-n-octyl phthalate	117-84-0	ug/kg	Fines	40	0	0%	95	1100	--	50	84.9	--	114.1	134%	Nonparametric
Hexachlorobenzene	118-74-1	ug/kg	Bulk	40	24	60%	2.4	4.4	3.1	7.55	1011	10000	2844	281%	Nonparametric
Hexachlorobenzene	118-74-1	ug/kg	Fines	40	35	88%	2.3	11	2.4	14	1291	13000	3595	278%	Nonparametric
Hexachlorobutadiene	87-68-3	ug/kg	Bulk	40	0	0%	3.7	43	--	2.175	4.039	--	5.396	134%	Nonparametric
Hexachlorobutadiene	87-68-3	ug/kg	Fines	40	0	0%	3.6	41	--	1.9	3.682	--	5.009	136%	Nonparametric

Table 2. Descriptive Statistics for the Bulk and Fine Fraction of Soils

Analyte	CAS	Result unit	Fraction	Number of Samples Analyzed	Number Detects	Percent Detected	Minimum Detection Limit	Maximum Detection Limit	Minimum Detect	Median	Mean	Maximum Detect	Standard Deviation	Percent Coefficient of variation	Distribution
Hexachlorocyclopentadiene	77-47-4	ug/kg	Bulk	40	0	0%	63	730	--	36.25	73.15	--	96.22	132%	Nonparametric
Hexachlorocyclopentadiene	77-47-4	ug/kg	Fines	40	0	0%	61	690	--	32	54.42	--	72.28	133%	Nonparametric
Hexachloroethane	67-72-1	ug/kg	Bulk	40	0	0%	82	950	--	47.75	95.4	--	125.2	131%	Nonparametric
Hexachloroethane	67-72-1	ug/kg	Fines	40	1	3%	79	910	690	42	87.44	690	136.2	156%	Nonparametric
Isophorone	78-59-1	ug/kg	Bulk	40	0	0%	94	1100	--	55	110.1	--	144.5	131%	Nonparametric
Isophorone	78-59-1	ug/kg	Fines	40	0	0%	91	1000	--	48	81.14	--	106.5	131%	Nonparametric
Nitrobenzene	98-95-3	ug/kg	Bulk	40	0	0%	77	890	--	44.75	89.41	--	117.5	131%	Nonparametric
Nitrobenzene	98-95-3	ug/kg	Fines	40	0	0%	74	850	--	39.5	66.74	--	88.84	133%	Nonparametric
n-Nitrosodimethylamine	62-75-9	ug/kg	Bulk	40	0	0%	97	1100	--	55	105.2	--	141	134%	Nonparametric
n-Nitrosodimethylamine	62-75-9	ug/kg	Fines	40	0	0%	94	1100	--	49.5	84.39	--	113.4	134%	Nonparametric
n-Nitrosodi-n-propylamine	621-64-7	ug/kg	Bulk	40	0	0%	85	980	--	49.25	98.74	--	129.7	131%	Nonparametric
n-Nitrosodi-n-propylamine	621-64-7	ug/kg	Fines	40	0	0%	82	940	--	43.5	73.75	--	98.18	133%	Nonparametric
n-Nitrosodiphenylamine	86-30-6	ug/kg	Bulk	40	0	0%	87	1000	--	50	101.4	--	132.9	131%	Nonparametric
n-Nitrosodiphenylamine	86-30-6	ug/kg	Fines	40	0	0%	84	960	--	44.5	75.53	--	100.5	133%	Nonparametric
Pentachlorophenol	87-86-5	ug/kg	Bulk	40	3	8%	24	390	67	14.5	33.41	130	44.57	133%	Nonparametric
Pentachlorophenol	87-86-5	ug/kg	Fines	40	4	10%	23	270	60	12.5	39.16	270	65.69	168%	Nonparametric
Phenol	108-95-2	ug/kg	Bulk	40	1	3%	84	970	170	48.75	100.6	170	128.6	128%	Nonparametric
Phenol	108-95-2	ug/kg	Fines	40	8	20%	81	930	90	43	111	550	132.8	120%	Nonparametric
2-Methylnaphthalene	91-57-6	ug/kg	Bulk	40	10	25%	0.42	1.5	0.82	0.2525	1.059	11	2.11	199%	Nonparametric
2-Methylnaphthalene	91-57-6	ug/kg	Fines	40	30	75%	0.42	0.52	0.45	0.805	2.148	17	3.249	151%	Nonparametric
Acenaphthene	83-32-9	ug/kg	Bulk	40	2	5%	0.46	1.3	2.3	0.275	0.4388	4.3	0.7056	161%	Nonparametric
Acenaphthene	83-32-9	ug/kg	Fines	40	3	8%	0.43	0.6	1.1	0.2425	0.4739	5.9	0.9761	206%	Nonparametric
Acenaphthylene	208-96-8	ug/kg	Bulk	40	0	0%	0.32	1.8	--	0.19	0.215	--	0.1152	54%	Nonparametric
Acenaphthylene	208-96-8	ug/kg	Fines	40	1	3%	0.31	0.42	1.8	0.17	0.2141	1.8	0.2575	120%	Nonparametric
Anthracene	120-12-7	ug/kg	Bulk	40	6	15%	0.39	0.75	0.63	0.235	0.5011	7	1.096	219%	Nonparametric
Anthracene	120-12-7	ug/kg	Fines	40	9	23%	0.37	0.51	0.41	0.215	0.6764	14	2.191	324%	Nonparametric
Benzo(a)anthracene	56-55-3	ug/kg	Bulk	40	9	23%	0.3	0.57	0.43	0.185	0.7556	19	2.968	393%	Nonparametric
Benzo(a)anthracene	56-55-3	ug/kg	Fines	40	14	35%	0.28	0.39	0.33	0.1675	1.305	35	5.5	421%	Nonparametric
Benzo(a)pyrene	50-32-8	ug/kg	Bulk	40	6	15%	0.39	0.75	0.49	0.2375	0.5274	9.2	1.417	269%	Nonparametric
Benzo(a)pyrene	50-32-8	ug/kg	Fines	40	9	23%	0.37	0.51	0.44	0.2175	0.9002	20	3.134	348%	Nonparametric
Benzo(b)fluoranthene	205-99-2	ug/kg	Bulk	40	6	15%	0.49	0.95	0.75	0.2975	1.563	47	7.373	472%	Nonparametric
Benzo(b)fluoranthene	205-99-2	ug/kg	Fines	40	14	35%	0.47	0.65	0.62	0.285	2.23	61	9.571	429%	Nonparametric
Benzo(g,h,i)perylene	191-24-2	ug/kg	Bulk	40	1	3%	0.98	1.9	18	0.575	1.036	18	2.753	266%	Nonparametric
Benzo(g,h,i)perylene	191-24-2	ug/kg	Fines	40	5	13%	0.92	1.3	1.4	0.5	1.118	19	2.929	262%	Nonparametric
Benzo(k)fluoranthene	207-08-9	ug/kg	Bulk	40	1	3%	0.74	1.4	20	0.4375	0.9455	20	3.091	327%	Nonparametric
Benzo(k)fluoranthene	207-08-9	ug/kg	Fines	40	5	13%	0.7	0.97	1	0.4	1.096	25	3.885	354%	Nonparametric
Chrysene	218-01-9	ug/kg	Bulk	40	18	45%	0.34	0.58	0.38	0.2625	2.178	62	9.725	447%	Nonparametric
Chrysene	218-01-9	ug/kg	Fines	40	23	58%	0.34	0.44	0.35	0.405	3.849	110	17.29	449%	Nonparametric
Dibenzo(a,h)anthracene	53-70-3	ug/kg	Bulk	40	1	3%	1.2	2.3	13	0.7	1.03	13	1.945	189%	Nonparametric
Dibenzo(a,h)anthracene	53-70-3	ug/kg	Fines	40	3	8%	1.1	1.5	1.5	0.6	1.012	14	2.119	209%	Nonparametric
Fluoranthene	206-44-0	ug/kg	Bulk	40	17	43%	0.29	0.49	0.35	0.21	1.498	36	5.658	378%	Nonparametric
Fluoranthene	206-44-0	ug/kg	Fines	40	31	78%	0.29	0.38	0.29	0.59	2.924	63	10.2	349%	Nonparametric
Fluorene	86-73-7	ug/kg	Bulk	40	2	5%	0.48	2.7	1	0.285	0.3556	1.1	0.2364	66%	Nonparametric
Fluorene	86-73-7	ug/kg	Fines	40	11	28%	0.46	0.61	0.6	0.2625	0.576	4	0.8164	142%	Nonparametric
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	Bulk	40	4	10%	0.47	0.9	0.53	0.28	0.6018	12	1.85	307%	Nonparametric
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	Fines	40	10	25%	0.44	0.61	0.48	0.2625	0.7009	12	1.866	266%	Nonparametric

Table 2. Descriptive Statistics for the Bulk and Fine Fraction of Soils

Analyte	CAS	Result unit	Fraction	Number of Samples Analyzed	Number Detects	Percent Detected	Minimum Detection Limit	Maximum Detection Limit	Minimum Detect	Median	Mean	Maximum Detect	Standard Deviation	Percent Coefficient of variation	Distribution
Naphthalene	91-20-3	ug/kg	Bulk	40	14	35%	0.3	9	0.42	0.2075	0.9801	14	2.307	235%	Nonparametric
Naphthalene	91-20-3	ug/kg	Fines	40	35	88%	0.31	0.37	0.32	1.05	2.515	24	4.38	174%	Lognormal
Phenanthrene	85-01-8	ug/kg	Bulk	40	27	68%	0.34	2.3	0.37	0.65	1.822	25	4.31	237%	Nonparametric
Phenanthrene	85-01-8	ug/kg	Fines	40	39	98%	3.4	3.4	0.37	1.3	4.025	43	9.103	226%	Nonparametric
Pyrene	129-00-0	ug/kg	Bulk	40	14	35%	0.34	0.66	0.5	0.235	2.455	74	11.63	474%	Nonparametric
Pyrene	129-00-0	ug/kg	Fines	40	26	65%	0.34	0.45	0.36	0.54	4.057	110	17.36	428%	Nonparametric
Low Molecular Weight PAH (ND=0)	LPAH-0	ug/kg	Bulk	40	31	78%	0.48	9	0.37	0.725	3.975	61	10.03	252%	Nonparametric
Low Molecular Weight PAH (ND=0)	LPAH-0	ug/kg	Fines	40	40	100%	--	--	0.37	3.25	9.85	110	19.62	199%	Lognormal
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	ug/kg	Bulk	40	31	78%	1.4	7.9	1.6	2.2	5.098	64	10.29	202%	Nonparametric
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	ug/kg	Fines	40	40	100%	--	--	1.6	4.2	10.75	110	19.43	181%	Nonparametric
High Molecular Weight PAH (ND=0)	HPAH-0	ug/kg	Bulk	40	19	48%	1.2	2	0.4	0.85	10.02	310	48.73	486%	Nonparametric
High Molecular Weight PAH (ND=0)	HPAH-0	ug/kg	Fines	40	33	83%	1.2	1.5	0.29	1.75	17.11	470	74.12	433%	Nonparametric
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	ug/kg	Bulk	40	19	48%	2.8	4.7	3.3	2.275	11.71	310	48.48	414%	Nonparametric
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	ug/kg	Fines	40	33	83%	2.8	3.6	2.9	4.35	18.94	470	73.77	389%	Nonparametric

Table 3. Detect Statistics for US Mag Soils

Analyte	Number of samples: Bulk	Number of samples: Fines	Percent Detected: Bulk	Percent Detected: Fines	Detected Pairs
Calculated TEQ (ND=0), Mammals	40	40	100%	100%	40
Calculated TEQ (ND=1/2 DL), Mammals	40	40	100%	100%	40
Calculated TEQ (ND=0), Avian	40	40	100%	100%	40
Calculated TEQ (ND=1/2 DL), Avian	40	40	100%	100%	40
Total PCBs	40	40	100%	100%	40
Aluminum	40	40	100%	100%	40
Antimony	40	40	48%	53%	18
Arsenic	40	40	100%	100%	40
Barium	40	40	100%	100%	40
Beryllium	40	40	100%	100%	40
Cadmium	40	40	58%	55%	20
Calcium	40	40	100%	100%	40
Chromium	40	40	100%	100%	40
Cobalt	40	40	100%	100%	40
Copper	40	40	100%	100%	40
Iron	40	40	100%	100%	40
Lead	40	40	100%	100%	40
Magnesium	40	40	100%	100%	40
Manganese	40	40	100%	100%	40
Mercury	40	40	33%	65%	10
Molybdenum	40	40	80%	83%	30
Nickel	40	40	100%	100%	40
Potassium	40	40	98%	100%	39
Selenium	40	40	33%	45%	12
Silver	40	40	5%	3%	1
Sodium	40	40	100%	100%	40
Thallium	40	40	5%	10%	1
Vanadium	40	40	100%	100%	40
Zinc	40	40	100%	100%	40
Biphenyl	40	40	0%	0%	0
1,2,4,5-Tetrachlorobenzene	40	40	0%	3%	0
2,3,4,6-Tetrachlorophenol	40	40	0%	0%	0
2,4,5-Trichlorophenol	40	40	0%	0%	0
2,4,6-Trichlorophenol	40	40	0%	0%	0
2,2-Oxybis(1-chloropropane)	40	40	0%	0%	0
2,4-Dichlorophenol	40	40	0%	0%	0
2,4-Dimethylphenol	40	40	0%	0%	0
2,4-Dinitrophenol	40	40	5%	0%	0
2,4-Dinitrotoluene	40	40	0%	0%	0
2,6-Dinitrotoluene	40	40	0%	0%	0
2-Chloronaphthalene	40	40	0%	0%	0
2-Chlorophenol	40	40	0%	0%	0
o-Cresol	40	40	0%	0%	0
2-Nitroaniline	40	40	0%	0%	0
2-Nitrophenol	40	40	0%	0%	0

Table 3. Detect Statistics for US Mag Soils

Analyte	Number of samples: Bulk	Number of samples: Fines	Percent Detected: Bulk	Percent Detected: Fines	Detected Pairs
3,3'-Dichlorobenzidine	40	40	0%	0%	0
3-Nitroaniline	40	40	0%	0%	0
Dinitro-o-cresol	40	40	0%	0%	0
4-Bromophenyl phenyl ether	40	40	0%	0%	0
4-Chloro-3-methylphenol	40	40	0%	0%	0
p-Chloroaniline	40	40	0%	0%	0
4-Chlorophenyl phenyl ether	40	40	0%	0%	0
3 & 4 Methylphenol	40	40	0%	0%	0
p-Nitroaniline	40	40	0%	0%	0
4-Nitrophenol	40	40	0%	0%	0
Acetophenone	40	40	8%	83%	3
Benzaldehyde	40	40	0%	43%	0
Benzyl butyl phthalate	40	40	3%	3%	0
Bis(2-chloroethoxy)methane	40	40	0%	0%	0
Dichloroethyl ether	40	40	0%	0%	0
Bis(2-ethylhexyl)phthalate	40	40	10%	15%	2
Carbazole	40	40	0%	0%	0
Dibenzofuran	40	40	0%	0%	0
Diethyl Phthalate	40	40	0%	0%	0
Dimethylphthalate	40	40	0%	0%	0
Dibutyl Phthalate	40	40	0%	5%	0
Di-n-octyl phthalate	40	40	3%	0%	0
Hexachlorobenzene	40	40	60%	88%	23
Hexachlorobutadiene	40	40	0%	0%	0
Hexachlorocyclopentadiene	40	40	0%	0%	0
Hexachloroethane	40	40	0%	3%	0
Isophorone	40	40	0%	0%	0
Nitrobenzene	40	40	0%	0%	0
n-Nitrosodimethylamine	40	40	0%	0%	0
n-Nitrosodi-n-propylamine	40	40	0%	0%	0
n-Nitrosodiphenylamine	40	40	0%	0%	0
Pentachlorophenol	40	40	8%	10%	0
Phenol	40	40	3%	20%	1
2-Methylnaphthalene	40	40	25%	75%	10
Acenaphthene	40	40	5%	8%	2
Acenaphthylene	40	40	0%	3%	0
Anthracene	40	40	15%	23%	5
Benzo(a)anthracene	40	40	23%	35%	9
Benzo(a)pyrene	40	40	15%	23%	6
Benzo(b)fluoranthene	40	40	15%	35%	6
Benzo(g,h,i)perylene	40	40	3%	13%	1
Benzo(k)fluoranthene	40	40	3%	13%	1
Chrysene	40	40	45%	58%	16
Dibenzo(a,h)anthracene	40	40	3%	8%	1
Fluoranthene	40	40	43%	78%	15

Table 3. Detect Statistics for US Mag Soils

Analyte	Number of samples		Percent Detected		Detected Pairs
	Bulk	Fines	Bulk	Fines	
Fluorene	40	40	5%	28%	2
Indeno(1,2,3-cd)pyrene	40	40	10%	25%	3
Naphthalene	40	40	35%	88%	14
Phenanthrene	40	40	68%	98%	27
Pyrene	40	40	35%	65%	13
Low Molecular Weight PAH (ND=0)	40	40	78%	100%	31
Low Molecular Weight PAH (ND=1/2DL)	40	40	78%	100%	31
High Molecular Weight PAH (ND=0)	40	40	48%	83%	18
High Molecular Weight PAH (ND=1/2DL)	40	40	48%	83%	18

Table 4. Advantages and Limitations of Each Test for a Linear Trend

	Simple Linear Regression	**Log-Linear Regression**	**Mann-Kendall** (w/ Sen's Slope Estimator)	**Median Regression**
Minimum number of samples	8-12	8-12	8-12	8-12
Model	$y = \beta_1 x + \beta_0$	$\ln(y) = \beta_1 * \ln(x) + \beta_0$	*see Section 3.3.2.3*	$y_\tau = \beta_1 x + \beta_0$
Data distribution requirements	Normal	Lognormal	None	None
Sensitivity to outliers	High	High	None	Low
Handling of Non-Detects	Cannot accommodate non-detects	Cannot accommodate non-detects	Accommodates non-detects	Accommodates non-detects
Handling of zeroes	Accommodates zeros	Cannot accommodate zeros	Accommodates zeros	Accommodates zeros
Significance testing	Provides an r^2 and *p*-value, slope and intercept	Provides and r^2 and *p*-value, slope and intercept	Provides a *p*-value and an estimate of the r^2	Provides a slope and intercept
Parametric approach	Parametric	Parametric	Nonparametric	Semi parametric

Notes:

r^2 = coefficient of determination

Table 5. Mann-Kendall Trend Tests and Median Regression Results for Analytes with at Least Eight Detect-Detect Pairs

		Number of samples			Mann-Kendall Correlation			Median Regression	
Analyte	CAS	Bulk	Fines	Detected Pairs	p-value	*tau*	*tau*^{2} (r^2 equivalent)	Intercept	Coefficient
Calculated TEQ (ND=0), Mammals	CALC_DX_0	40	40	40	0.000	0.841	0.71	0.46	1.12
Calculated TEQ (ND=1/2 DL), Mammals	CALC_DX_2	40	40	40	0.000	0.805	0.65	0.39	1.12
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	40	40	40	0.000	0.650	0.42	42.40	1.33
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	40	40	40	0.000	0.621	0.39	32.40	1.33
Total PCBs	1336-36-3	40	40	40	0.000	0.783	0.61	72.00	1.27
Aluminum	7429-90-5	40	40	40	0.000	0.806	0.65	1490.00	0.95
Antimony	7440-36-0	40	40	18	0.002	0.550	0.30	0.06	0.87
Arsenic	7440-38-2	40	40	40	0.000	0.767	0.59	0.02	1.02
Barium	7440-39-3	40	40	40	0.000	0.578	0.33	49.80	0.62
Beryllium	7440-41-7	40	40	40	0.000	0.765	0.59	0.04	1.05
Cadmium	7440-43-9	40	40	20	0.000	0.743	0.55	0.04	0.86
Calcium	7440-70-2	40	40	40	0.000	0.603	0.36	-9170.00	0.85
Chromium	7440-47-3	40	40	40	0.000	0.716	0.51	1.87	0.97
Cobalt	7440-48-4	40	40	40	0.000	0.795	0.63	0.32	0.99
Copper	7440-50-8	40	40	40	0.000	0.474	0.22	13.90	0.89
Iron	7439-89-6	40	40	40	0.000	0.741	0.55	1520.00	0.99
Lead	7439-92-1	40	40	40	0.000	0.799	0.64	0.99	0.90
Magnesium	7439-95-4	40	40	40	0.000	0.689	0.47	25.40	1.08
Manganese	7439-96-5	40	40	40	0.000	0.795	0.63	-18.10	1.23
Mercury	7439-97-6	40	40	10	0.146	0.368	0.14	-0.01	1.46
Molybdenum	7439-98-7	40	40	30	0.000	0.811	0.66	0.32	0.78
Nickel	7440-02-0	40	40	40	0.000	0.702	0.49	-2.33	1.57
Potassium	7440-09-7	40	40	39	0.000	0.809	0.65	1390.00	0.66
Selenium	7782-49-2	40	40	12	0.112	0.357	0.13	0.17	0.57
Sodium	7440-23-5	40	40	40	0.000	0.842	0.71	833.00	0.51
Vanadium	7440-62-2	40	40	40	0.000	0.772	0.60	2.56	0.98
Zinc	7440-66-6	40	40	40	0.000	0.657	0.43	8.72	0.94
Hexachlorobenzene	118-74-1	40	40	23	0.000	0.758	0.57	1.92	1.34
2-Methylnaphthalene	91-57-6	40	40	10	0.002	0.764	0.58	0.21	1.53
Benzo(a)anthracene	56-55-3	40	40	9	0.028	0.592	0.35	-0.26	1.86

Table 5. Mann-Kendall Trend Tests and Median Regression Results for Analytes with at Least Eight Detect-Detect Pairs

		Number of samples			Mann-Kendall Correlation			Median Regression	
Analyte	**CAS**	**Bulk**	**Fines**	**Detected Pairs**	**p-value**	***tau***	***tau*^{2} (r^2 equivalent)**	**Intercept**	**Coefficient**
Chrysene	218-01-9	40	40	16	0.000	0.667	0.44	-0.60	1.78
Fluoranthene	206-44-0	40	40	15	0.003	0.574	0.33	-0.15	1.75
Naphthalene	91-20-3	40	40	14	0.054	0.393	0.15	0.39	1.69
Phenanthrene	85-01-8	40	40	27	0.000	0.545	0.30	0.18	1.67
Pyrene	129-00-0	40	40	13	0.057	0.410	0.17	-0.12	1.49
Low Molecular Weight PAH (ND=0)	LPAH-0	40	40	31	0.000	0.497	0.25	1.34	1.78
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	40	40	31	0.000	0.551	0.30	-0.06	1.72
High Molecular Weight PAH (ND=0)	HPAH-0	40	40	18	0.001	0.551	0.30	1.90	1.51
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	40	40	18	0.002	0.532	0.28	-0.41	1.52

Table 6. Median Fine-to-Bulk Ratio for Constituents With One to Seven Detect-Detect Pairs

Analyte	CAS	Analyte group	Number of Bulk	Number of Fines	Detected Pairs	Median Regression Coefficients	Median Fine: Bulk Ratio
2-Methylnaphthalene	91-57-6	PAH	40	40	10	1.5	—
Acenaphthene	83-32-9	PAH	40	40	2	—	0.9
Benzo(a)anthracene	56-55-3	PAH	40	40	9	1.9	—
Benzo(a)pyrene	50-32-8	PAH	40	40	6	—	0.9
Benzo(b)fluoranthene	205-99-2	PAH	40	40	6	—	1.0
Benzo(g,h,i)perylene	191-24-2	PAH	40	40	1	—	0.9
Benzo(k)fluoranthene	207-08-9	PAH	40	40	1	—	0.9
Chrysene	218-01-9	PAH	40	40	16	1.8	—
Dibenzo(a,h)anthracene	53-70-3	PAH	40	40	1	—	0.9
Fluoranthene	206-44-0	PAH	40	40	15	1.8	—
Fluorene	86-73-7	PAH	40	40	2	—	0.9
Indeno(1,2,3-cd)pyrene	193-39-5	PAH	40	40	3	—	0.9
Naphthalene	91-20-3	PAH	40	40	14	1.7	—
Phenanthrene	85-01-8	PAH	40	40	27	1.7	—
Pyrene	129-00-0	PAH	40	40	13	1.5	—
High Molecular Weight PAH (ND=0)	HPAH-0	PAH	40	40	18	1.5	—
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	PAH	40	40	18	1.5	—
Low Molecular Weight PAH (ND=0)	LPAH-0	PAH	40	40	31	1.8	—
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	PAH	40	40	31	1.7	—
Acetophenone	98-86-2	SVOC	40	40	3	—	5.3
Anthracene	120-12-7	SVOC	40	40	5	—	0.9
Bis(2-ethylhexyl)phthalate	117-81-7	SVOC	40	40	2	—	0.9
Hexachlorobenzene	118-74-1	SVOC	40	40	23	1.3	—
Phenol	108-95-2	SVOC	40	40	1	—	0.9
Silver	7440-22-4	Metal	40	40	1	—	0.9
Thallium	7440-28-0	Metal	40	40	1	—	0.9

*Table 7. Summary of Bulk-to-Fine Adjustments**

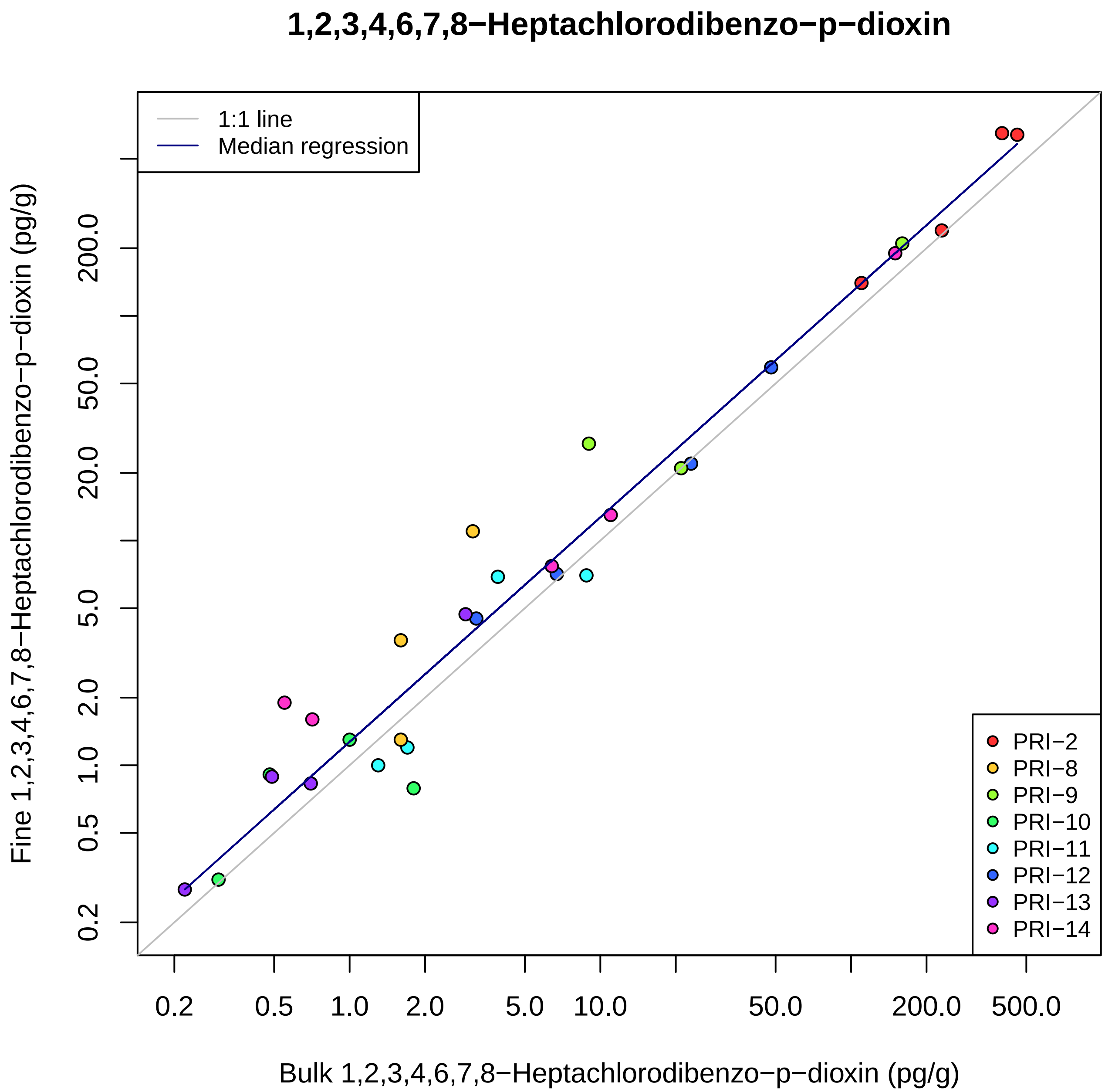
Analyte	Bulk-to-Fine Adjustment	
	Slope	*y*-Intercept
Aluminum	0.95	1490
Antimony	0.87	0.06
Arsenic	1.02	0.02
Barium	0.62	50
Beryllium	1.05	0.04
Cadmium	0.86	0.04
Calcium	0.85	-9170
Chromium	0.97	1.87
Cobalt	0.99	0.32
Copper	0.89	14
Iron	0.99	1520
Lead	0.90	0.99
Magnesium	1.08	25
Manganese	1.23	-18
Mercury	1.46	-0.01
Molybdenum	0.78	0.32
Nickel	1.57	-2.33
Potassium	0.66	1390
Selenium	0.57	0.17
Silver	1.0	0
Sodium	0.51	833
Thallium	1.0	0
Vanadium	0.98	2.56
Zinc	0.94	8.72
Calculated TEQ (ND=0), Avian	1.33	42
Calculated TEQ (ND=0), Mammals	1.12	0.46
Calculated TEQ (ND=1/2 DL), Avian	1.33	32
Calculated TEQ (ND=1/2 DL), Mammals	1.12	0.39
2-Methylnaphthalene	2.0	0
2-Methylnaphthalene	1.53	0.21
Acenaphthene	2.0	0
Acetophenone	2.0	0
Anthracene	2.0	0
Benzo(a)anthracene	2.0	0
Benzo(a)pyrene	2.0	0
Benzo(b)fluoranthene	2.0	0
Benzo(g,h,i)perylene	2.0	0
Benzo(k)fluoranthene	2.0	0
Chrysene	2.0	0
Dibenzo(a,h)anthracene	2.0	0
Fluoranthene	2.0	0

Table 7. Summary of Bulk-to-Fine Adjustments *

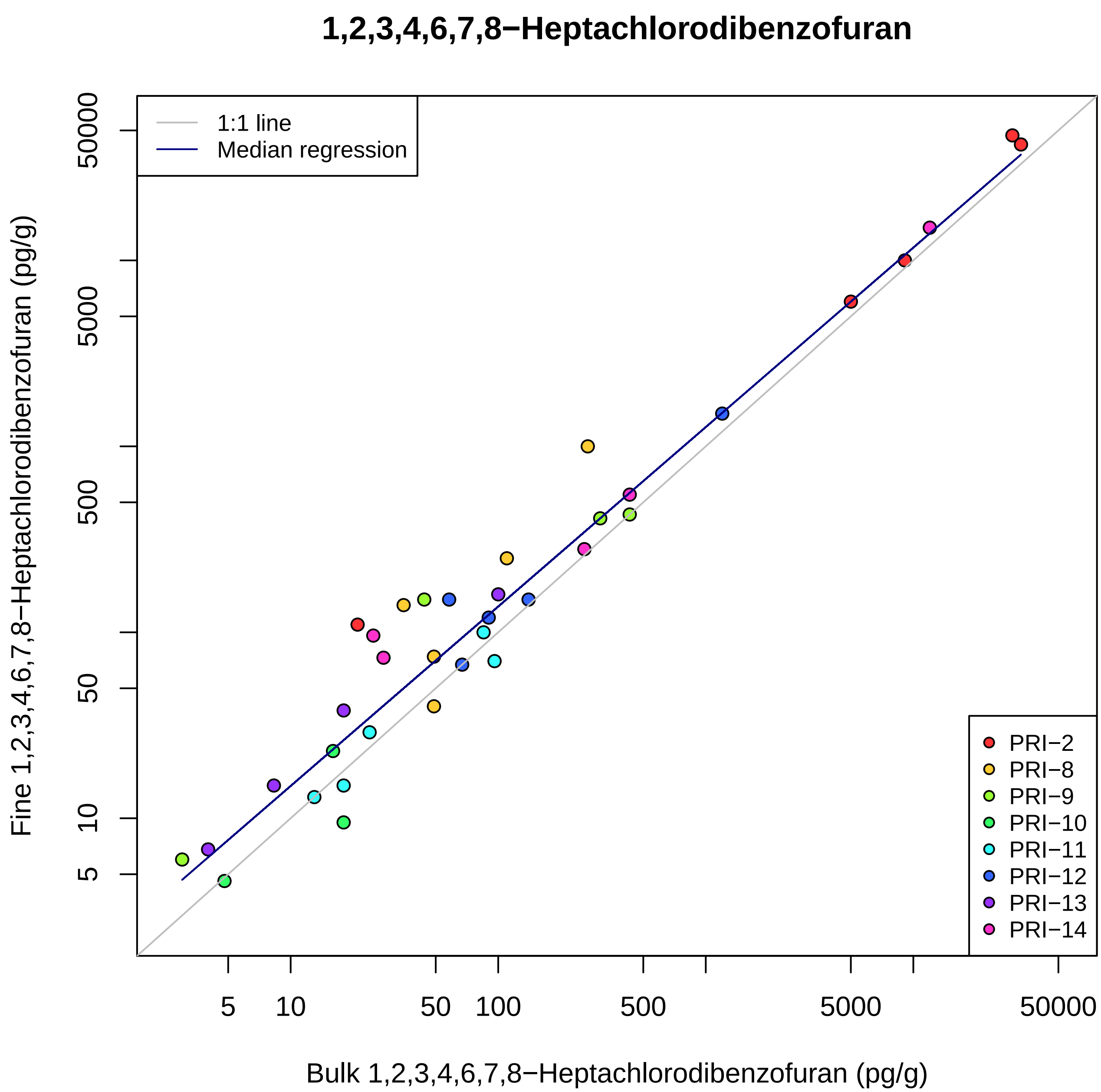
Analyte	Bulk-to-Fine Adjustment	
	Slope	*y*-Intercept
Fluorene	2.0	0
Indeno(1,2,3-cd)pyrene	2.0	0
Naphthalene	2.0	0
Phenanthrene	2.0	0
Pyrene	2.0	0
High Molecular Weight PAH (ND=0)	2.0	0
High Molecular Weight PAH (ND=1/2DL)	2.0	0
Low Molecular Weight PAH (ND=0)	2.0	0
Low Molecular Weight PAH (ND=1/2DL)	2.0	0
Total PCBs	1.27	72
Bis(2-ethylhexyl)phthalate	2.0	0
Phenol	2.0	0
Hexachlorobenzene	1.34	1.92

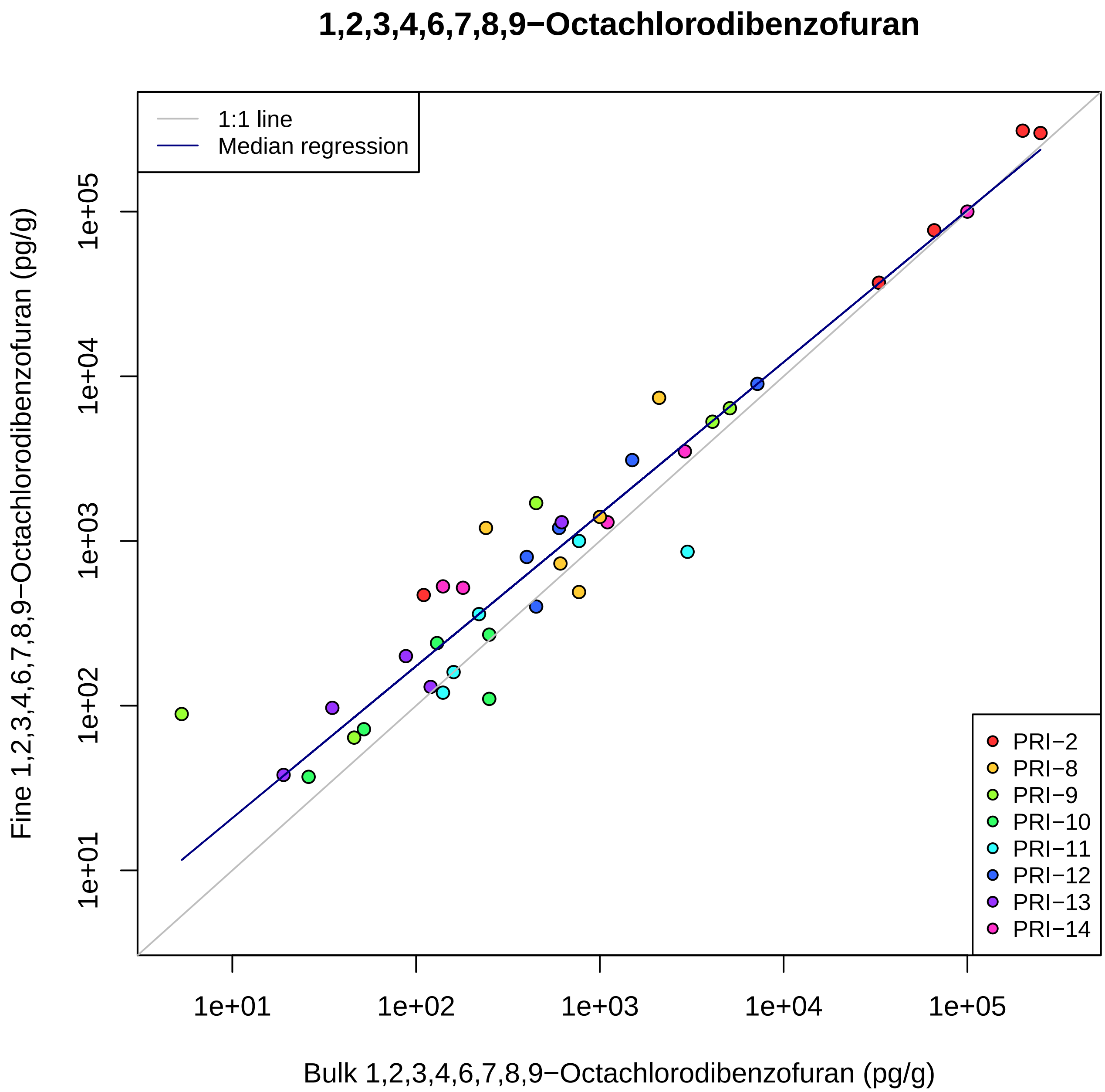
* Apply slope and y-intercept to bulk concentration to adjust for fine fraction concentration

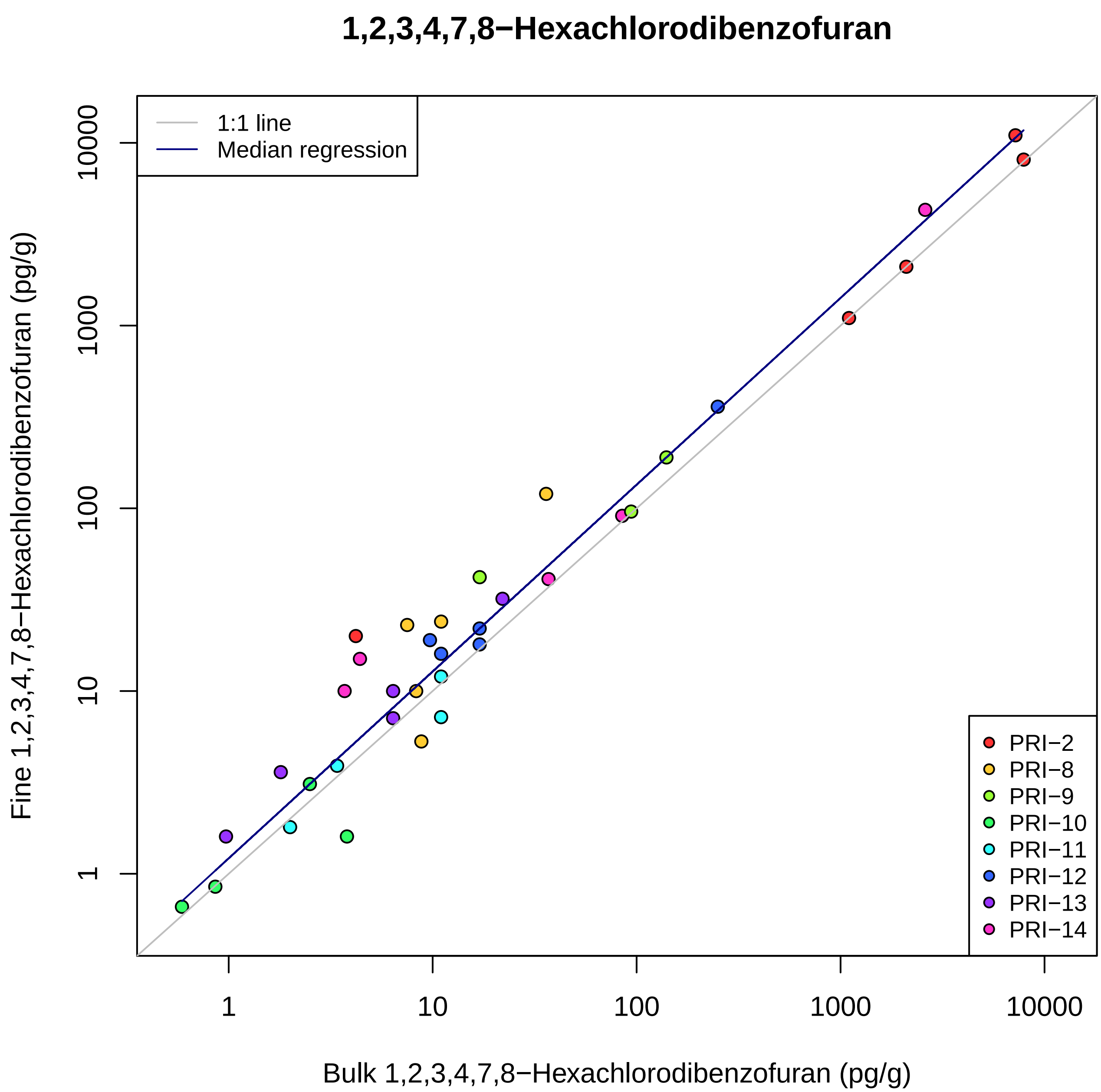
Attachment A
Fine Fraction vs. Bulk Sample
Scatterplots

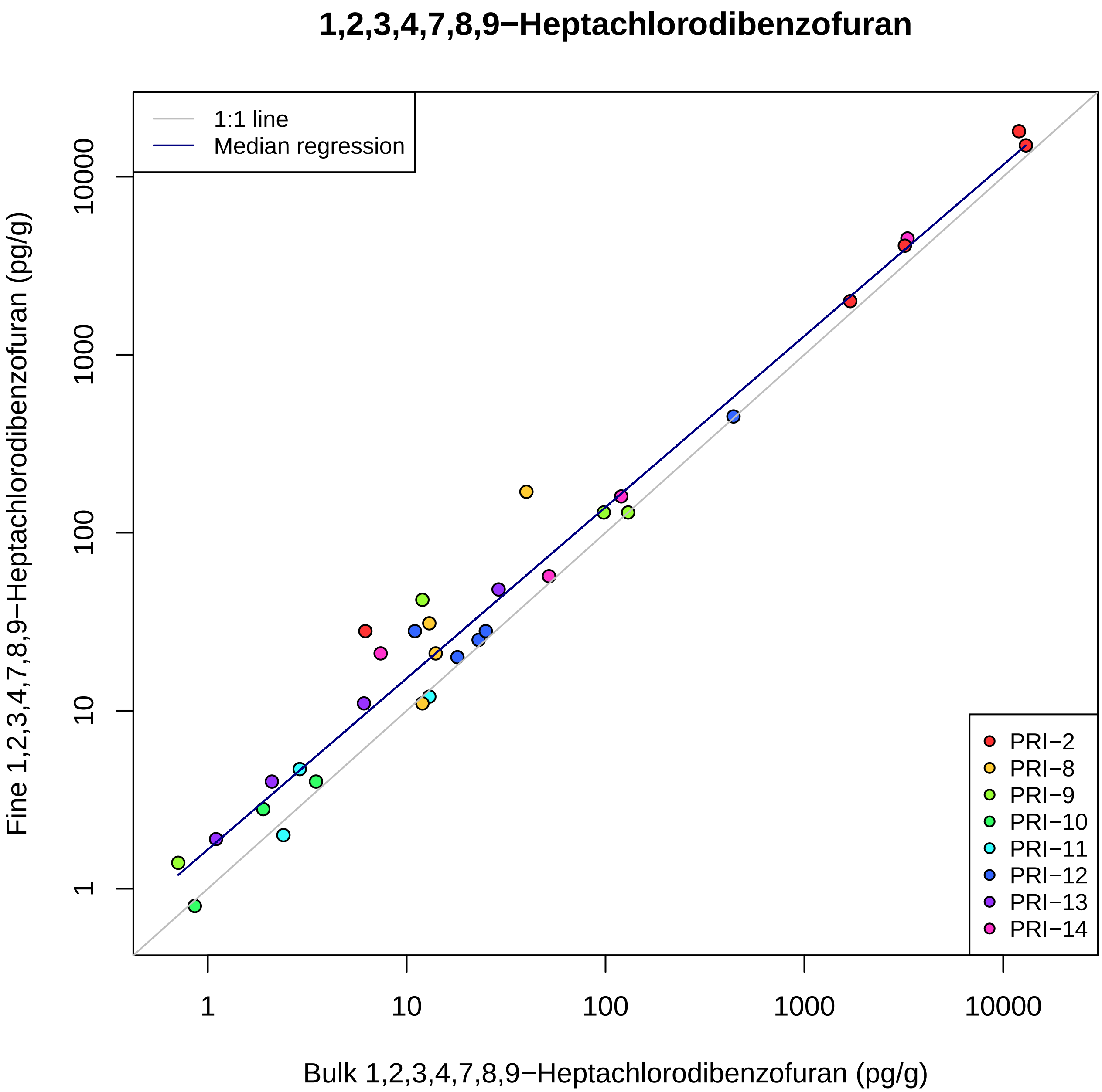


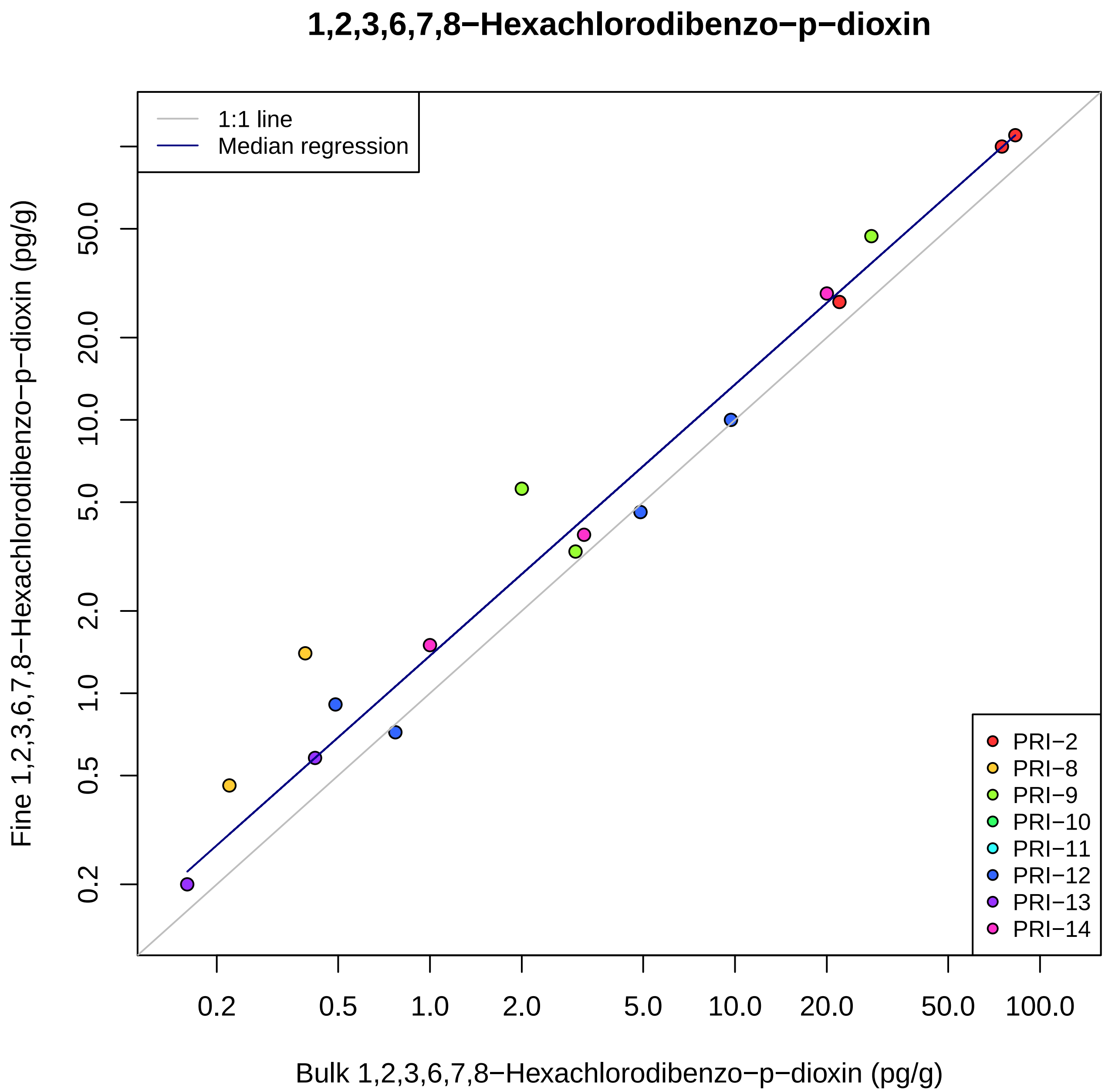
1,2,3,4,6,7,8−Heptachlorodibenzo−p−dioxin
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine 1,2,3,4,6,7,8−Heptachlorodibenzo−p−dioxin (pg/g)
0.2
0.5
1.0
2.0
5.0
20.0
50.0
200.0
0.2
0.5
1.0
2.0
5.0
10.0
50.0
200.0
500.0
Bulk 1,2,3,4,6,7,8−Heptachlorodibenzo−p−dioxin (pg/g)


1,2,3,4,6,7,8−Heptachlorodibenzofuran
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine 1,2,3,4,6,7,8−Heptachlorodibenzofuran (pg/g)
5
10
50
500
5000
50000
Bulk 1,2,3,4,6,7,8−Heptachlorodibenzofuran (pg/g)
5
10
50
100
500
5000
50000

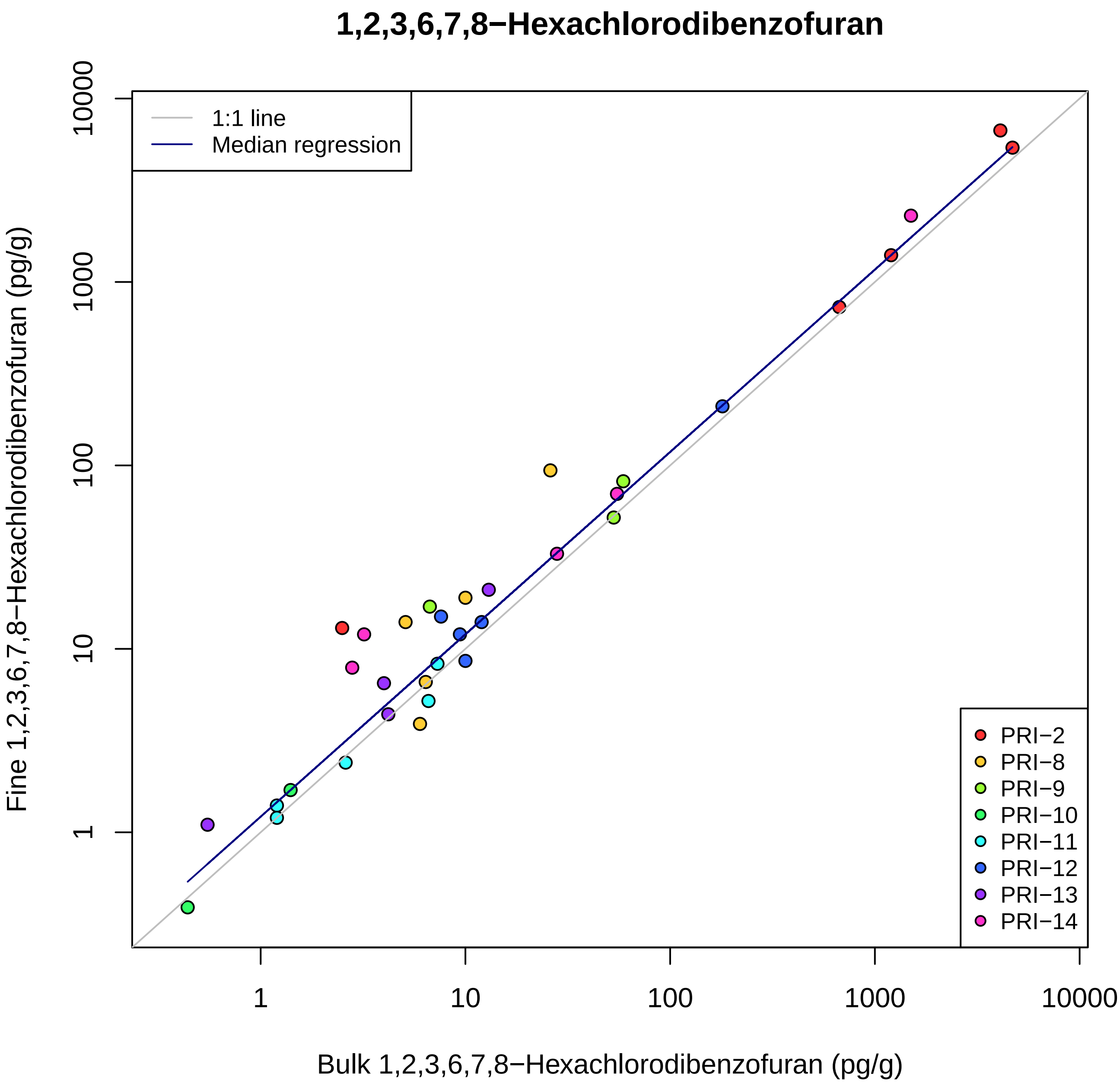

1,2,3,4,6,7,8,9−Octachlorodibenzofuran
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
1e+01
1e+02
1e+03
1e+04
1e+05
Bulk 1,2,3,4,6,7,8,9−Octachlorodibenzofuran (pg/g)
Fine 1,2,3,4,6,7,8,9−Octachlorodibenzofuran (pg/g)


1,2,3,4,7,8−Hexachlorodibenzofuran
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine 1,2,3,4,7,8−Hexachlorodibenzofuran (pg/g)
Bulk 1,2,3,4,7,8−Hexachlorodibenzofuran (pg/g)
1
10
100
1000
10000

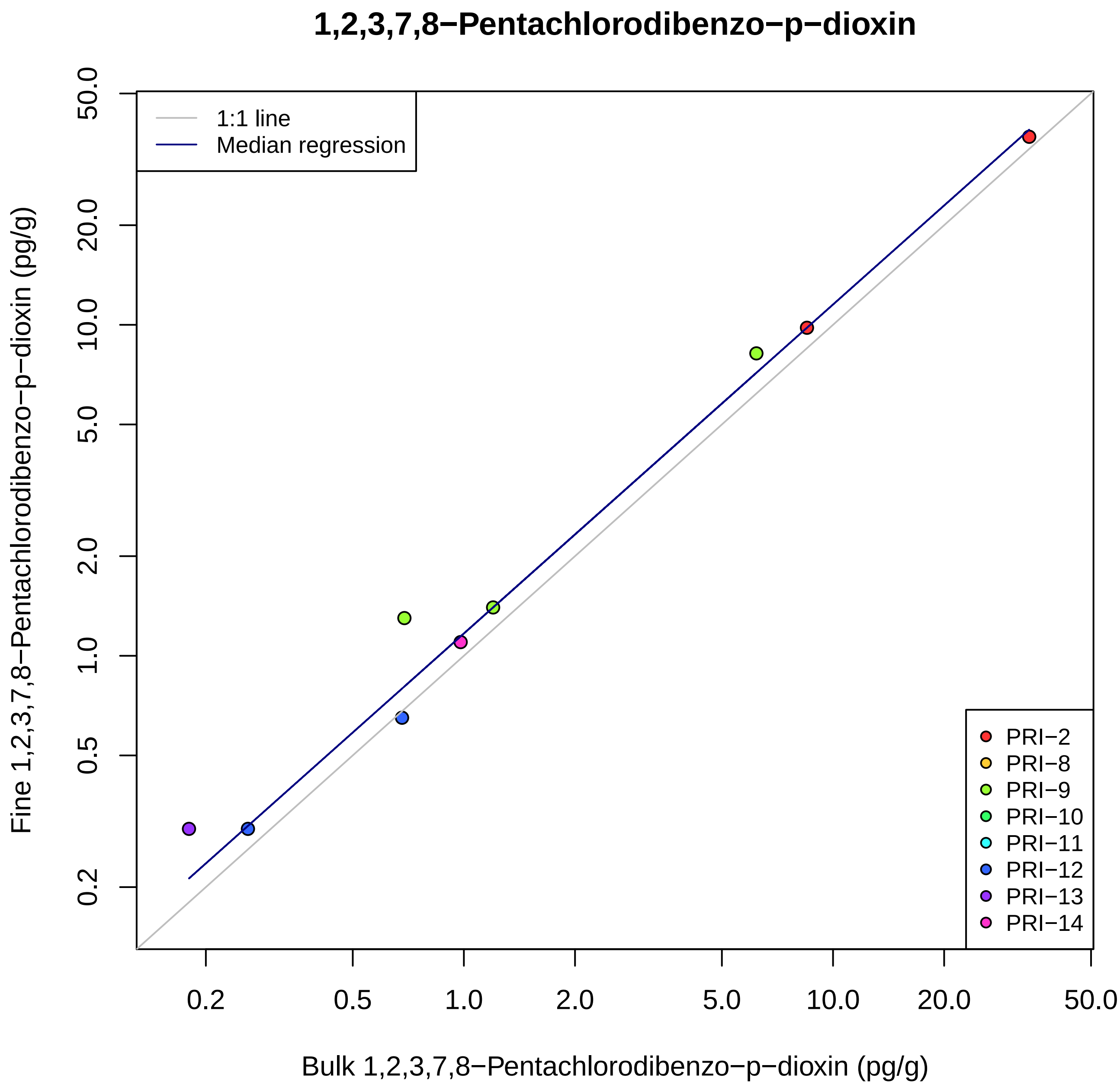

1,2,3,4,7,8,9−Heptachlorodibenzofuran
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine 1,2,3,4,7,8,9−Heptachlorodibenzofuran (pg/g)
Bulk 1,2,3,4,7,8,9−Heptachlorodibenzofuran (pg/g)
1
10
100
1000
10000

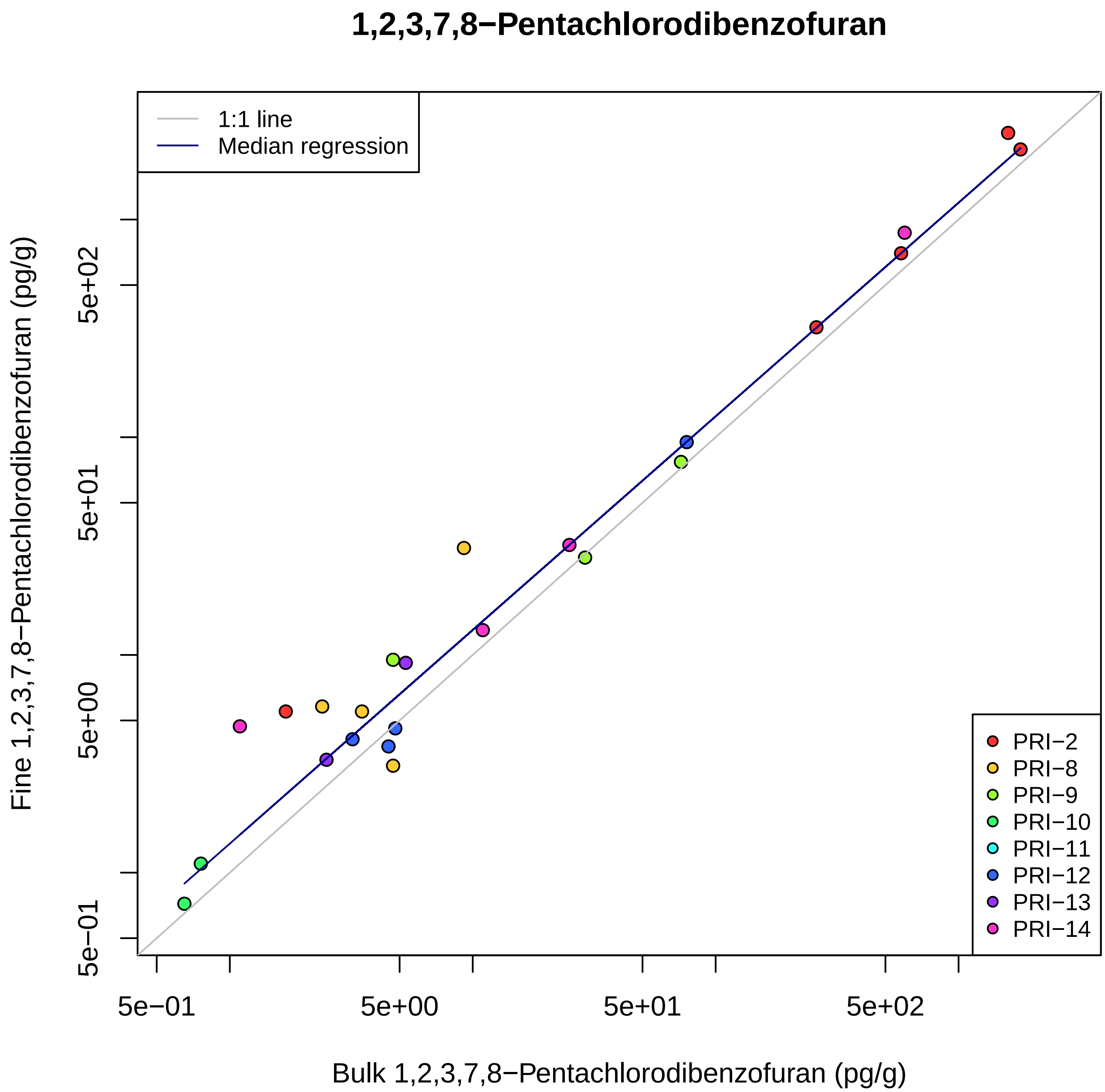


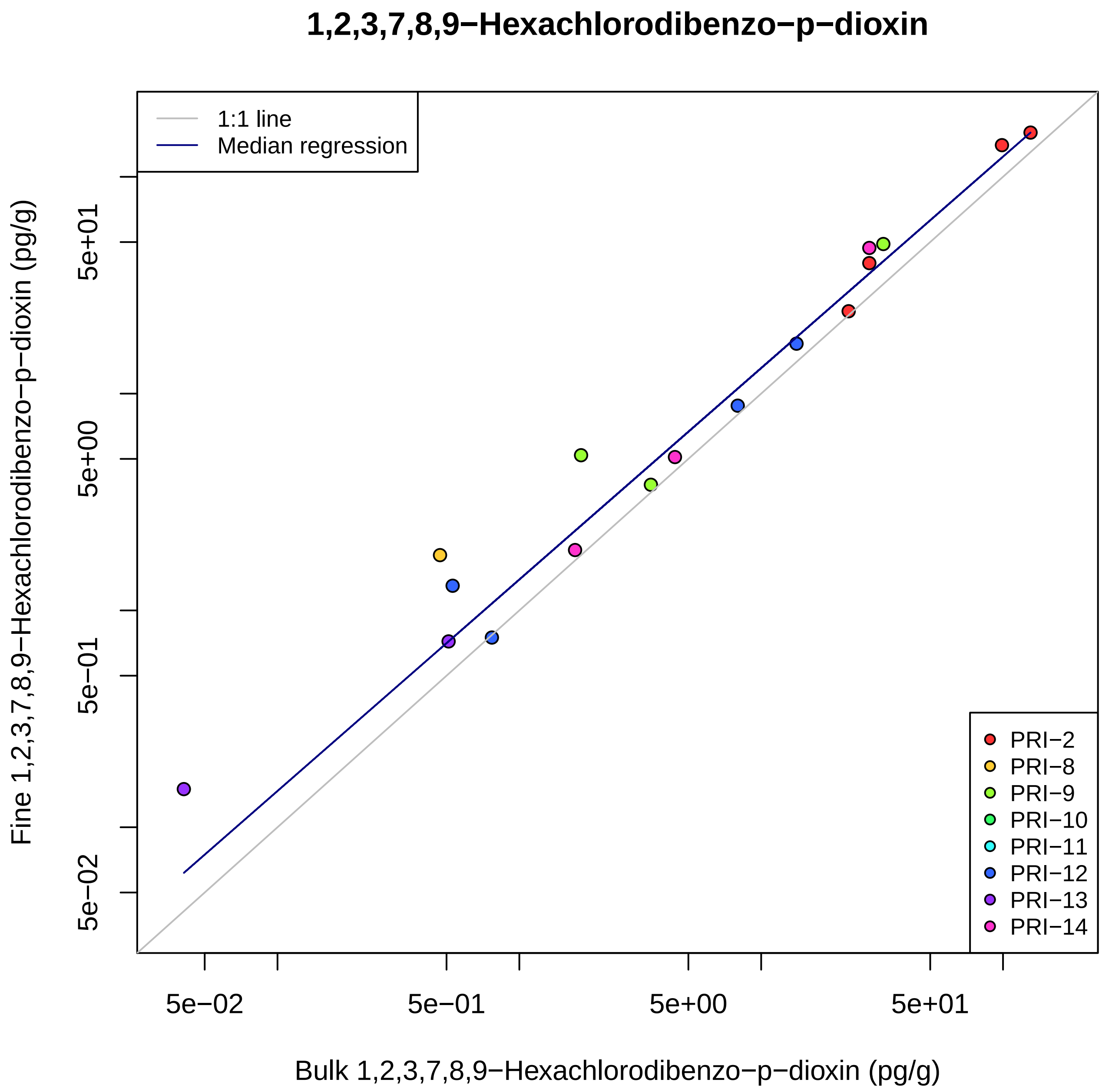
1,2,3,6,7,8−Hexachlorodibenzo−p−dioxin
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine 1,2,3,6,7,8−Hexachlorodibenzo−p−dioxin (pg/g)
0.2
0.5
1.0
2.0
5.0
10.0
20.0
50.0
0.2
0.5
1.0
2.0
5.0
10.0
20.0
50.0
100.0
Bulk 1,2,3,6,7,8−Hexachlorodibenzo−p−dioxin (pg/g)

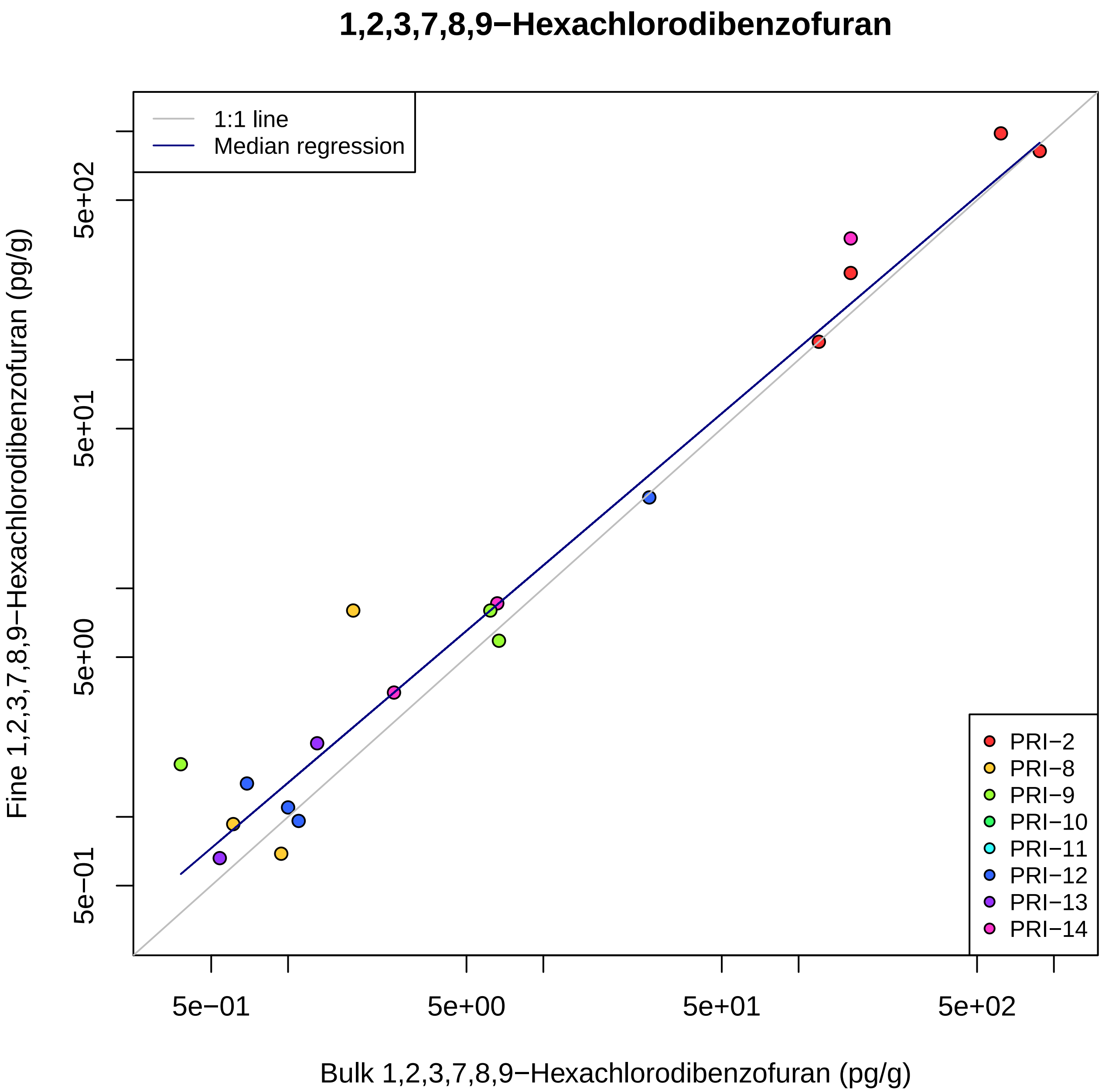


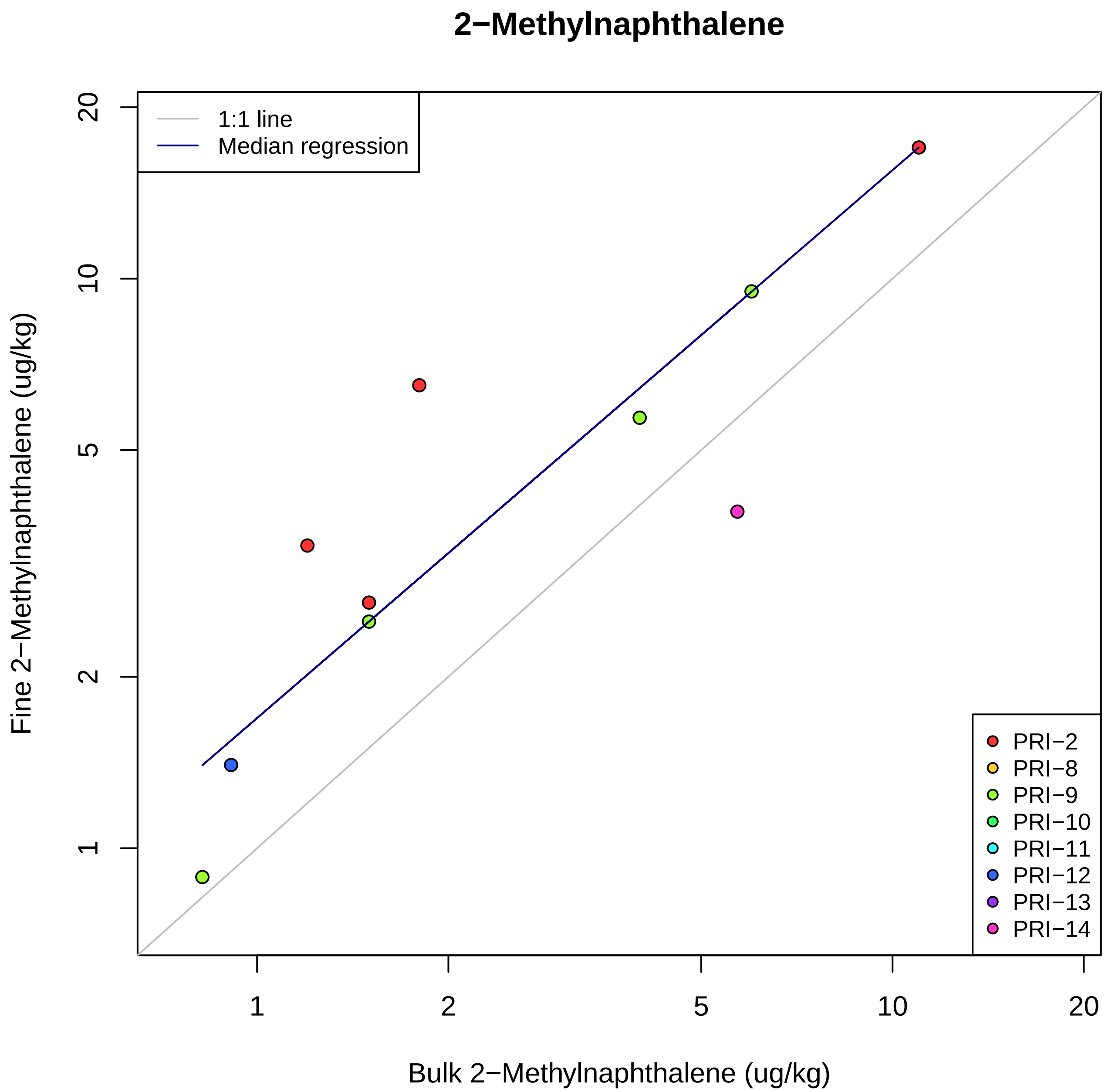
1,2,3,6,7,8−Hexachlorodibenzofuran
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine 1,2,3,6,7,8−Hexachlorodibenzofuran (pg/g)
Bulk 1,2,3,6,7,8−Hexachlorodibenzofuran (pg/g)
1
10
100
1000
10000

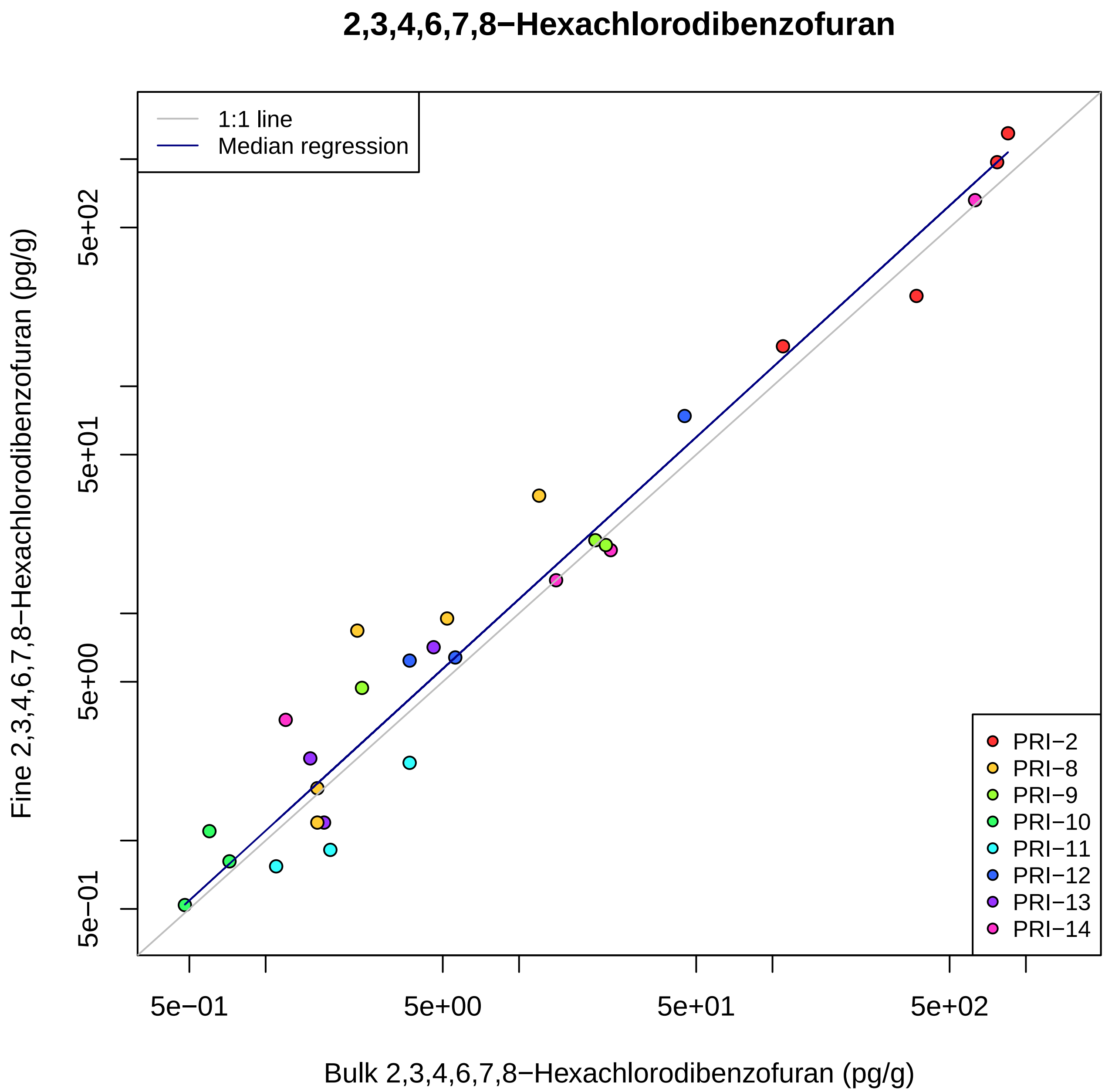

1,2,3,7,8−Pentachlorodibenzo−p−dioxin
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine 1,2,3,7,8−Pentachlorodibenzo−p−dioxin (pg/g)
Bulk 1,2,3,7,8−Pentachlorodibenzo−p−dioxin (pg/g)
0.2
0.5
1.0
2.0
5.0
10.0
20.0
50.0


1,2,3,7,8−Pentachlorodibenzofuran
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
5e−01
5e+00
5e+01
5e+02
Bulk 1,2,3,7,8−Pentachlorodibenzofuran (pg/g)
Fine 1,2,3,7,8−Pentachlorodibenzofuran (pg/g)

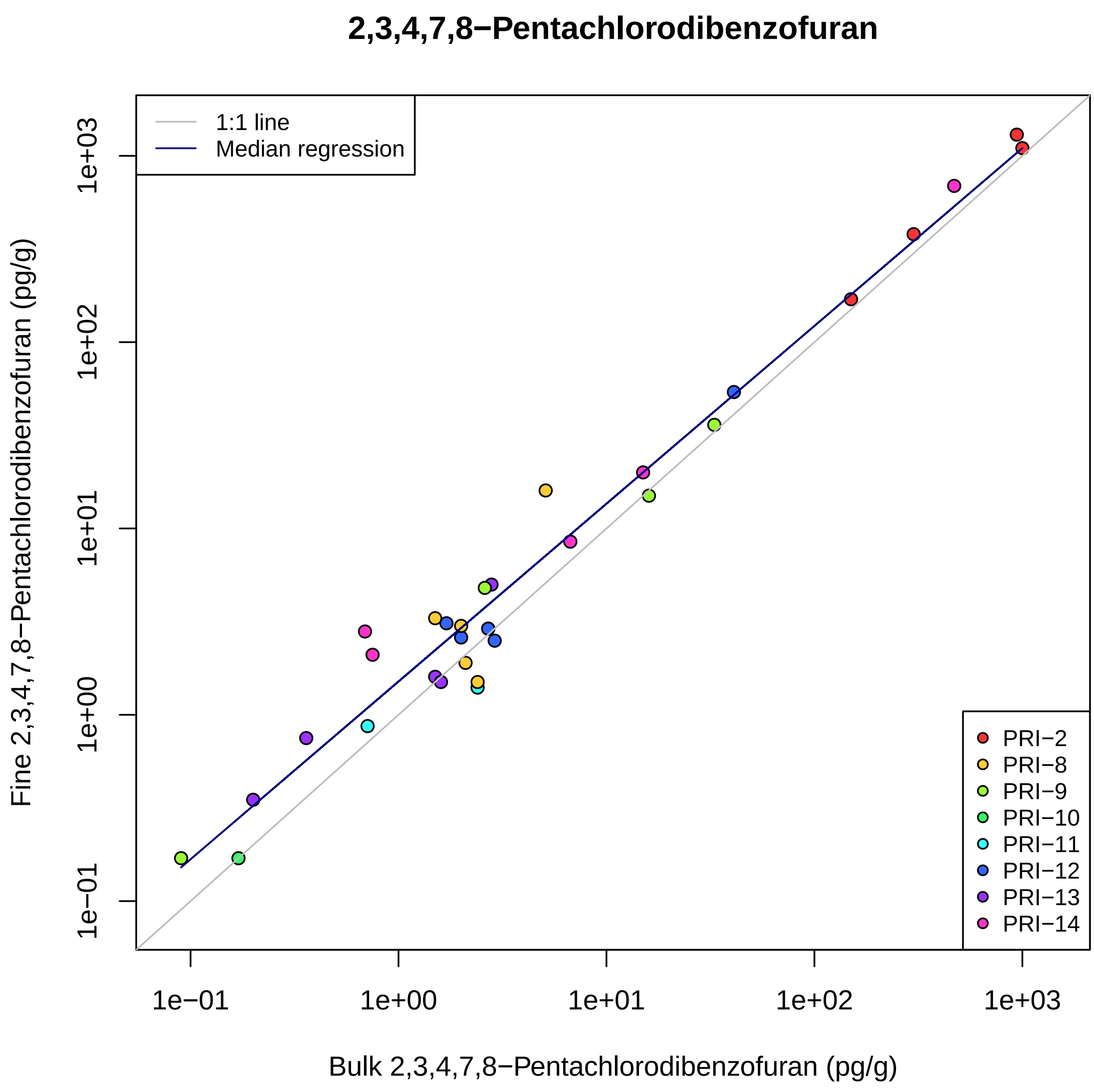

1,2,3,7,8,9−Hexachlorodibenzo−p−dioxin
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine 1,2,3,7,8,9−Hexachlorodibenzo−p−dioxin (pg/g)
5e−02
5e−01
5e+00
5e+01
Bulk 1,2,3,7,8,9−Hexachlorodibenzo−p−dioxin (pg/g)

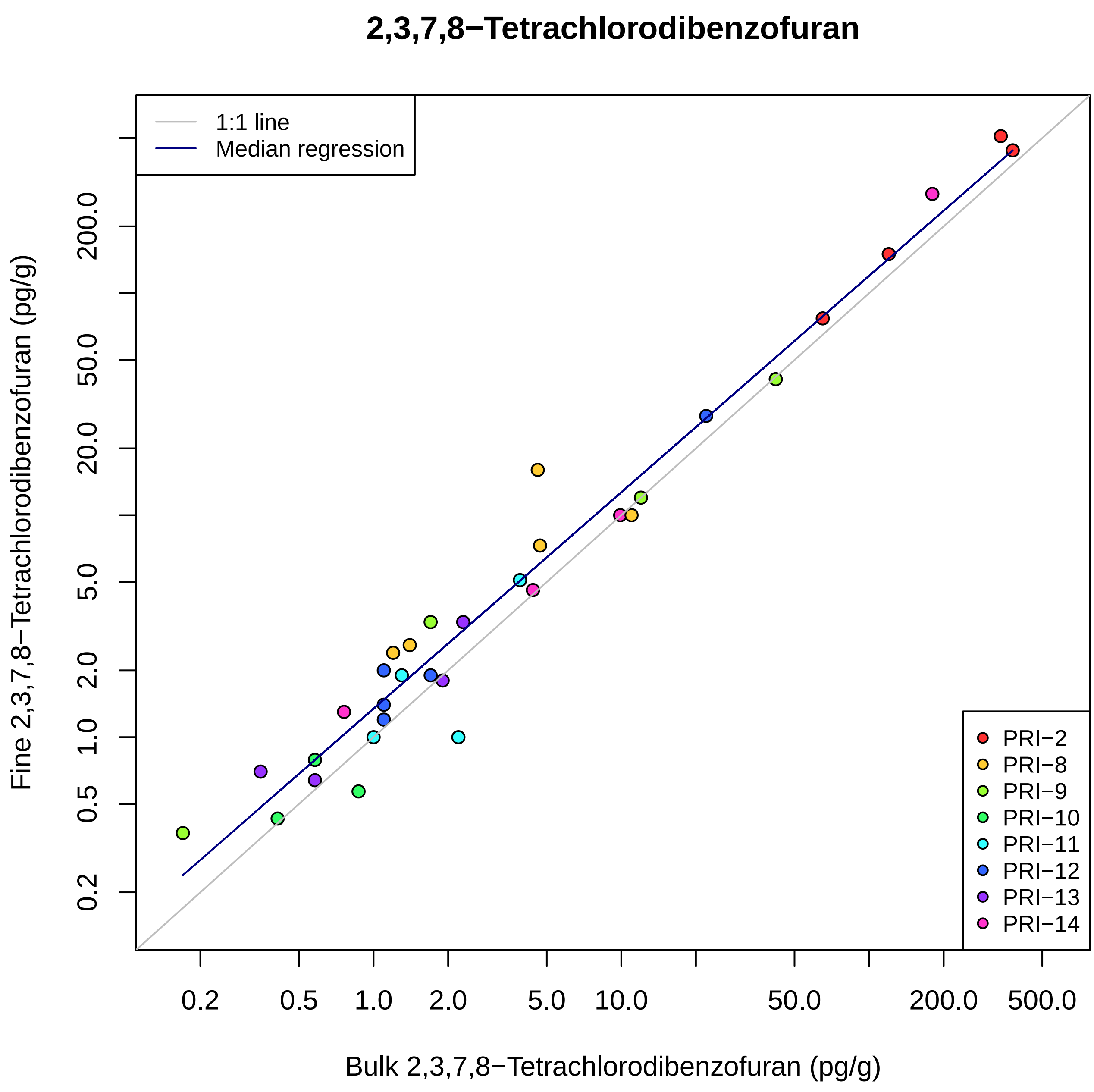

1,2,3,7,8,9−Hexachlorodibenzofuran
1:1 line
Median regression
Fine 1,2,3,7,8,9−Hexachlorodibenzofuran (pg/g)
5e−01
5e+00
5e+01
5e+02
Bulk 1,2,3,7,8,9−Hexachlorodibenzofuran (pg/g)
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14

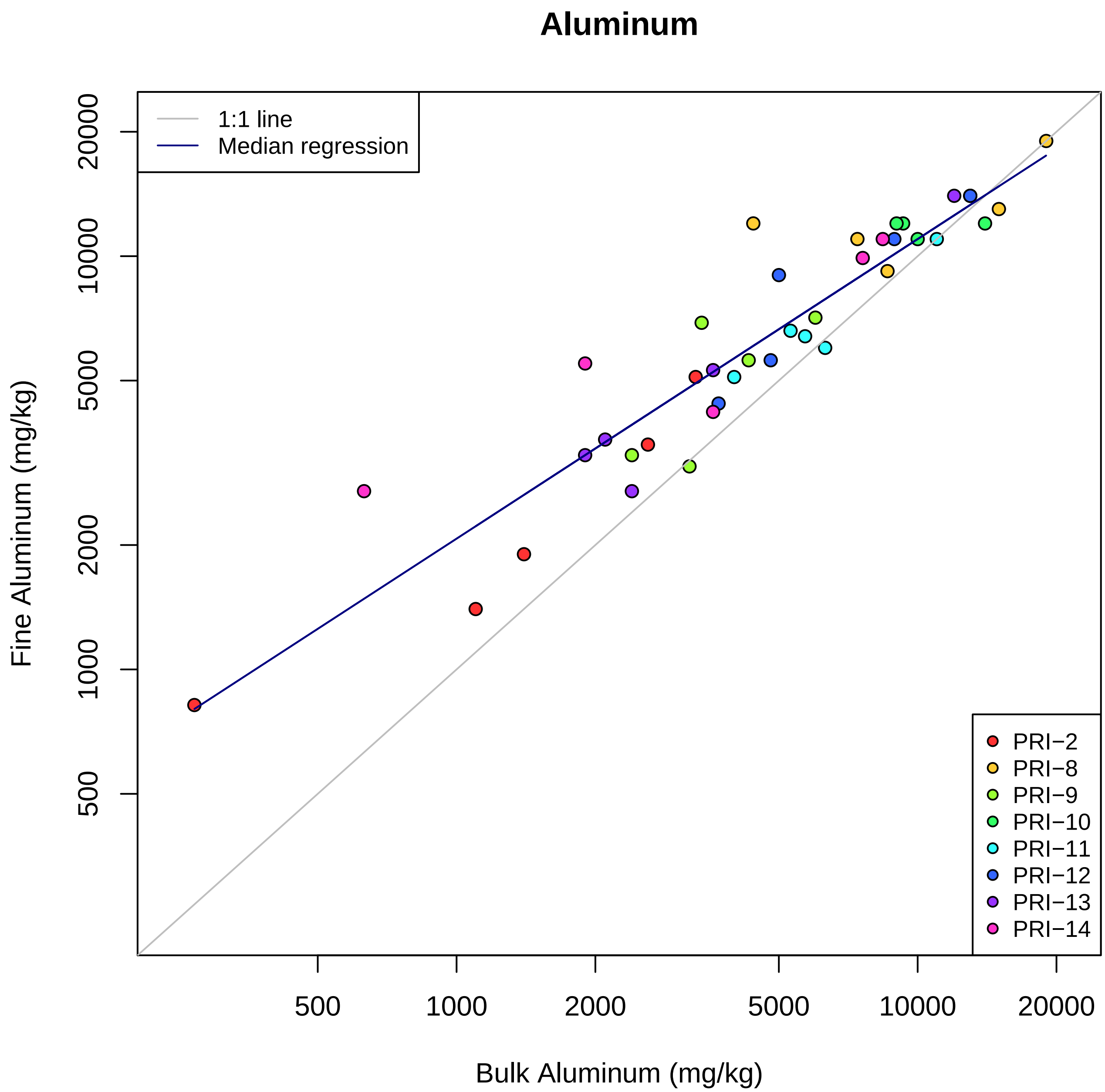

2−Methylnaphthalene
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine 2−Methylnaphthalene (ug/kg)
Bulk 2−Methylnaphthalene (ug/kg)
1
2
5
10
20

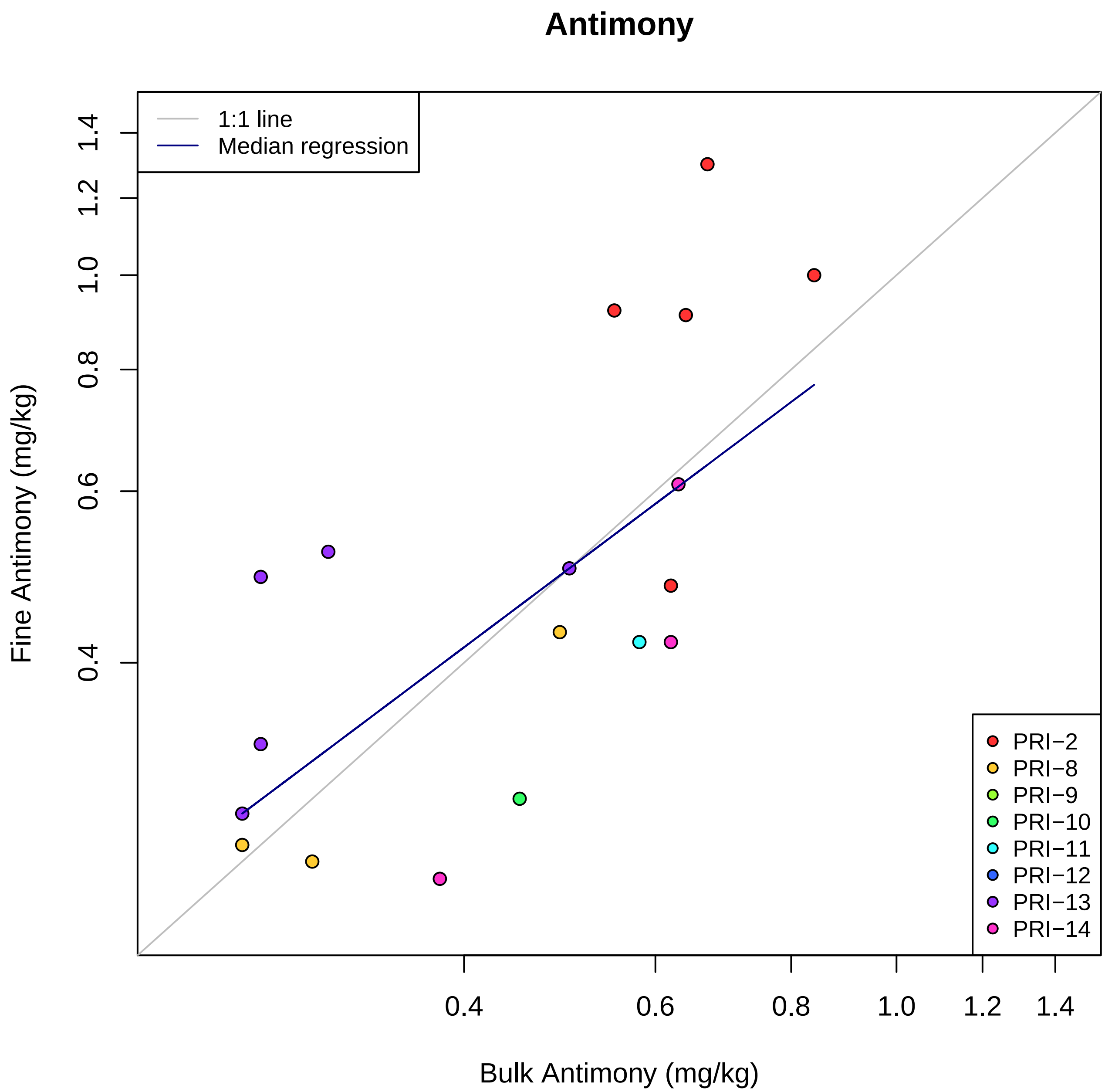


2,3,4,6,7,8−Hexachlorodibenzofuran
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
5e−01
5e+00
5e+01
5e+02
Fine 2,3,4,6,7,8−Hexachlorodibenzofuran (pg/g)
Bulk 2,3,4,6,7,8−Hexachlorodibenzofuran (pg/g)

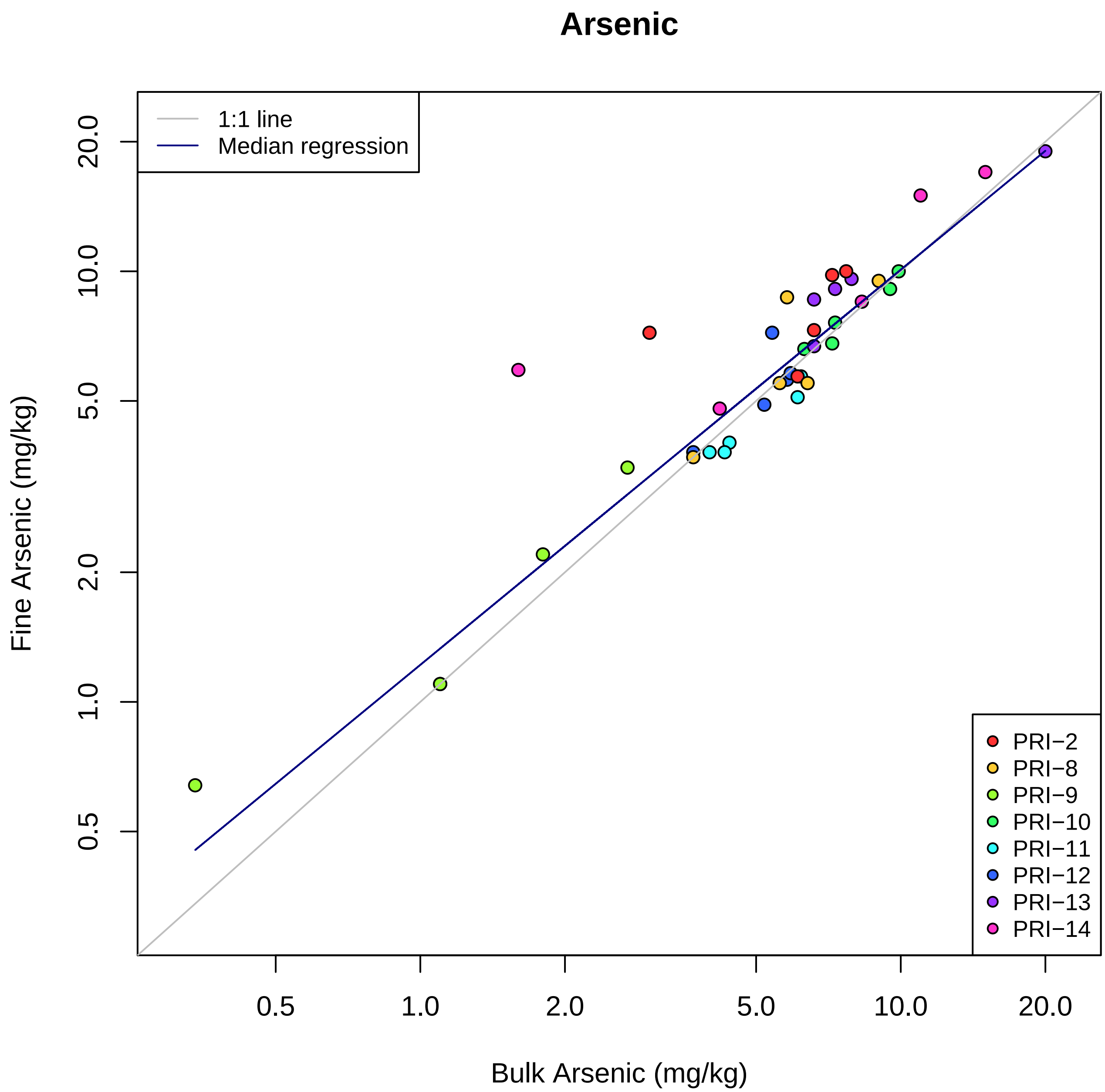

2,3,4,7,8−Pentachlorodibenzofuran
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine 2,3,4,7,8−Pentachlorodibenzofuran (pg/g)
1e−01
1e+00
1e+01
1e+02
1e+03
Bulk 2,3,4,7,8−Pentachlorodibenzofuran (pg/g)


2,3,7,8−Tetrachlorodibenzofuran
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine 2,3,7,8−Tetrachlorodibenzofuran (pg/g)
0.2
0.5
1.0
2.0
5.0
20.0
50.0
200.0
Bulk 2,3,7,8−Tetrachlorodibenzofuran (pg/g)
0.2
0.5
1.0
2.0
5.0
10.0
50.0
200.0
500.0

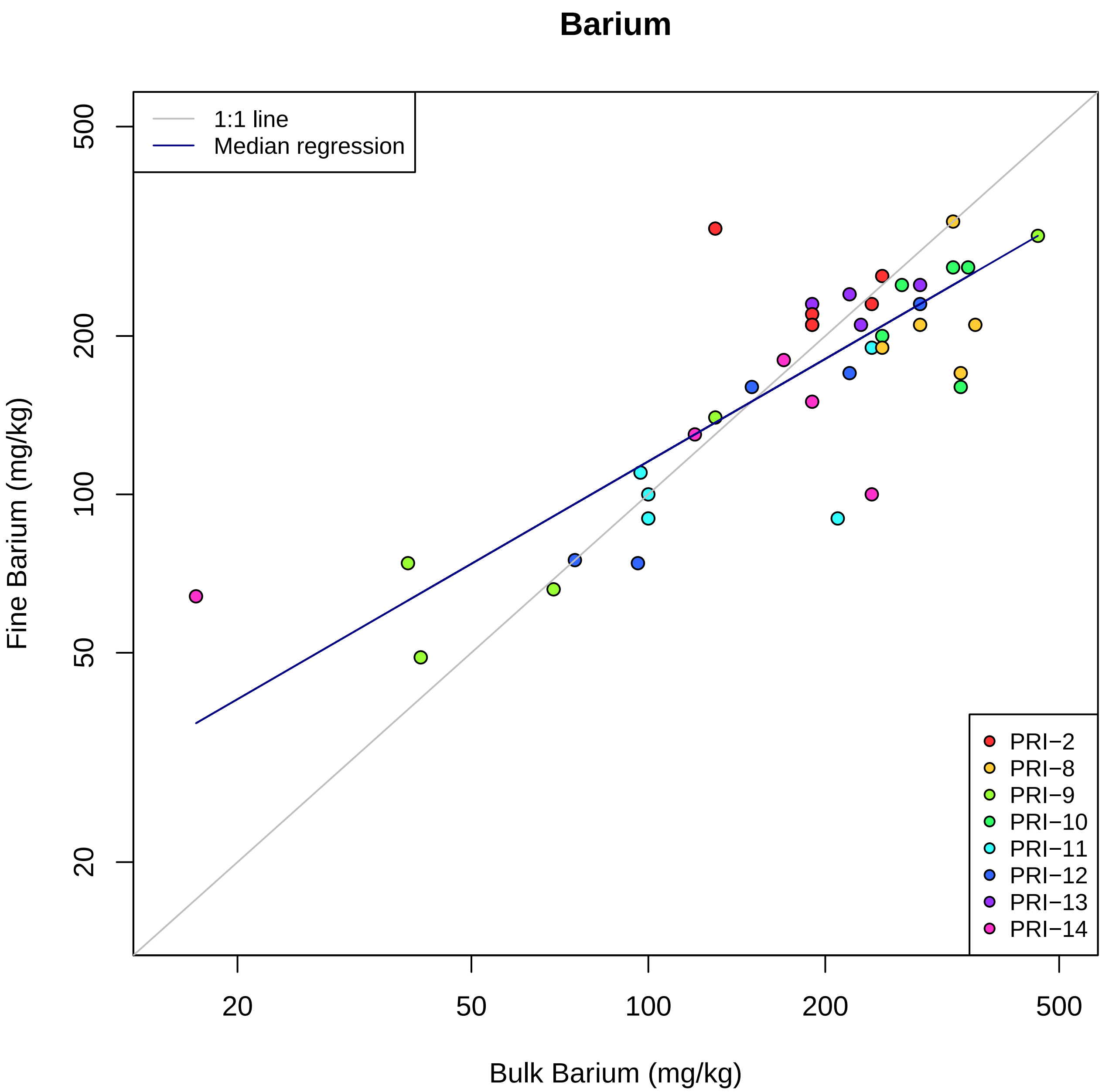

Aluminum
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Aluminum (mg/kg)
500
1000
2000
5000
10000
20000
Bulk Aluminum (mg/kg)
500
1000
2000
5000
10000
20000

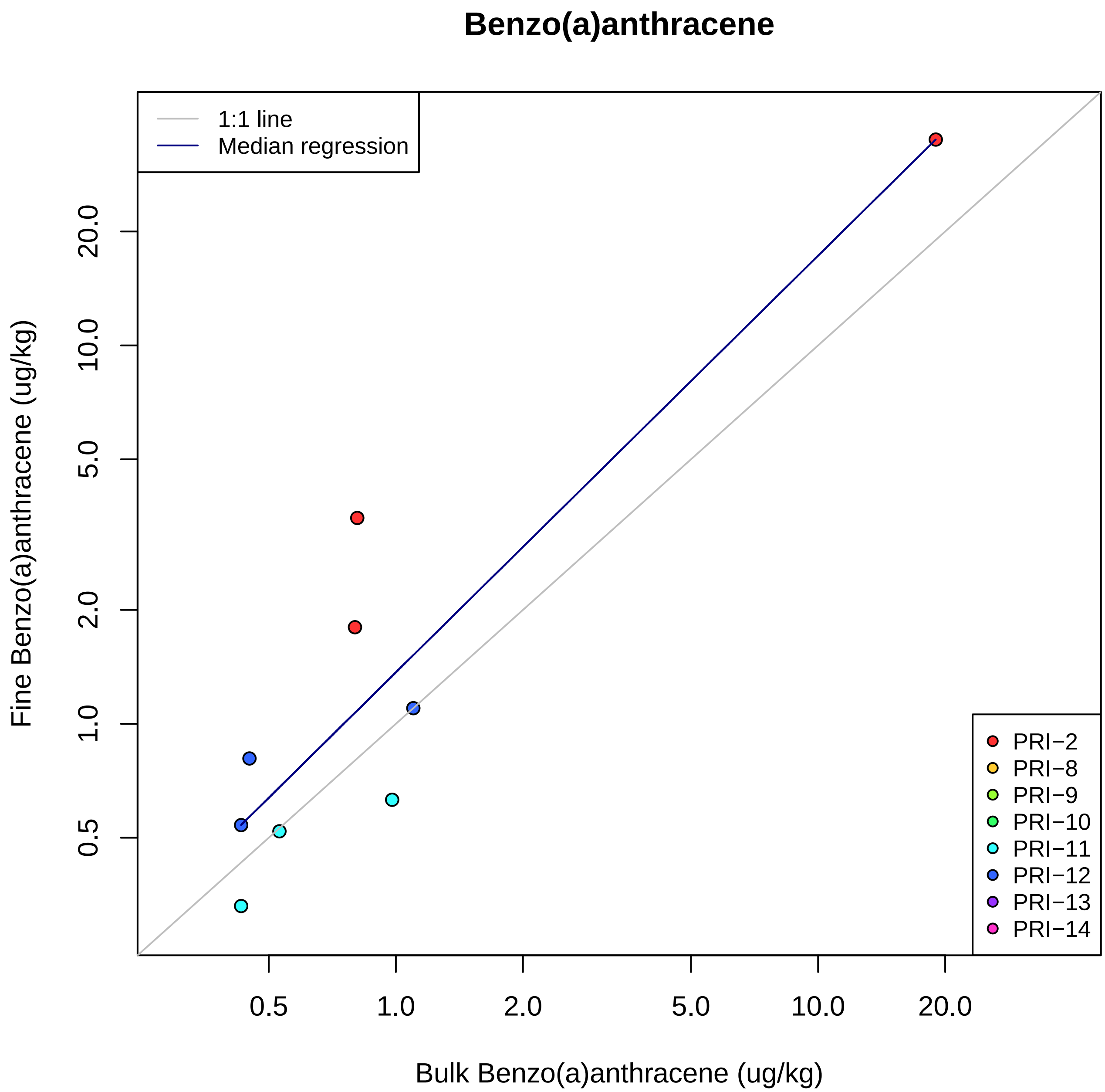


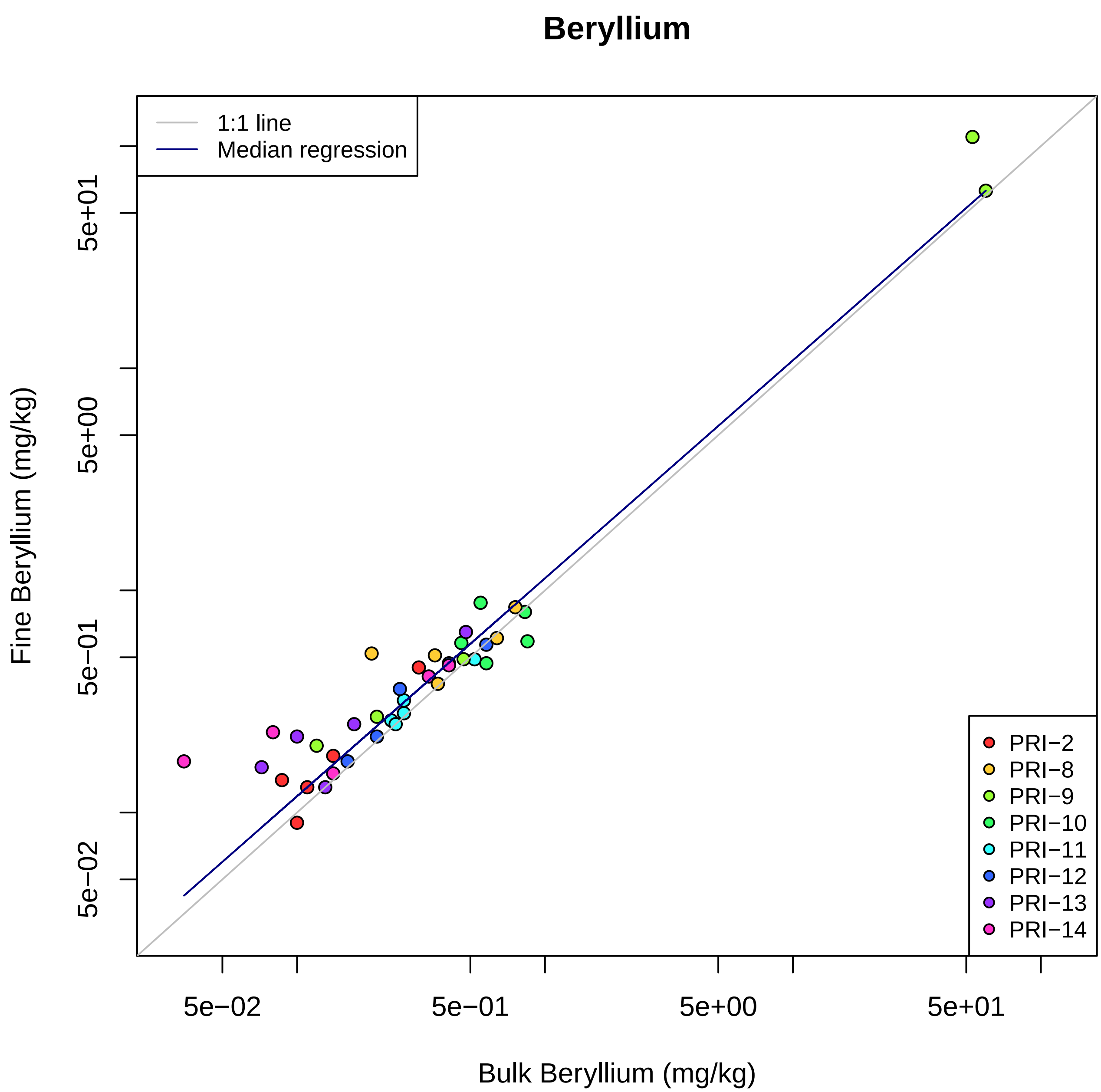
Antimony
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Antimony (mg/kg)
0.4
0.6
0.8
1.0
1.2
1.4
Bulk Antimony (mg/kg)
0.4
0.6
0.8
1.0
1.2
1.4

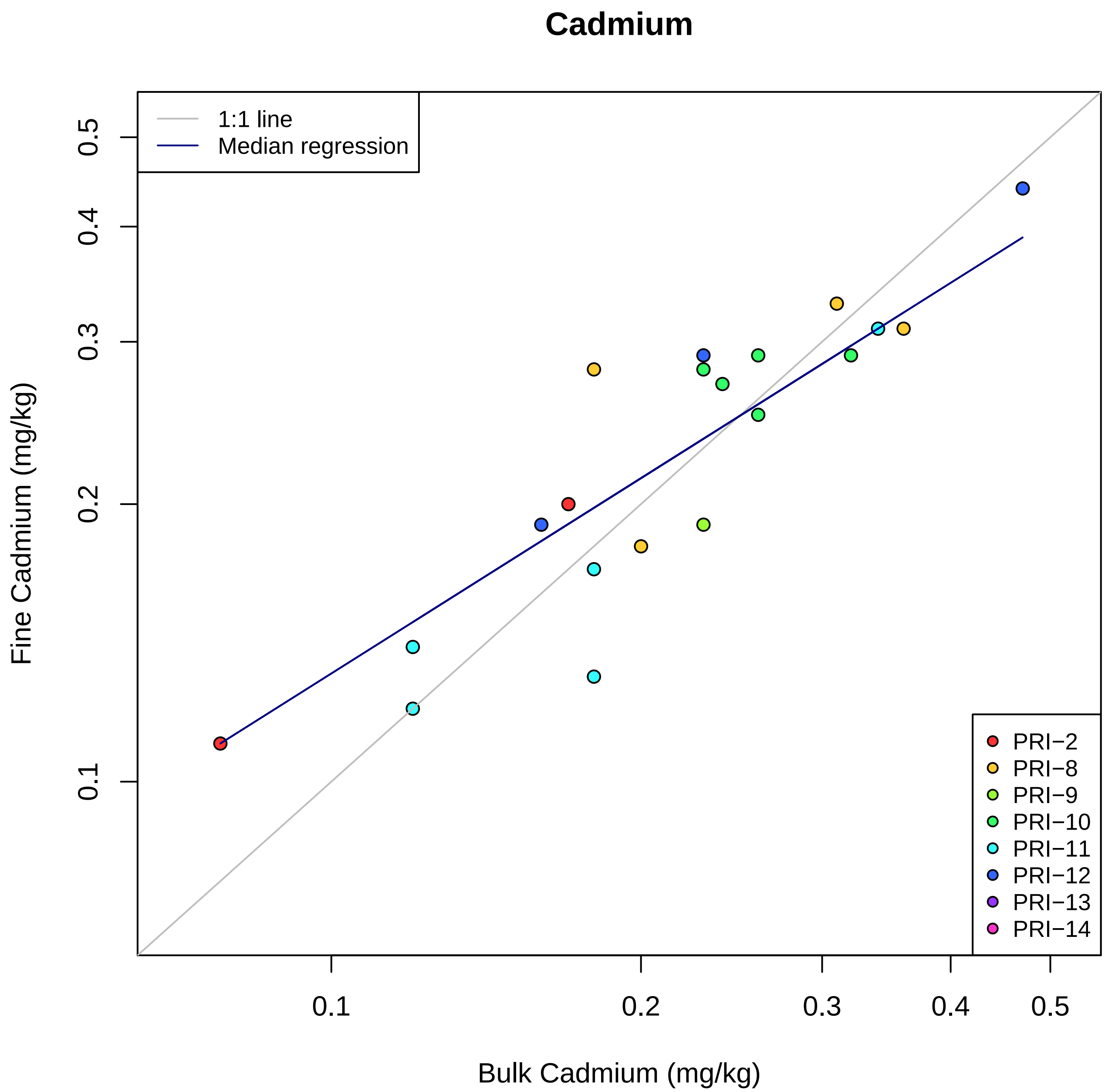


Arsenic
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Arsenic (mg/kg)
Bulk Arsenic (mg/kg)
0.5
1.0
2.0
5.0
10.0
20.0

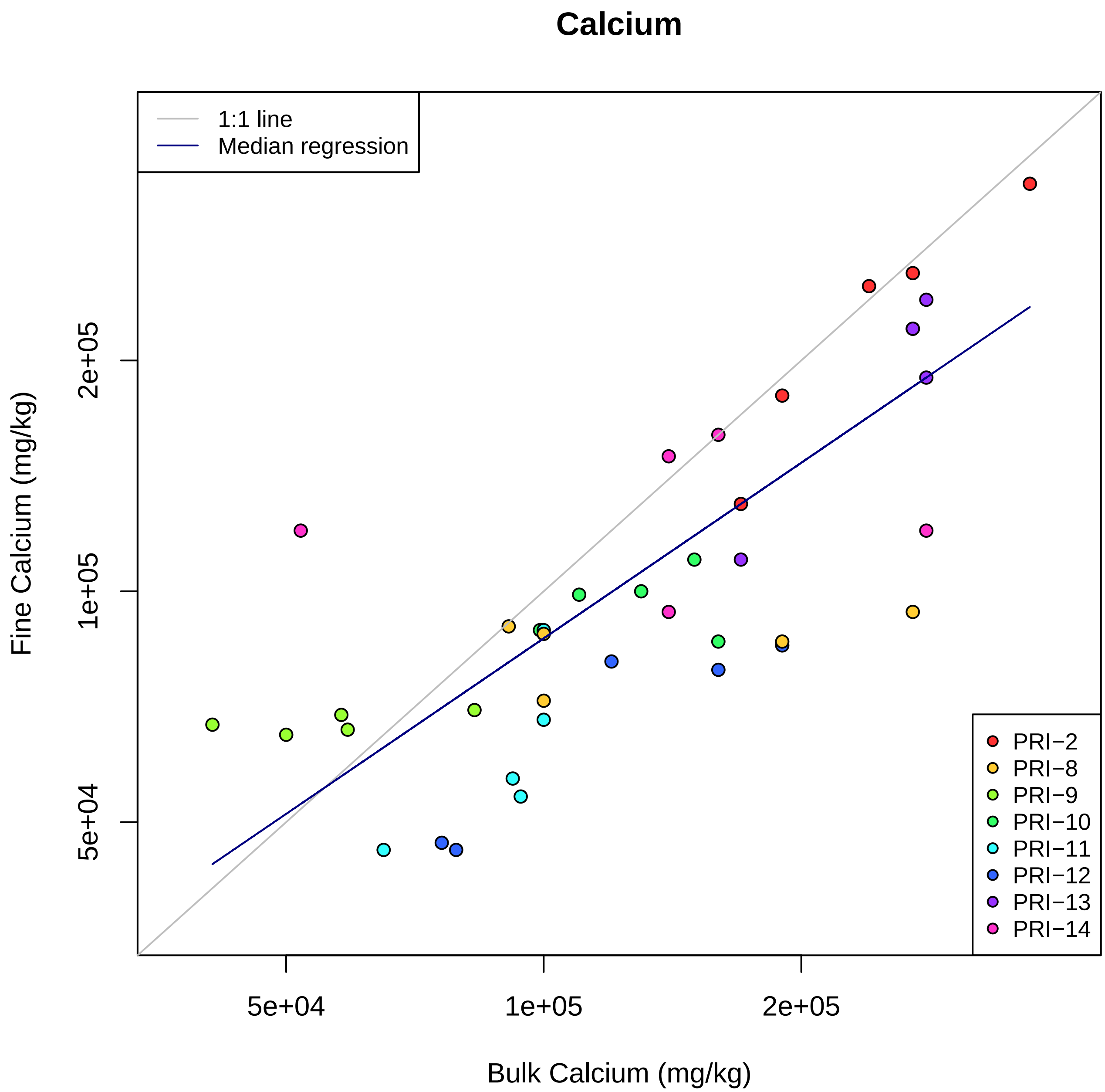

Barium
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Barium (mg/kg)
Bulk Barium (mg/kg)
500
200
100
50
20
20
50
100
200
500


Benzo(a)anthracene
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Benzo(a)anthracene (ug/kg)
0.5
1.0
2.0
5.0
10.0
20.0
Bulk Benzo(a)anthracene (ug/kg)

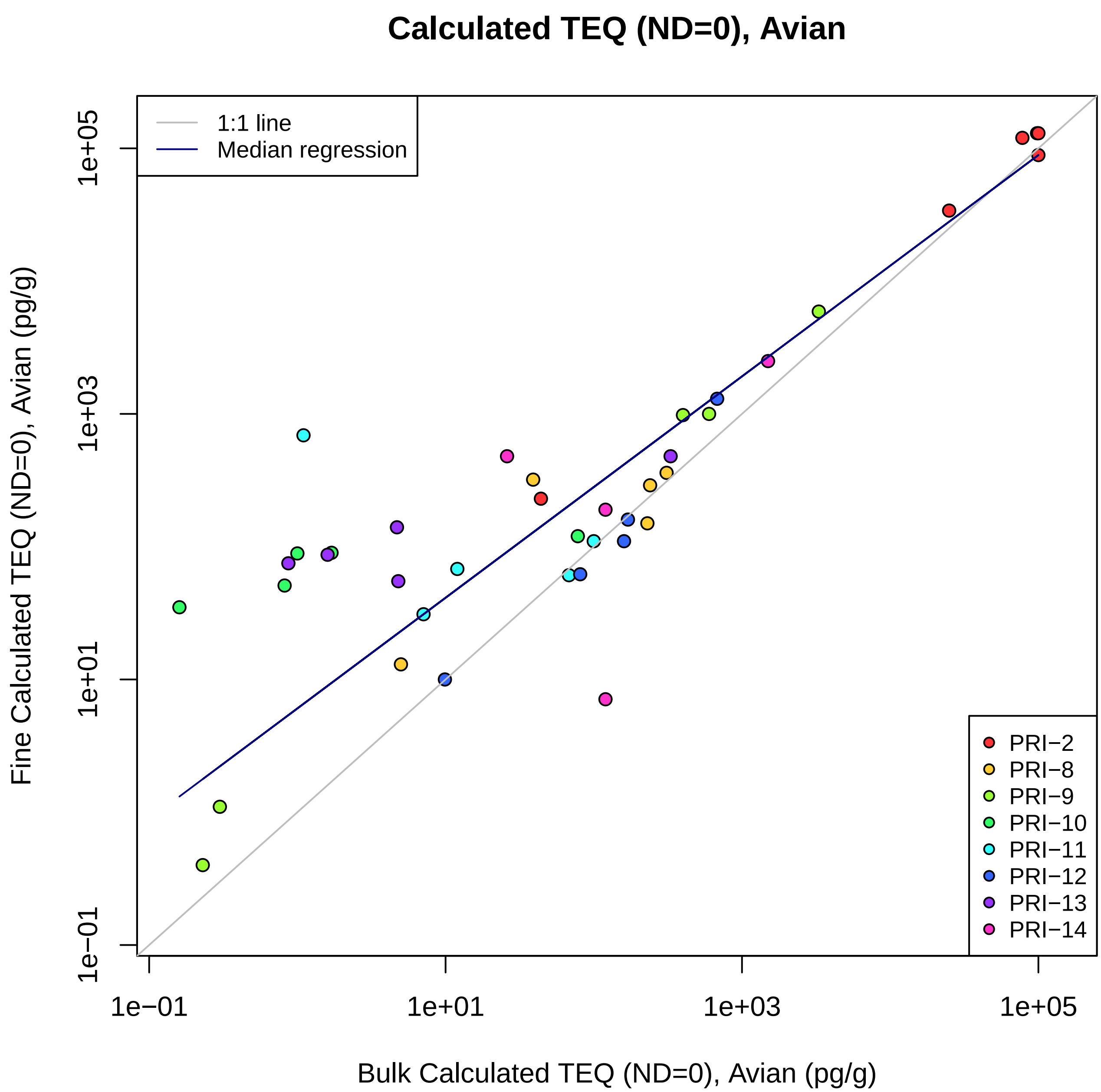

Beryllium
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
5e−02
5e−01
5e+00
5e+01
Fine Beryllium (mg/kg)
Bulk Beryllium (mg/kg)

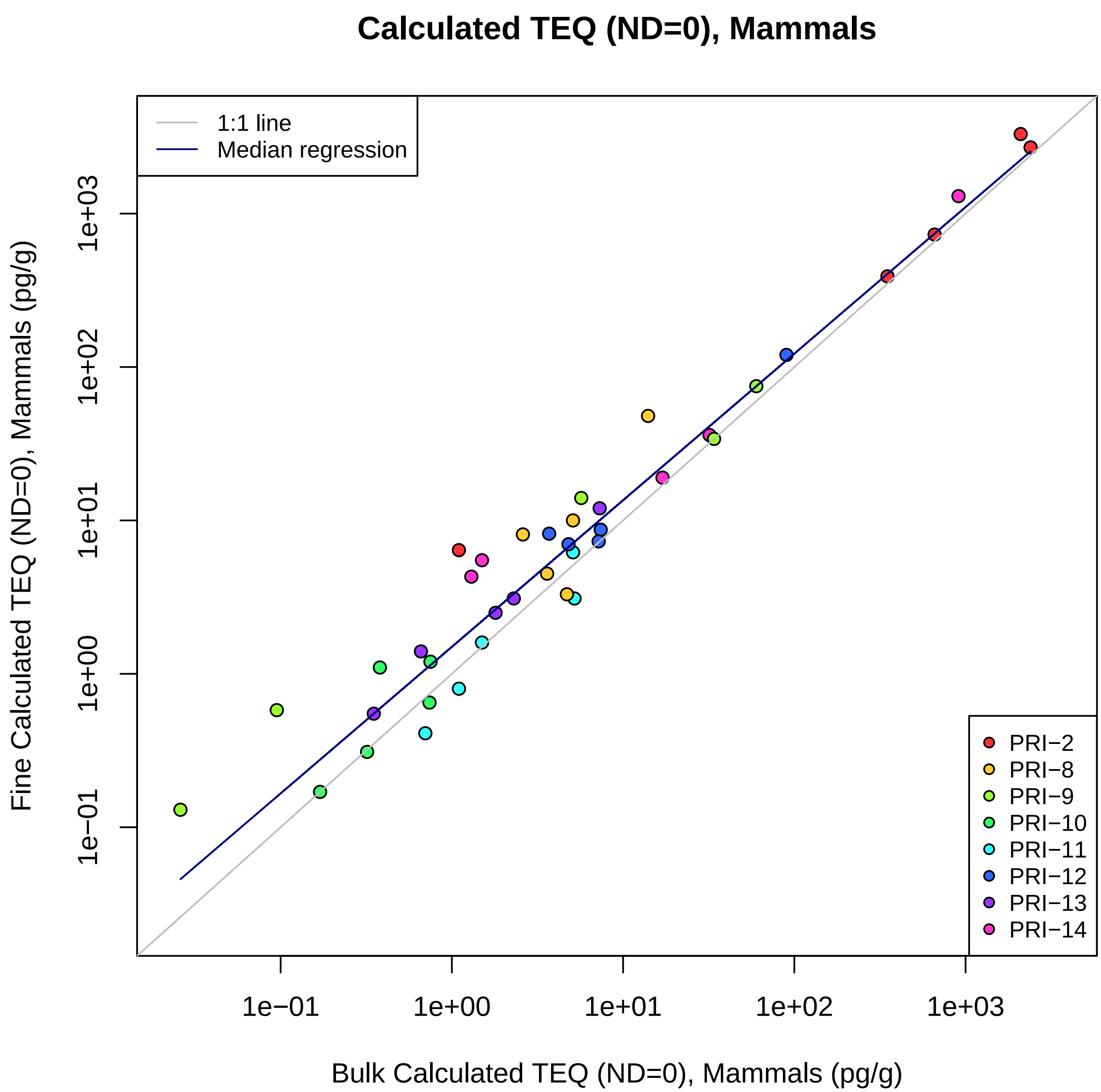


Cadmium
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
0.1
0.2
0.3
0.4
0.5
Fine Cadmium (mg/kg)
Bulk Cadmium (mg/kg)

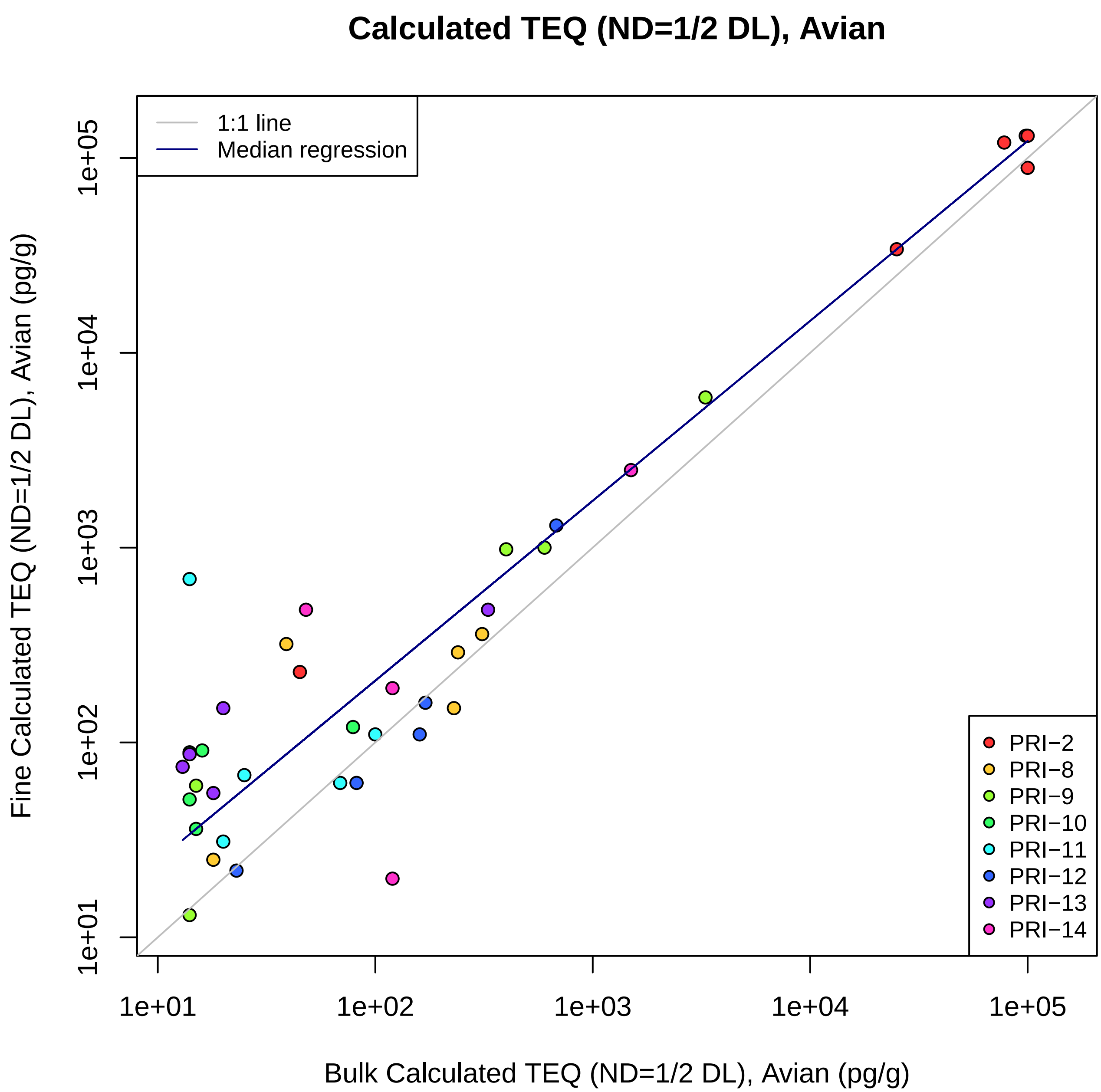


Calcium
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
5e+04
1e+05
2e+05
Bulk Calcium (mg/kg)
Fine Calcium (mg/kg)

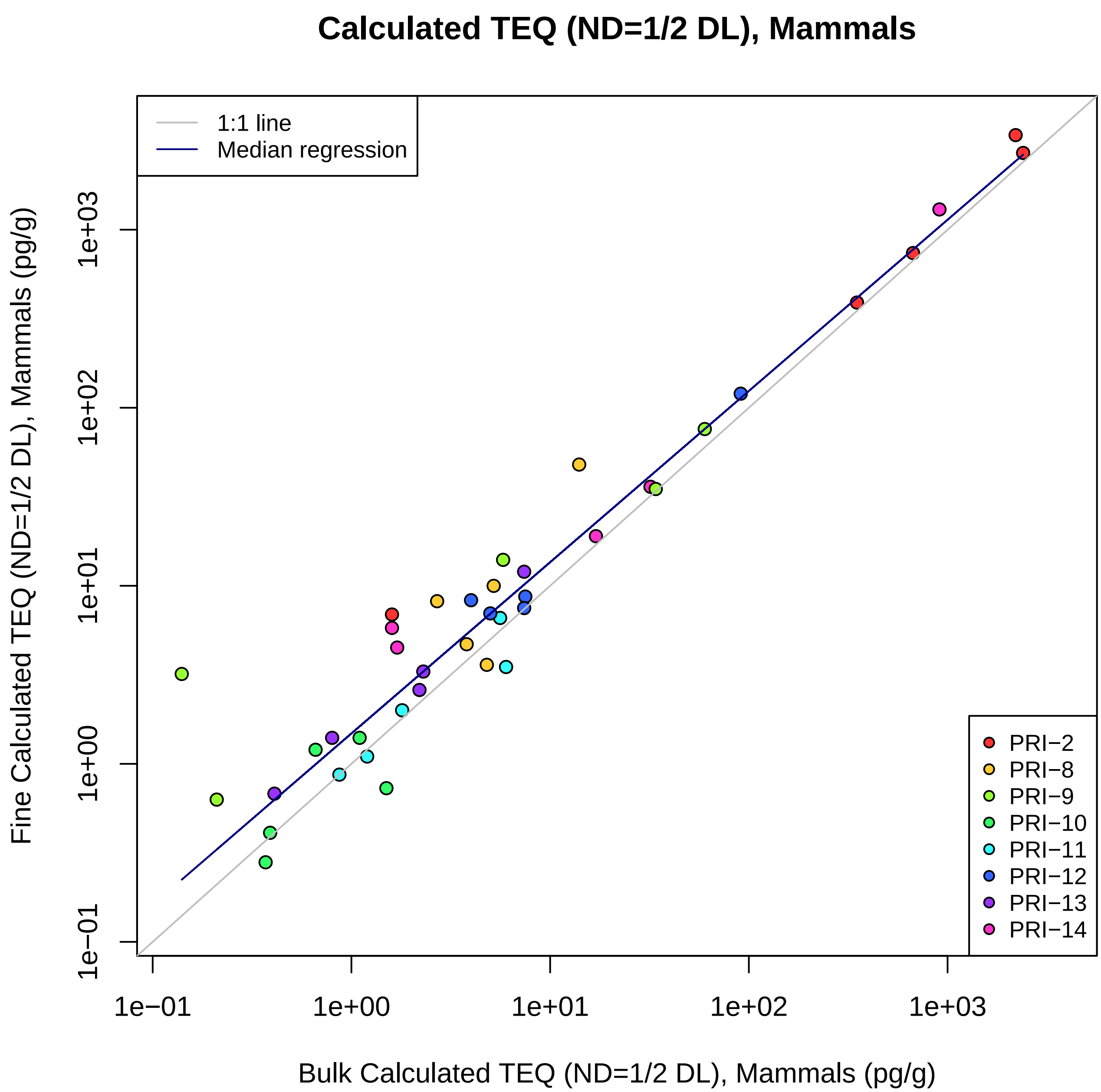

Calculated TEQ (ND=0), Avian
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
1e−01
1e+01
1e+03
1e+05
Fine Calculated TEQ (ND=0), Avian (pg/g)
Bulk Calculated TEQ (ND=0), Avian (pg/g)



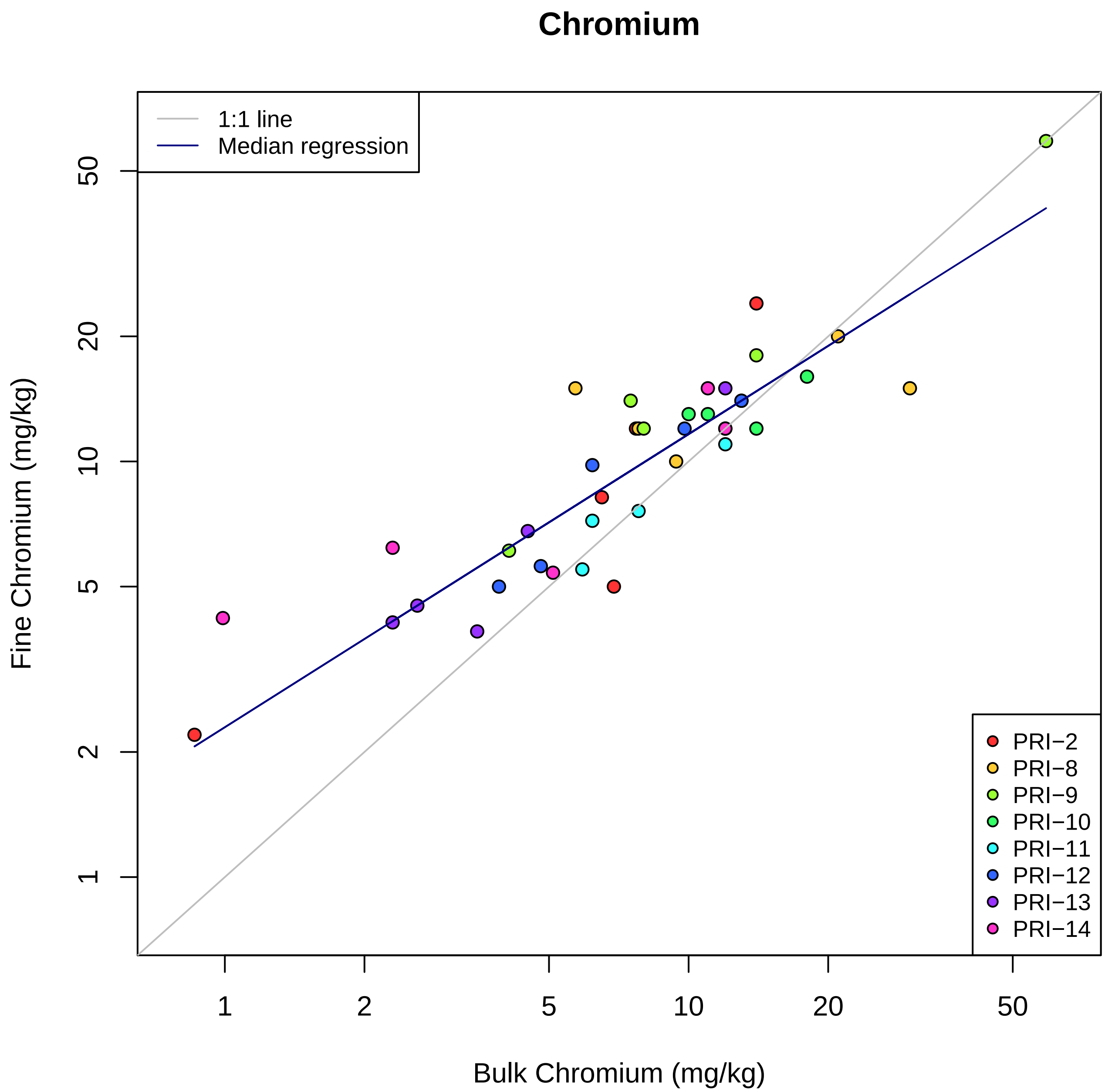
Calculated TEQ (ND=0), Mammals
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
1e−01
1e+00
1e+01
1e+02
1e+03
Bulk Calculated TEQ (ND=0), Mammals (pg/g)
Fine Calculated TEQ (ND=0), Mammals (pg/g)

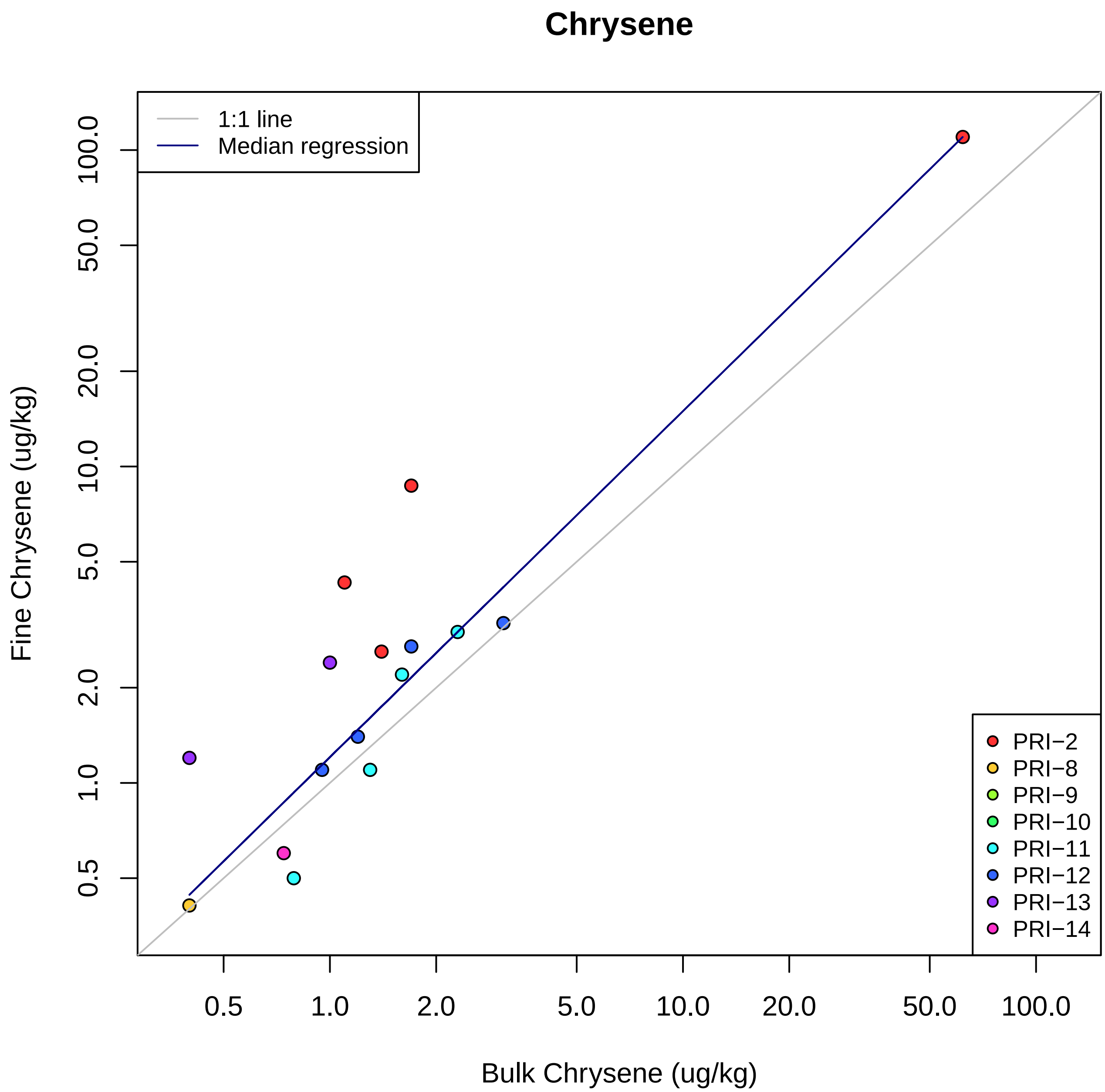


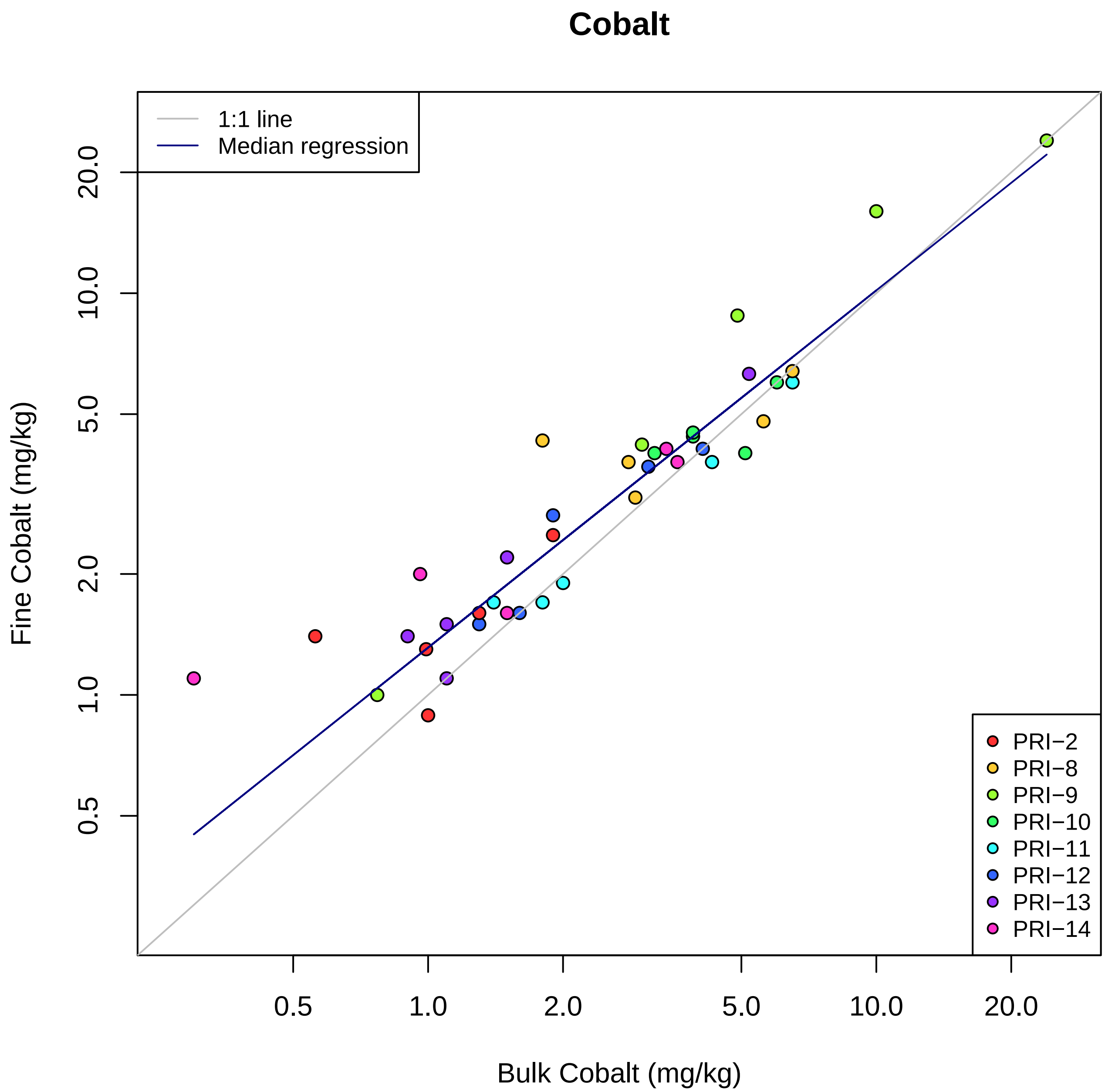
Calculated TEQ (ND=1/2 DL), Avian
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Calculated TEQ (ND=1/2 DL), Avian (pg/g)
1e+01
1e+02
1e+03
1e+04
1e+05
Bulk Calculated TEQ (ND=1/2 DL), Avian (pg/g)



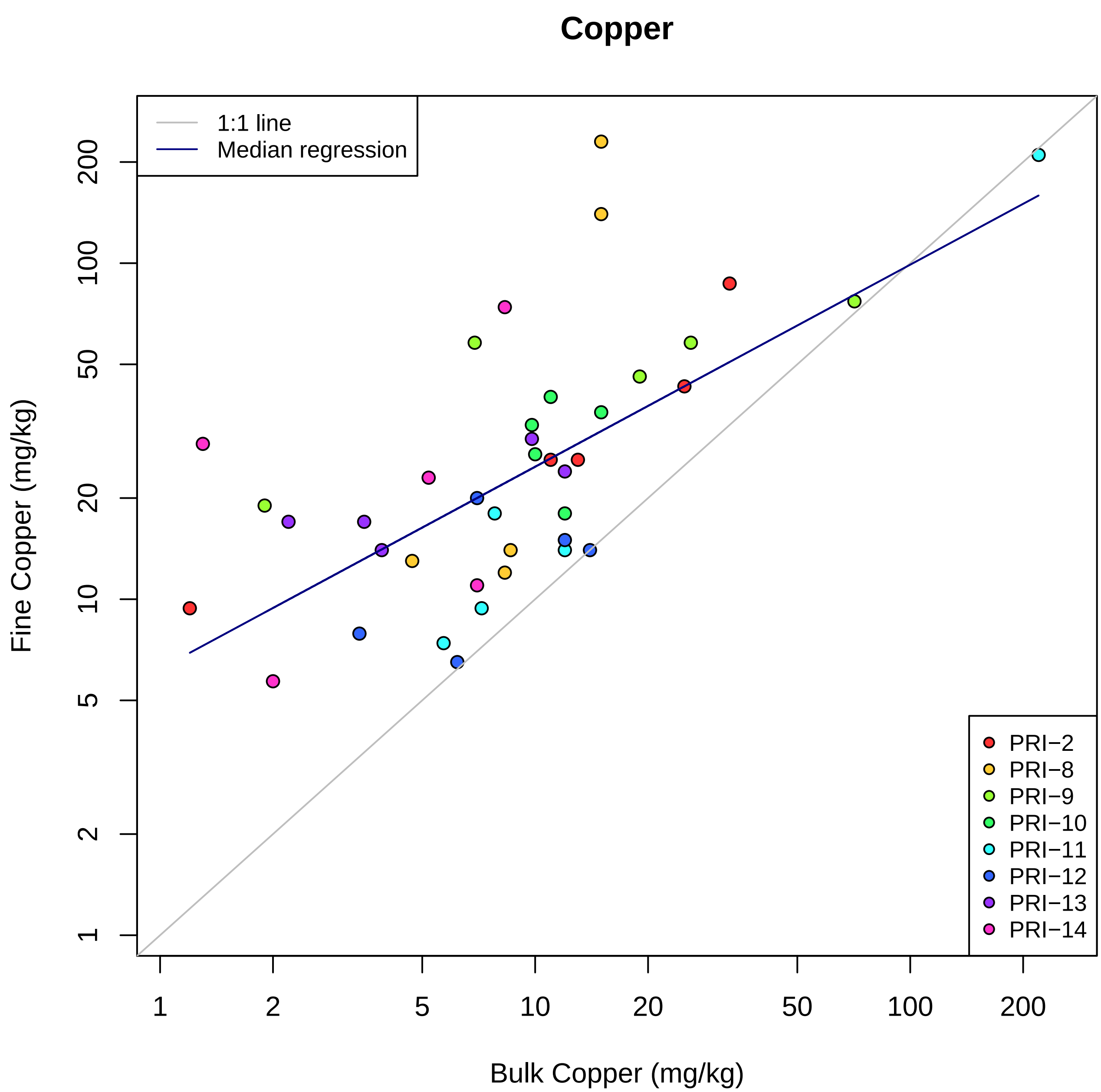
Calculated TEQ (ND=1/2 DL), Mammals
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
1e−01
1e+00
1e+01
1e+02
1e+03
Fine Calculated TEQ (ND=1/2 DL), Mammals (pg/g)
Bulk Calculated TEQ (ND=1/2 DL), Mammals (pg/g)


Chromium
1:1 line
Median regression
Fine Chromium (mg/kg)
Bulk Chromium (mg/kg)
1
2
5
10
20
50
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14

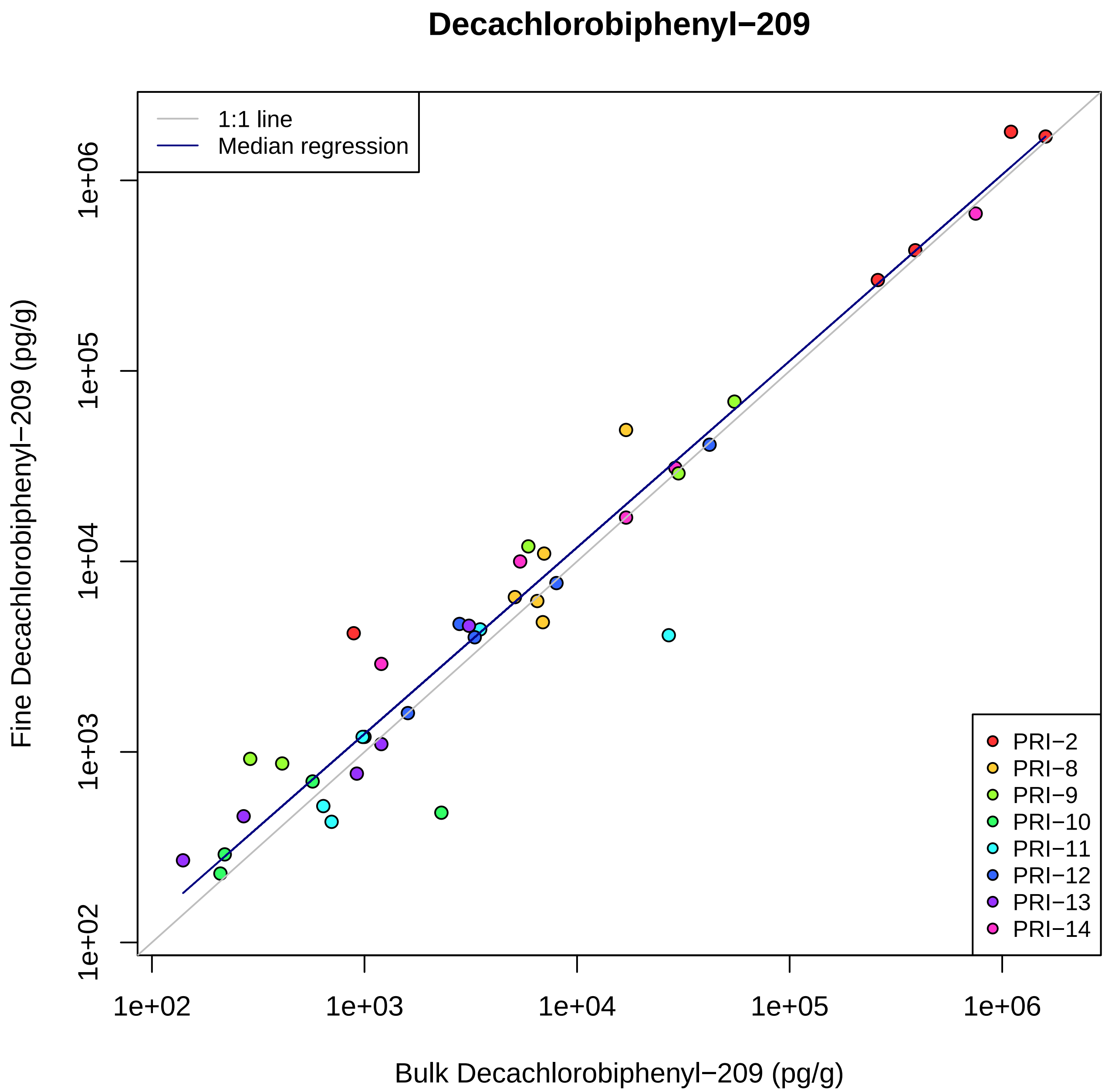

Chrysene
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Chrysene (ug/kg)
Bulk Chrysene (ug/kg)
0.5
1.0
2.0
5.0
10.0
20.0
50.0
100.0



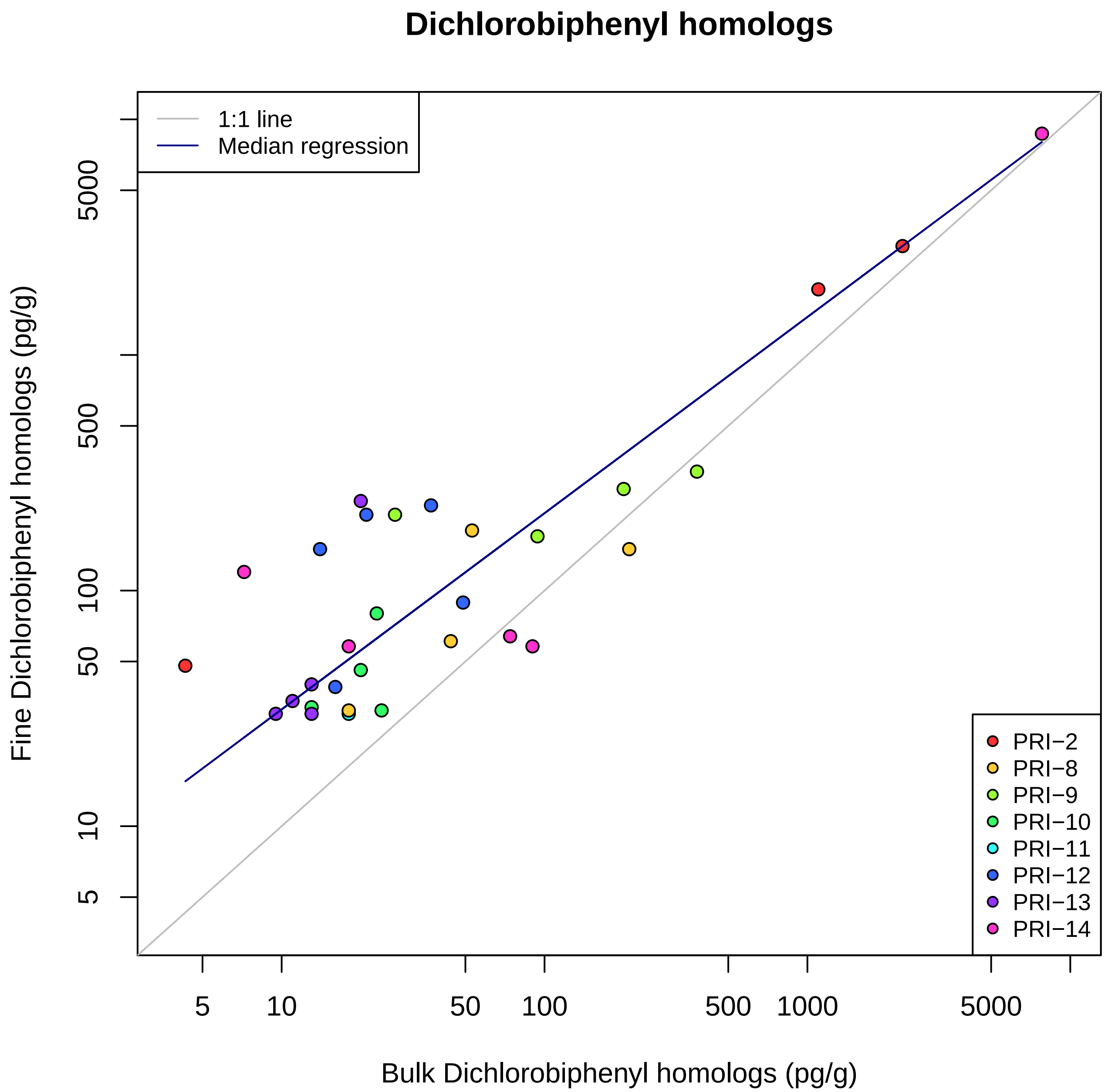
Cobalt
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Cobalt (mg/kg)
0.5
1.0
2.0
5.0
10.0
20.0
Bulk Cobalt (mg/kg)



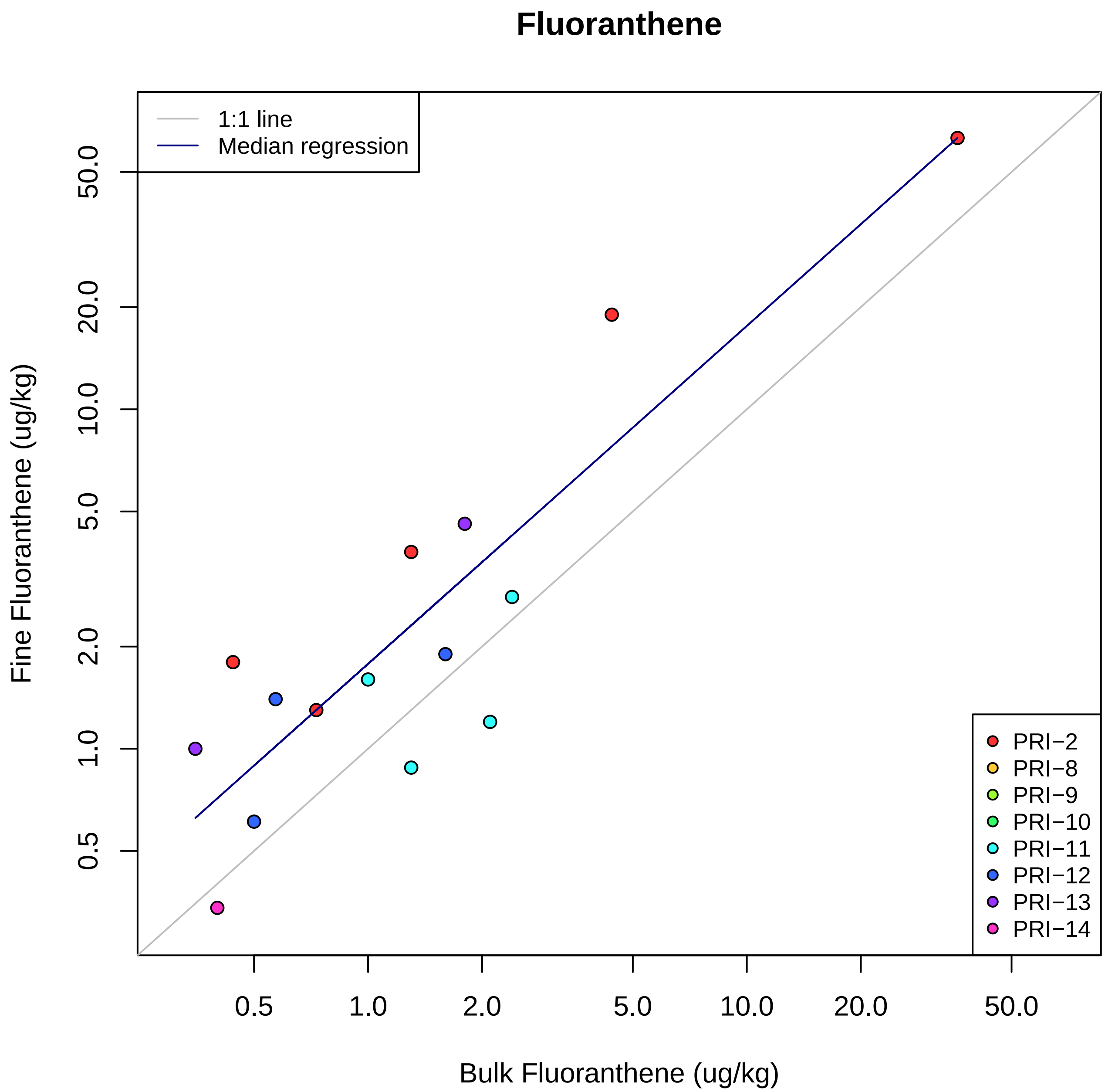
Copper
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Copper (mg/kg)
Bulk Copper (mg/kg)
1
2
5
10
20
50
100
200

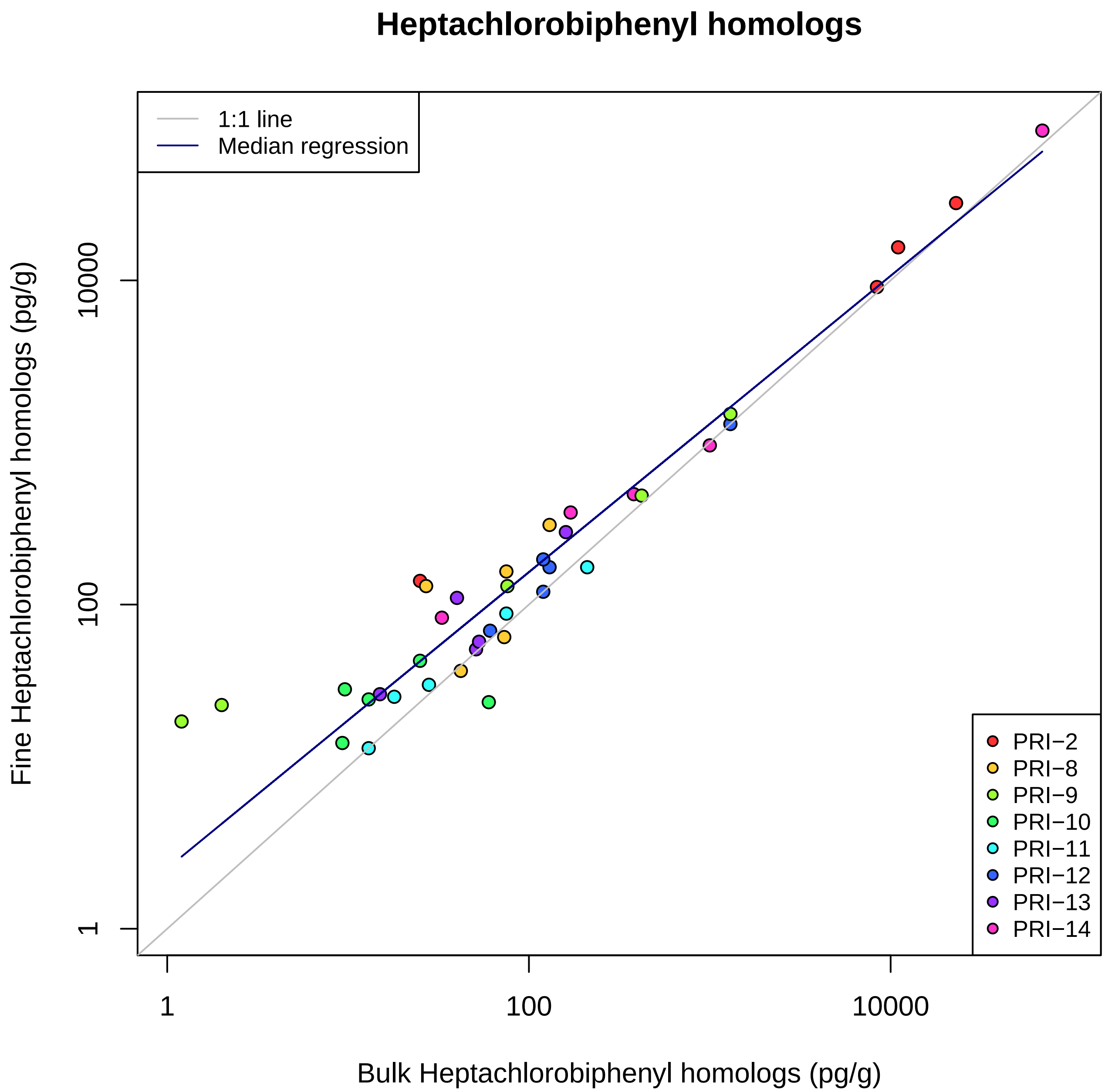


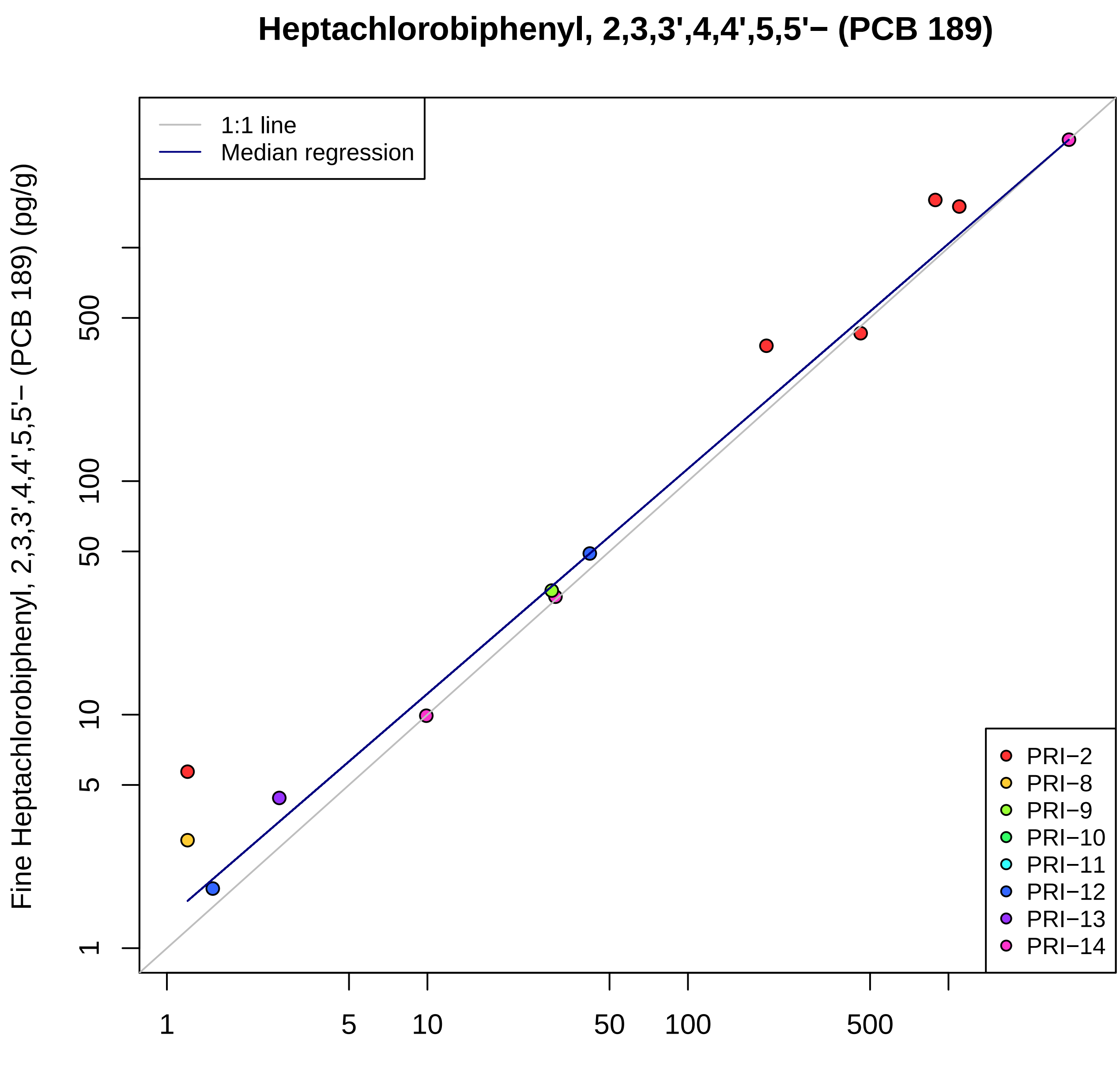
Decachlorobiphenyl−209
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
1e+02
1e+03
1e+04
1e+05
1e+06
Bulk Decachlorobiphenyl−209 (pg/g)
Fine Decachlorobiphenyl−209 (pg/g)



Dichlorobiphenyl homologs
1:1 line
Median regression
Fine Dichlorobiphenyl homologs (pg/g)
5000
500
100
50
10
5
5
10
50
100
500
1000
5000
Bulk Dichlorobiphenyl homologs (pg/g)
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14

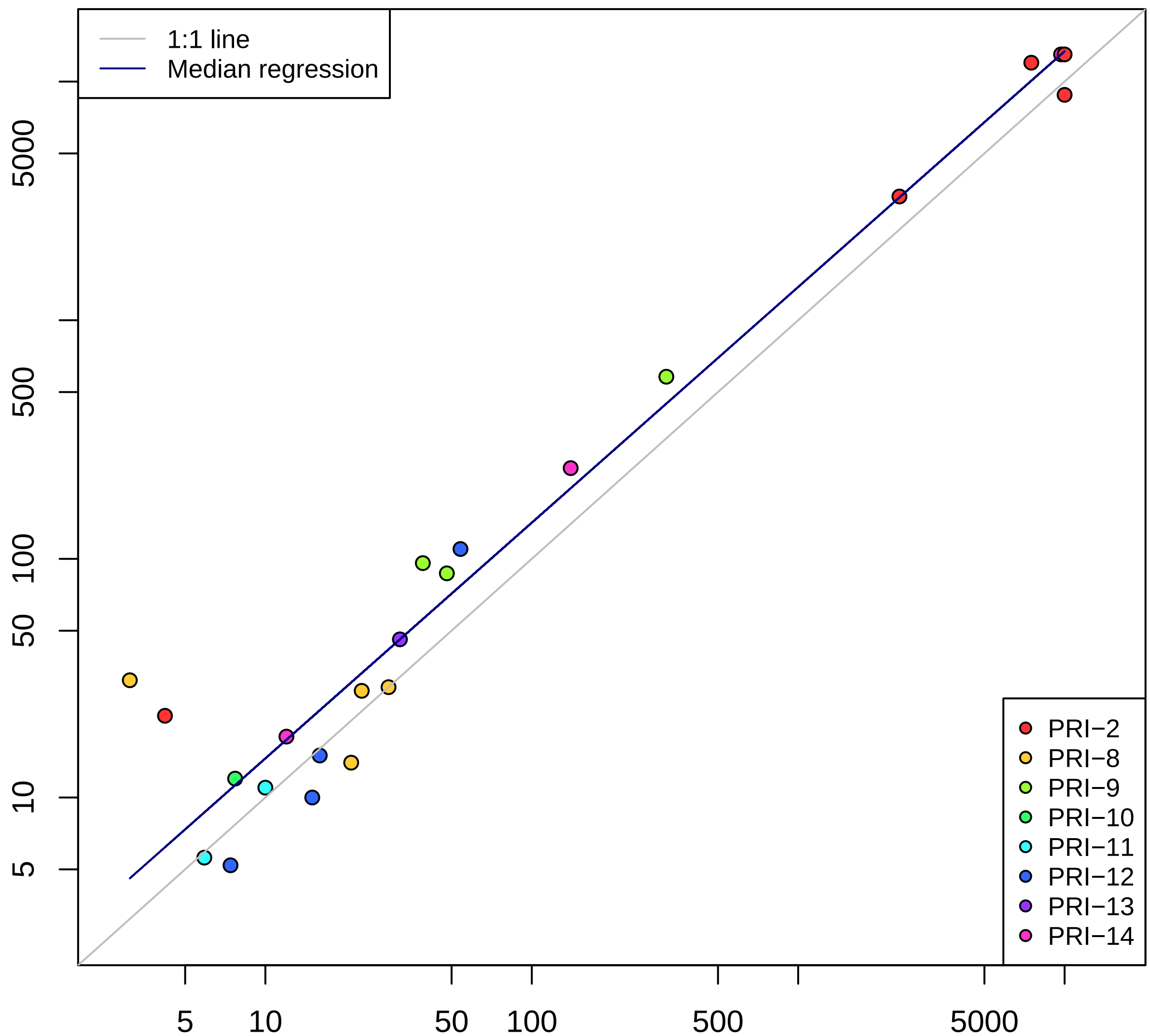

Fluoranthene
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Fluoranthene (ug/kg)
0.5
1.0
2.0
5.0
10.0
20.0
50.0
Bulk Fluoranthene (ug/kg)


Heptachlorobiphenyl homologs
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Heptachlorobiphenyl homologs (pg/g)
Bulk Heptachlorobiphenyl homologs (pg/g)
1
100
10000



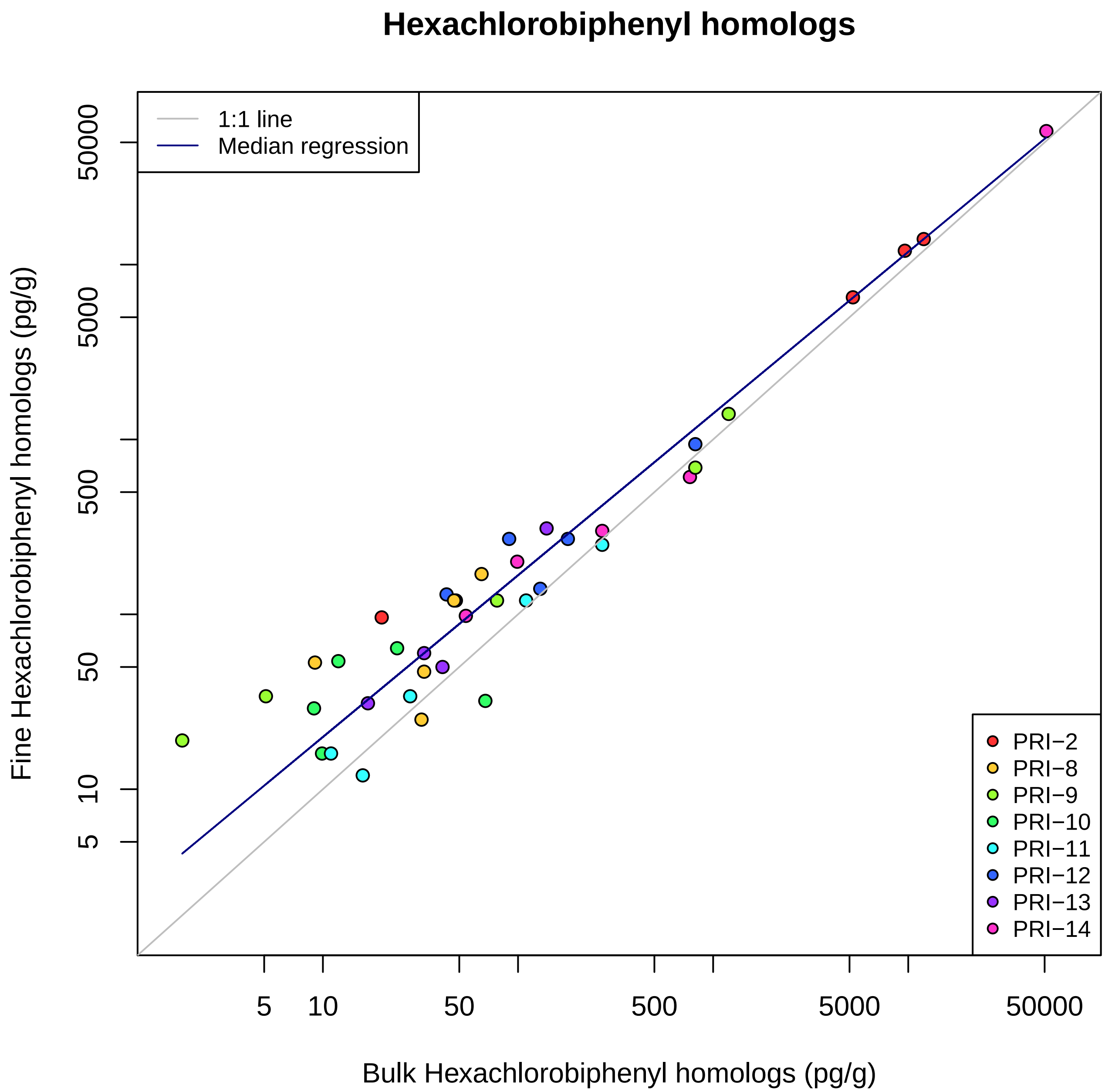
Heptachlorobiphenyl, 2,3,3',4,4',5,5'− (PCB 189)
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
1
5
10
50
100
500
Fine Heptachlorobiphenyl, 2,3,3',4,4',5,5'− (PCB 189) (pg/g)
Bulk Heptachlorobiphenyl, 2,3,3',4,4',5,5'− (PCB 189) (pg/g)

Hexachlorobenzene

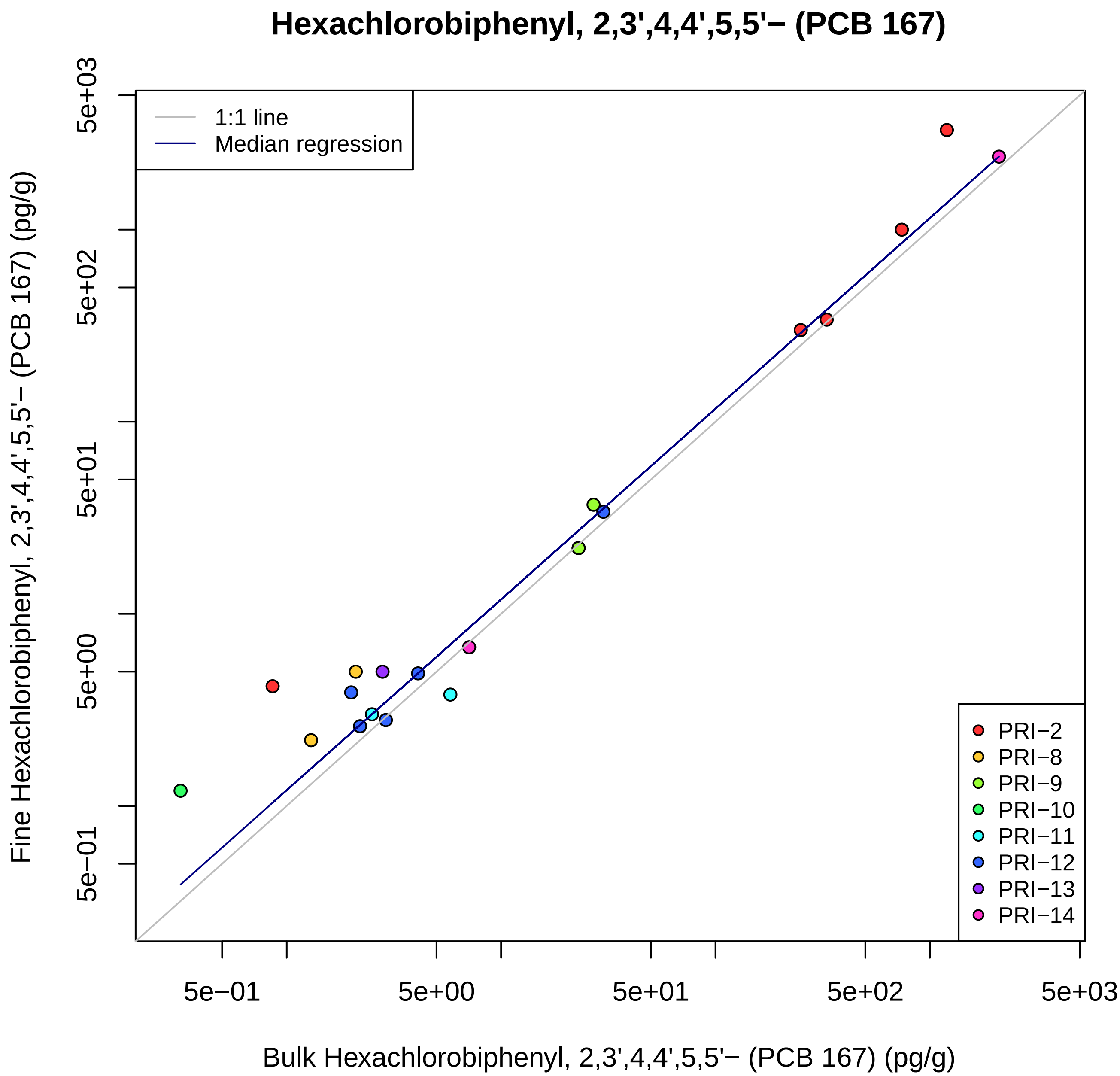


Fine Hexachlorobenzene (ug/kg)

Bulk Hexachlorobenzene (ug/kg)

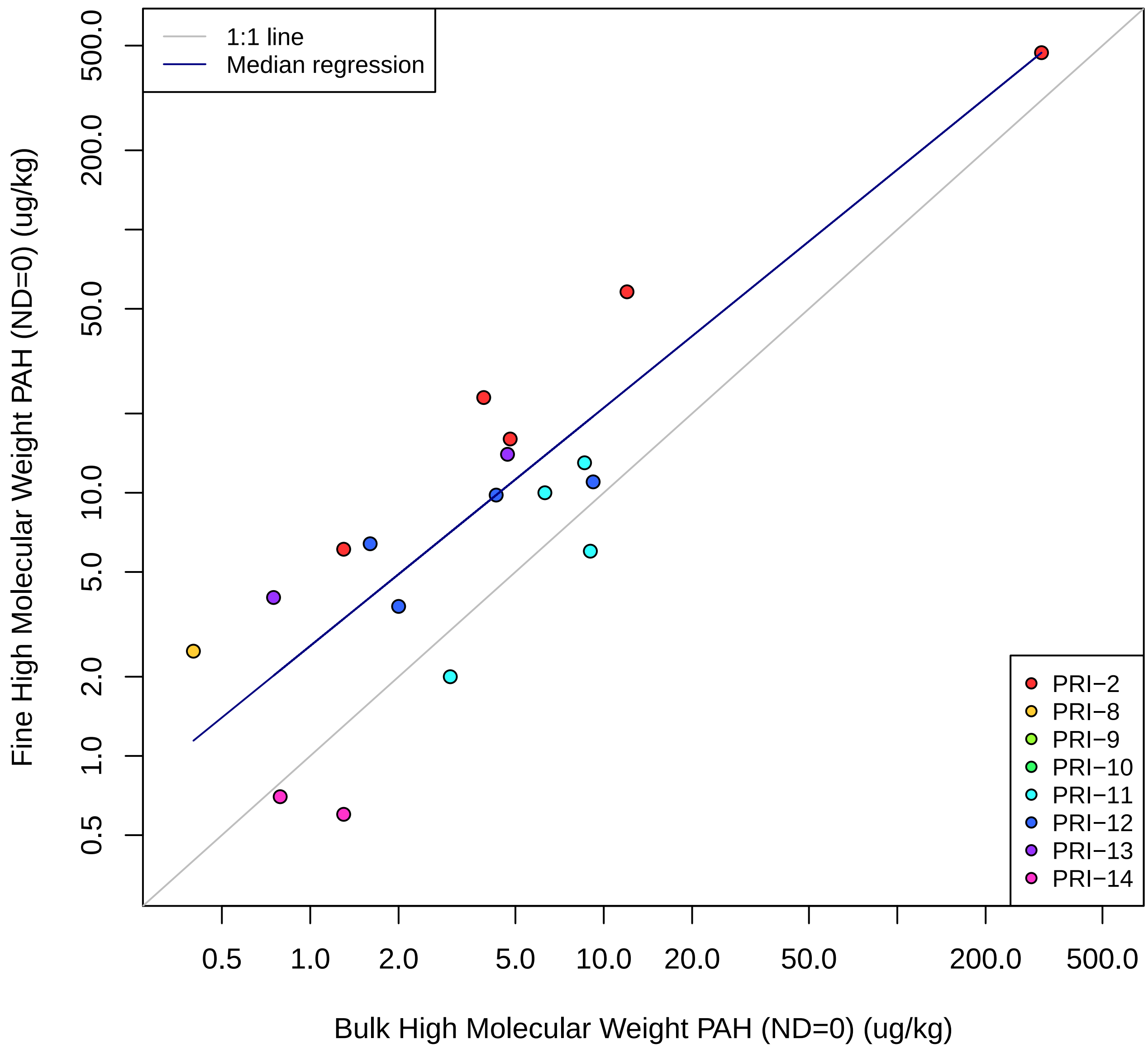


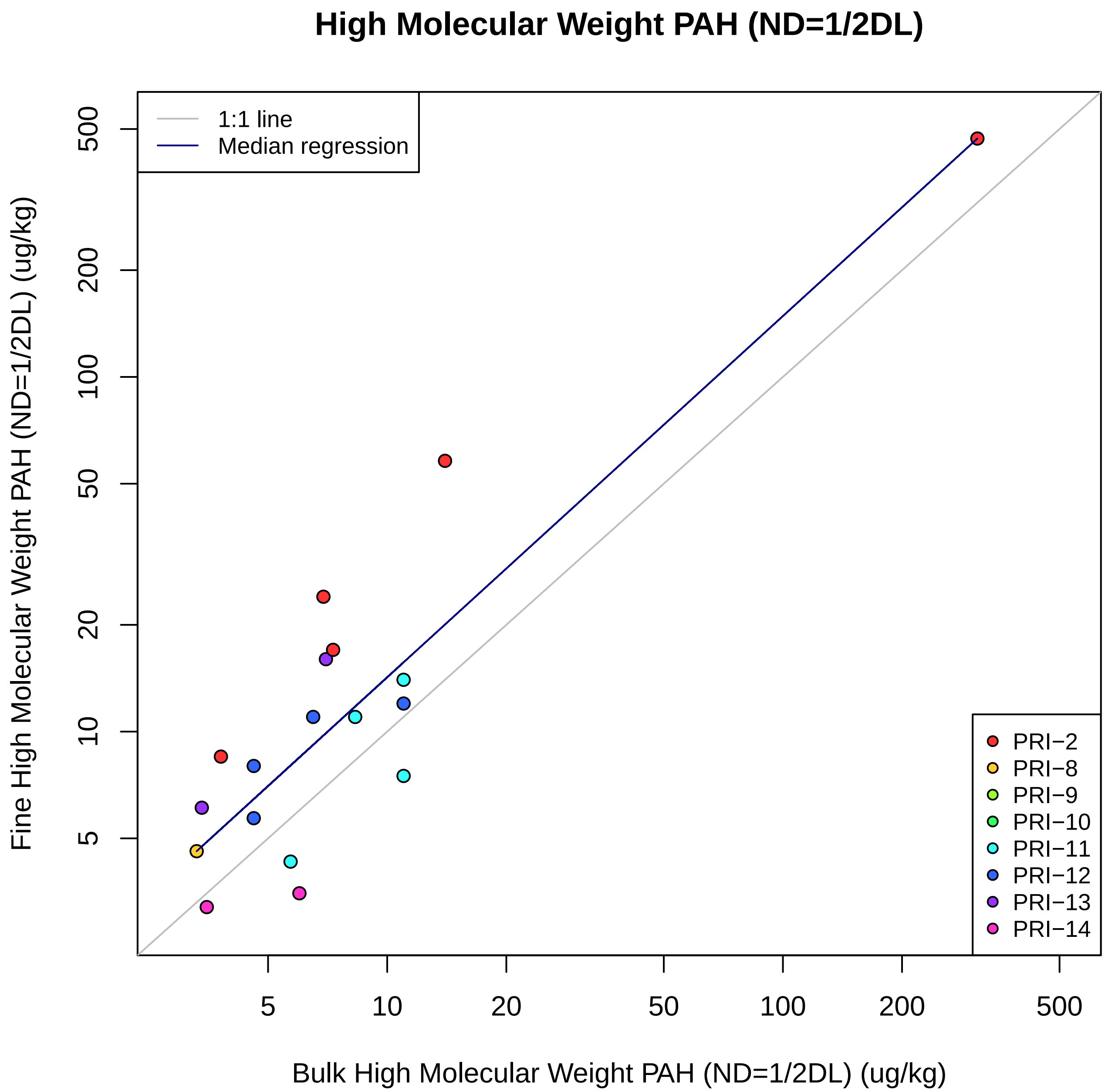
Hexachlorobiphenyl homologs
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Hexachlorobiphenyl homologs (pg/g)
5
10
50
500
5000
50000
Bulk Hexachlorobiphenyl homologs (pg/g)



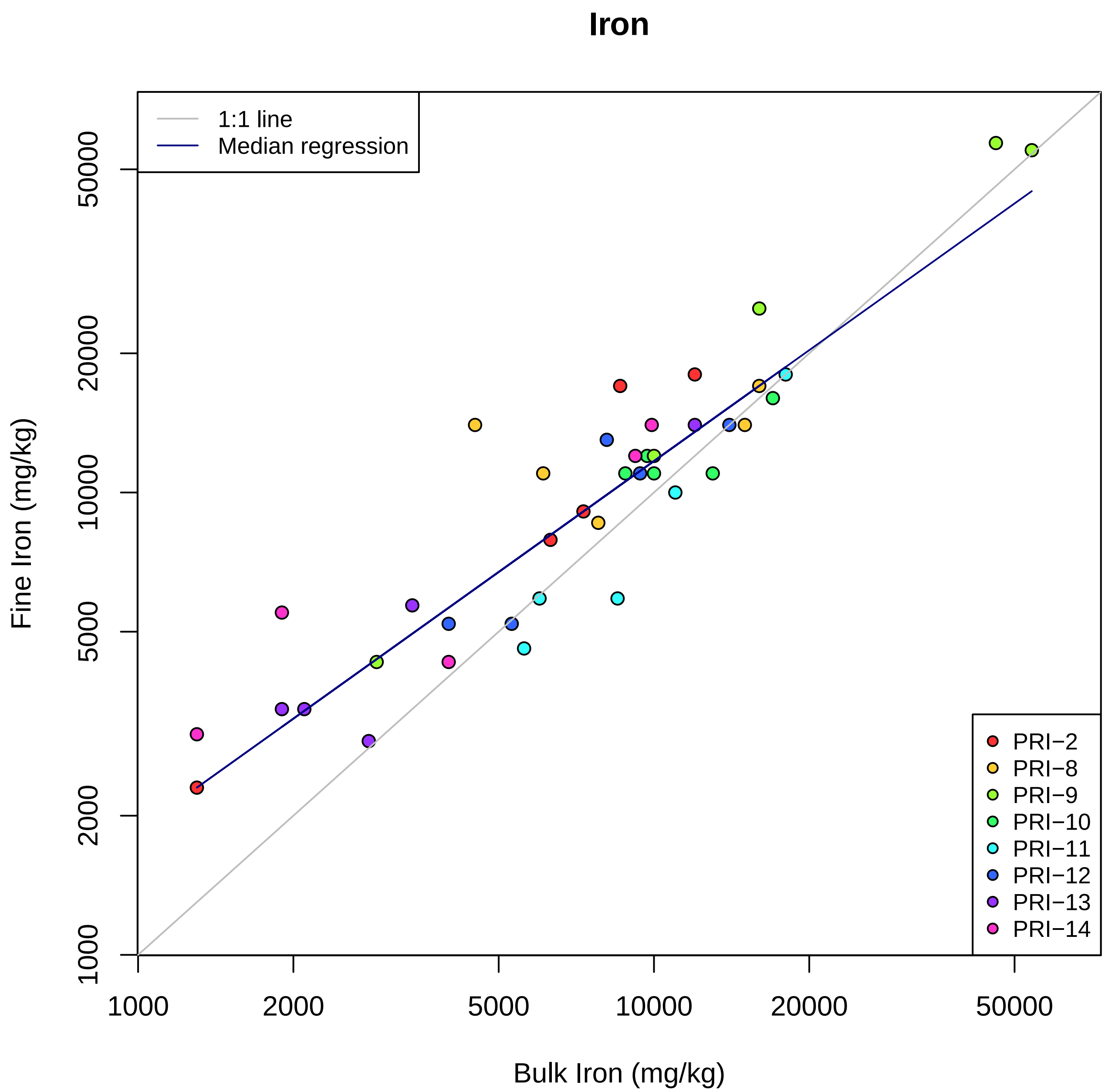
Hexachlorobiphenyl, 2,3',4,4',5,5'− (PCB 167)
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
5e−01
5e+00
5e+01
5e+02
5e+03
Fine Hexachlorobiphenyl, 2,3',4,4',5,5'− (PCB 167) (pg/g)
Bulk Hexachlorobiphenyl, 2,3',4,4',5,5'− (PCB 167) (pg/g)

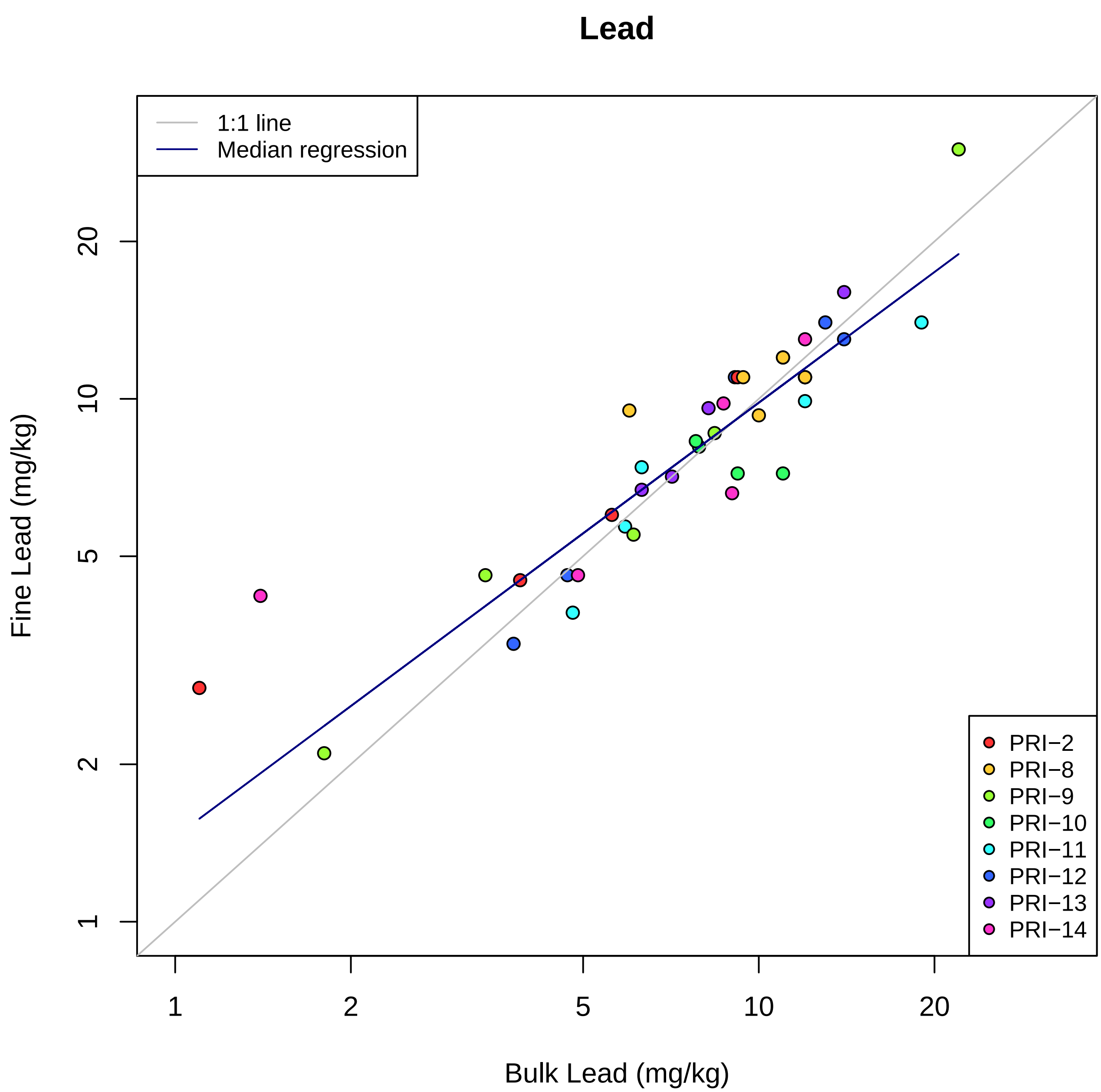
High Molecular Weight PAH (ND=0)

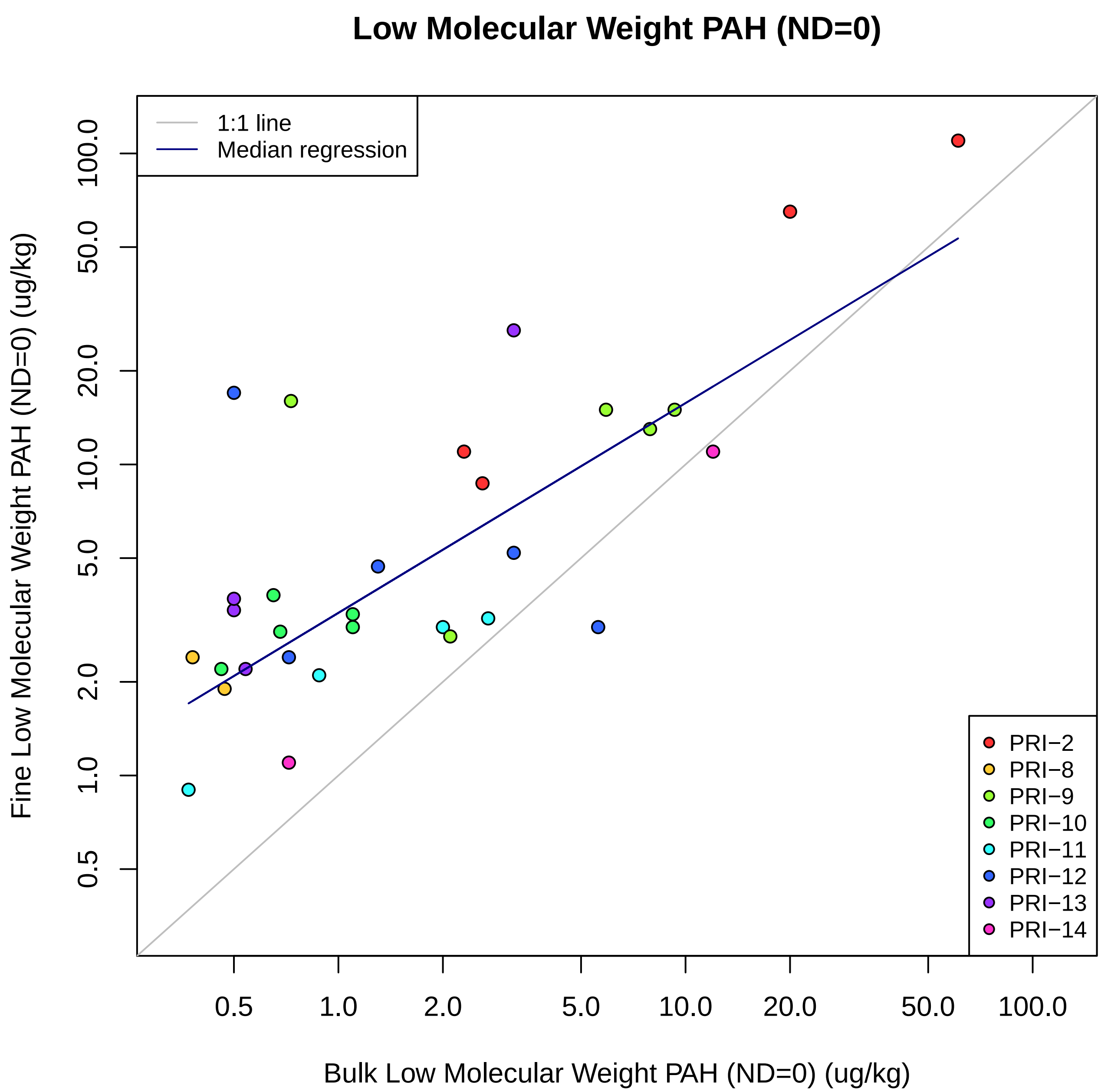




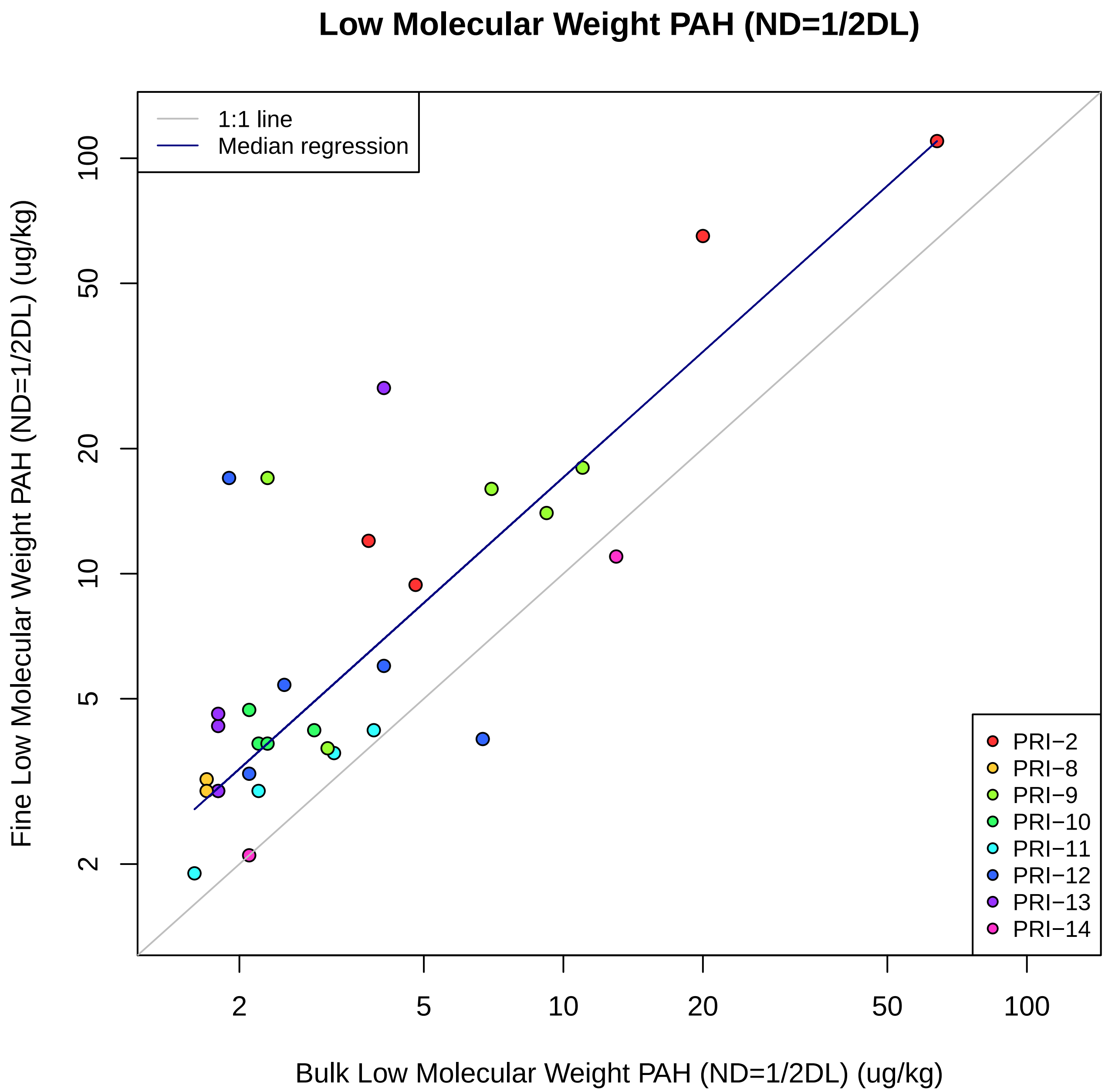
High Molecular Weight PAH (ND=1/2DL)
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine High Molecular Weight PAH (ND=1/2DL) (ug/kg)
Bulk High Molecular Weight PAH (ND=1/2DL) (ug/kg)
5
10
20
50
100
200
500

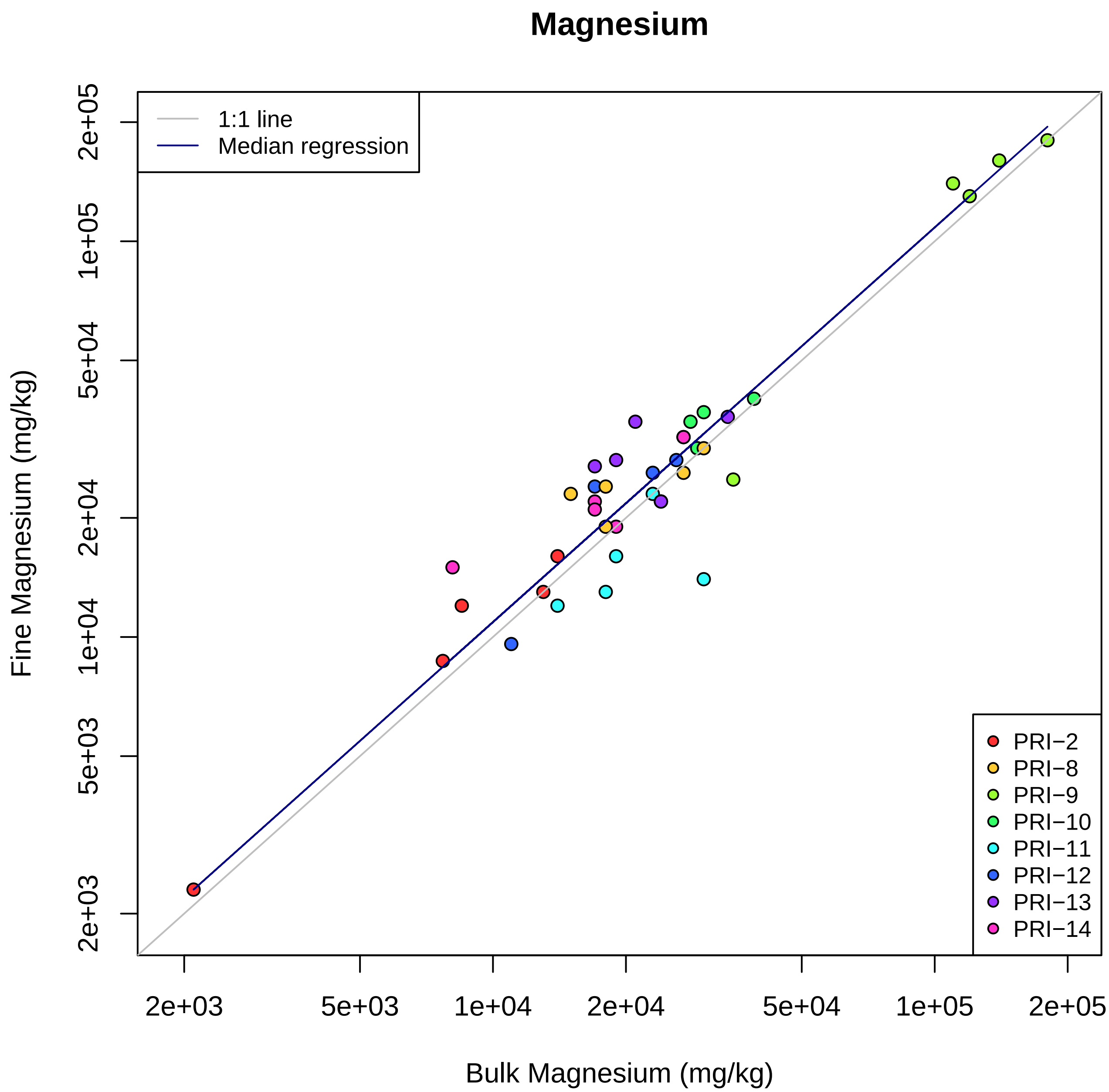

Iron
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Iron (mg/kg)
Bulk Iron (mg/kg)
1000
2000
5000
10000
20000
50000


Lead
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Lead (mg/kg)
1
2
5
10
20
Bulk Lead (mg/kg)
1
2
5
10
20

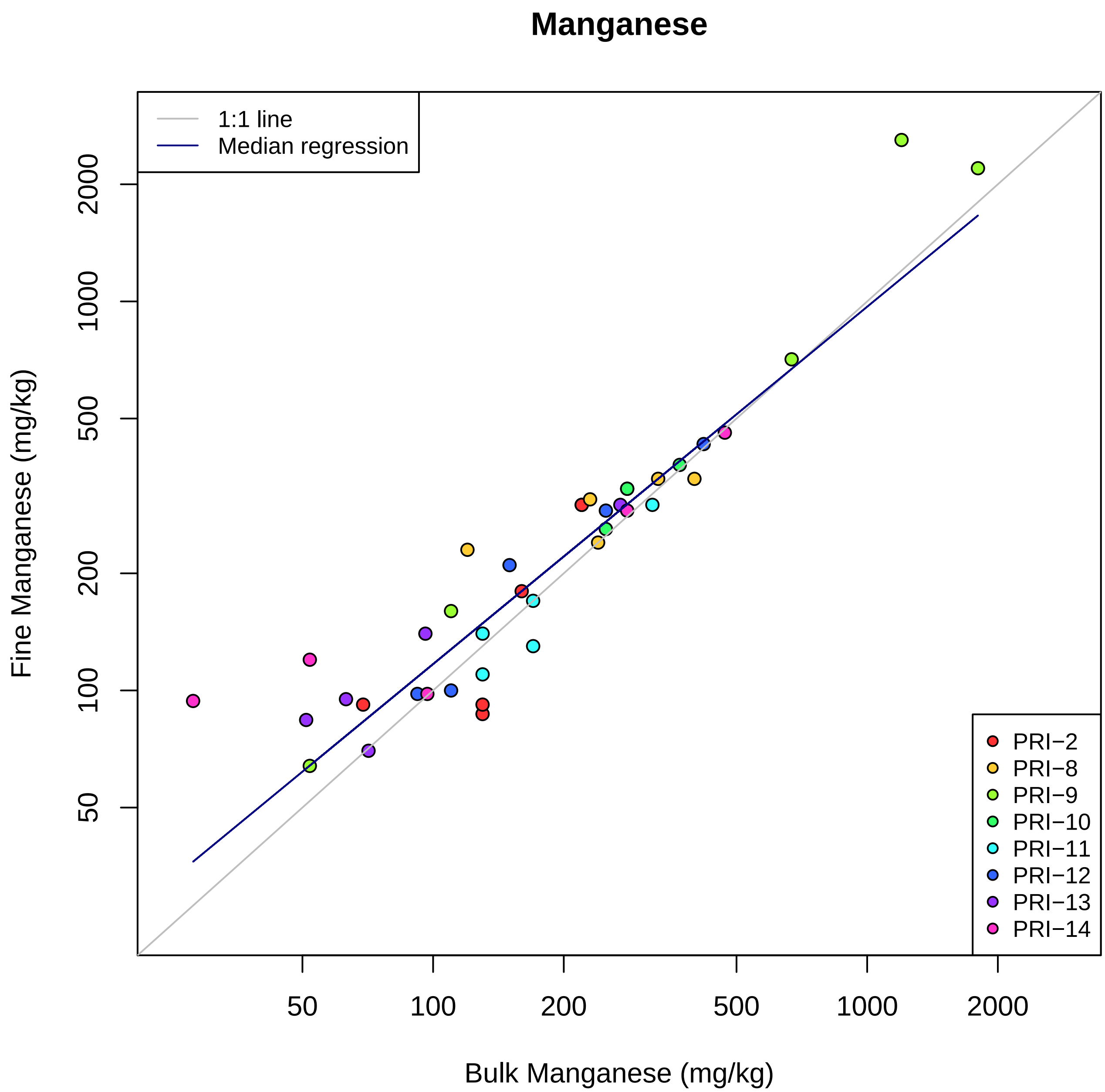


Low Molecular Weight PAH (ND=0)
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Low Molecular Weight PAH (ND=0) (ug/kg)
0.5
1.0
2.0
5.0
10.0
20.0
50.0
100.0
Bulk Low Molecular Weight PAH (ND=0) (ug/kg)

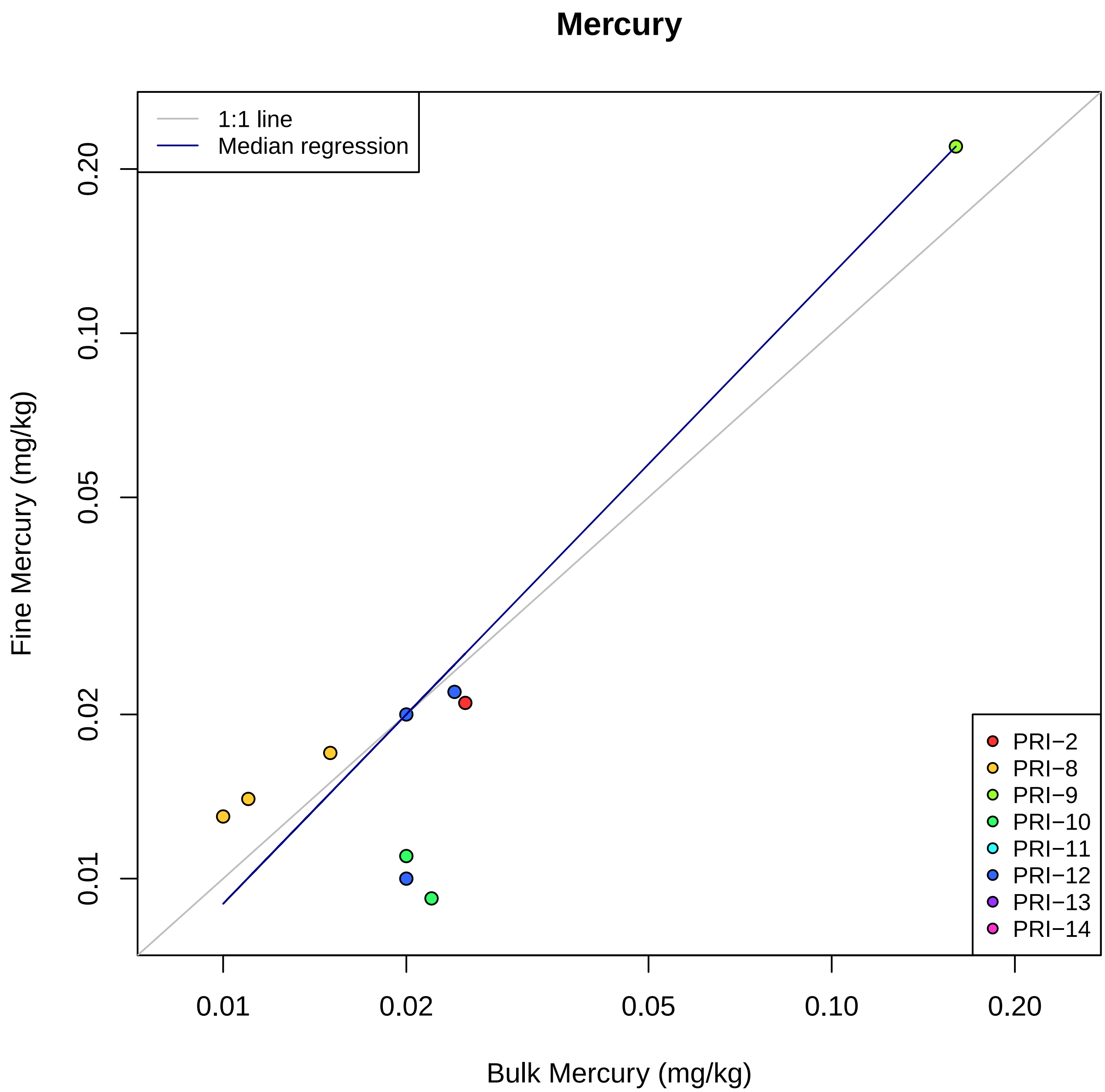

Low Molecular Weight PAH (ND=1/2DL)
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Low Molecular Weight PAH (ND=1/2DL) (ug/kg)
Bulk Low Molecular Weight PAH (ND=1/2DL) (ug/kg)
2
5
10
20
50
100

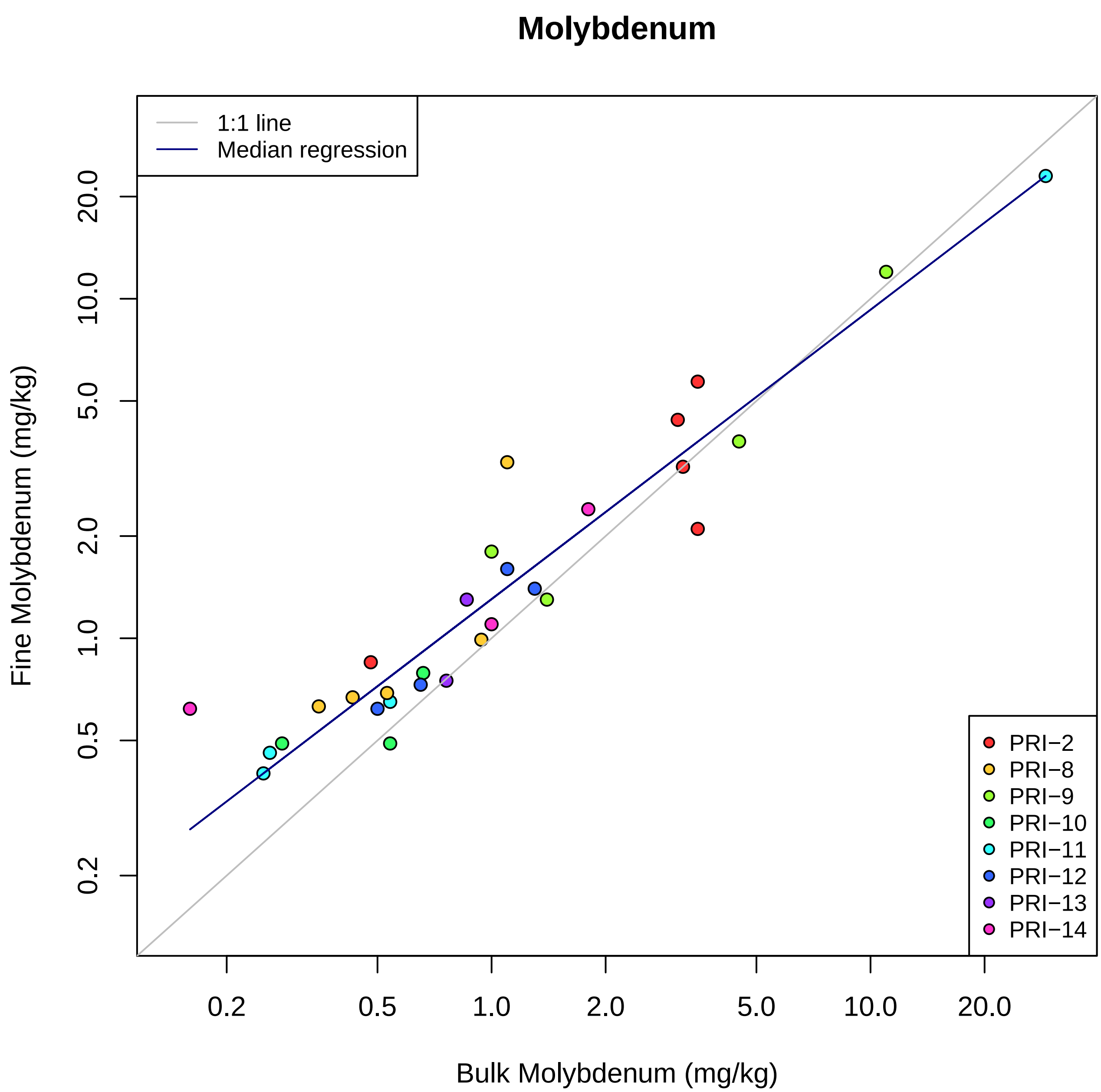


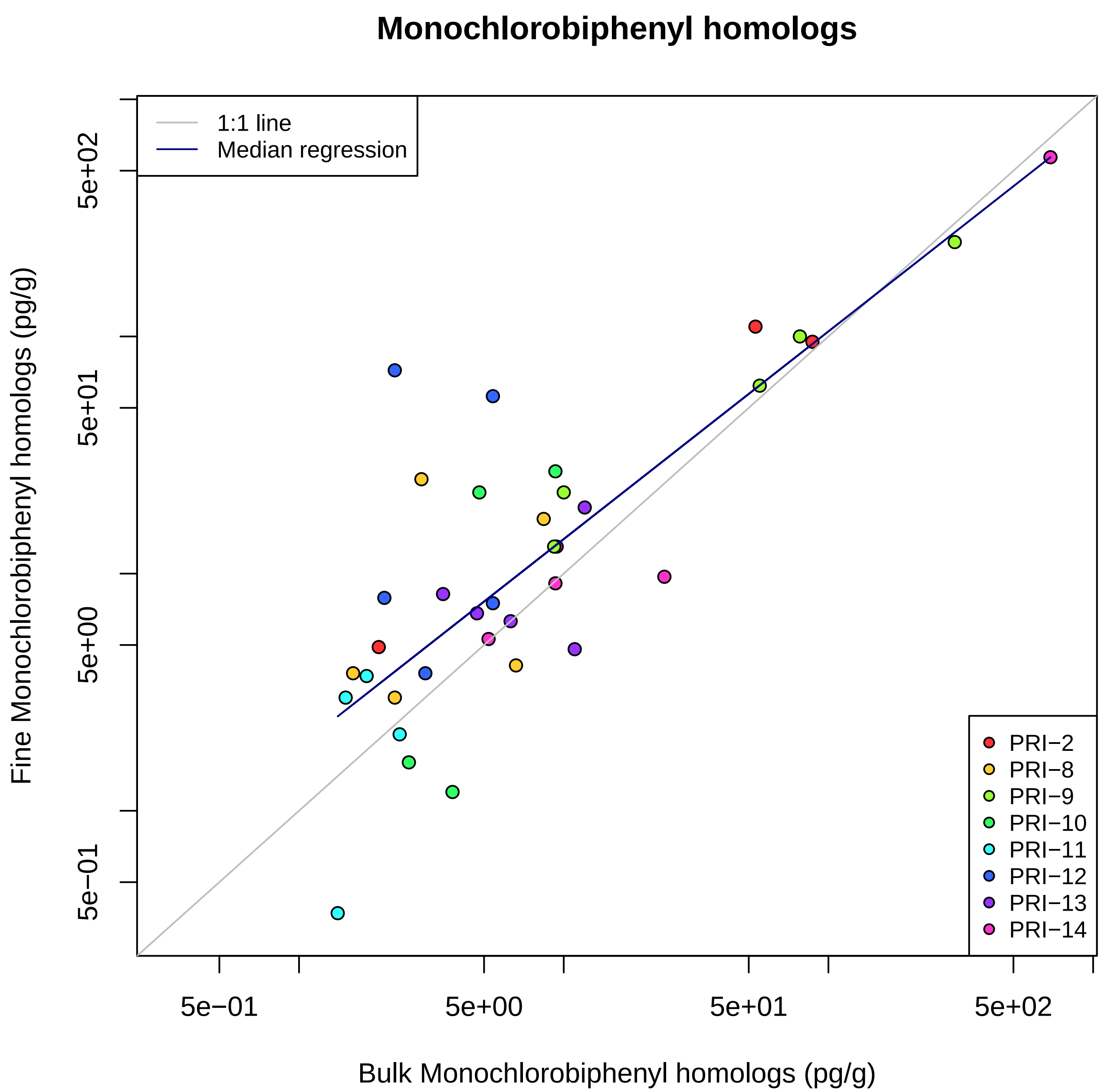
Magnesium
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Magnesium (mg/kg)
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05
2e+05
Bulk Magnesium (mg/kg)
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05
2e+05

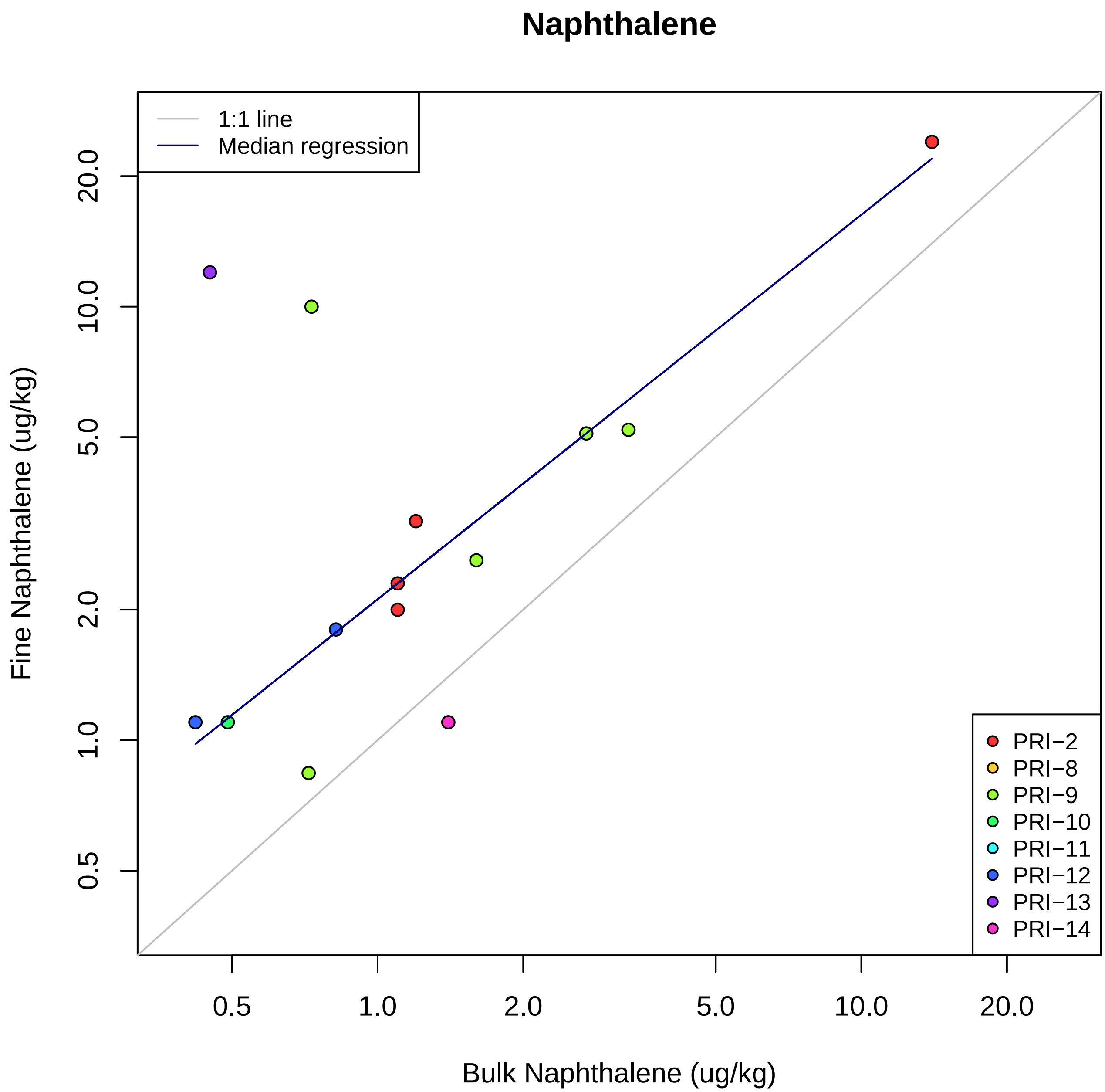


Manganese
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Manganese (mg/kg)
50
100
200
500
1000
2000
Bulk Manganese (mg/kg)
50
100
200
500
1000
2000

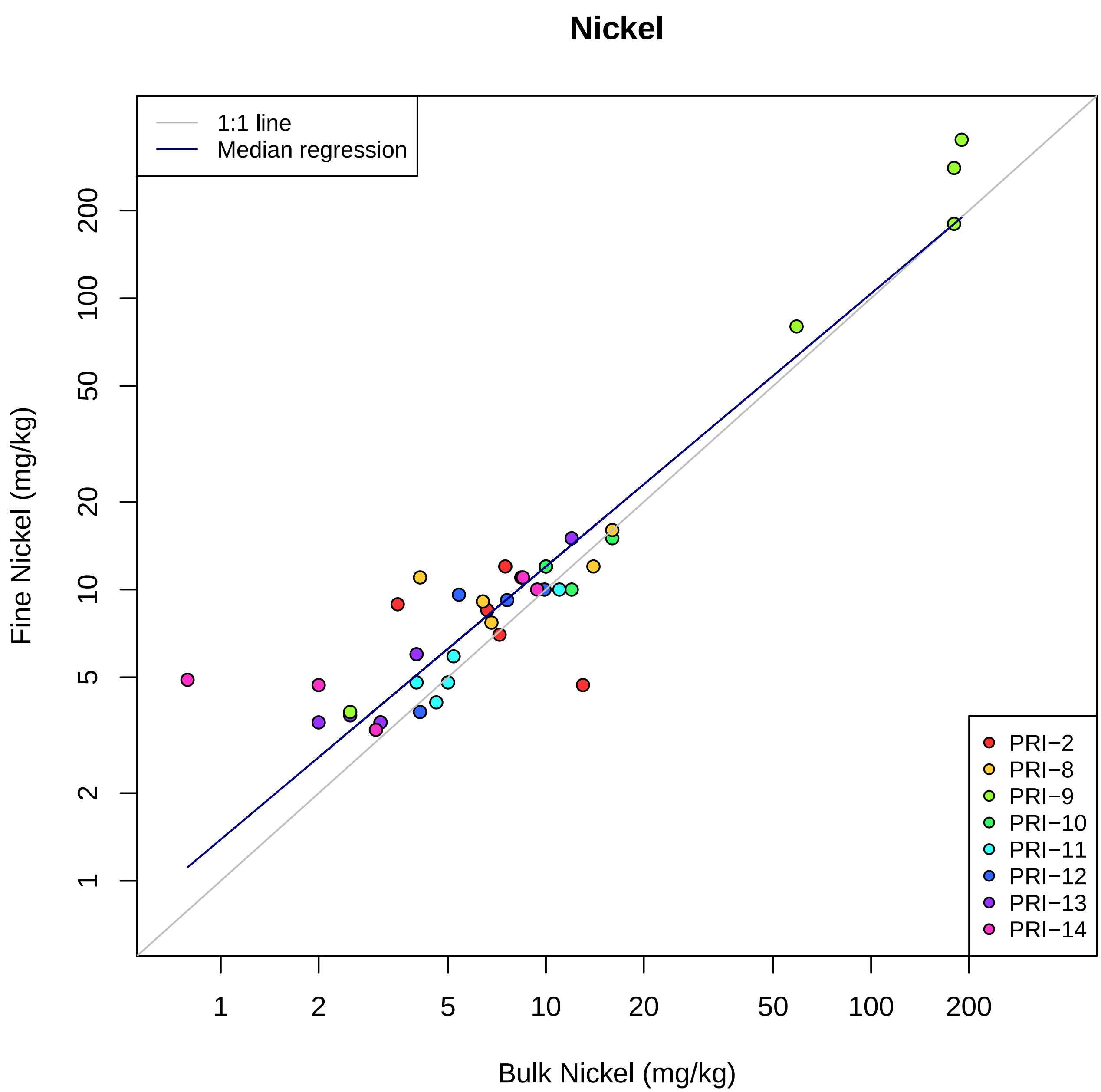

Mercury
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
0.01
0.02
0.05
0.10
0.20
Bulk Mercury (mg/kg)
Fine Mercury (mg/kg)


Molybdenum
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Molybdenum (mg/kg)
0.2
0.5
1.0
2.0
5.0
10.0
20.0
Bulk Molybdenum (mg/kg)

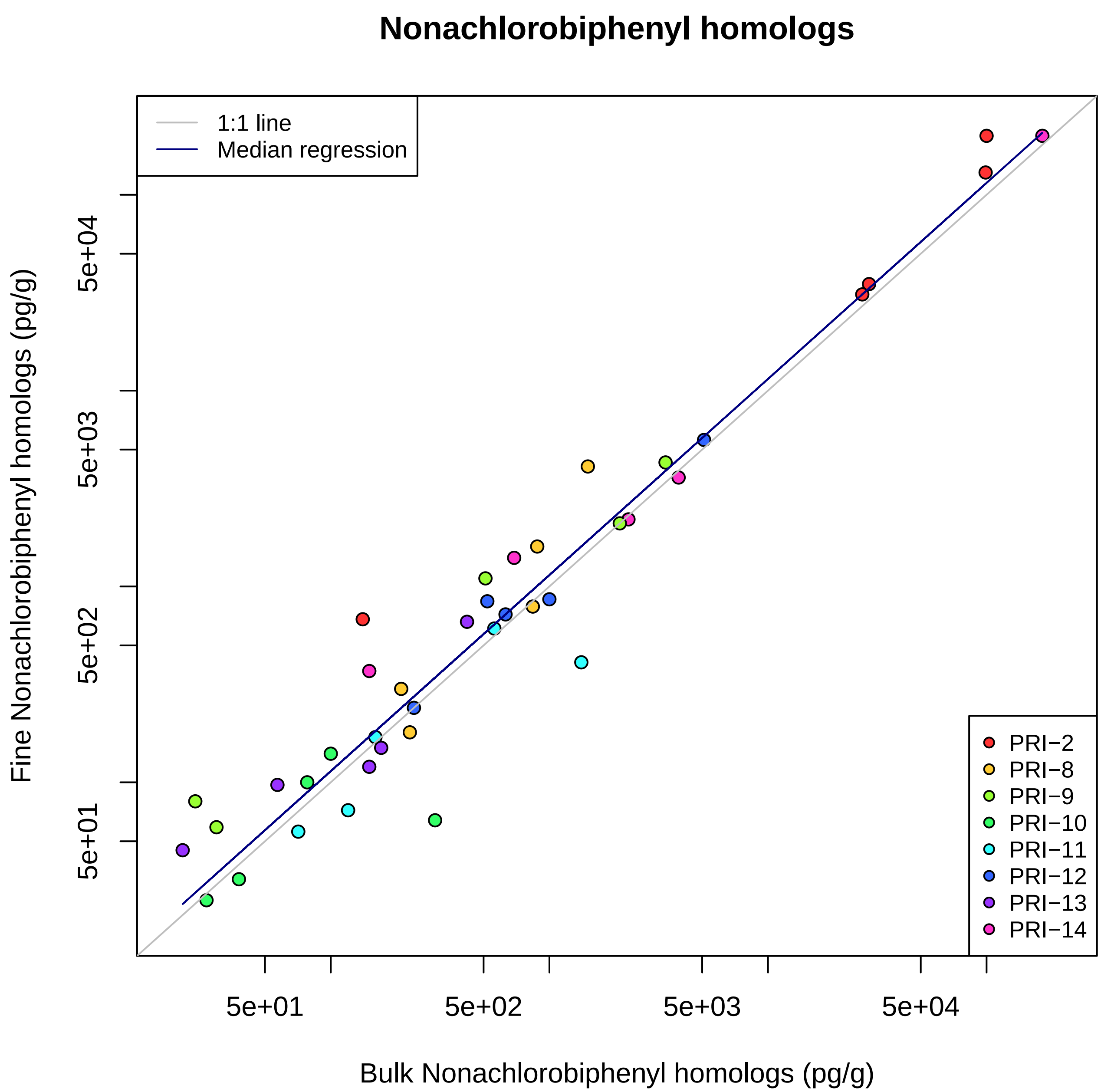

Monochlorobiphenyl homologs
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
5e−01
5e+00
5e+01
5e+02
Bulk Monochlorobiphenyl homologs (pg/g)
Fine Monochlorobiphenyl homologs (pg/g)



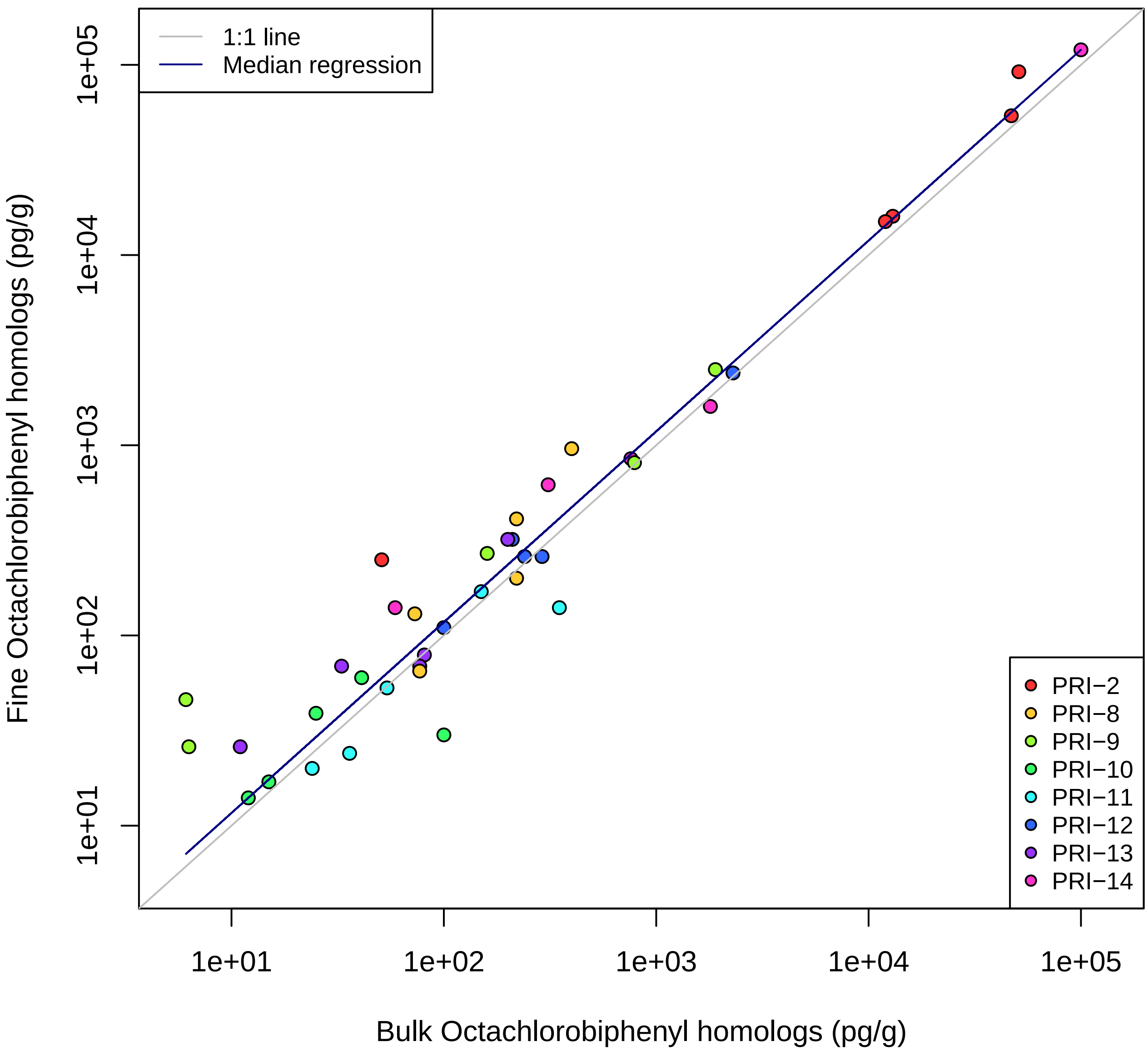
Naphthalene
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Naphthalene (ug/kg)
Bulk Naphthalene (ug/kg)
0.5
1.0
2.0
5.0
10.0
20.0

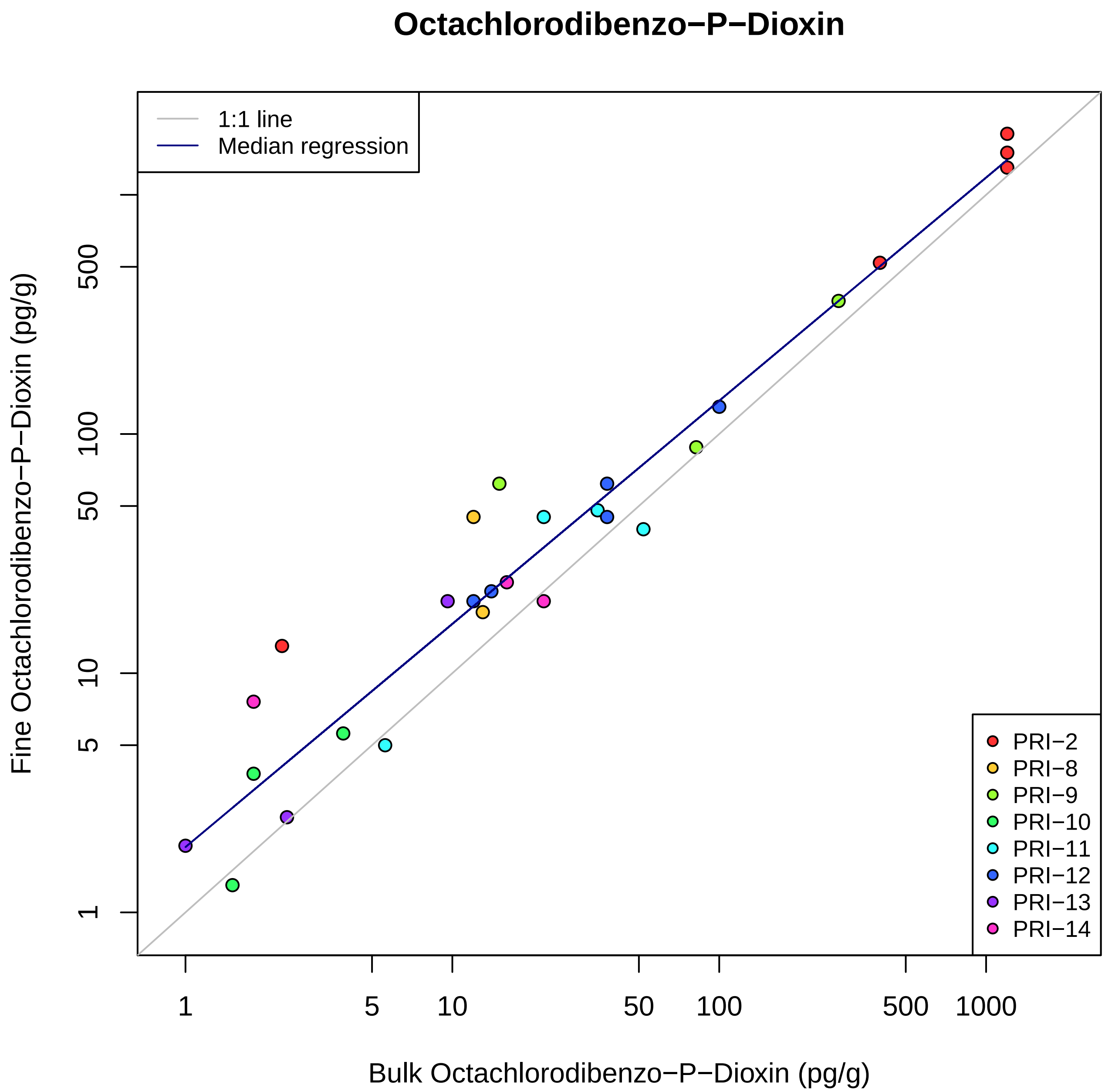


Nickel
1:1 line
Median regression
Fine Nickel (mg/kg)
1
2
5
10
20
50
100
200
Bulk Nickel (mg/kg)
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14

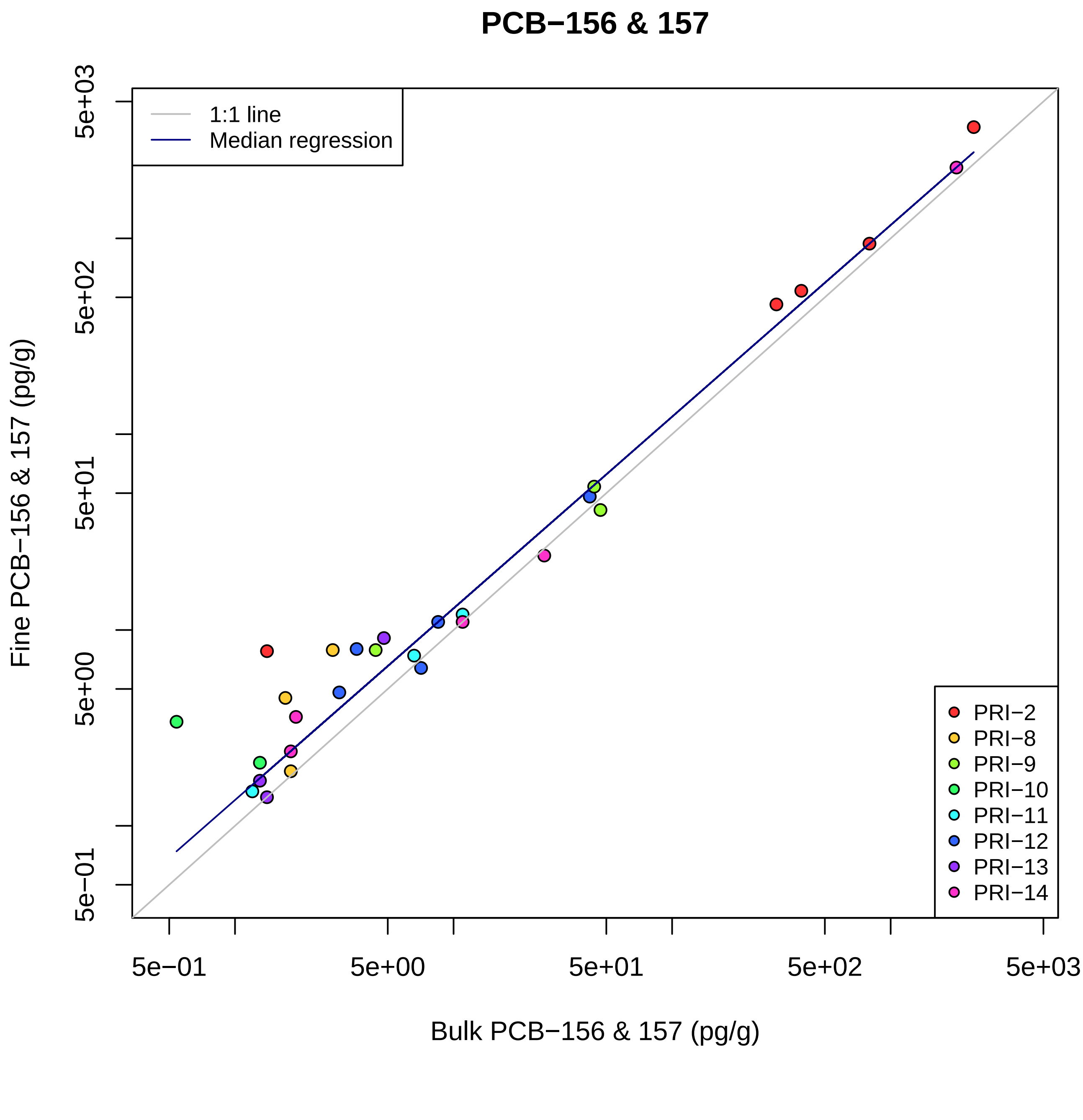

Nonachlorobiphenyl homologs
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
5e+01
5e+02
5e+03
5e+04
5e+01
5e+02
5e+03
5e+04
Bulk Nonachlorobiphenyl homologs (pg/g)
Fine Nonachlorobiphenyl homologs (pg/g)

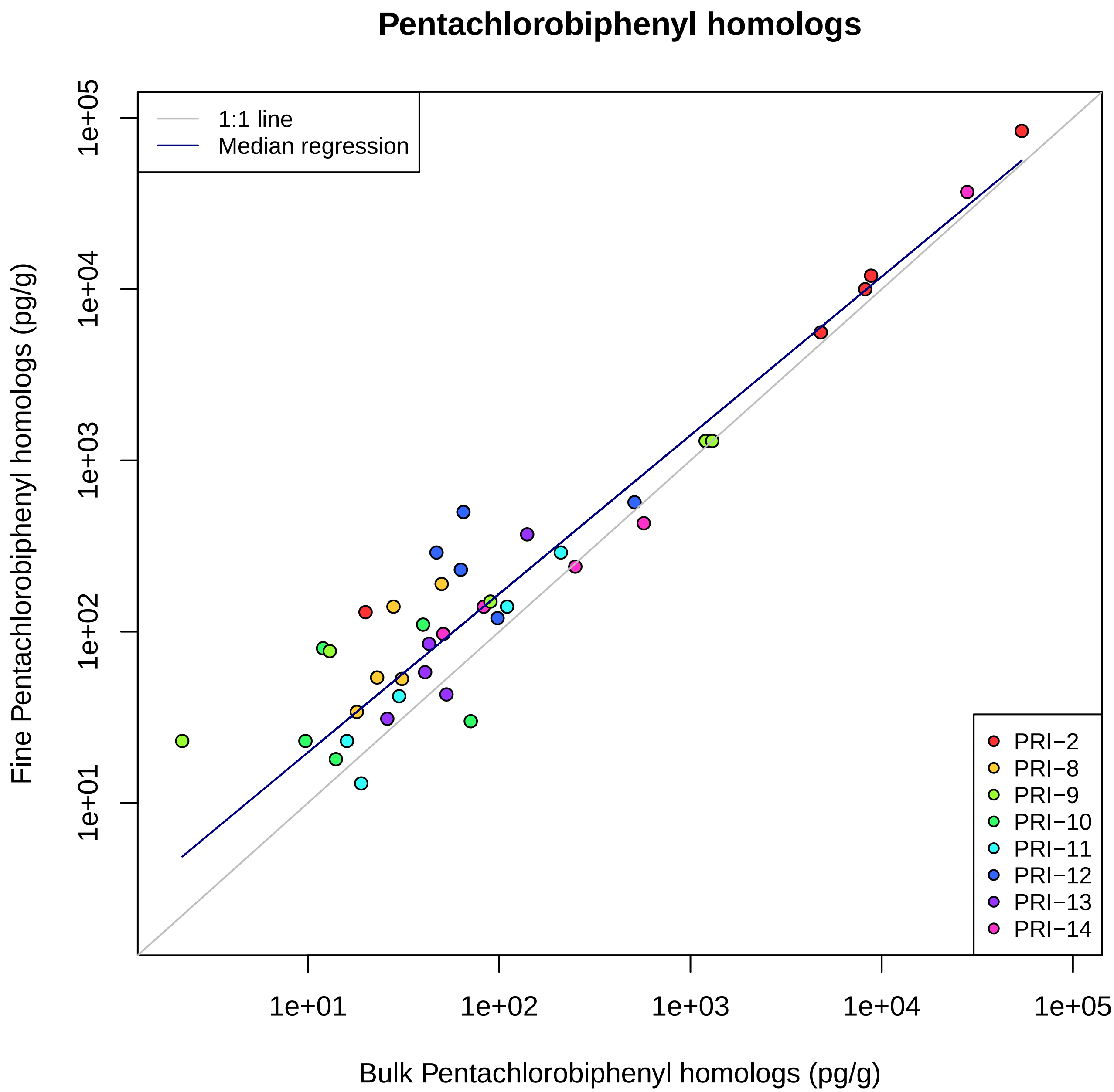
Octachlorobiphenyl homologs

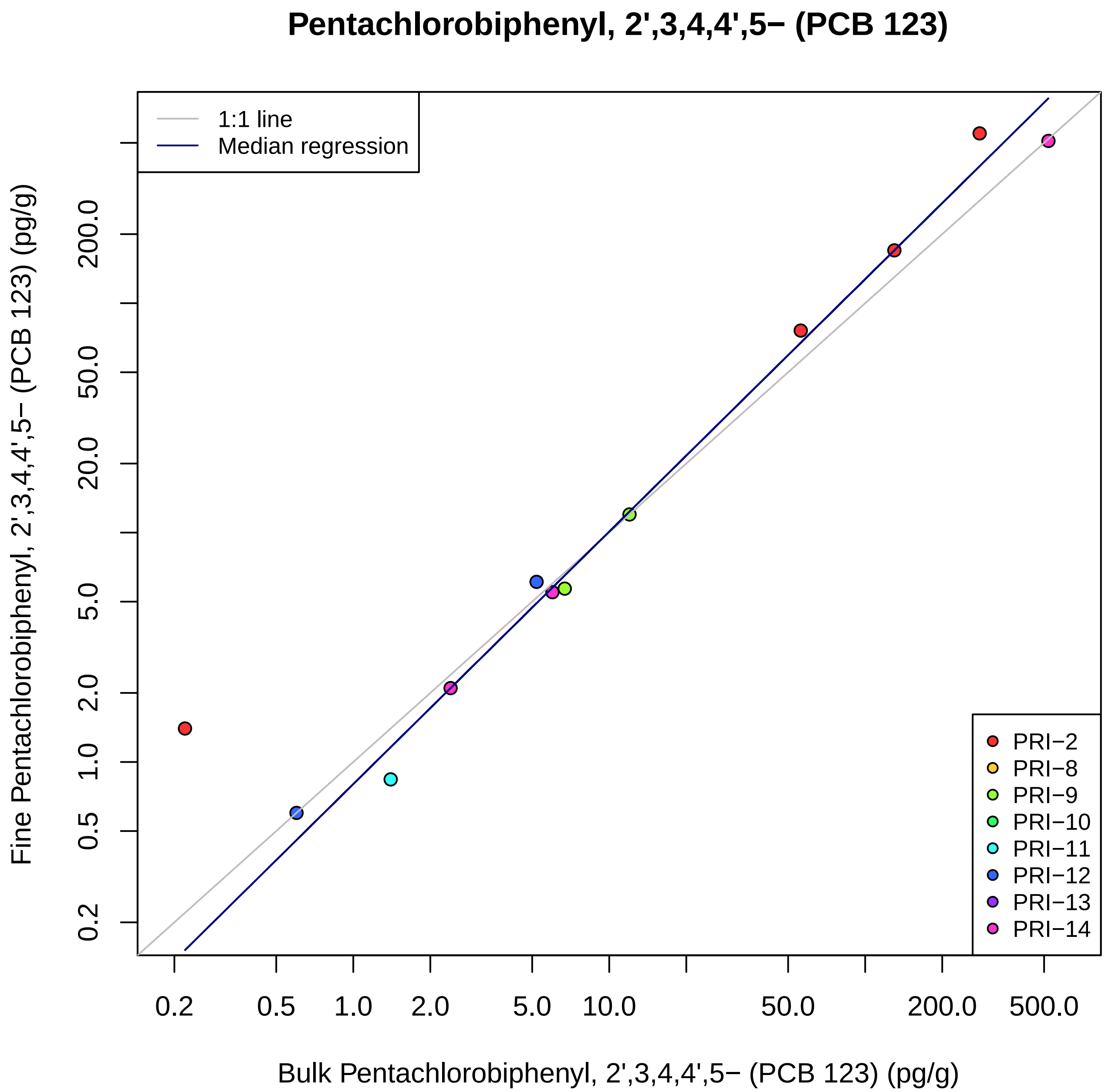


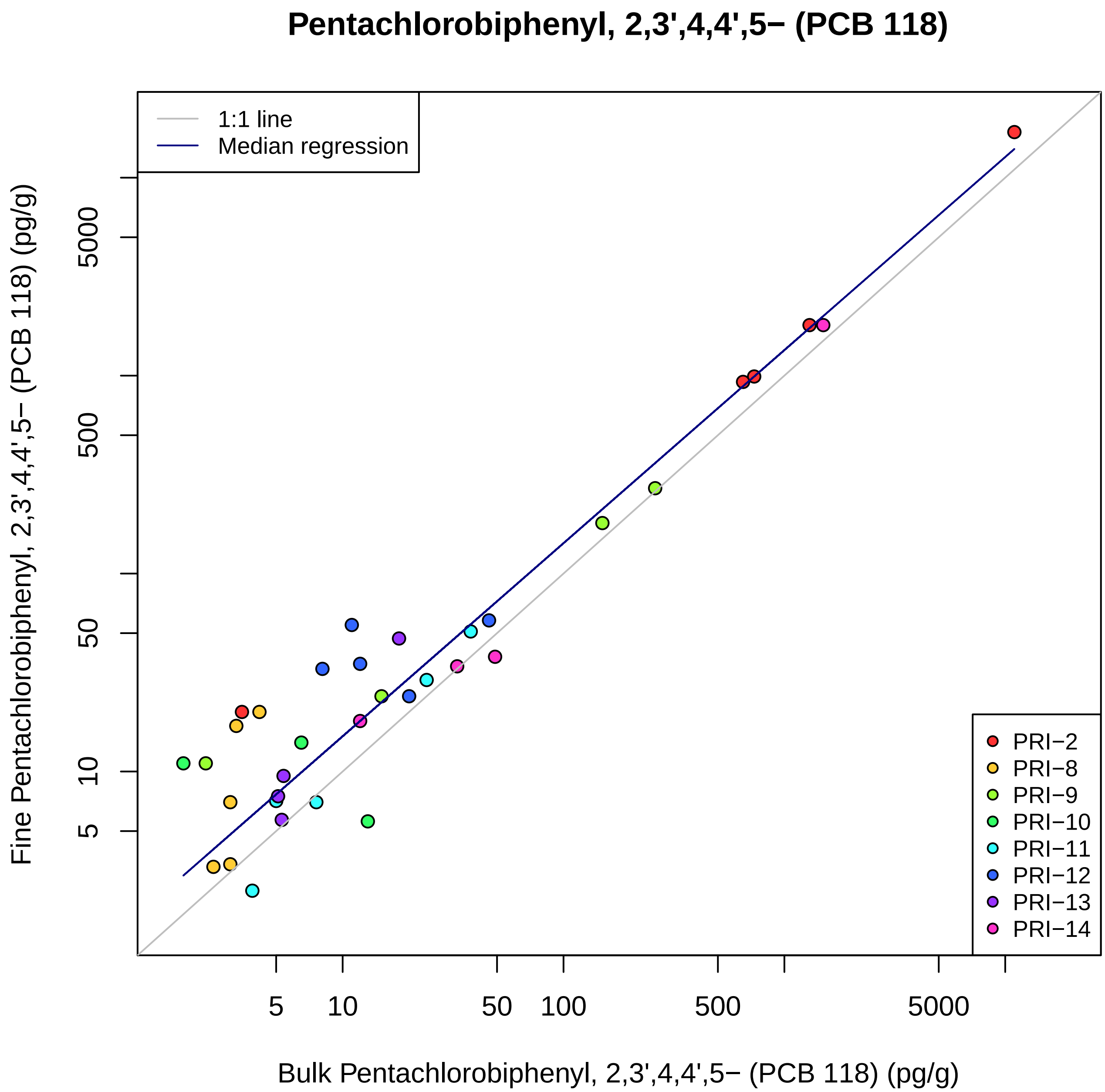


Octachlorodibenzo−P−Dioxin
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Octachlorodibenzo−P−Dioxin (pg/g)
Bulk Octachlorodibenzo−P−Dioxin (pg/g)
1
5
10
50
100
500
1000

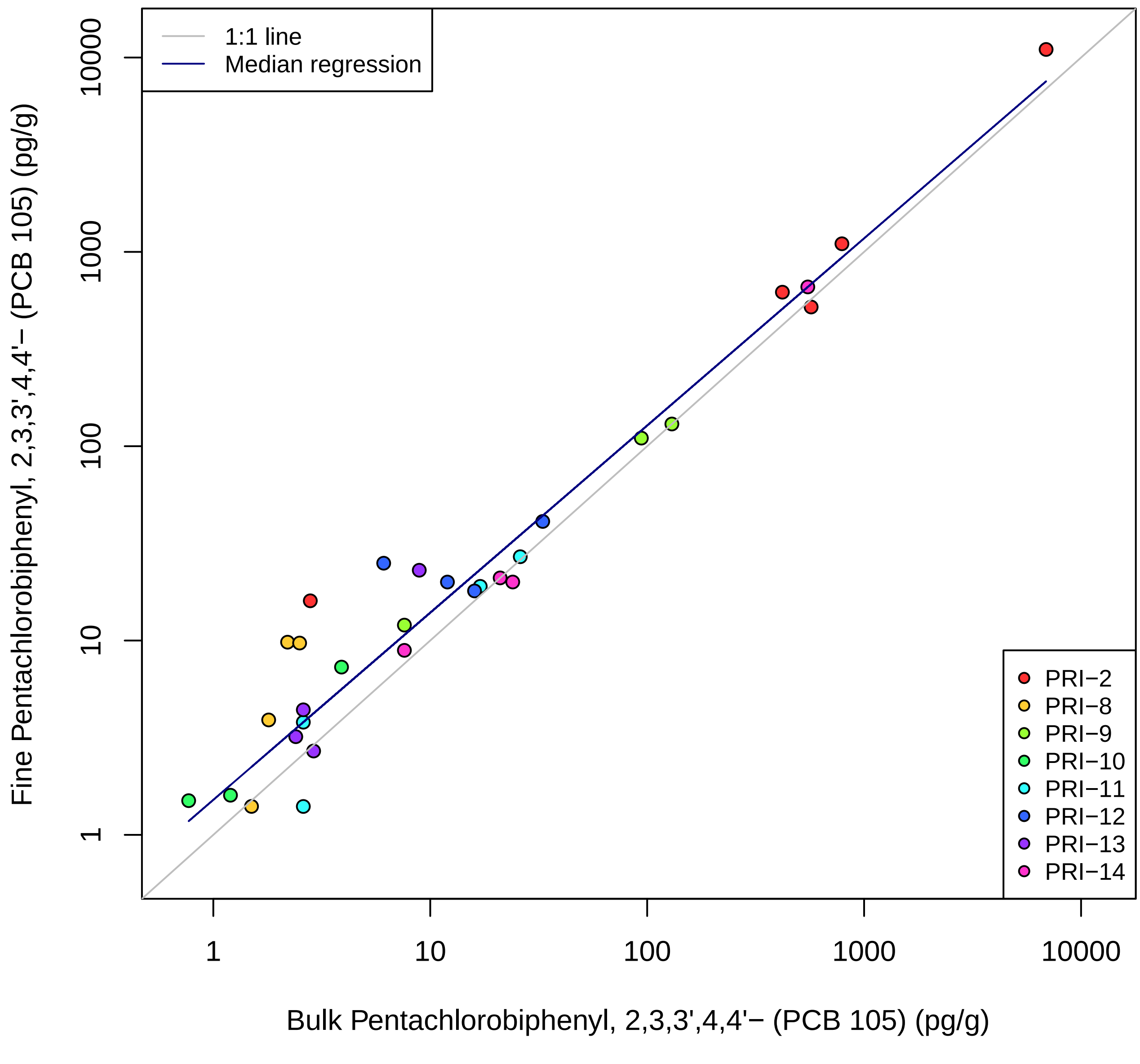

PCB−156 & 157
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine PCB−156 & 157 (pg/g)
5e−01
5e+00
5e+01
5e+02
5e+03
Bulk PCB−156 & 157 (pg/g)

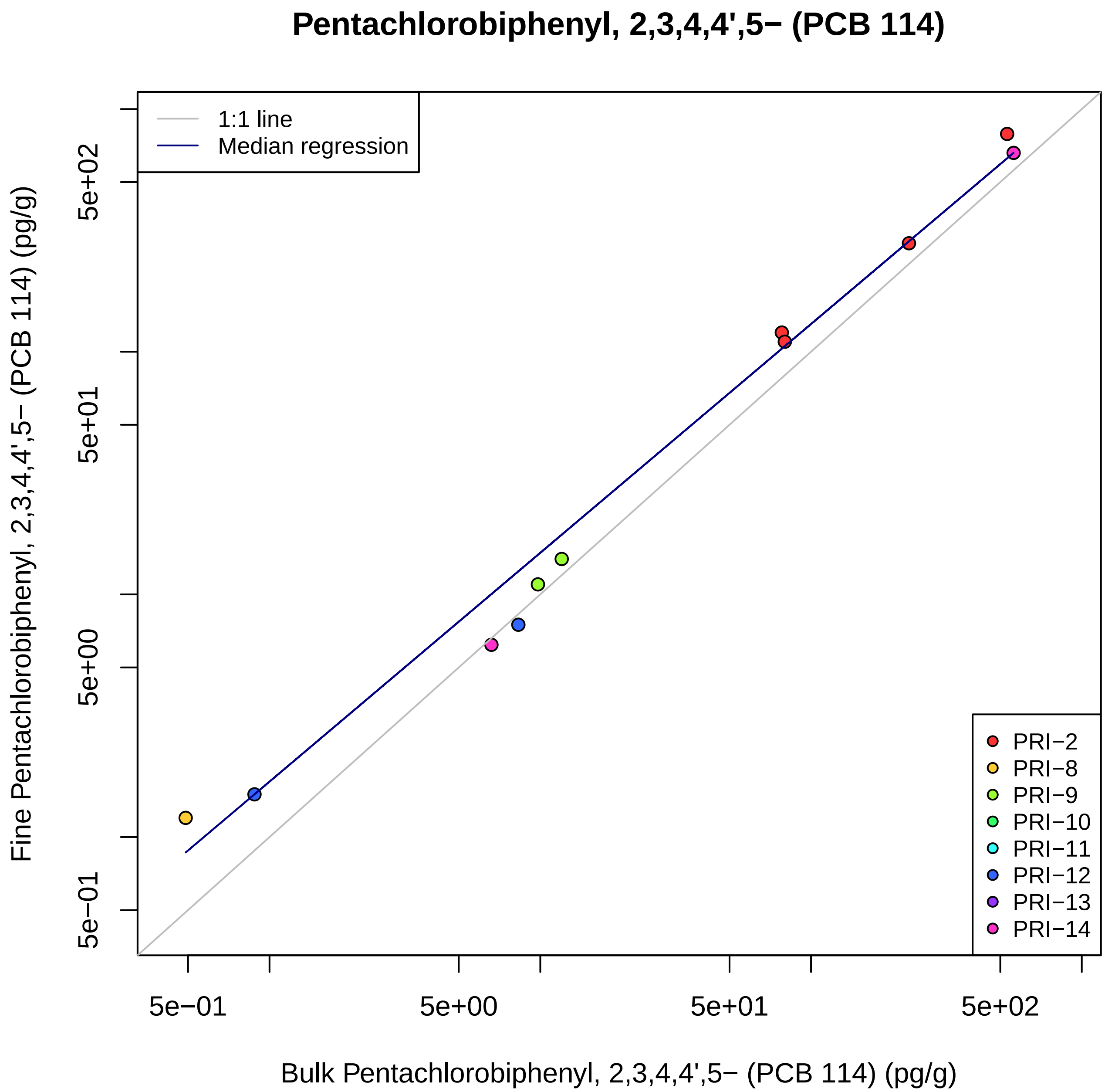

Pentachlorobiphenyl homologs
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
1e+01
1e+02
1e+03
1e+04
1e+05
Bulk Pentachlorobiphenyl homologs (pg/g)
Fine Pentachlorobiphenyl homologs (pg/g)

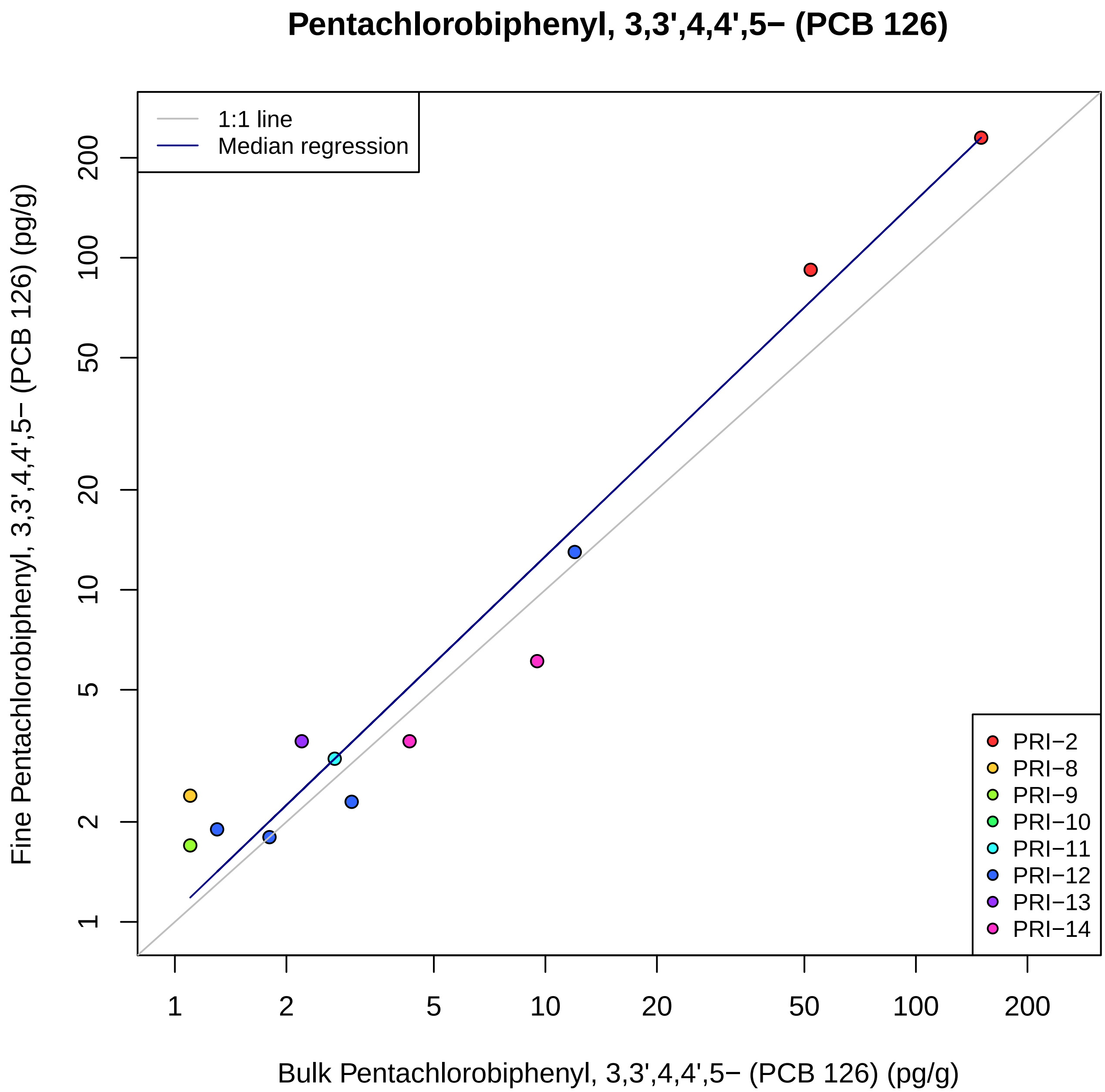

Pentachlorobiphenyl, 2',3,4,4',5− (PCB 123)
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Pentachlorobiphenyl, 2',3,4,4',5− (PCB 123) (pg/g)
0.2
0.5
1.0
2.0
5.0
20.0
50.0
200.0
0.2
0.5
1.0
2.0
5.0
10.0
50.0
200.0
500.0
Bulk Pentachlorobiphenyl, 2',3,4,4',5− (PCB 123) (pg/g)


Pentachlorobiphenyl, 2,3',4,4',5− (PCB 118)
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
5
10
50
500
5000
5
10
50
100
500
5000
Fine Pentachlorobiphenyl, 2,3',4,4',5− (PCB 118) (pg/g)
Bulk Pentachlorobiphenyl, 2,3',4,4',5− (PCB 118) (pg/g)

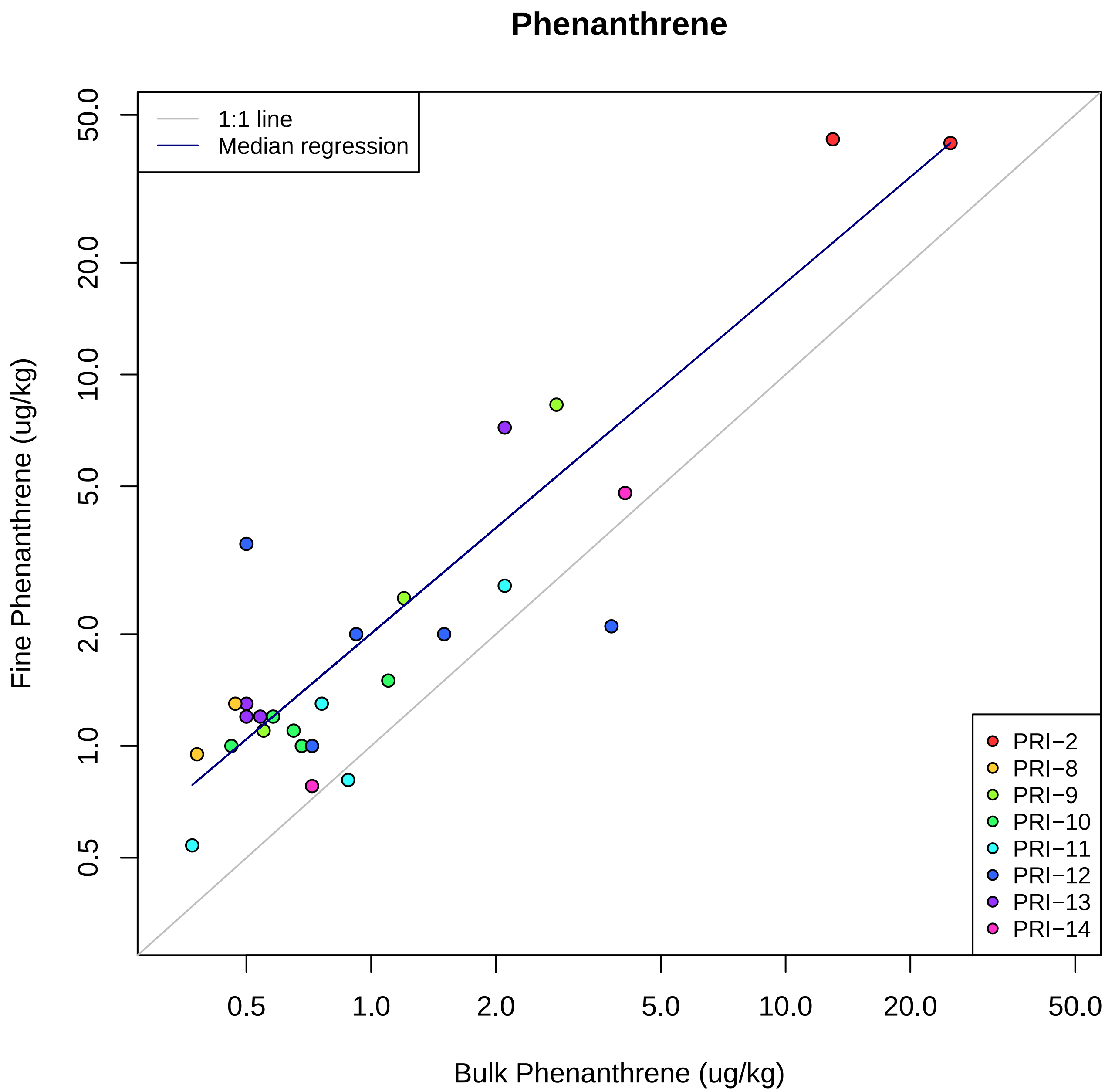
Pentachlorobiphenyl, 2,3,3',4,4'− (PCB 105)

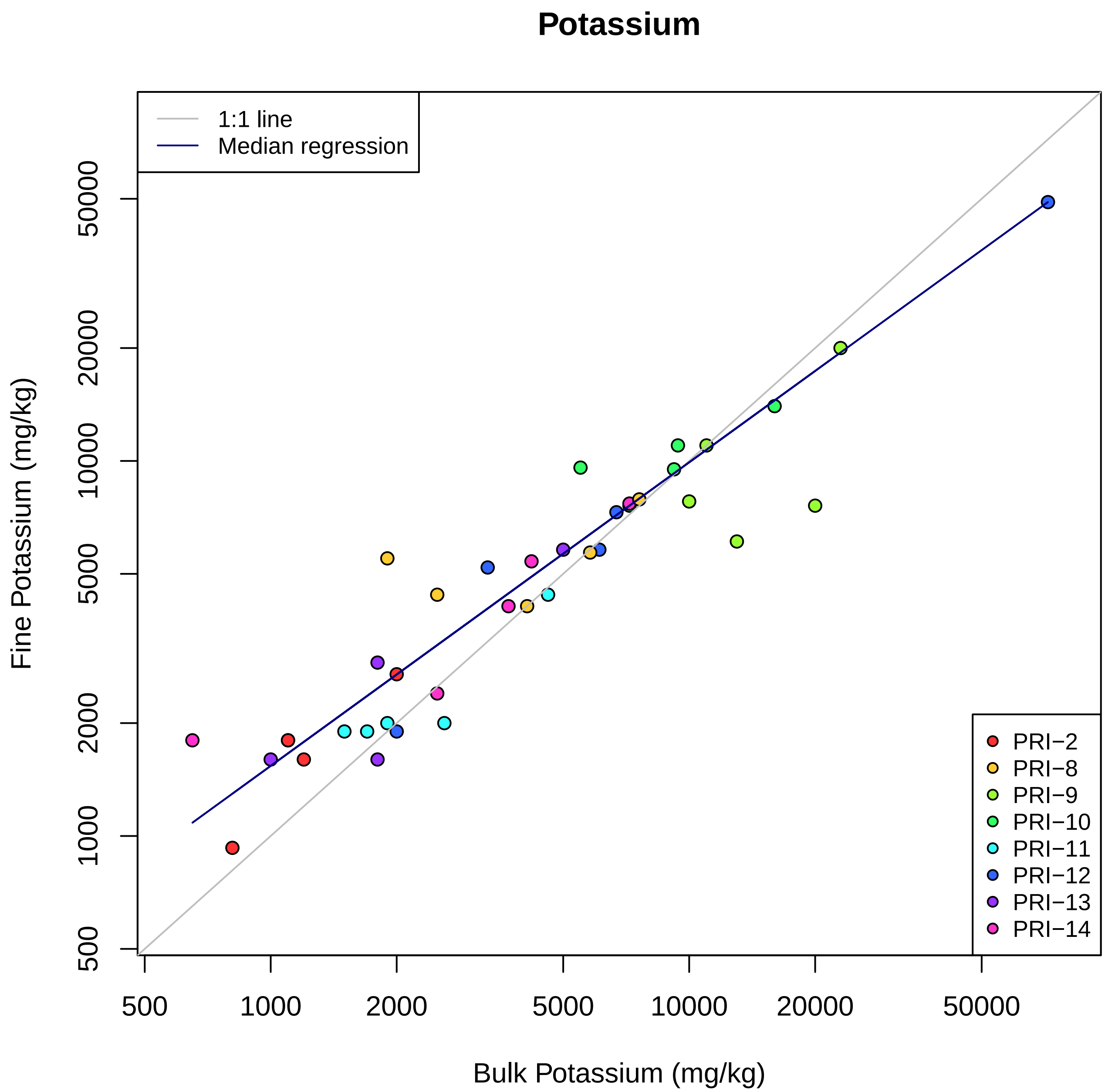



Pentachlorobiphenyl, 2,3,4,4',5− (PCB 114)
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
5e−01
5e+00
5e+01
5e+02
Fine Pentachlorobiphenyl, 2,3,4,4',5− (PCB 114) (pg/g)
Bulk Pentachlorobiphenyl, 2,3,4,4',5− (PCB 114) (pg/g)

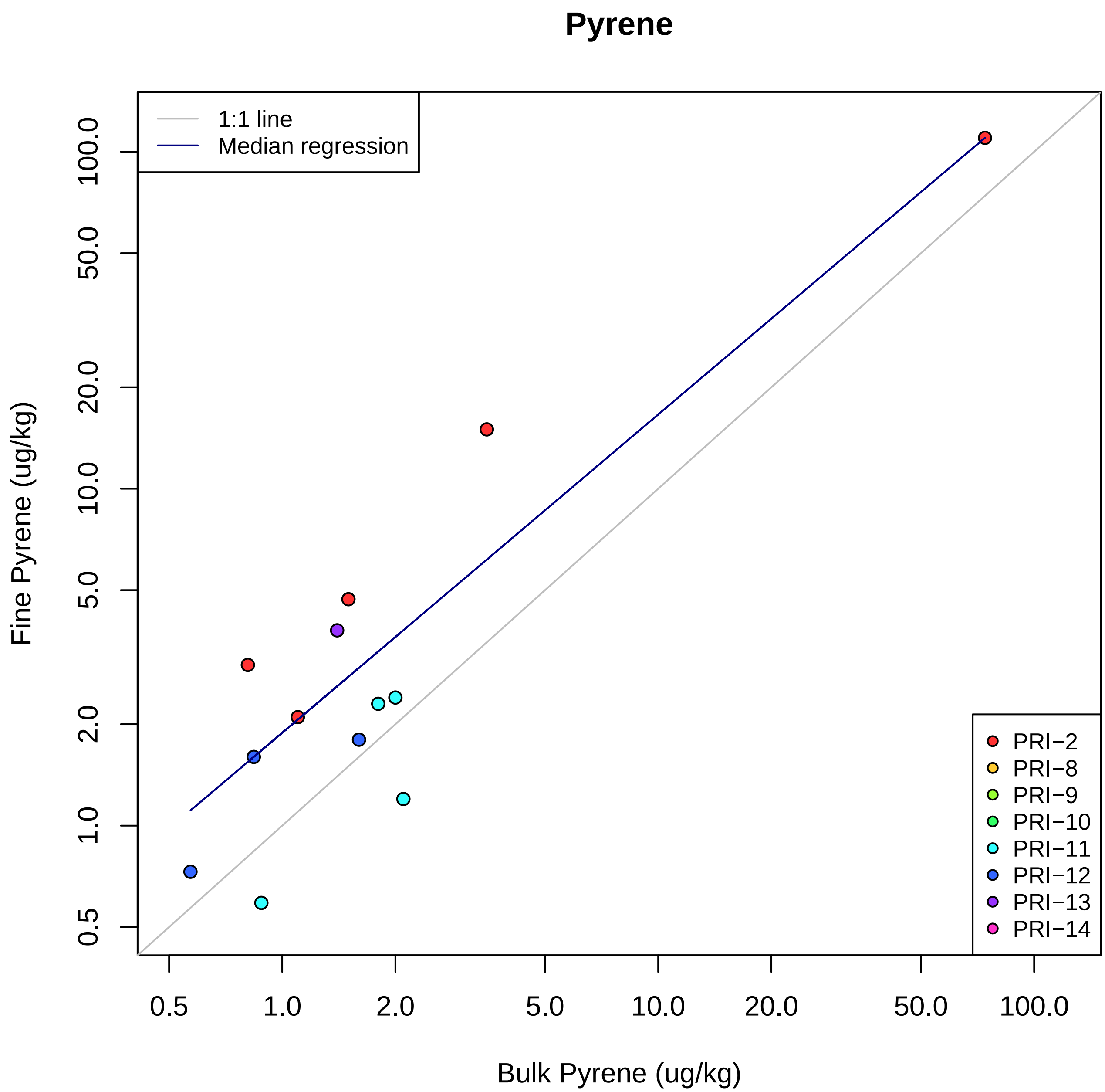


Pentachlorobiphenyl, 3,3',4,4',5− (PCB 126)
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Pentachlorobiphenyl, 3,3',4,4',5− (PCB 126) (pg/g)
1
2
5
10
20
50
100
200
Bulk Pentachlorobiphenyl, 3,3',4,4',5− (PCB 126) (pg/g)

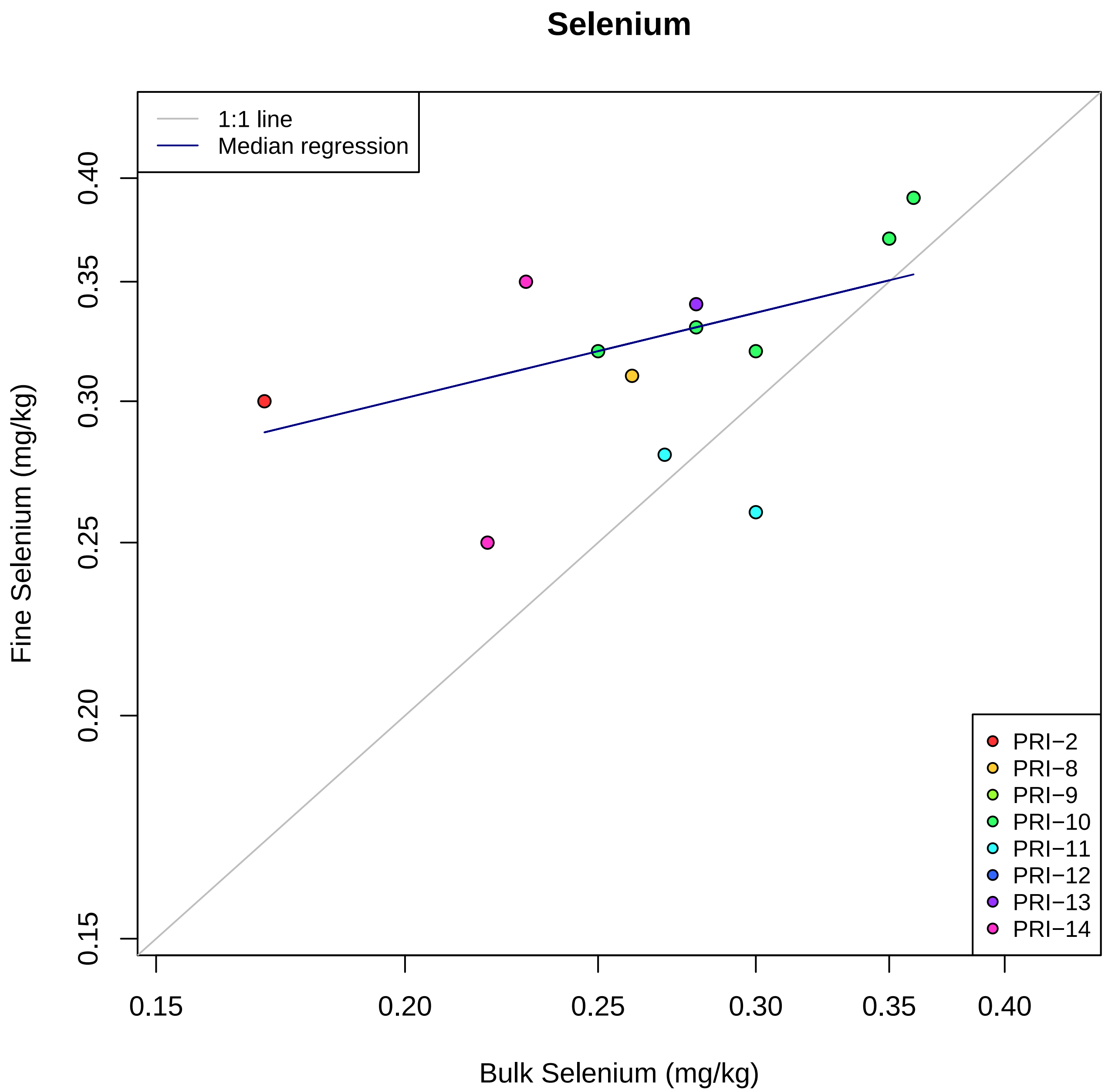

Phenanthrene
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Phenanthrene (ug/kg)
Bulk Phenanthrene (ug/kg)
0.5
1.0
2.0
5.0
10.0
20.0
50.0

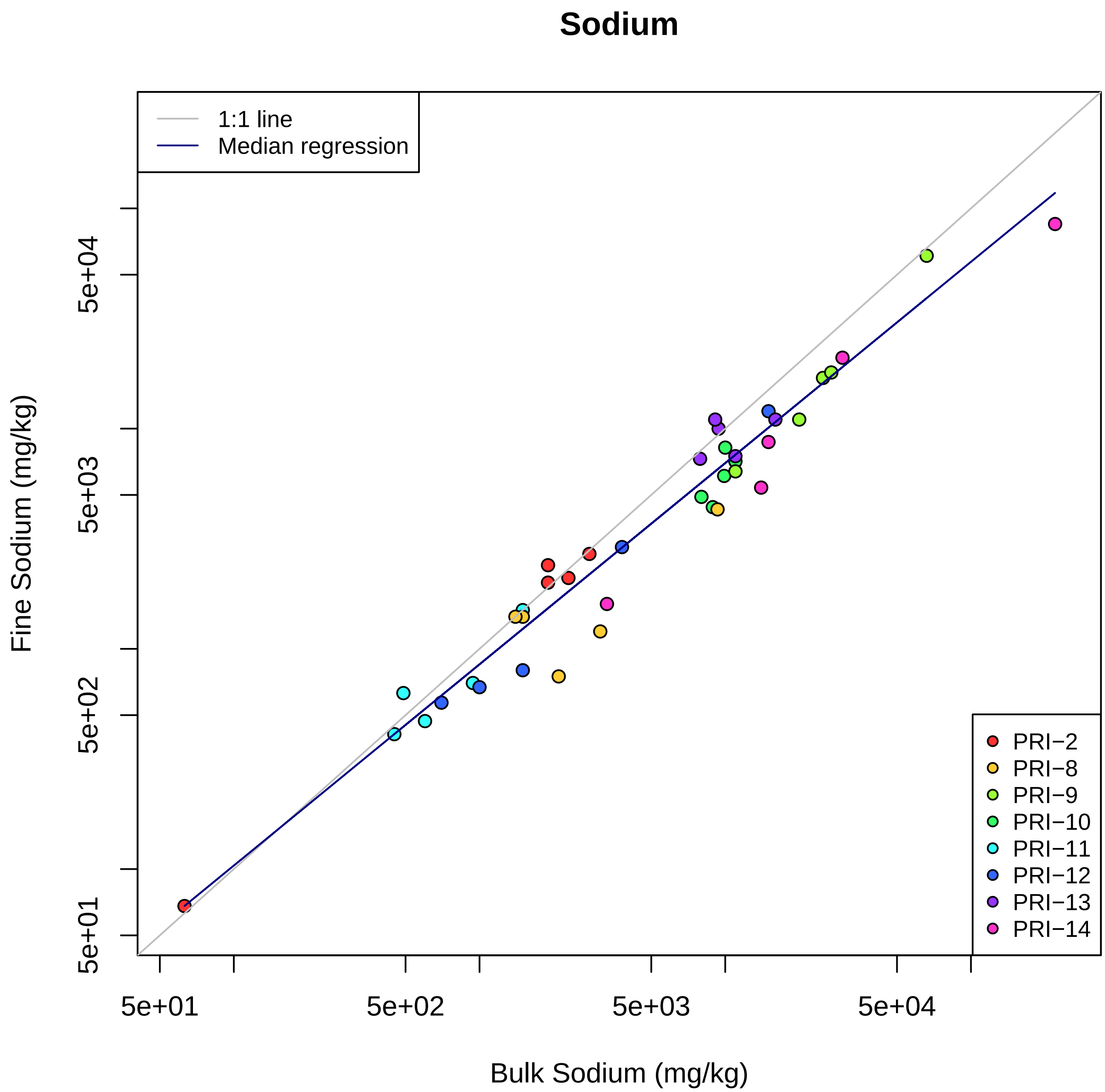


Potassium
1:1 line
Median regression
Fine Potassium (mg/kg)
500
1000
2000
5000
10000
20000
50000
Bulk Potassium (mg/kg)
500
1000
2000
5000
10000
20000
50000
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14

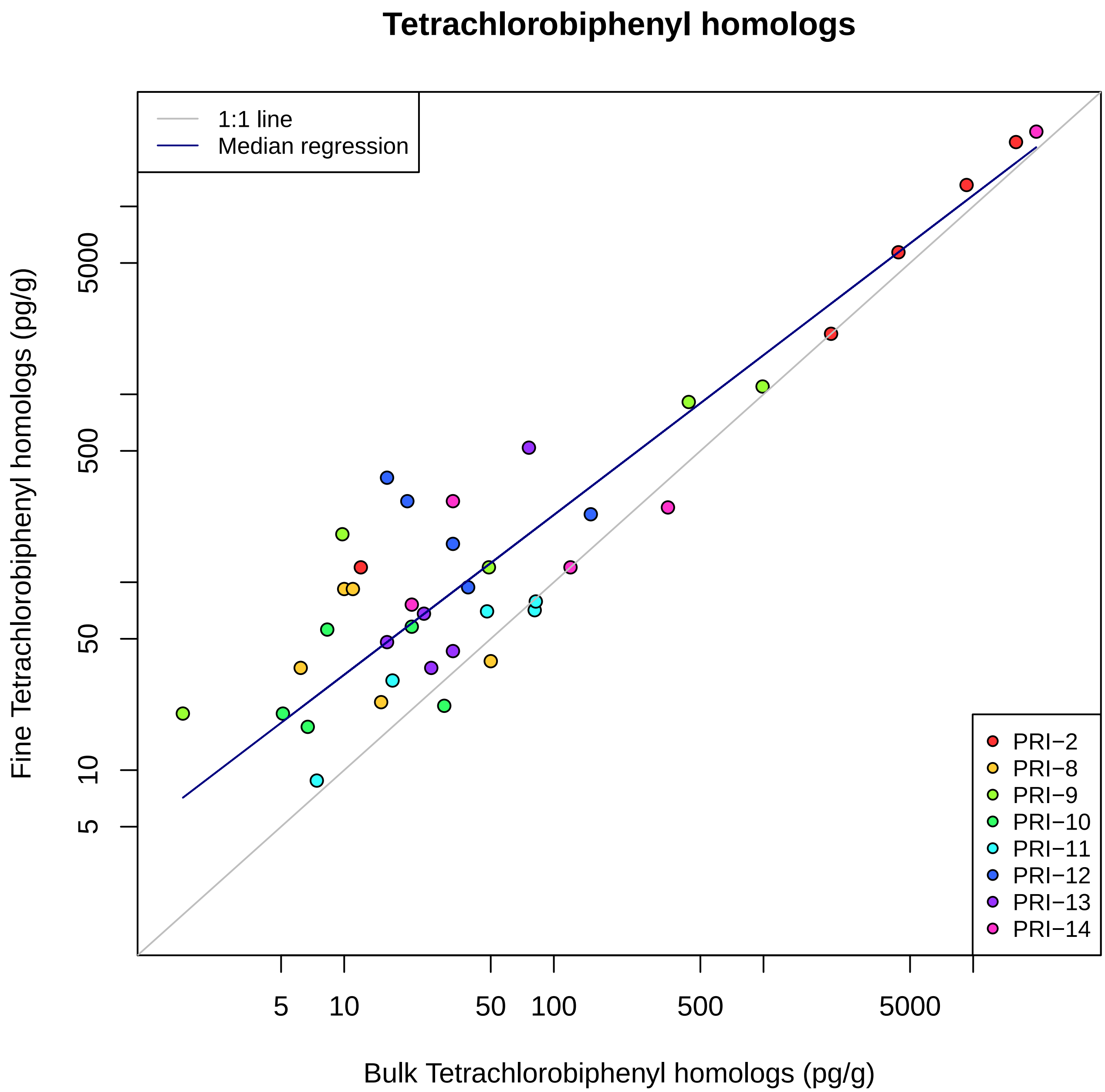


Pyrene
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Pyrene (ug/kg)
0.5
1.0
2.0
5.0
10.0
20.0
50.0
100.0
Bulk Pyrene (ug/kg)

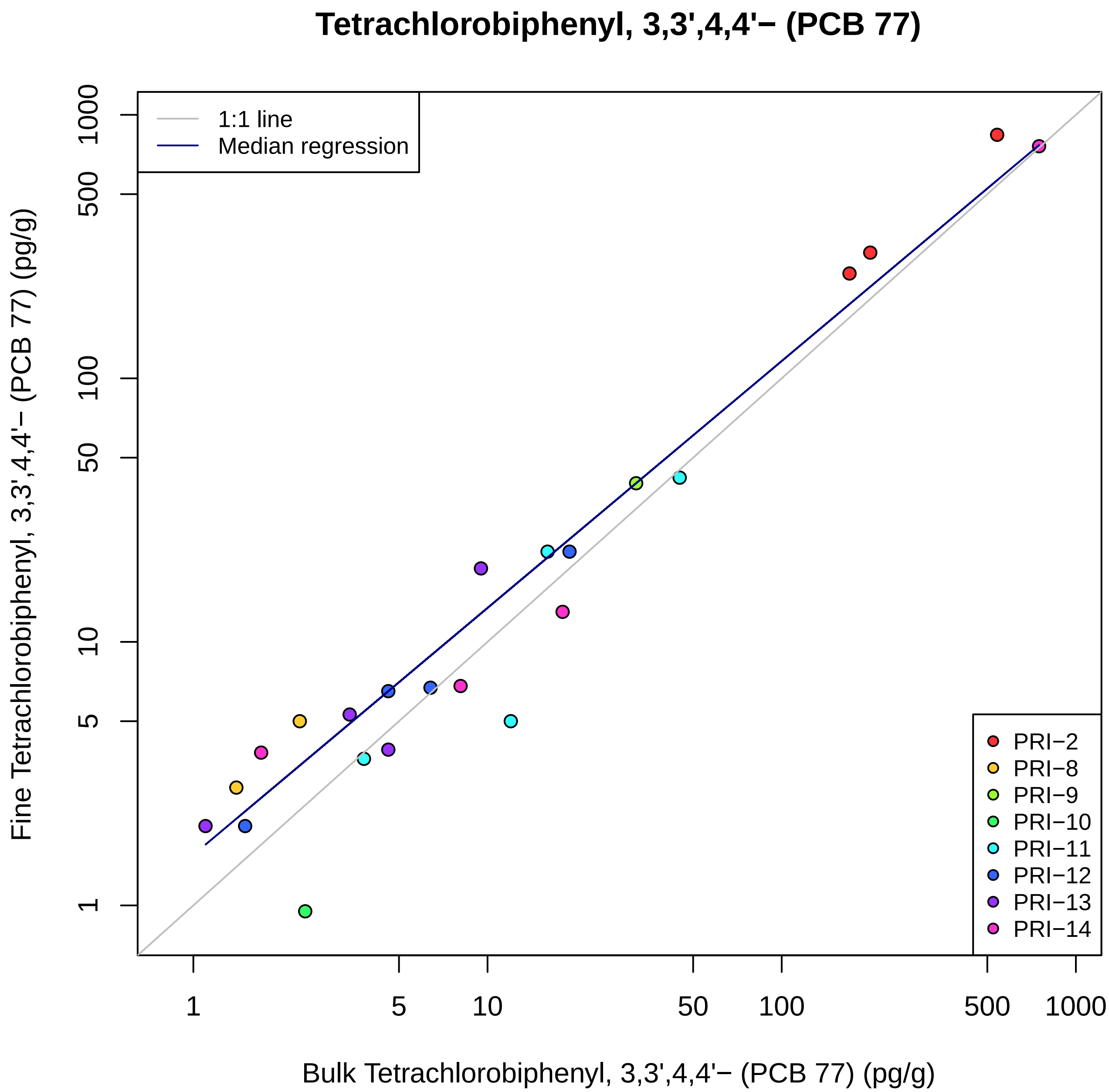

Selenium
1:1 line
Median regression
Fine Selenium (mg/kg)
0.15
0.20
0.25
0.30
0.35
0.40
Bulk Selenium (mg/kg)
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14

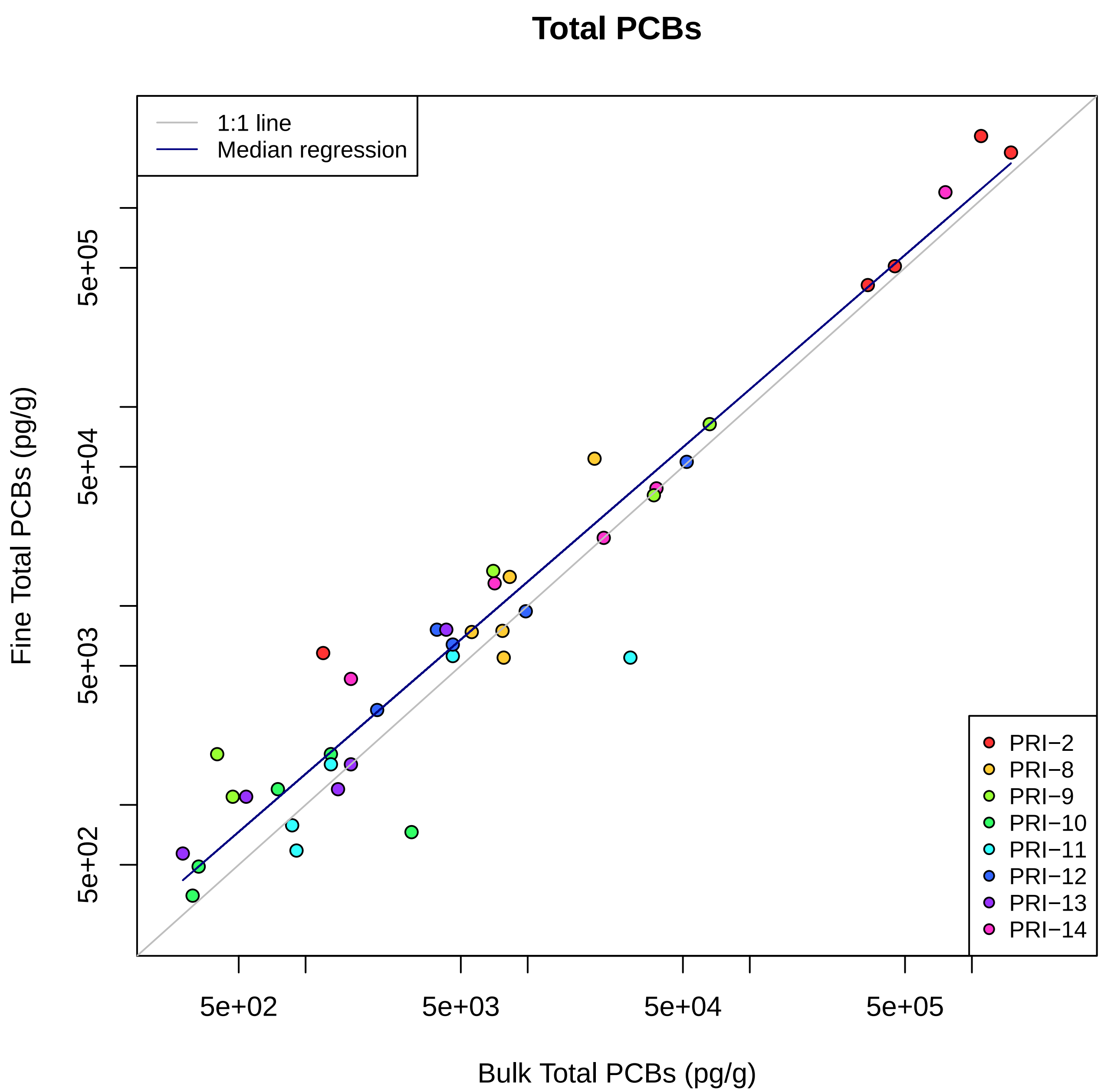


Sodium
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
5e+01
5e+02
5e+03
5e+04
Fine Sodium (mg/kg)
Bulk Sodium (mg/kg)

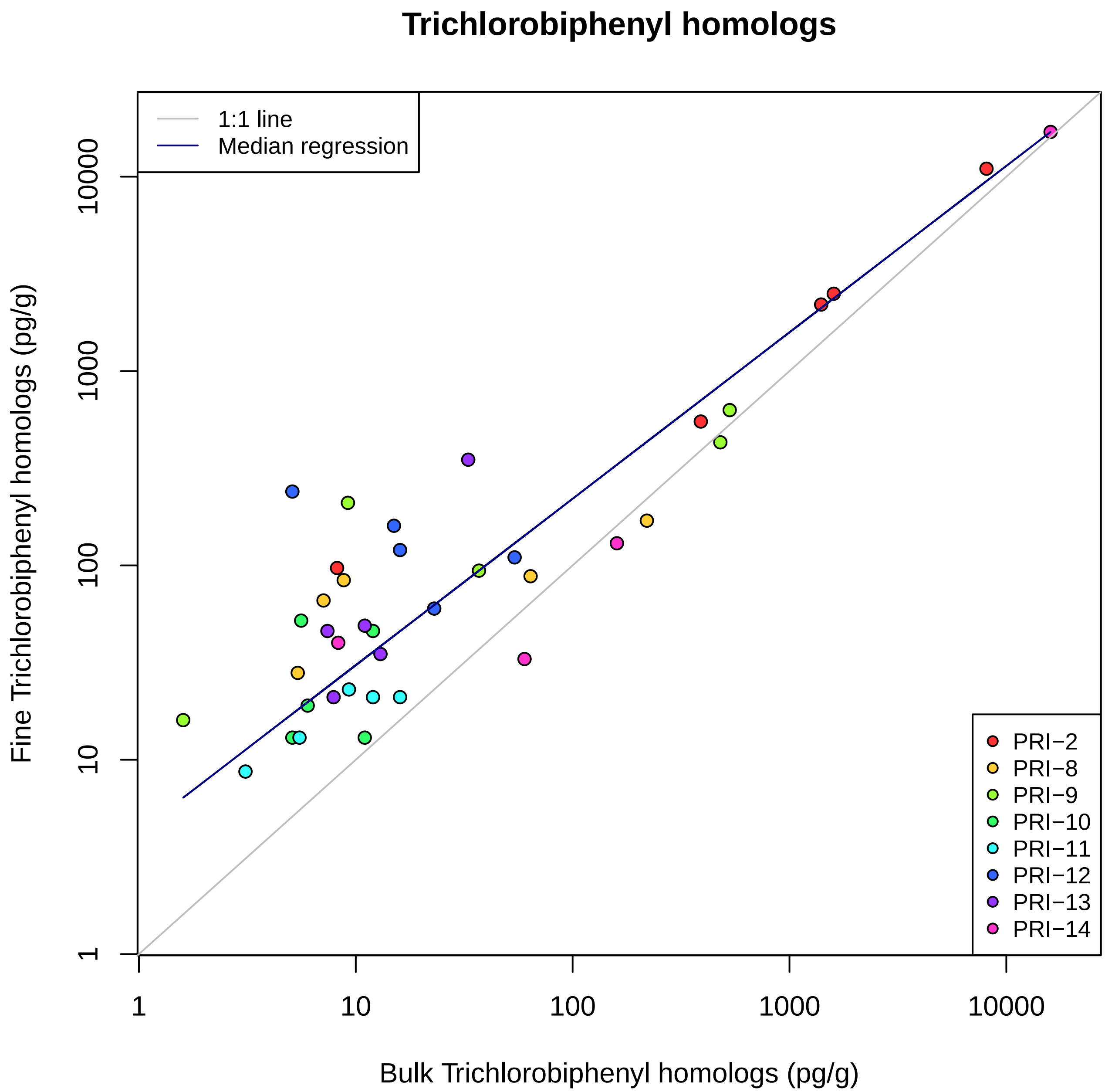


Tetrachlorobiphenyl homologs
1:1 line
Median regression
Fine Tetrachlorobiphenyl homologs (pg/g)
5
10
50
500
5000
Bulk Tetrachlorobiphenyl homologs (pg/g)
5
10
50
100
500
5000
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14

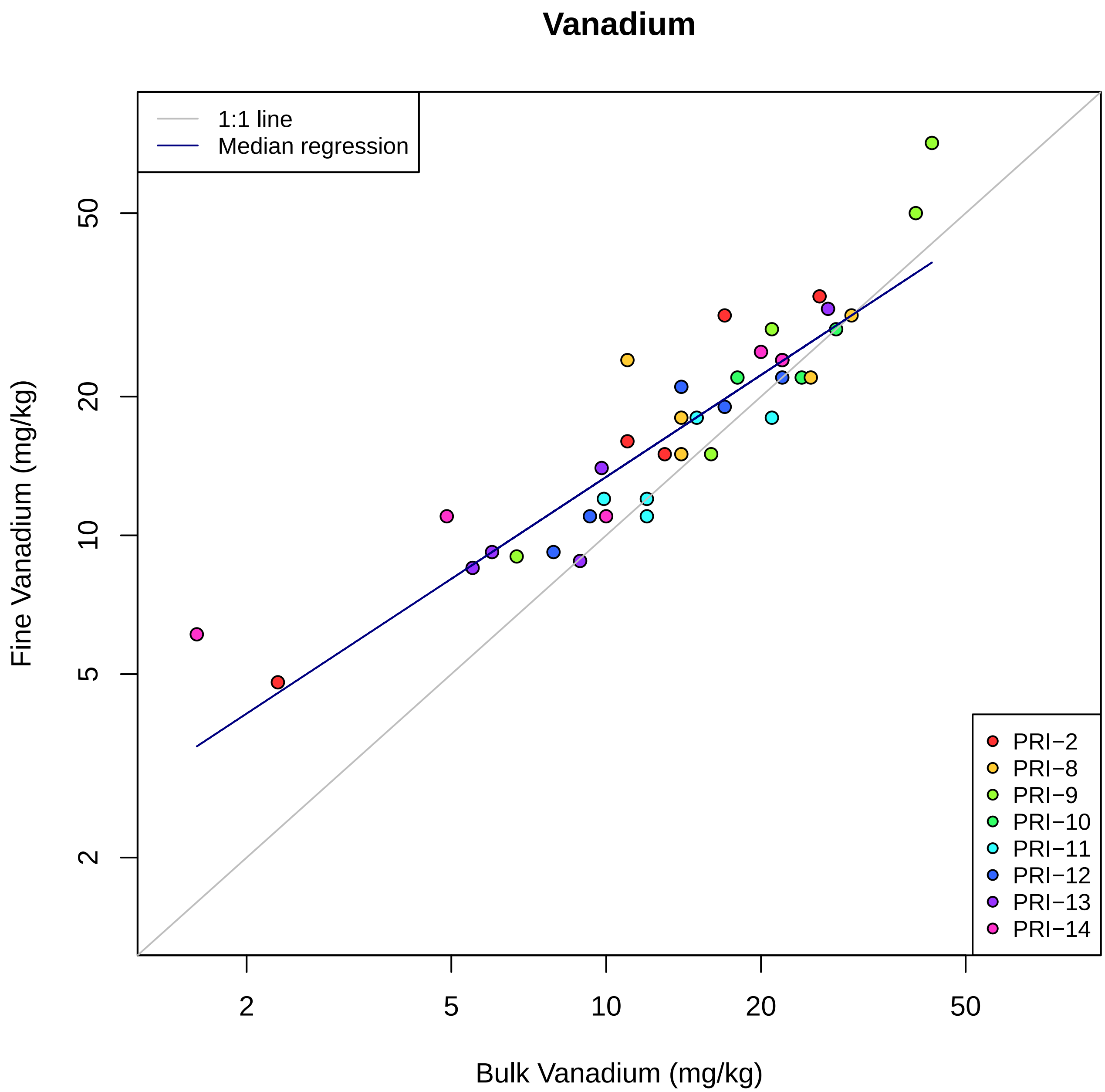

Tetrachlorobiphenyl, 3,3',4,4'− (PCB 77)
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Tetrachlorobiphenyl, 3,3',4,4'− (PCB 77) (pg/g)
Bulk Tetrachlorobiphenyl, 3,3',4,4'− (PCB 77) (pg/g)
1
5
10
50
100
500
1000



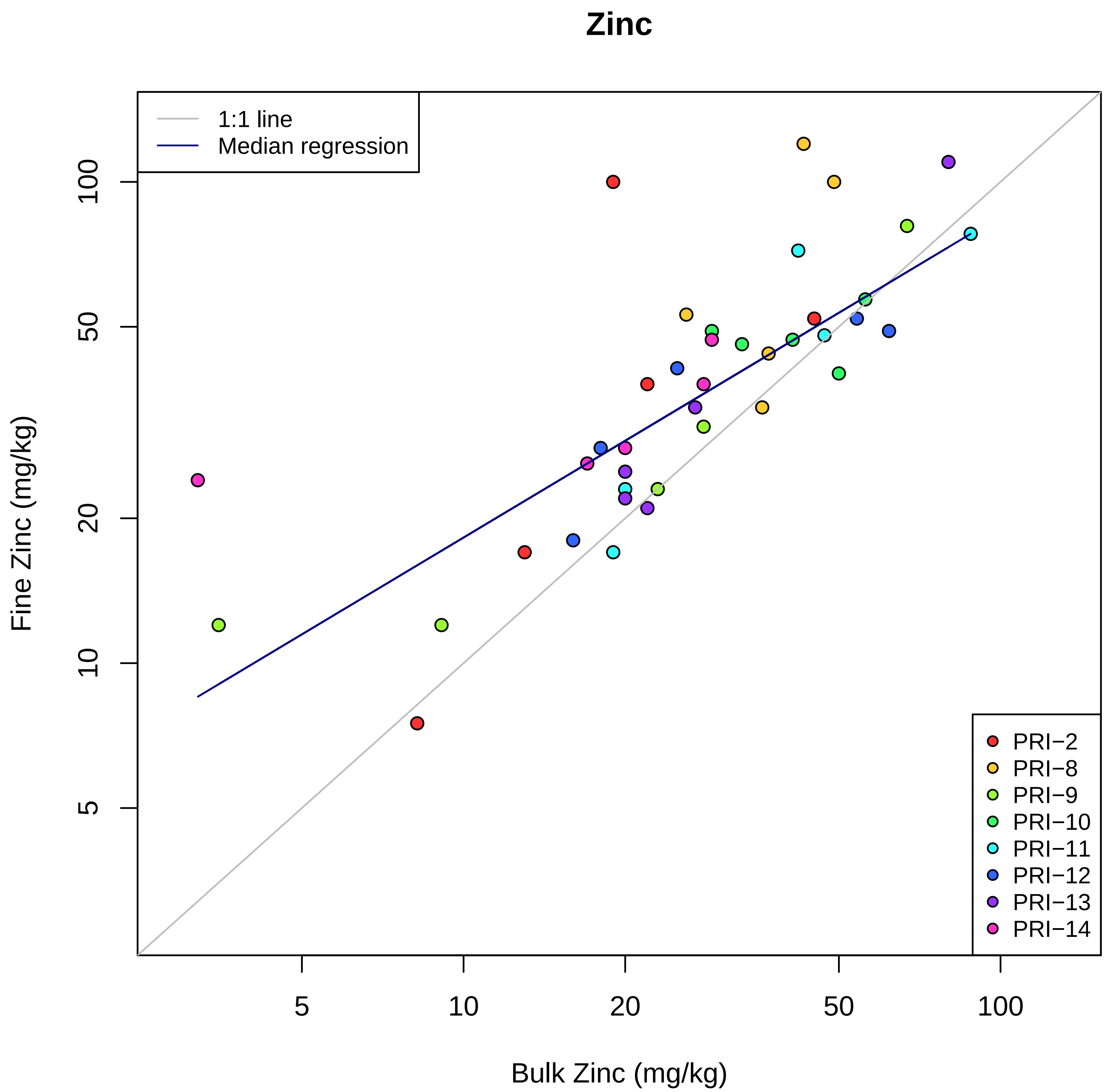
Total PCBs
1:1 line
Median regression
Fine Total PCBs (pg/g)
5e+02
5e+03
5e+04
5e+05
Bulk Total PCBs (pg/g)
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14



Trichlorobiphenyl homologs
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Trichlorobiphenyl homologs (pg/g)
1
10
100
1000
10000
Bulk Trichlorobiphenyl homologs (pg/g)



Vanadium
1:1 line
Median regression
Fine Vanadium (mg/kg)
50
20
10
5
2
2
5
10
20
50
Bulk Vanadium (mg/kg)
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14


Zinc
1:1 line
Median regression
PRI−2
PRI−8
PRI−9
PRI−10
PRI−11
PRI−12
PRI−13
PRI−14
Fine Zinc (mg/kg)
Bulk Zinc (mg/kg)
5
10
20
50
100

Attachment B
Analytes having Fewer than
Eight (8) Detect-Detect Pairs

SVOCs and VOCs

- 1,2,4,5-Tetrachlorobenzene
- 2,2-Oxybis(1-chloropropane)
- 2,3,4,6-Tetrachlorophenol
- 2,4,5-Trichlorophenol
- 2,4,6-Trichlorophenol
- 2,4-Dichlorophenol
- 2,4-Dimethylphenol
- 2,4-Dinitrophenol
- 2,4-Dinitrotoluene
- 2,6-Dinitrotoluene
- 2-Chloronaphthalene
- 2-Chlorophenol
- 2-Nitroaniline
- 2-Nitrophenol
- 3 & 4 Methylphenol
- 3,3'-Dichlorobenzidine
- 3-Nitroaniline
- 4-Bromophenyl phenyl ether
- 4-Chloro-3-methylphenol
- 4-Chlorophenyl phenyl ether
- 4-Nitrophenol
- Acetophenone
- Benzaldehyde
- Benzyl butyl phthalate
- Biphenyl
- Bis(2-chloroethoxy)methane
- Bis(2-ethylhexyl)phthalate
- Carbazole
- Dibutyl Phthalate
- Dichloroethyl ether
- Diethyl phthalate
- Dimethylphthalate
- Dinitro-o-cresol
- Di-n-octyl phthalate
- Hexachlorobutadiene
- Hexachlorocyclopentadiene
- Hexachloroethane
- Isophorone
- Nitrobenzene
- n-Nitrosodimethylamine
- n-Nitrosodi-n-propylamine
- n-Nitrosodiphenylamine
- o-Cresol
- p-Chloroaniline
- Pentachlorophenol
- Phenol
- p-Nitroaniline

PAHs

- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Dibenzo(a,h)anthracene
- Fluorene
- Indeno(1,2,3-cd)pyrene

Metals

- Silver
- Thallium

Appendix K
Data Adequacy Evaluation of Phase 1A RI data for PRI Areas 2 and 8–17

Memorandum

Environmental
Resources
Management

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Suite 108
Scottsdale, AZ 85251
(480) 998-2401
(480) 998-2106 (fax)

To: Ken Wangerud (USEPA)

From: Judy Nedoff (ERM), David Abranovic (ERM)

Date: 8 October 2015

Subject: OU-1 Phase 1A Outer PRI Data Adequacy

1.0 INTRODUCTION

This memorandum describes the methods used and results of the evaluation of the adequacy and reliability of the data to be used for the Outer Preliminary Remedial Investigation (PRI) Areas 2 and 8 through 17 (referred to hereafter as the Outer PRIs) in the OU-1 Screening-Level Risk Assessment (OU-1 SLRA). The OU-1 SLRA will primarily focus on selection of constituents of potential concern (COPCs). To assess the Outer PRIs, the OU-1 SLRA will include Phase 1A solids and aqueous sample data, as well as solids sample data collected from the Outer PRIs during the Demonstration of Method Applicability (DMA) (ERM 2013). This data adequacy evaluation includes only Phase 1A solids and groundwater data. Based on comments received from the United States Environmental Protection Agency (USEPA) (see responses to agency comments in Appendix L to the *Phase 1A Data Report for PRI Areas 2 and 8–17*) regarding the aqueous dataset, surface water data will be evaluated in an addendum to the Phase 1A Data Report for PRI Areas 2 and 8–17 after the results from the remaining Phase 1A surface water samples are validated. ERM collected these samples during May and July 2015.

The purpose and methods for conducting the OU-1 SLRA are described in the *Final Screening-Level Risk Assessment Technical Memorandum* (SLRA Tech Memo) (ERM 2014). By comparing maximum concentrations to risk-based screening levels (RBSLs) or risk-based ecological screening levels (RBESLs)[1], the SLRA will present information on exceedances (or lack thereof) to:

- Identify constituents in environmental media requiring further evaluation for OU-1; and
- Prioritize/scope potential future investigations/risk analysis efforts for OU-1.

---

[1] Consistent with the Phase 1A SAP, risk-based concentrations (RBCs) will be used as a generic term for RBSL and RBESL in the remainder of the text.

A constituent identified as requiring further evaluation will be identified as a COPC or constituent of potential ecological concern (COPEC). Effectively, the OU-1 SLRA will be the primary tool used to guide discussions with the USEPA, State of Utah, and other participating regulatory agencies with respect to the content and level of detail of subsequent human health and ecological risk assessments.

Development of data quality objectives (DQOs) for the Phase 1A investigation of solid and aqueous media in the Outer PRIs is described in Section 11.3 of the *Phase 1A Remedial Investigation Sampling and Analysis Plan* (Phase 1A SAP) (USEPA 2013). The goal of the Phase 1A sampling in the Outer PRIs was to obtain sufficient data for soils, sediments, solid wastes, surface water, and groundwater to reliably select human and ecological COPCs in these media and support design of future sampling and analysis. The purpose of this evaluation is to indicate whether the solids and groundwater datasets are clearly adequate and to note which datasets may have some uncertainty regarding adequacy for use in the OU-1 SLRA.

2.0 APPROACH

Data adequacy is evaluated for an individual analyte in an environmental medium in a specific area. Because human and ecological exposure areas have not yet been established at the Site, COPC selection in the Outer PRIs will occur on a PRI Area basis; thus, datasets are defined and evaluated on a PRI Area basis for the data adequacy evaluation (Phase 1A and DMA solid samples collected in PRI Areas 2 and 8 through 16, and Phase 1A groundwater samples evaluated as PRI 17 (groundwater)).

2.1 Assessing Adequate Sample Size per Area

The first step in selection of COPCs in the OU-1 SLRA will be to compare the maximum detected concentration in a dataset (Cmax) to appropriate human health and ecological RBCs. If the value of Cmax for an analyte in a dataset does not exceed any of the selected RBCs, that analyte may be generally excluded as a COPC in that dataset, provided that the dataset contains a sufficient number of samples. If Cmax exceeds a human health and/or ecological RBC, the analyte will be retained as a COPC and/or COPEC in that dataset.

To minimize the probability that a chemical will be excluded as a COPC/COPEC when it should be retained (Type I error), the observed Cmax must have a "high probability of exceeding the RBC when the chemical is truly of potential concern" (USEPA 2013). The DQOs presented in the Phase 1A SAP Worksheet 11 provide the performance criteria for sample size for COPC/COPEC selection, which is founded on the concept that given a dataset of adequate size, Cmax in that dataset will have a high probability (at least 95 percent) of exceeding the true mean concentration across the exposure area. The Phase 1A SAP specifies sample size criteria as follows:

> *If the observed maximum concentration does not exceed the RBC, there is confidence that the true mean will not exceed the RBC, and hence the chemical will not contribute significant risk and may be excluded as a COPC.*
>
> *However, if the data set is not large enough, the observed Cmax may not exceed the true mean across the exposure area. This is demonstrated as follows:*
>
> > *Let P equal the percentile of the distribution occupied by the mean. Then, if a single sample is drawn, the probability that the sample is less than the mean is equal to P. If N samples are drawn, the probability that ALL the samples are below the mean is P^N. Thus, the probability that one or more samples exceed the mean is given by:*
>
> $$prob(Cmax > mean) = 1 - P^N$$
>
> *The number of samples (N) needed to ensure at least 95 percent probability that one or more samples exceed the true mean is shown below for distributions in which the true mean occurs at a percentile ranging from the 50^{th} to 90^{th}:*

Percentile of the True Mean	*N*	*Probability that Cmax > True Mean*
50th	*5*	*96.9%*
60th	*6*	*95.3%*
70th	*9*	*96.0%*

Percentile of the True Mean	*N*	*Probability that Cmax > True Mean*
80th	*14*	*95.6%*
90th	*29*	*95.3%*

For a data set with a normal distribution, the mean occupies the 50th percentile (P = 0.5), and a data set of five samples would likely be sufficient to support COPC selection. However, most environmental data sets for soil, sediment, or solid waste are right-skewed, and this results in the mean occupying a percentile higher than 0.5. Depending on the degree of skewness, the mean usually falls between the 60th and the 90th percentile (or even higher in extreme cases).

Assumed for planning the Phase 1A investigation of soil, sediment, and solid wastes is that the mean will generally not be higher than the 80th percentile, so a data set of 14 samples is likely to suffice for most analytes. However, if the data from Phase 1A suggest that the distribution of some analytes is more strongly skewed than assumed (i.e., the sample mean is substantially higher than the 80th percentile of the data set), it may be necessary to collect additional samples in subsequent phases of the site investigation to ensure analytes are not improperly excluded as COPCs.

The datasets for solid media at each of the Outer PRIs are composed of at least 14 samples.

In addition, to minimize the risk of inappropriately excluding a COPC, two to four additional samples were collected in some PRI Areas from biased locations (considered likely to be at the high end of the range of concentrations). This strategy increases the probability of having one or more samples in the high end of the distribution (e.g., greater than the 90th percentile) so that a Cmax-based COPC/COPEC selection protocol will be reliable for receptors (USEPA 2013).

In some PRI Areas (2, 8, 10, and 14), cores that extend to the depth of native soil were collected where the USEPA believes analyte concentrations may increase with depth (e.g., in the landfill, PRI 2). In identifying COPCs for a PRI Area where subsurface samples have been collected, Cmax will be the highest of any value in the PRI Area dataset, including both surface and subsurface samples (see Phase 1A SAP, page 78). Further description of data used is provided in Section 3.

If an analyte is detected in groundwater at a level above the human health RBC at any location, it will be considered a COPC in that medium at all locations. As described in the Phase 1A SAP, the USEPA considers that between-sample variability of groundwater may be quite high, with the true mean potentially reaching the 90th percentile of the sampling distribution. On this basis, the USEPA estimated in the Phase 1A SAP up to 30 groundwater samples may be required to support COPC selection. A total of 30 groundwater samples were collected during Phase 1A.

2.2 *Evaluation Process for Data Adequacy*

A stepwise decision process consisting of five decision rules is used to evaluate data adequacy, as shown on Figure 2-1. This decision process is applied to each analyte for each of the Outer PRIs.

As indicated by Decision 0, the lack of an RBC for a constituent creates uncertainty in selection or exclusion of the constituent as a COPC/COPEC. This will be discussed in the uncertainty analysis of the SLRA. In addition, essential nutrients (calcium, magnesium, potassium, and sodium) are excluded as COPCs/COPECs per the SLRA Tech Memo (ERM 2014) and are not considered in the data adequacy evaluation. Total organic carbon and pH, which are indicators of soil conditions, are also excluded.

Decision 1 compared Cmax to the identified RBCs for the PRI Area. If Cmax is greater than one or more of the applicable RBCs, the analyte will be selected as a COPC and/or COPEC in the SLRA, regardless of the number of detects in the dataset; therefore, the data are adequate for use in the SLRA. If Cmax is less than the lowest RBC, or the dataset does not contain any detects, the decision process differs depending on the proportion of detected values in the dataset.

Decision 2 relates to the number of detections. As described in Section 2.1, Phase 1A sample size recommendations were based on the assumption that the mean would generally not be higher than the 80th percentile, and that a sample size of at least 14 (for solids) or 30 (for groundwater) would be sufficient to ensure there was a high probability that Cmax would exceed the true mean. Note that there is a divergence in the decision process at Decision 2, based on the proportion of detects in the dataset (60 percent detect). This proportion of detects is considered sufficient to reliably characterize the mean and is supported by 1) a minimum of eight detected values for a sample size of 14 and 2) recommended minimum proportion of detects for statistical tests of central tendency.[2]

For datasets with at least 60 percent detects, if the mean is less than the 80th percentile (Decision 3), then the data are sufficient for COPC/COPEC selection. If the mean is greater than the 80th percentile, then the dataset is considered to be highly skewed and it is uncertain that the data are adequate.

If an analyte was not detected in at least 60 percent of the samples in the dataset and Cmax is less than the lowest RBC, the sensitivity of the analytical results was evaluated (Decision 4). If all detects are less than RBCs, and the maximum detection limit (DL) for non-detects is less than the RBCs, the data are adequate to select COPCs/COPECs (i.e., all detected concentrations and analytical methods meet DQOs in detecting concentrations below the RBCs). If the maximum DL is not less than the RBCs, the data may or may not be adequate for COPC/COPEC selection. Decision 5 evaluates the DLs for undiluted samples in the dataset. If at least 50 percent of the undiluted samples have DLs less than the lowest RBC, the dataset is adequate for COPC/COPEC selection. If less than 50 percent of undiluted samples have DLs less than the lowest RBC, there is uncertainty regarding adequacy, which will be addressed in the SLRA.

3.0 DATA USED

Analytical data for solid media from Phase 1A and the DMA and for groundwater from Phase 1A were included in the PRI datasets evaluated for adequacy. Calculated toxicity equivalency quotients (TEQs), total polychlorinated biphenyls (PCBs), metals, semi-volatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), perchlorate, and cyanide are included in this analysis for solid media. Anions, haloacetic acids, and general chemistry parameters are also included for groundwater. Individual PCB congeners, PCB and dioxin/furan homolog groups, and individual dioxins/furans

[2] USEPA's ProUCL suggests (as a rule of thumb) 8 to 10 samples to compute reliable estimates of means and upper bounds of means (i.e., exposure point concentration terms). The United States Department of the Navy (2002) notes that a minimum of 60 percent detects is required by the Wilcoxon Rank Sum and Gehan tests, tests of central tendency.

were not included because these compounds are accounted for in the TEQ or Total PCBs. Field duplicates were not included in the datasets.

As described in Section 2.1, Phase 1A sample size recommendations were based on the assumption that the mean would generally not be higher than the 80th percentile, and that a sample size of 14 (for soil) or 30 (for groundwater) would generally be sufficient to capture Cmax. To evaluate data adequacy, the mean was calculated for each analyte in solids at each of PRI Areas 2 and 8 through 16 and in PRI 17 (groundwater). For this evaluation, one-half of the DL was substituted for a non-detected value.

Some samples in both the groundwater and solid datasets had results for five SVOCs analytes reported by both the SW8270C full scan and SW8270C-SIM methods (ERM 2015):

- Hexachlorobenzene;
- n-Nitrosodimethylamine;
- Hexachlorobutadiene;
- Pentachlorophenol; and
- 2,4,6-Trichlorophenol.

One result was selected for each sample based on the following criteria:

- If both values are detects, use the maximum value;
- If one value is detected, use the detected value; and
- If neither value is detected, use the minimum DL value.

3.1 Solids

Results for all solid samples (sediment, soil, and solid waste) were combined for the solid datasets in each PRI Area (PRI Areas 2 and 8 through 16). Sediment is present in PRI Areas 8, 13, and 14 only. Stockpiled waste samples were collected from PRI 2 (the USM Landfill), PRI 9 (Smut Area), and PRI 12 (Ancillary Worker Exposure Area). Solid waste samples were collected from the subsurface at PRI 10 (Barium Sulfate Area). To ensure a conservative evaluation, data from all depths were used (per page 78 of the Phase 1A SAP).

In Phase 1A, separate analyses were conducted on the fine fraction from soils for those PRI Areas with soil containing less than 75 percent fines (PRI Areas 2 and 8 through 14). Only the bulk sample data were used to determine data adequacy; however, the bulk sample concentrations were adjusted in those PRI Areas with soil containing less than 75 percent fines using adjustment factors derived from the relationship between concentrations in the fine fraction and the bulk samples. Details on how these adjustment factors were developed and applied can be found in Appendix J to the *Phase 1A Data Report for PRI Areas 2 and 8–17* (ERM 2015). Adjusted bulk sample concentrations were used for comparison to human health RBCs only.

3.2 Water

Only groundwater datasets were evaluated for this data adequacy analysis (PRI 17 (groundwater)). Total metals and dissolved metals were evaluated as separate datasets.

3.3 PARCC Assessment

The data quality attributes of precision, accuracy, representativeness, comparability, and completeness (PARCC) were evaluated in the *Phase 1A Data Report for PRI Areas 2 and 8–17* (ERM 2015). The data used for this data adequacy evaluation met the method quality objectives presented in the SAP. Analytical results qualified as rejected were excluded from the datasets used for this data adequacy evaluation. Precision and accuracy results on an analyte by PRI Area basis have been summarized into tables presented in the data report (Section 7). Sample results qualified based on precision-related measurement quality objectives (MQOs) represent less than one percent of the total Phase 1A sample results. Results qualified due to accuracy-related MQOs were primarily related to holding time exceedances related to re-extractions, blank contamination with selected metals, laboratory control spikes and surrogate recovery in SVOC analyses, and matrix spike recovery in metals. Sample matrix effects explain the majority of the accuracy-related qualifiers added at validation. Representative and comparable data were obtained by collecting and analyzing samples as specified in the Phase 1A SAP, including required field and laboratory QC samples, following field and laboratory SOPs. Few results were rejected or not collected, and the completeness was 99 percent as discussed in Section 7 of the *Phase 1A Data Report for PRI Areas 2 and 8–17* (ERM 2015), meeting the completeness MQO in the SAP for solids and groundwater. The rejected sample results and the perchlorate analyses that were not performed in one sample delivery group in Phase 1A are presented in Section 7.

4.0 RESULTS

Descriptive statistics including number of samples, number of detects, maximum concentration, and range of DLs for each dataset in each PRI Area are provided in Tables 4-1 through 4-10 (solids) and Table 4-11 for groundwater results. The result at each decision step is shown, as well as the conclusion regarding data adequacy. The results are discussed in the following sections.

4.1 Solids

In PRI Areas 2 and 8 through 16, the majority of analytes have adequate data for COPC selection in the SLRA. The following paragraphs describe the uncertain datasets, as summarized in Table 4-12.

In PRI 2 (Landfill), five PAHs, low molecular weight PAH, and 4-methyl-2-pentanone have skewed datasets (mean is greater than the 80^{th} percentile). The skewed datasets for the PAHs in PRI 2 may be related to samples collected at depth for characterization of the subsurface in the landfill. For 4-methyl-2-pentanone, the maximum concentration detected is four orders of magnitude lower than the lowest RBC. There is uncertainty in adequacy for COPC/COPEC selection for six analytes based on DL comparison to the lowest RBC (see Table 4-12). Of these six, four are SVOCs whose DLs do not meet the lowest RBC in any solids data for the site (2,4-dimethylphenol, 2,6-dinitrotoluene, 2-chloronaphthalene, N-nitrosodimethylamine).

In PRI 8 (Northwest Ponded Waste Lagoon Overflow), bromodichloromethane and dibromochloromethane also have skewed datasets. Because VOCs were only analyzed in saturated samples, fewer than 14 samples were analyzed for VOCs in PRI 8. Maximum concentrations for bromodichloromethane and dibromochloromethane are less than half the lowest RBC. There are 20 analytes (all SVOCs) in PRI 8 whose DLs exceed the lowest RBC in greater than 50 percent of the undiluted samples.

In PRI 9 (Smut Area), there is uncertainty only for the four SVOCs whose DLs do not meet the lowest RBC in any solids data collected in Phase 1A.

In PRI 10 (Barium Sulfate Area), there is uncertainty for beryllium due to a skewed dataset. Beryllium was detected in most solids samples collected in Phase 1A. In the PRI 10 dataset, one beryllium result is much higher than the rest, which causes the mean to be greater than the 80^{th} percentile.

However, this result is much lower than the lowest beryllium RBC and was collected 8 feet below ground surface. Based on DL comparisons, there is uncertainty for thallium, the four SVOCs common to all PRIs, and 2,4-dinitrophenol. All thallium results were diluted.

In PRI 11 (ATI and US Mag Parking Lots), chrysene and high molecular weight PAH have uncertainty due to skewed datasets. The maximum concentration for chrysene is two orders of magnitude lower than the lowest RBC. The dataset appears to be skewed by one sample that has the maximum concentration for most PAHs, which is also skewing the high molecular weight PAH dataset. Based on DL, there is uncertainty for only the four SVOCs that exceed RBCs in every PRI Area.

In PRI 12 (Ancillary Worker Exposure Areas), other than the four SVOCs common to all PRI Areas, only thallium is uncertain. All thallium results were diluted, and DLs exceeded the lowest RBC.

In PRI 13 (Buffer Area North & East), the low molecular weight PAH dataset shows uncertainty due to a skewed dataset for the sum calculated with not detected constituents set equal to zero, but not when one-half the method DL is used in the sum. COPC/COPEC selection will be based on the sum using one-half the method DL, so data are considered adequate. Based on DLs for non-detect results, 22 SVOCs and thallium are uncertain in PRI 13.

Similar to PRI 13, there are 22 SVOCs in PRI 14 (Buffer Area South) for which DLs in non-detect results exceed the lowest RBC. No other analytes have uncertainty regarding data adequacy in PRI 14.

In PRI Areas 15 (Buffer Area West) and 16 (Lakeside Mountains Buffer Area), there are five SVOCs for which DLs in non-detect results exceed the lowest RBC; these include the four common to all PRI Areas as well as 2,4-dinitrophenol.

4.2 Groundwater

Most analytes in PRI 17 (groundwater) have adequate data for COPC/COPEC selection in the SLRA. All 30 samples were analyzed for VOCs, providing sufficient results to evaluate data adequacy for VOCs in groundwater. Only one analyte is uncertain due to a skewed dataset (1,1-dichloroethene). The maximum detected concentration for 1,1-dichloroethene (8.2 micrograms per liter) is less than the lowest RBC (25 micrograms per liter). Four of the 22 samples with detects are an order of magnitude higher than the others, skewing the dataset. There are 20 analytes with uncertainty related to DL comparisons to RBCs. Five are VOCs, 14 are SVOCs, and one is an inorganic constituent. All were not detected in any of the 30 groundwater samples, and all are uncertain due to DLs greater than the lowest RBC. Nitrite as N, the only inorganic constituent, had no undiluted results. However, the dilution factors were low and the adjusted DLs for more than 50 percent of the samples were less than the lowest RBC. Data for nitrite as N are considered adequate for COPC/COPEC selection, as noted in Table 4-12.

4.3 Evaluation of Datasets with Fewer than 14 Samples

A few datasets have fewer than 14 samples, including perchlorate at PRI Areas 15 and 16 and VOCs at PRI Areas 8, 10, and 14. There are at least 14 perchlorate results at the other PRI Areas. Review of the perchlorate data indicates it was rarely detected, the few detected concentrations were much lower than the RBC, and the maximum DL for non-detects was also less than the RBC. Based on these results, perchlorate is unlikely to exceed the RBC in PRIs 15 and 16. Thus, it is concluded that the perchlorate datasets are adequate for COPC/COPEC selection.

VOC analyses were not conducted in most PRI Areas, as they were only conducted on saturated sediment and subsurface solids samples. (Note that VOCs were analyzed in all aqueous samples.) In PRI 2, 23 subsurface samples were analyzed for VOCs. In other PRI Areas, surface solids samples were saturated in fewer than 14 locations (most PRI Areas did not have any saturated sediment samples) or there were less than 14 subsurface samples (PRI Areas 8, 10, and 14). Because fewer than 14 VOC results are available in these PRI Areas, VOCs will be evaluated in the SLRA on a case-by-case basis, including a spatial evaluation of any detected VOCs, analytical sensitivity evaluation, and other lines of evidence to decide if they should be selected as COPCs/COPECs.

5.0 CONCLUSIONS

Based on the results of this analysis, there are few analytes with uncertainty of having adequate data for COPC/COPEC selection. As discussed in the preceding sections:

- A few PAHs and VOCs that do not exceed RBCs have some uncertainty due to skewed datasets; these will be evaluated through spatial analysis in the SLRA.

- Beryllium and thallium are the only metals with uncertainty in solids datasets; these uncertainties will be considered in the SLRA in determining whether to select beryllium and thallium as COPCs/COPECs. Results of the background study will also be applied to evaluation of metals as COPCs/COPECs.
- The RBCs for some SVOCs are lower than can be detected by standard analytical methods. For this reason, there is uncertainty for four SVOCs in all the solids PRI Area datasets, and for several other SVOCs in many of the PRI Areas.
- In groundwater, RBCs lower than can be detected by standard analytical methods for several SVOCs and VOCs account for most of the uncertain datasets.
- The remaining datasets have adequate data to be used for selection of COPCs/COPECs in the SLRA. These include:
  - TCDD TEQ, total PCBs, and hexachlorobenzene in all PRI Areas; and
  - All metals and PAHs in most PRI Areas.

6.0 REFERENCES

Environmental Resources Management (ERM). 2013. *Draft Phase 1A Laboratory Demonstration of Method Applicability Technical Memorandum for Soil, Sediment, Waste, and Water.* US Magnesium RI/FS, Rowley, Utah. January.

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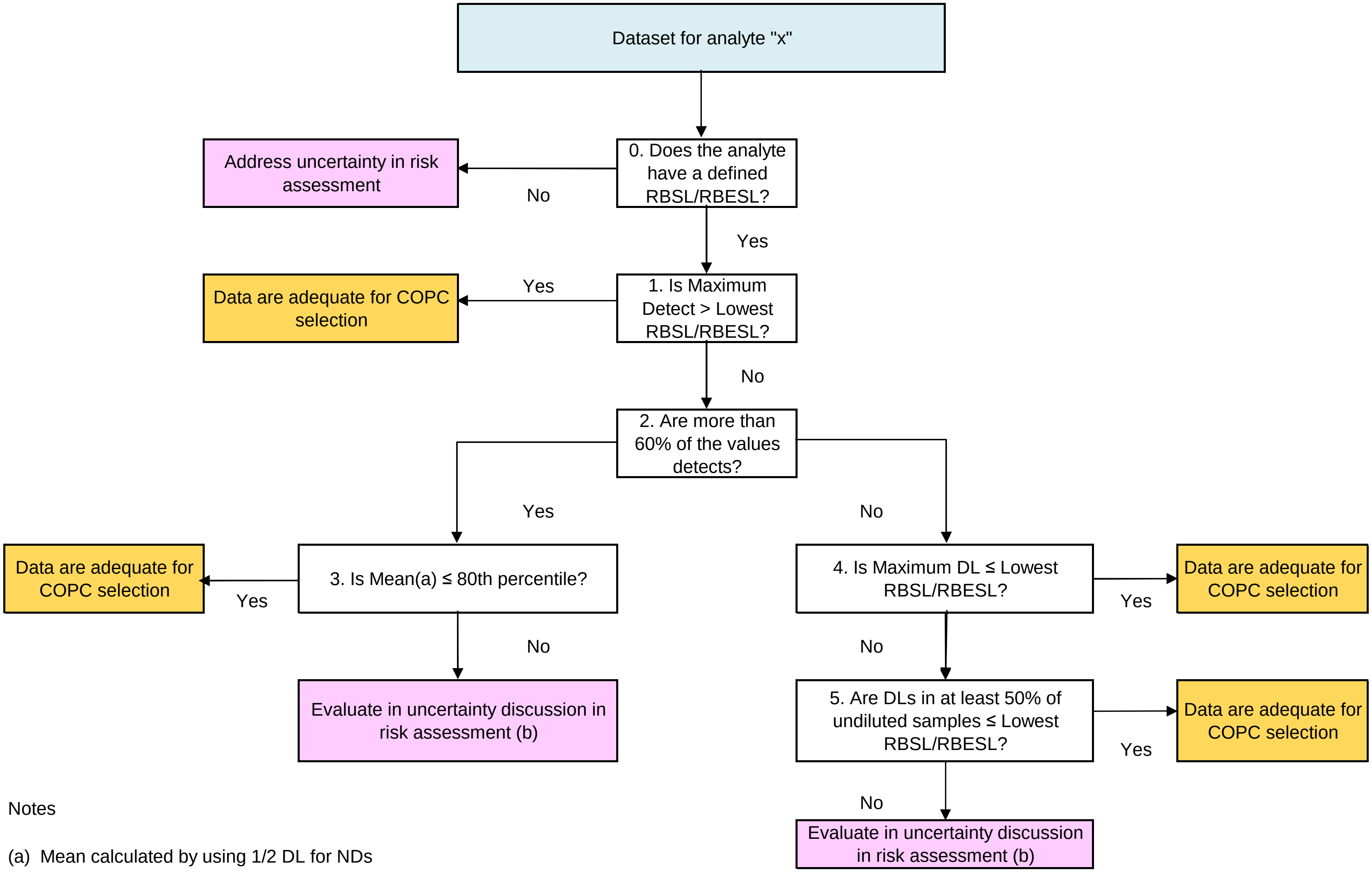
United States Department of the Navy (USN). 2002. *Guidance for Environmental Background Analysis, Volume I: Soil.* April.

Figure

Figure 2-1. Data Adequacy Assessment Protocol for Phase 1A Outer PRIs



Notes

(a) Mean calculated by using 1/2 DL for NDs
(b) Additional detail provided in data adequacy memorandum text.

COPC = Constituent of potential concern
DL = Detection limit
RBSL = Risk-based screening level
RBESL = Risk-based ecological screening level

Tables

Table 4-1
PRI 2 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Calculated TEQ (ND=0), Mammalian	ug/kg	37	37	9.8E+00	1.1E+01	1.1E-03	4.6E-01			7.2E-02	**1.6E+02**	2.0E-04	**4.9E+04**	4.9E+04	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Mammalian	ug/kg	37	37	9.9E+00	1.1E+01	1.6E-03	4.0E-01			7.2E-02	**1.6E+02**	2.0E-04	**5.0E+04**	5.0E+04	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=0), Avian	ug/kg	37	37	9.9E+02	1.4E+03	4.4E-02	4.2E+01			NSV	NSV	2.0E-04	**5.0E+06**	5.0E+06	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Avian	ug/kg	37	37	9.9E+02	1.3E+03	4.5E-02	3.2E+01			NSV	NSV	2.0E-04	**5.0E+06**	5.0E+06	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total PCBs	ug/kg	37	37	1.1E+04	1.4E+04	1.2E+00	7.4E+01			9.7E+02	**1.4E+01**	3.3E-01	**3.3E+04**	3.3E+04	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Aluminum	ug/kg	37	37	1.6E+07	1.5E+07	1.6E+05	1.5E+05			1.1E+08	1.4E-01	5.0E+03	**3.2E+03**	3.2E+03	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Antimony	ug/kg	37	32	1.5E+03	1.3E+03	2.3E+02	2.0E+02	2.1E+02	3.3E+02	1.1E+05	1.2E-02	2.7E+02	**5.6E+00**	5.6E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Arsenic	ug/kg	37	37	2.3E+04	2.3E+04	1.1E+03	1.1E+03			3.0E+03	**7.8E+00**	1.8E+04	**1.3E+00**	7.8E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Barium	ug/kg	37	37	6.5E+05	4.0E+05	5.8E+03	3.7E+03			2.2E+07	1.8E-02	3.3E+05	**2.0E+00**	2.0E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Beryllium	ug/kg	37	34	8.3E+02	8.7E+02	3.7E+01	3.9E+01	2.1E+01	2.5E+01	2.3E+05	3.8E-03	2.1E+04	4.0E-02	4.0E-02	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Total Cadmium	ug/kg	37	20	5.9E+02	5.1E+02	7.8E+01	6.7E+01	6.0E+01	1.3E+02	9.8E+04	5.2E-03	3.6E+02	**1.6E+00**	1.6E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Calcium	ug/kg	37	37	3.7E+08	3.1E+08	6.1E+06	5.2E+06			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Chromium	ug/kg	37	37	7.2E+04	7.0E+04	5.3E+02	5.1E+02			6.3E+03	**1.1E+01**	2.6E+04	**2.8E+00**	1.1E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cobalt	ug/kg	37	36	8.1E+03	8.0E+03	1.5E+02	1.5E+02	1.5E+02	1.5E+02	3.5E+04	2.3E-01	1.3E+04	6.2E-01	6.2E-01	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Total Copper	ug/kg	37	37	3.3E+05	2.9E+05	3.1E+02	2.9E+02			4.7E+06	6.3E-02	2.8E+04	**1.2E+01**	1.2E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Iron	ug/kg	37	37	3.9E+07	3.9E+07	7.5E+05	7.4E+05			8.2E+07	4.7E-01	NSV	NSV	4.7E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Lead	ug/kg	37	37	2.9E+04	2.6E+04	9.1E+02	8.2E+02			8.0E+05	3.3E-02	1.1E+04	**2.6E+00**	2.6E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Magnesium	ug/kg	37	37	1.1E+08	1.2E+08	2.1E+06	2.3E+06			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Manganese	ug/kg	37	37	3.7E+05	4.6E+05	4.9E+03	6.0E+03			2.6E+06	1.8E-01	2.2E+05	**1.7E+00**	1.7E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Mercury	ug/kg	37	14	6.4E+02	9.3E+02	1.3E+01	1.9E+01	9.0E+00	3.5E+01	3.5E+04	2.7E-02	5.1E-01	**1.3E+03**	1.3E+03	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Molybdenum	ug/kg	37	37	2.0E+04	1.6E+04	4.1E+02	3.2E+02			5.8E+05	2.7E-02	2.0E+03	**1.0E+01**	1.0E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Nickel	ug/kg	37	37	6.2E+04	9.7E+04	2.6E+02	4.1E+02			2.2E+06	4.4E-02	3.8E+04	**1.6E+00**	1.6E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Potassium	ug/kg	37	36	1.4E+08	1.4E+08	6.9E+05	6.9E+05	1.3E+05	1.3E+05	NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Selenium	ug/kg	37	6	3.0E+02	1.7E+02	1.6E+02	9.2E+01	1.2E+02	2.6E+02	5.8E+05	3.0E-04	5.2E+02	5.8E-01	5.8E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Silver	ug/kg	37	7	8.6E+02	8.6E+02	7.5E+01	7.5E+01	3.6E+01	8.2E+01	5.8E+05	1.5E-03	4.2E+03	2.0E-01	2.0E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Sodium	ug/kg	37	37	6.9E+07	3.5E+07	6.3E+04	3.3E+04			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Thallium	ug/kg	37	0					6.0E+01	1.4E+02	1.2E+03	ND	1.0E+01	ND	NA	Yes	ND	No	NA	No	X	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Total Vanadium	ug/kg	37	36	4.3E+04	4.2E+04	1.0E+03	9.8E+02	7.4E+02	7.4E+02	5.8E+05	7.2E-02	7.8E+03	**5.5E+00**	5.5E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Zinc	ug/kg	37	36	1.9E+05	1.8E+05	2.5E+03	2.3E+03	1.5E+03	1.5E+03	3.5E+07	5.1E-03	4.6E+04	**4.1E+00**	4.1E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
1,1'-Biphenyl	ug/kg	37	0					1.7E+02	2.5E+03	2.0E+04	ND	6.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,4,5-Tetrachlorobenzene	ug/kg	37	2	9.6E+02	1.9E+03	3.3E+01	6.6E+01	2.6E+01	3.6E+02	3.5E+04	5.5E-02	2.0E+03	4.8E-01	4.8E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
2,3,4,6-Tetrachlorophenol	ug/kg	37	0					8.3E+01	1.2E+03	2.5E+06	ND	2.0E+02	ND	NA	Yes	ND	No	NA	No	35%	Yes	--	Adequate	Adequate
2,4,5-Trichlorophenol	ug/kg	37	0					8.4E+01	1.2E+03	8.2E+06	ND	4.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4,6-Trichlorophenol	ug/kg	37	0					4.5E+00	6.6E+01	8.2E+04	ND	4.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,2-Oxybis(1-chloropropane)	ug/kg	37	0					8.0E+01	1.2E+03	2.2E+04	ND	2.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dichlorophenol	ug/kg	37	0					9.0E+01	1.3E+03	2.5E+05	ND	8.8E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dimethylphenol	ug/kg	37	0					1.7E+02	2.5E+03	1.6E+06	ND	1.0E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dinitrophenol	ug/kg	37	0					2.2E+02	3.2E+03	1.6E+05	ND	6.1E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dinitrotoluene	ug/kg	37	0					9.0E+01	1.3E+03	7.4E+03	ND	1.3E+03	ND	NA	Yes	ND	No	NA	No	0%	Yes	--	Adequate	Adequate
2,6-Dinitrotoluene	ug/kg	37	0					1.0E+02	1.5E+03	1.5E+03	ND	3.3E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chloronaphthalene	ug/kg	37	0					8.2E+01	1.2E+03	6.0E+06	ND	1.2E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chlorophenol	ug/kg	37	0					8.9E+01	1.3E+03	5.8E+05	ND	2.4E+02	ND	NA	Yes	ND	No	NA	No	35%	Yes	--	Adequate	Adequate
2-Methylphenol	ug/kg	37	0					5.9E+01	8.7E+02	4.1E+06	ND	4.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitroaniline	ug/kg	37	0					8.5E+01	1.3E+03	8.0E+05	ND	7.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitrophenol	ug/kg	37	0					8.3E+01	1.2E+03	NSV	NSV	1.6E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
3,3'-Dichlorobenzidine	ug/kg	37	0					9.5E+01	1.4E+03	5.1E+03	ND	6.5E+02	ND	NA	Yes	ND	No	NA	No	35%	Yes	--	Adequate	Adequate
3-Nitroaniline	ug/kg	37	0					1.7E+02	2.5E+03	NSV	NSV	3.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4,6-Dinitro-2-methylphenol	ug/kg	37	0					8.2E+01	1.2E+03	6.6E+03	ND	1.4E+02	ND	NA	Yes	ND	No	NA	No	35%	Yes	--	Adequate	Adequate

Table 4-1
PRI 2 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
4-Bromophenyl-phenylether	ug/kg	37	0					8.6E+01	1.3E+03	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
4-Chloro-3-methylphenol	ug/kg	37	0					9.3E+01	1.4E+03	8.2E+06	ND	8.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chloroaniline	ug/kg	37	0					5.9E+01	8.7E+02	1.1E+04	ND	1.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chlorophenyl-phenylether	ug/kg	37	0					9.4E+01	1.4E+03	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
3 & 4 Methylphenol	ug/kg	37	0					3.3E+02	4.9E+03	8.2E+06	ND	1.6E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitroaniline	ug/kg	37	0					8.9E+01	1.3E+03	1.1E+05	ND	2.2E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitrophenol	ug/kg	37	0					2.8E+02	4.2E+03	NSV	NSV	5.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acetophenone	ug/kg	37	8	5.7E+02	1.1E+03	4.8E+01	9.6E+01	2.5E+01	3.7E+02	1.2E+07	9.5E-05	3.0E+05	1.9E-03	1.9E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzaldehyde	ug/kg	37	5	2.7E+03	5.4E+03	2.0E+02	4.0E+02	1.7E+02	2.5E+03	1.2E+07	4.5E-04	NSV	NSV	4.5E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzylbutylphthalate	ug/kg	37	2	3.1E+02	6.2E+02	2.1E+02	4.2E+02	9.6E+01	1.4E+03	1.2E+06	5.2E-04	2.4E+02	**1.3E+00**	1.3E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Bis(2-chloroethoxy)methane	ug/kg	37	0					8.9E+01	1.3E+03	2.5E+05	ND	3.0E+02	ND	NA	Yes	ND	No	NA	No	35%	Yes	--	Adequate	Adequate
bis(2-Chloroethyl) ether	ug/kg	37	0					8.2E+01	1.2E+03	1.0E+03	ND	2.4E+04	ND	NA	Yes	ND	No	NA	No	5%	Yes	--	Adequate	Adequate
Bis(2-ethylhexyl)phthalate	ug/kg	37	17	1.1E+03	2.2E+03	1.3E+02	2.6E+02	9.9E+01	1.5E+03	1.6E+05	1.4E-02	9.3E+02	**1.2E+00**	1.2E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Carbazole	ug/kg	37	0					9.6E+01	1.4E+03	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Dibenzofuran	ug/kg	37	2	1.6E+02	3.2E+02	1.1E+02	2.2E+02	8.7E+01	1.3E+03	1.0E+05	3.2E-03	NSV	NSV	3.2E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Diethyl phthalate	ug/kg	37	4	4.1E+03	8.2E+03	1.5E+02	3.0E+02	9.1E+01	1.3E+03	6.6E+07	1.2E-04	2.5E+04	1.7E-01	1.7E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Dimethylphthalate	ug/kg	37	0					8.8E+01	1.3E+03	NSV	NSV	2.0E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Di-n-butylphthalate	ug/kg	37	2	5.5E+02	5.5E+02	1.1E+02	1.1E+02	9.8E+01	1.4E+03	8.2E+06	6.7E-05	1.5E+02	**3.7E+00**	3.7E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Di-n-octylphthalate	ug/kg	37	0					9.8E+01	1.4E+03	8.2E+05	ND	7.1E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorobenzene	ug/kg	37	37	9.8E+04	1.3E+05	4.2E+00	7.5E+00			9.6E+02	**1.4E+02**	2.0E+02	**4.9E+02**	4.9E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Hexachlorobutadiene	ug/kg	37	4	4.4E+02	8.8E+02	4.5E+00	9.0E+00	3.7E+00	4.3E+01	5.3E+03	1.7E-01	4.0E+01	**1.1E+01**	1.1E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Hexachlorocyclopentadiene	ug/kg	37	0					6.3E+01	9.3E+02	7.5E+02	ND	1.0E+02	ND	NA	Yes	ND	No	NA	No	35%	Yes	--	Adequate	Adequate
Hexachloroethane	ug/kg	37	1	1.0E+02	2.0E+02	1.0E+02	2.0E+02	8.2E+01	1.2E+03	8.0E+03	2.5E-02	6.0E+02	1.7E-01	1.7E-01	Yes	No	No	NA	No	35%	Yes	--	Adequate	Adequate
Isophorone	ug/kg	37	3	4.8E+02	9.6E+02	1.6E+02	3.2E+02	9.4E+01	1.4E+03	2.4E+06	4.0E-04	1.4E+05	3.5E-03	3.5E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Nitrobenzene	ug/kg	37	0					7.7E+01	1.1E+03	2.2E+04	ND	1.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
N-Nitrosodimethylamine	ug/kg	37	0					9.7E+01	1.4E+03	3.4E+01	ND	3.2E-02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
N-Nitroso-di-n-propylamine	ug/kg	37	0					8.5E+01	1.3E+03	3.3E+02	ND	5.4E+02	ND	NA	Yes	ND	No	NA	No	35%	Yes	--	Adequate	Adequate
N-Nitrosodiphenylamine	ug/kg	37	0					8.7E+01	1.3E+03	4.7E+05	ND	5.5E+02	ND	NA	Yes	ND	No	NA	No	35%	Yes	--	Adequate	Adequate
Pentachlorophenol	ug/kg	37	7	4.6E+02	9.2E+02	3.4E+01	6.8E+01	2.5E+01	3.9E+02	4.0E+03	2.3E-01	2.1E+03	2.2E-01	2.3E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Phenol	ug/kg	37	1	1.2E+02	2.4E+02	1.2E+02	2.4E+02	8.4E+01	1.2E+03	2.5E+07	9.6E-06	3.0E+04	4.0E-03	4.0E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Methylnaphthalene	ug/kg	37	35	1.6E+02	3.2E+02	6.2E-01	1.2E+00	5.3E-01	5.6E-01	3.0E+05	1.1E-03	NSV	NSV	1.1E-03	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Acenaphthene	ug/kg	37	11	6.1E+01	1.2E+02	1.2E+00	2.4E+00	4.9E-01	1.3E+00	4.5E+06	2.7E-05	NSV	NSV	2.7E-05	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthylene	ug/kg	37	4	2.2E+01	4.4E+01	2.7E+00	5.4E+00	3.4E-01	2.0E+00	NSV	NSV	NSV	NSV	NA	No	NA	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Anthracene	ug/kg	37	20	8.4E+01	1.7E+02	5.2E-01	1.0E+00	4.1E-01	2.4E+00	2.3E+07	7.3E-06	NSV	NSV	7.3E-06	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)anthracene	ug/kg	37	25	1.5E+02	3.0E+02	3.9E-01	7.8E-01	3.1E-01	1.9E+00	2.9E+03	1.0E-01	NSV	NSV	1.0E-01	Yes	No	Yes	No	Yes	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Benzo(a)pyrene	ug/kg	37	23	8.9E+01	1.8E+02	4.6E-01	9.2E-01	4.1E-01	2.5E+00	2.9E+02	6.1E-01	NSV	NSV	6.1E-01	Yes	No	Yes	No	Yes	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Benzo(b)fluoranthene	ug/kg	37	24	1.4E+02	2.8E+02	6.4E-01	1.3E+00	5.2E-01	3.1E+00	2.9E+03	9.7E-02	NSV	NSV	9.7E-02	Yes	No	Yes	No	Yes	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Benzo(g,h,i)perylene	ug/kg	37	15	3.8E+01	7.6E+01	1.2E+00	2.4E+00	1.0E+00	6.1E+00	NSV	NSV	NSV	NSV	NA	No	NA	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Benzo(k)fluoranthene	ug/kg	37	16	1.0E+02	2.0E+02	1.1E+00	2.2E+00	7.9E-01	4.7E+00	2.9E+04	6.9E-03	NSV	NSV	6.9E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Chrysene	ug/kg	37	31	1.8E+02	3.6E+02	5.7E-01	1.1E+00	3.6E-01	2.1E+00	2.9E+05	1.2E-03	NSV	NSV	1.2E-03	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Dibenzo(a,h)anthracene	ug/kg	37	10	1.3E+01	2.6E+01	1.5E+00	3.0E+00	1.2E+00	7.4E+00	2.9E+02	9.0E-02	NSV	NSV	9.0E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Fluoranthene	ug/kg	37	32	6.7E+02	1.3E+03	4.4E-01	8.8E-01	3.2E-01	4.0E-01	3.0E+06	4.5E-04	NSV	NSV	4.5E-04	Yes	No	Yes	No	Yes	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Fluorene	ug/kg	37	23	4.4E+01	8.8E+01	6.3E-01	1.3E+00	5.1E-01	2.7E+00	3.0E+06	2.9E-05	NSV	NSV	2.9E-05	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Indeno(1,2,3-cd)pyrene	ug/kg	37	16	5.3E+01	1.1E+02	5.9E-01	1.2E+00	5.0E-01	2.9E+00	2.9E+03	3.7E-02	NSV	NSV	3.7E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Naphthalene	ug/kg	37	34	1.5E+02	3.0E+02	3.9E-01	7.8E-01	3.6E-01	4.0E-01	1.7E+04	1.8E-02	NSV	NSV	1.8E-02	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Phenanthrene	ug/kg	37	29	9.3E+02	1.9E+03	6.1E-01	1.2E+00	1.3E+00	4.7E+00	NSV	NSV	NSV	NSV	NA	No	NA	Yes	No	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation

Table 4-1
PRI 2 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Pyrene	ug/kg	37	35	4.7E+02	9.4E+02	5.5E-01	1.1E+00	4.3E-01	4.7E-01	2.3E+06	4.1E-04	NSV	NSV	4.1E-04	Yes	No	Yes	No	Yes	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Low Molecular Weight PAH (ND=0)	ug/kg	37	36	1.3E+03	2.6E+03	6.2E-01	1.2E+00	1.4E+00	1.4E+00	NSV	NSV	2.9E+04	4.5E-02	4.5E-02	Yes	No	Yes	No	Yes	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Low Molecular Weight PAH (ND=1/2DL)	ug/kg	37	36	1.3E+03	2.6E+03	2.3E+00	4.6E+00	2.3E+00	2.3E+00	NSV	NSV	2.9E+04	4.5E-02	4.5E-02	Yes	No	Yes	No	Yes	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
High Molecular Weight PAH (ND=0)	ug/kg	37	35	1.9E+03	3.8E+03	5.5E-01	1.1E+00	1.5E+00	1.6E+00	NSV	NSV	1.1E+03	**1.7E+00**	1.7E+00	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
High Molecular Weight PAH (ND=1/2DL)	ug/kg	37	35	1.9E+03	3.8E+03	3.4E+00	6.8E+00	3.5E+00	3.7E+00	NSV	NSV	1.1E+03	**1.7E+00**	1.7E+00	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
1,4-Dioxane	ug/kg	23	0					3.8E+01	1.0E+02	2.4E+04	ND	2.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1-Dichloroethane	ug/kg	23	2	2.7E+00	2.7E+00	9.7E-01	9.7E-01	2.8E-01	7.6E-01	1.6E+04	1.7E-04	2.0E+04	1.3E-04	1.7E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1-Dichloroethene	ug/kg	23	1	1.7E+00	1.7E+00	1.7E+00	1.7E+00	2.5E-01	6.8E-01	1.0E+05	1.7E-05	8.3E+03	2.1E-04	2.1E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dibromo-3-chloropropane	ug/kg	23	0					8.6E-01	2.3E+00	6.4E+01	ND	3.5E+01	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dibromoethane	ug/kg	23	0					2.6E-01	7.1E-01	1.6E+02	ND	1.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dichlorobenzene	ug/kg	23	0					6.2E-01	1.7E+00	9.3E+05	ND	3.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dichloroethane	ug/kg	23	0					7.1E-01	1.9E+00	2.0E+03	ND	2.1E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
cis-1,2-Dichloroethene	ug/kg	23	1	2.7E+00	2.7E+00	2.7E+00	2.7E+00	8.7E-01	2.3E+00	2.3E+05	1.2E-05	NSV	NSV	1.2E-05	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
trans-1,2-Dichloroethene	ug/kg	23	0					3.7E-01	9.9E-01	2.3E+06	ND	7.8E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dichloropropane	ug/kg	23	0					5.8E-01	1.6E+00	4.4E+03	ND	3.3E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,3-Dichlorobenzene	ug/kg	23	0					2.9E-01	7.8E-01	NSV	NSV	3.8E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
cis-1,3-Dichloropropene	ug/kg	23	0					6.2E-01	1.7E+00	8.2E+03	ND	4.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
trans-1,3-Dichloropropene	ug/kg	23	0					7.3E-01	2.0E+00	8.2E+03	ND	4.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,4-Dichlorobenzene	ug/kg	23	0					7.6E-01	2.0E+00	1.1E+04	ND	5.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,1-Trichloroethane	ug/kg	23	4	2.7E+00	2.7E+00	1.5E+00	1.5E+00	3.5E-01	9.4E-01	3.6E+06	7.5E-07	3.0E+04	9.1E-05	9.1E-05	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,2-Trichloroethane	ug/kg	23	0					4.3E-01	1.2E+00	6.3E+02	ND	2.9E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	ug/kg	23	0					8.1E-01	2.2E+00	1.7E+07	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,3-Trichlorobenzene	ug/kg	23	4	6.2E+00	6.2E+00	1.1E+00	1.1E+00	7.3E-01	2.0E+00	9.3E+04	6.7E-05	2.0E+04	3.1E-04	3.1E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,4-Trichlorobenzene	ug/kg	23	5	1.9E+01	1.9E+01	1.3E+00	1.3E+00	7.3E-01	2.0E+00	2.6E+04	7.3E-04	1.1E+04	1.7E-03	1.7E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,2,2-Tetrachloroethane	ug/kg	23	0					6.6E-01	1.8E+00	2.7E+03	ND	1.3E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Butanone	ug/kg	23	19	1.9E+02	1.9E+02	4.9E+00	4.9E+00	1.6E+00	2.3E+00	1.9E+07	1.0E-05	9.0E+04	2.1E-03	2.1E-03	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
2-Hexanone	ug/kg	23	14	4.5E+01	4.5E+01	1.2E+00	1.2E+00	8.6E-01	1.2E+00	1.3E+05	3.5E-04	1.3E+04	3.6E-03	3.6E-03	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
4-Methyl-2-pentanone	ug/kg	23	14	5.3E+01	5.3E+01	1.6E+00	1.6E+00	1.1E+00	1.5E+00	5.6E+06	9.5E-06	4.4E+05	1.2E-04	1.2E-04	Yes	No	Yes	No	Yes	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Acetone	ug/kg	23	19	4.1E+02	4.1E+02	2.6E+01	2.6E+01	2.0E+00	9.8E+00	6.7E+07	6.1E-06	2.5E+03	1.6E-01	1.6E-01	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Benzene	ug/kg	23	6	6.8E+00	6.8E+00	4.3E-01	4.3E-01	2.5E-01	4.3E-01	5.1E+03	1.3E-03	2.6E+02	2.7E-02	2.7E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Bromochloromethane	ug/kg	23	0					9.1E-01	2.5E+00	6.3E+04	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bromodichloromethane	ug/kg	23	0					5.2E-01	1.4E+00	1.3E+03	ND	5.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bromoform	ug/kg	23	1	8.4E-01	8.4E-01	8.4E-01	8.4E-01	3.9E-01	1.0E+00	8.6E+04	9.8E-06	1.6E+04	5.3E-05	5.3E-05	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Bromomethane	ug/kg	23	0					8.4E-01	2.2E+00	3.0E+03	ND	2.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Carbon disulfide	ug/kg	23	1	2.0E+01	2.0E+01	2.0E+01	2.0E+01	5.7E-01	1.2E+01	3.5E+05	5.7E-05	9.4E+01	2.1E-01	2.1E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Carbon tetrachloride	ug/kg	23	0					5.2E-01	1.4E+00	2.9E+03	ND	3.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Chlorobenzene	ug/kg	23	0					2.8E-01	7.6E-01	1.3E+05	ND	1.3E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Cyclohexane	ug/kg	23	0					2.6E+00	6.9E+00	2.7E+06	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dibromochloromethane	ug/kg	23	1	3.6E-01	3.6E-01	3.6E-01	3.6E-01	2.0E-01	5.5E-01	3.3E+03	1.1E-04	2.1E+03	1.8E-04	1.8E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Chloroethane	ug/kg	23	1	9.2E-01	9.2E-01	9.2E-01	9.2E-01	4.4E-01	1.2E+00	5.7E+06	1.6E-07	NSV	NSV	1.6E-07	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Chloroform	ug/kg	23	13	3.2E+00	3.2E+00	3.5E-01	3.5E-01	3.0E-01	6.8E-01	1.4E+03	2.3E-03	1.2E+03	2.7E-03	2.7E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Chloromethane	ug/kg	23	11	2.1E+01	2.1E+01	6.0E-01	6.0E-01	5.7E-01	8.2E-01	4.6E+04	4.6E-04	1.0E+04	2.0E-03	2.0E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Dichlorodifluoromethane (Freon-12)	ug/kg	23	0					8.7E-01	2.3E+00	3.7E+04	ND	4.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Ethyl benzene	ug/kg	23	11	2.3E+00	2.3E+00	5.4E-01	5.4E-01	3.9E-01	5.6E-01	2.5E+04	9.2E-05	5.2E+03	4.5E-04	4.5E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Isopropylbenzene	ug/kg	23	5	5.2E+00	5.2E+00	8.7E-01	8.7E-01	5.1E-01	1.4E+00	9.9E+05	5.3E-06	NSV	NSV	5.3E-06	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Methyl tertbutyl ether (MTBE)	ug/kg	23	0					5.8E-01	1.6E+00	2.1E+05	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dichloromethane (Methylene chloride)	ug/kg	23	5	5.6E+00	5.6E+00	1.0E+00	1.0E+00	8.2E-01	2.2E+00	3.2E+05	1.8E-05	4.1E+03	1.4E-03	1.4E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Styrene	ug/kg	23	5	2.3E+00	2.3E+00	9.8E-01	9.8E-01	3.0E-01	8.1E-01	3.5E+06	6.6E-07	4.7E+03	4.9E-04	4.9E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Tetrachloroethene	ug/kg	23	9	5.5E+00	5.5E+00	1.5E+00	1.5E+00	5.9E-01	1.6E+00	3.9E+04	1.4E-04	9.9E+03	5.5E-04	5.5E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Toluene	ug/kg	23	12	1.2E+01	1.2E+01	1.1E+00	1.1E+00	7.0E-01	1.0E+00	4.7E+06	2.6E-06	5.5E+03	2.2E-03	2.2E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Trichloroethene	ug/kg	23	4	2.5E+00	2.5E+00	9.2E-01	9.2E-01	5.8E-01	1.6E+00	1.9E+03	1.3E-03	1.2E+04	2.0E-04	1.3E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Trichlorofluoromethane (Freon-11)	ug/kg	23	0					3.3E-01	8.9E-01	3.1E+05	ND	1.6E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Vinyl chloride	ug/kg	23	1	1.3E+00	1.3E+00	1.3E+00	1.3E+00	3.5E-01	9.4E-01	1.7E+03	7.6E-04	6.5E+02	2.0E-03	2.0E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
o-Xylene	ug/kg	23	17	4.8E+00	4.8E+00	5.3E-01	5.3E-01	3.8E-01	5.4E-01	2.8E+05	1.7E-05	NSV	NSV	1.7E-05	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
m,p Xylenes	ug/kg	23	15	7.7E+00	7.7E+00	1.2E+00	1.2E+00	9.2E-01	1.3E+00	2.4E+05	3.2E-05	NSV	NSV	3.2E-05	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Perchlorate	ug/kg	37	1	6.5E+01	6.5E+01	6.5E+01	6.5E+01	2.1E+01	2.5E+02	8.2E+04	7.9E-04	NSV	NSV	7.9E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Cyanide, Total	ug/kg	37	2	4.7E+02	4.7E+02	2.7E+02	2.7E+02	2.1E+02	3.0E+02	1.2E+03	3.9E-01	1.3E+03	3.6E-01	3.9E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-2
PRI 8 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Freshwater Sediment RBESL (ug/kg)	Freshwater Sediment ESR	Saltwater Sediment RBESL (ug/kg)	Saltwater Sediment ESR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Calculated TEQ (ND=0), Mammalian	CALC_DX_0	ug/kg	21	21	2.3E-02	4.9E-01	7.8E-05	4.6E-01			7.2E-02	**6.8E+00**	1.2E-04	**1.9E+02**	8.5E-04	**2.7E+01**	2.0E-04	**1.2E+02**	1.9E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Mammalian	CALC_DX_2	ug/kg	21	21	2.3E-02	4.2E-01	3.3E-04	3.9E-01			7.2E-02	**5.8E+00**	1.2E-04	**1.9E+02**	8.5E-04	**2.7E+01**	2.0E-04	**1.2E+02**	1.9E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	ug/kg	21	21	1.5E+00	4.4E+01	1.9E-04	4.2E+01			NSV	NSV	1.2E-04	**1.3E+04**	8.5E-04	**1.8E+03**	2.0E-04	**7.5E+03**	1.3E+04	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	ug/kg	21	21	1.5E+00	3.4E+01	1.4E-02	3.2E+01			NSV	NSV	1.2E-04	**1.3E+04**	8.5E-04	**1.8E+03**	2.0E-04	**7.5E+03**	1.3E+04	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total PCBs	1336-36-3	ug/kg	21	21	3.7E+01	1.2E+02	4.1E-01	7.3E+01			9.7E+02	1.2E-01	6.0E+01	6.2E-01	2.3E+01	**1.6E+00**	3.3E-01	**1.1E+02**	1.1E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Aluminum	7429-90-5	ug/kg	21	21	2.0E+07	1.9E+07	2.6E+06	2.5E+06			1.1E+08	1.7E-01	1.4E+07	**1.4E+00**	1.8E+07	**1.1E+00**	5.0E+03	**4.0E+03**	4.0E+03	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Antimony	7440-36-0	ug/kg	21	18	6.6E+02	5.7E+02	1.9E+02	1.6E+02	2.1E+02	3.9E+02	1.1E+05	5.2E-03	6.4E+04	1.0E-02	2.0E+03	3.3E-01	2.7E+02	**2.4E+00**	2.4E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Arsenic	7440-38-2	ug/kg	21	21	1.3E+04	1.3E+04	3.7E+03	3.8E+03			3.0E+03	**4.4E+00**	9.8E+03	**1.3E+00**	8.2E+03	**1.6E+00**	1.8E+04	7.2E-01	4.4E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Barium	7440-39-3	ug/kg	21	21	4.0E+05	2.5E+05	2.1E+05	1.3E+05			2.2E+07	1.1E-02	2.0E+04	**2.0E+01**	2.0E+04	**2.0E+01**	3.3E+05	**1.2E+00**	2.0E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Beryllium	7440-41-7	ug/kg	21	21	8.3E+02	8.7E+02	1.5E+02	1.6E+02			2.3E+05	3.8E-03	NSV	NSV	NSV	NSV	2.1E+04	4.0E-02	4.0E-02	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cadmium	7440-43-9	ug/kg	21	20	4.4E+02	3.8E+02	1.6E+02	1.4E+02	1.0E+02	1.0E+02	9.8E+04	3.8E-03	9.9E+02	4.4E-01	1.2E+03	3.7E-01	3.6E+02	**1.2E+00**	1.2E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Calcium	7440-70-2	ug/kg	21	21	2.7E+08	2.3E+08	4.7E+07	4.0E+07			NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Chromium	7440-47-3	ug/kg	21	21	3.0E+04	2.9E+04	5.7E+03	5.5E+03			6.3E+03	**4.6E+00**	4.3E+04	6.9E-01	8.1E+04	3.7E-01	2.6E+04	**1.2E+00**	4.6E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cobalt	7440-48-4	ug/kg	21	21	7.4E+03	7.3E+03	1.8E+03	1.8E+03			3.5E+04	2.1E-01	5.0E+04	1.5E-01	1.0E+04	7.4E-01	1.3E+04	5.7E-01	7.4E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Copper	7440-50-8	ug/kg	21	21	1.9E+04	1.7E+04	4.7E+03	4.2E+03			4.7E+06	3.6E-03	3.2E+04	6.0E-01	3.4E+04	5.6E-01	2.8E+04	6.8E-01	6.8E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Iron	7439-89-6	ug/kg	21	21	2.0E+07	2.0E+07	4.5E+06	4.5E+06			8.2E+07	2.4E-01	2.0E+07	1.0E+00	2.2E+08	9.1E-02	NSV	NSV	1.0E+00	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Lead	7439-92-1	ug/kg	21	21	1.6E+04	1.4E+04	6.0E+03	5.4E+03			8.0E+05	1.8E-02	3.6E+04	4.5E-01	4.7E+04	3.4E-01	1.1E+04	**1.5E+00**	1.5E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Magnesium	7439-95-4	ug/kg	21	21	3.1E+07	3.3E+07	1.4E+07	1.5E+07			NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Manganese	7439-96-5	ug/kg	21	21	4.1E+05	5.0E+05	1.2E+05	1.5E+05			2.6E+06	1.9E-01	4.6E+05	8.9E-01	2.6E+05	**1.6E+00**	2.2E+05	**1.9E+00**	1.9E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Mercury	7439-97-6	ug/kg	21	10	1.6E+01	2.3E+01	9.5E+00	1.4E+01	9.6E+00	1.3E+01	3.5E+04	6.7E-04	1.8E+02	8.9E-02	1.5E+02	1.1E-01	5.1E-01	**3.1E+01**	3.1E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Molybdenum	7439-98-7	ug/kg	21	19	1.4E+04	1.1E+04	2.3E+02	1.8E+02	2.0E+02	4.1E+02	5.8E+05	1.9E-02	NSV	NSV	NSV	NSV	2.0E+03	**7.0E+00**	7.0E+00	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total Nickel	7440-02-0	ug/kg	21	21	2.0E+04	3.1E+04	4.1E+03	6.4E+03			2.2E+06	1.4E-02	2.3E+04	8.8E-01	2.1E+04	9.6E-01	3.8E+04	5.3E-01	9.6E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Potassium	7440-09-7	ug/kg	21	21	8.3E+06	8.3E+06	9.2E+05	9.2E+05			NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Selenium	7782-49-2	ug/kg	21	14	3.3E+02	1.9E+02	1.8E+02	1.0E+02	2.1E+02	2.6E+02	5.8E+05	3.3E-04	1.0E+02	**3.3E+00**	1.0E+03	3.3E-01	5.2E+02	6.3E-01	3.3E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Silver	7440-22-4	ug/kg	21	1	4.4E+01	4.4E+01	4.4E+01	4.4E+01	4.1E+01	8.2E+01	5.8E+05	7.6E-05	5.0E+02	8.8E-02	1.0E+03	4.4E-02	4.2E+03	1.0E-02	8.8E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Sodium	7440-23-5	ug/kg	21	21	9.3E+06	4.7E+06	8.3E+05	4.2E+05			NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Thallium	7440-28-0	ug/kg	21	8	1.7E+02	1.7E+02	8.2E+01	8.2E+01	6.9E+01	1.4E+02	1.2E+03	1.4E-01	NSV	NSV	NSV	NSV	1.0E+01	**1.7E+01**	1.7E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Vanadium	7440-62-2	ug/kg	21	21	3.8E+04	3.7E+04	1.1E+04	1.1E+04			5.8E+05	6.4E-02	NSV	NSV	5.7E+04	6.7E-01	7.8E+03	**4.9E+00**	4.9E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Zinc	7440-66-6	ug/kg	21	21	8.3E+04	7.8E+04	1.7E+04	1.6E+04			3.5E+07	2.2E-03	1.2E+05	6.9E-01	1.5E+05	5.5E-01	4.6E+04	**1.8E+00**	1.8E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
1,1'-Biphenyl	92-52-4	ug/kg	21	0					1.7E+02	2.4E+02	2.0E+04	ND	NSV	NSV	NSV	NSV	6.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/kg	21	0					2.7E+01	3.9E+01	3.5E+04	ND	1.3E+03	ND	NSV	NSV	2.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,3,4,6-Tetrachlorophenol	58-90-2	ug/kg	21	0					8.6E+01	1.2E+02	2.5E+06	ND	1.3E+02	ND	NSV	NSV	2.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4,5-Trichlorophenol	95-95-4	ug/kg	21	0					8.7E+01	1.2E+02	8.2E+06	ND	NSV	NSV	3.0E+00	ND	4.0E+03	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4,6-Trichlorophenol	88-06-2	ug/kg	21	0					4.6E+00	6.5E+00	8.2E+04	ND	2.1E+02	ND	6.0E+00	ND	4.0E+03	ND	NA	Yes	ND	No	NA	No	10%	Yes	--	Adequate	Adequate
2,2-Oxybis(1-chloropropane)	108-60-1	ug/kg	21	0					8.3E+01	1.2E+02	2.2E+04	ND	NSV	NSV	NSV	NSV	2.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dichlorophenol	120-83-2	ug/kg	21	0					9.3E+01	1.3E+02	2.5E+05	ND	8.2E+01	ND	2.1E-01	ND	8.8E+04	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dimethylphenol	105-67-9	ug/kg	21	0					1.8E+02	2.5E+02	1.6E+06	ND	3.0E+02	ND	1.8E+01	ND	1.0E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dinitrophenol	51-28-5	ug/kg	21	1	3.0E+02	6.0E+02	3.0E+02	6.0E+02	2.2E+02	3.2E+02	1.6E+05	3.8E-03	6.2E+00	**4.8E+01**	NSV	NSV	6.1E+01	**4.9E+00**	4.8E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
2,4-Dinitrotoluene	121-14-2	ug/kg	21	0					9.3E+01	1.3E+02	7.4E+03	ND	1.4E+01	ND	7.5E+02	ND	1.3E+03	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,6-Dinitrotoluene	606-20-2	ug/kg	21	0					1.0E+02	1.5E+02	1.5E+03	ND	4.0E+01	ND	6.2E+02	ND	3.3E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chloronaphthalene	91-58-7	ug/kg	21	0					8.5E+01	1.2E+02	6.0E+06	ND	4.2E+02	ND	NSV	NSV	1.2E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chlorophenol	95-57-8	ug/kg	21	0					9.2E+01	1.3E+02	5.8E+05	ND	3.2E+01	ND	3.3E-01	ND	2.4E+02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Methylphenol	95-48-7	ug/kg	21	0					6.1E+01	8.6E+01	4.1E+06	ND	5.5E+01	ND	8.0E+00	ND	4.0E+04	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Nitroaniline	88-74-4	ug/kg	21	0					8.8E+01	1.2E+02	8.0E+05	ND	NSV	NSV	NSV	NSV	7.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitrophenol	88-75-5	ug/kg	21	0					8.6E+01	1.2E+02	NSV	NSV	NSV	NSV	NSV	NSV	1.6E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
3,3'-Dichlorobenzidine	91-94-1	ug/kg	21	0					9.9E+01	1.4E+02	5.1E+03	ND	1.3E+02	ND	NSV	NSV	6.5E+02	ND	NA	Yes	ND	No	NA	No	14%	Yes	--	Adequate	Adequate
3-Nitroaniline	99-09-2	ug/kg	21	0					1.8E+02	2.5E+02	NSV	NSV	NSV	NSV	NSV	NSV	3.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4,6-Dinitro-2-methylphenol	534-52-1	ug/kg	21	1	3.2E+02	6.4E+02	3.2E+02	6.4E+02	8.5E+01	1.2E+02	6.6E+03	9.7E-02	1.0E+02	**3.1E+00**	NSV	NSV	1.4E+02	**2.2E+00**	3.1E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
4-Bromophenyl-phenylether	101-55-3	ug/kg	21	0					8.9E+01	1.3E+02	NSV	NSV	1.6E+03	ND	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chloro-3-methylphenol	59-50-7	ug/kg	21	0					9.7E+01	1.4E+02	8.2E+06	ND	3.9E+02	ND	NSV	NSV	8.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chloroaniline	106-47-8	ug/kg	21	0					6.1E+01	8.6E+01	1.1E+04	ND	1.5E+02	ND	NSV	NSV	1.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chlorophenyl-phenylether	7005-72-3	ug/kg	21	0					9.8E+01	1.4E+02	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation

Table 4-2
PRI 8 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Freshwater Sediment RBESL (ug/kg)	Freshwater Sediment ESR	Saltwater Sediment RBESL (ug/kg)	Saltwater Sediment ESR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
3 & 4 Methylphenol	15831-10-4	ug/kg	21	0					3.5E+02	4.9E+02	8.2E+06	ND	2.0E+01	ND	1.0E+02	ND	1.6E+05	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
4-Nitroaniline	100-01-6	ug/kg	21	0					9.2E+01	1.3E+02	1.1E+05	ND	NSV	NSV	NSV	NSV	2.2E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitrophenol	100-02-7	ug/kg	21	0					2.9E+02	4.2E+02	NSV	NSV	1.3E+01	ND	NSV	NSV	5.1E+03	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Acetophenone	98-86-2	ug/kg	21	0					2.6E+01	3.7E+01	1.2E+07	ND	NSV	NSV	NSV	NSV	3.0E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzaldehyde	100-52-7	ug/kg	21	0					1.7E+02	2.4E+02	1.2E+07	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzylbutylphthalate	85-68-7	ug/kg	21	0					1.0E+02	1.4E+02	1.2E+06	ND	2.0E+03	ND	6.3E+01	ND	2.4E+02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Bis(2-chloroethoxy)methane	111-91-1	ug/kg	21	0					9.2E+01	1.3E+02	2.5E+05	ND	NSV	NSV	NSV	NSV	3.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
bis(2-Chloroethyl) ether	111-44-4	ug/kg	21	0					8.5E+01	1.2E+02	1.0E+03	ND	3.5E+03	ND	NSV	NSV	2.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bis(2-ethylhexyl)phthalate	117-81-7	ug/kg	21	3	1.7E+02	3.4E+02	1.4E+02	2.8E+02	1.0E+02	1.5E+02	1.6E+05	2.1E-03	1.8E+02	9.3E-01	1.8E+02	9.3E-01	9.3E+02	1.8E-01	9.3E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Carbazole	86-74-8	ug/kg	21	0					1.0E+02	1.4E+02	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Dibenzofuran	132-64-9	ug/kg	21	0					9.0E+01	1.3E+02	1.0E+05	ND	4.5E+02	ND	1.1E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	No	14%	Yes	--	Adequate	Adequate
Diethyl phthalate	84-66-2	ug/kg	21	0					9.5E+01	1.3E+02	6.6E+07	ND	3.0E+02	ND	6.0E+00	ND	2.5E+04	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Dimethylphthalate	131-11-3	ug/kg	21	0					9.1E+01	1.3E+02	NSV	NSV	NSV	NSV	6.0E+00	ND	2.0E+05	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Di-n-butylphthalate	84-74-2	ug/kg	21	0					1.0E+02	1.4E+02	8.2E+06	ND	1.1E+03	ND	NSV	NSV	1.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Di-n-octylphthalate	117-84-0	ug/kg	21	0					1.0E+02	1.4E+02	8.2E+05	ND	4.1E+04	ND	5.8E+02	ND	7.1E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorobenzene	118-74-1	ug/kg	21	10	1.5E+02	2.0E+02	2.5E+00	5.3E+00	2.5E+00	2.9E+00	9.6E+02	2.1E-01	2.0E+01	**7.5E+00**	6.0E+00	**2.5E+01**	2.0E+02	7.5E-01	2.5E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Hexachlorobutadiene	87-68-3	ug/kg	21	0					3.9E+00	5.5E+00	5.3E+03	ND	2.7E+01	ND	1.3E+00	ND	4.0E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Hexachlorocyclopentadiene	77-47-4	ug/kg	21	0					6.5E+01	9.2E+01	7.5E+02	ND	2.0E+02	ND	2.7E+01	ND	1.0E+02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Hexachloroethane	67-72-1	ug/kg	21	0					8.5E+01	1.2E+02	8.0E+03	ND	5.8E+02	ND	7.3E+01	ND	6.0E+02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Isophorone	78-59-1	ug/kg	21	0					9.8E+01	1.4E+02	2.4E+06	ND	4.3E+02	ND	NSV	NSV	1.4E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Nitrobenzene	98-95-3	ug/kg	21	0					8.0E+01	1.1E+02	2.2E+04	ND	1.5E+02	ND	2.1E+01	ND	1.3E+03	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
N-Nitrosodimethylamine	62-75-9	ug/kg	21	0					1.0E+02	1.4E+02	3.4E+01	ND	NSV	NSV	NSV	NSV	3.2E-02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
N-Nitroso-di-n-propylamine	621-64-7	ug/kg	21	0					8.8E+01	1.2E+02	3.3E+02	ND	NSV	NSV	NSV	NSV	5.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
N-Nitrosodiphenylamine	86-30-6	ug/kg	21	0					9.0E+01	1.3E+02	4.7E+05	ND	NSV	NSV	2.8E+01	ND	5.5E+02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Pentachlorophenol	87-86-5	ug/kg	21	3	2.5E+02	5.0E+02	6.3E+01	1.3E+02	2.5E+01	3.6E+01	4.0E+03	1.3E-01	7.0E+03	3.6E-02	1.7E+01	**1.5E+01**	2.1E+03	1.2E-01	1.5E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Phenol	108-95-2	ug/kg	21	0					8.7E+01	1.2E+02	2.5E+07	ND	4.9E+01	ND	1.3E+02	ND	3.0E+04	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Methylnaphthalene	91-57-6	ug/kg	21	0					4.4E-01	6.1E-01	3.0E+05	ND	2.0E+01	ND	7.0E+01	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthene	83-32-9	ug/kg	21	0					4.8E-01	6.7E-01	4.5E+06	ND	6.7E+00	ND	1.6E+01	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthylene	208-96-8	ug/kg	21	0					3.4E-01	4.7E-01	NSV	NSV	5.9E+00	ND	4.4E+01	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Anthracene	120-12-7	ug/kg	21	0					4.1E-01	5.6E-01	2.3E+07	ND	5.7E+01	ND	8.5E+01	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)anthracene	56-55-3	ug/kg	21	1	3.5E-01	7.0E-01	3.5E-01	7.0E-01	3.1E-01	4.3E-01	2.9E+03	2.4E-04	1.1E+02	3.2E-03	2.6E+02	1.3E-03	NSV	NSV	3.2E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)pyrene	50-32-8	ug/kg	21	0					4.1E-01	5.7E-01	2.9E+02	ND	1.5E+02	ND	4.3E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(b)fluoranthene	205-99-2	ug/kg	21	0					5.2E-01	7.2E-01	2.9E+03	ND	3.7E+01	ND	1.8E+03	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(g,h,i)perylene	191-24-2	ug/kg	21	0					1.0E+00	1.4E+00	NSV	NSV	1.7E+02	ND	6.7E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(k)fluoranthene	207-08-9	ug/kg	21	0					7.8E-01	1.1E+00	2.9E+04	ND	3.7E+01	ND	2.4E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Chrysene	218-01-9	ug/kg	21	8	9.1E-01	1.8E+00	4.0E-01	8.0E-01	3.6E-01	4.9E-01	2.9E+05	6.3E-06	1.7E+02	5.4E-03	3.8E+02	2.4E-03	NSV	NSV	5.4E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Dibenzo(a,h)anthracene	53-70-3	ug/kg	21	0					1.2E+00	1.7E+00	2.9E+02	ND	3.3E+01	ND	6.3E+01	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Fluoranthene	206-44-0	ug/kg	21	5	5.9E-01	1.2E+00	3.7E-01	7.4E-01	3.0E-01	4.2E-01	3.0E+06	3.9E-07	4.2E+02	1.4E-03	6.0E+02	9.8E-04	NSV	NSV	1.4E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Fluorene	86-73-7	ug/kg	21	0					5.0E-01	7.0E-01	3.0E+06	ND	7.7E+01	ND	1.9E+01	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	21	0					4.9E-01	6.8E-01	2.9E+03	ND	3.0E+01	ND	6.0E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Naphthalene	91-20-3	ug/kg	21	0					3.2E-01	4.4E-01	1.7E+04	ND	1.8E+02	ND	1.6E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Phenanthrene	85-01-8	ug/kg	21	17	1.1E+00	2.2E+00	3.8E-01	7.6E-01	4.1E-01	4.9E-01	NSV	NSV	2.0E+02	5.5E-03	2.4E+02	4.6E-03	NSV	NSV	5.5E-03	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Pyrene	129-00-0	ug/kg	21	2	5.1E-01	1.0E+00	4.3E-01	8.6E-01	3.6E-01	5.0E-01	2.3E+06	4.4E-07	2.0E+02	2.6E-03	6.7E+02	7.6E-04	NSV	NSV	2.6E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Low Molecular Weight PAH (ND=0)	LPAH-0	ug/kg	21	17	1.1E+00	2.2E+00	3.8E-01	7.6E-01	5.4E-01	6.9E-01	NSV	NSV	NSV	NSV	NSV	NSV	2.9E+04	3.8E-05	3.8E-05	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	ug/kg	21	17	2.4E+00	4.8E+00	1.7E+00	3.4E+00	1.6E+00	1.9E+00	NSV	NSV	NSV	NSV	NSV	NSV	2.9E+04	8.3E-05	8.3E-05	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
High Molecular Weight PAH (ND=0)	HPAH-0	ug/kg	21	8	2.2E+00	4.4E+00	4.0E-01	8.0E-01	1.2E+00	1.7E+00	NSV	NSV	NSV	NSV	NSV	NSV	1.1E+03	2.0E-03	2.0E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	ug/kg	21	8	4.6E+00	9.2E+00	3.3E+00	6.6E+00	2.9E+00	4.0E+00	NSV	NSV	NSV	NSV	NSV	NSV	1.1E+03	4.2E-03	4.2E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
1,4-Dioxane	123-91-1	ug/kg	7	0					4.6E+01	6.8E+01	2.4E+04	ND	1.2E+02	ND	2.3E+03	ND	2.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1-Dichloroethane	75-34-3	ug/kg	7	0					3.4E-01	5.0E-01	1.6E+04	ND	5.8E-01	ND	NSV	NSV	2.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1-Dichloroethene	75-35-4	ug/kg	7	0					3.1E-01	4.5E-01	1.0E+05	ND	1.9E+01	ND	NSV	NSV	8.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dibromo-3-chloropropane	96-12-8	ug/kg	7	0					1.0E+00	1.5E+00	6.4E+01	ND	NSV	NSV	NSV	NSV	3.5E+01	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dibromoethane	106-93-4	ug/kg	7	0					3.2E-01	4.7E-01	1.6E+02	ND	NSV	NSV	NSV	NSV	1.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dichlorobenzene	95-50-1	ug/kg	7	0					7.5E-01	1.1E+00	9.3E+05	ND	2.9E+02	ND	1.3E+01	ND	3.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dichloroethane	107-06-2	ug/kg	7	0					8.6E-01	1.3E+00	2.0E+03	ND	2.6E+02	ND	NSV	NSV	2.1E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-2
PRI 8 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Freshwater Sediment RBESL (ug/kg)	Freshwater Sediment ESR	Saltwater Sediment RBESL (ug/kg)	Saltwater Sediment ESR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
cis-1,2-Dichloroethene	156-59-2	ug/kg	7	0					1.0E+00	1.5E+00	2.3E+05	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
trans-1,2-Dichloroethene	156-60-5	ug/kg	7	0					4.5E-01	6.6E-01	2.3E+06	ND	6.5E+02	ND	NSV	NSV	7.8E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dichloropropane	78-87-5	ug/kg	7	0					7.1E-01	1.0E+00	4.4E+03	ND	3.3E+02	ND	NSV	NSV	3.3E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,3-Dichlorobenzene	541-73-1	ug/kg	7	0					3.5E-01	5.2E-01	NSV	NSV	1.3E+03	ND	NSV	NSV	3.8E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
cis-1,3-Dichloropropene	10061-01-5	ug/kg	7	0					7.5E-01	1.1E+00	8.2E+03	ND	NSV	NSV	NSV	NSV	4.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
trans-1,3-Dichloropropene	10061-02-6	ug/kg	7	0					8.8E-01	1.3E+00	8.2E+03	ND	NSV	NSV	NSV	NSV	4.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,4-Dichlorobenzene	106-46-7	ug/kg	7	0					9.2E-01	1.4E+00	1.1E+04	ND	3.2E+02	ND	1.1E+02	ND	5.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,1-Trichloroethane	71-55-6	ug/kg	7	0					4.2E-01	6.3E-01	3.6E+06	ND	2.1E+02	ND	NSV	NSV	3.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,2-Trichloroethane	79-00-5	ug/kg	7	0					5.2E-01	7.6E-01	6.3E+02	ND	5.2E+02	ND	NSV	NSV	2.9E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	76-13-1	ug/kg	7	0					9.8E-01	1.4E+00	1.7E+07	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,3-Trichlorobenzene	87-61-6	ug/kg	7	0					8.8E-01	1.3E+00	9.3E+04	ND	NSV	NSV	NSV	NSV	2.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,4-Trichlorobenzene	120-82-1	ug/kg	7	0					8.8E-01	1.3E+00	2.6E+04	ND	5.1E+03	ND	4.8E+00	ND	1.1E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,2,2-Tetrachloroethane	79-34-5	ug/kg	7	0					8.0E-01	1.2E+00	2.7E+03	ND	8.5E+02	ND	NSV	NSV	1.3E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Butanone	78-93-3	ug/kg	7	5	1.5E+01	1.5E+01	5.8E+00	5.8E+00	1.8E+00	2.3E+00	1.9E+07	7.9E-07	4.2E+01	3.5E-01	NSV	NSV	9.0E+04	1.7E-04	3.5E-01	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
2-Hexanone	591-78-6	ug/kg	7	0					8.7E-01	1.3E+00	1.3E+05	ND	5.8E+01	ND	NSV	NSV	1.3E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Methyl-2-pentanone	108-10-1	ug/kg	7	0					1.1E+00	1.6E+00	5.6E+06	ND	2.5E+01	ND	NSV	NSV	4.4E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acetone	67-64-1	ug/kg	7	4	8.3E+01	8.3E+01	1.7E+01	1.7E+01	8.6E+00	2.2E+01	6.7E+07	1.2E-06	9.9E+00	**8.4E+00**	8.0E+02	1.0E-01	2.5E+03	3.3E-02	8.4E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Benzene	71-43-2	ug/kg	7	3	9.9E-01	9.9E-01	5.9E-01	5.9E-01	3.1E-01	4.3E-01	5.1E+03	1.9E-04	1.4E+02	7.0E-03	NSV	NSV	2.6E+02	3.9E-03	7.0E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Bromochloromethane	74-97-5	ug/kg	7	1	7.3E+00	7.3E+00	7.3E+00	7.3E+00	1.1E+00	1.6E+00	6.3E+04	1.2E-04	NSV	NSV	NSV	NSV	NSV	NSV	1.2E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Bromodichloromethane	75-27-4	ug/kg	7	6	2.2E+02	2.2E+02	5.3E+00	5.3E+00	6.2E-01	6.2E-01	1.3E+03	1.7E-01	NSV	NSV	NSV	NSV	5.4E+02	4.1E-01	4.1E-01	Yes	No	Yes	No	Yes	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Bromoform	75-25-2	ug/kg	7	6	5.7E+02	5.7E+02	2.4E+00	2.4E+00	4.7E-01	4.7E-01	8.6E+04	6.6E-03	4.9E+02	**1.2E+00**	NSV	NSV	1.6E+04	3.6E-02	1.2E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Bromomethane	74-83-9	ug/kg	7	0					1.0E+00	1.5E+00	3.0E+03	ND	1.4E+00	ND	NSV	NSV	2.4E+02	ND	NA	Yes	ND	No	NA	No	43%	Yes	--	Adequate	Adequate
Carbon disulfide	75-15-0	ug/kg	7	3	2.0E+01	2.0E+01	7.1E-01	7.1E-01	6.4E-01	8.5E-01	3.5E+05	5.7E-05	2.4E+01	8.4E-01	NSV	NSV	9.4E+01	2.1E-01	8.4E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Carbon tetrachloride	56-23-5	ug/kg	7	1	9.8E-01	9.8E-01	9.8E-01	9.8E-01	6.2E-01	9.2E-01	2.9E+03	3.4E-04	1.5E+03	6.8E-04	NSV	NSV	3.0E+03	3.3E-04	6.8E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Chlorobenzene	108-90-7	ug/kg	7	0					3.4E-01	5.0E-01	1.3E+05	ND	2.9E+02	ND	NSV	NSV	1.3E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Cyclohexane	110-82-7	ug/kg	7	0					3.1E+00	4.6E+00	2.7E+06	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dibromochloromethane	124-48-1	ug/kg	7	6	3.9E+02	3.9E+02	5.9E+00	5.9E+00	2.5E-01	2.5E-01	3.3E+03	1.2E-01	NSV	NSV	NSV	NSV	2.1E+03	1.9E-01	1.9E-01	Yes	No	Yes	No	Yes	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Chloroethane	75-00-3	ug/kg	7	0					5.3E-01	7.8E-01	5.7E+06	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Chloroform	67-66-3	ug/kg	7	7	1.1E+02	1.1E+02	3.9E+00	3.9E+00			1.4E+03	7.9E-02	5.9E+01	**1.9E+00**	3.8E+02	2.9E-01	1.2E+03	9.2E-02	1.9E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Chloromethane	74-87-3	ug/kg	7	0					5.9E-01	8.7E-01	4.6E+04	ND	NSV	NSV	NSV	NSV	1.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dichlorodifluoromethane (Freon-12)	75-71-8	ug/kg	7	0					1.0E+00	1.5E+00	3.7E+04	ND	NSV	NSV	NSV	NSV	4.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Ethyl benzene	100-41-4	ug/kg	7	0					4.0E-01	5.9E-01	2.5E+04	ND	1.8E+02	ND	4.0E+00	ND	5.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Isopropylbenzene	98-82-8	ug/kg	7	0					6.1E-01	9.0E-01	9.9E+05	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Methyl tertbutyl ether (MTBE)	1634-04-4	ug/kg	7	0					7.1E-01	1.0E+00	2.1E+05	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dichloromethane (Methylene chloride)	75-09-2	ug/kg	7	2	2.6E+00	2.6E+00	1.1E+00	1.1E+00	9.9E-01	1.5E+00	3.2E+05	8.1E-06	1.6E+02	1.6E-02	NSV	NSV	4.1E+03	6.4E-04	1.6E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Styrene	100-42-5	ug/kg	7	0					3.7E-01	5.4E-01	3.5E+06	ND	2.5E+02	ND	NSV	NSV	4.7E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Tetrachloroethene	127-18-4	ug/kg	7	0					7.2E-01	1.1E+00	3.9E+04	ND	9.9E+02	ND	5.7E+01	ND	9.9E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Toluene	108-88-3	ug/kg	7	0					7.2E-01	1.1E+00	4.7E+06	ND	1.2E+03	ND	NSV	NSV	5.5E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Trichloroethene	79-01-6	ug/kg	7	0					7.1E-01	1.0E+00	1.9E+03	ND	1.1E+02	ND	NSV	NSV	1.2E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Trichlorofluoromethane (Freon-11)	75-69-4	ug/kg	7	0					4.0E-01	5.9E-01	3.1E+05	ND	NSV	NSV	NSV	NSV	1.6E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Vinyl chloride	75-01-4	ug/kg	7	0					4.2E-01	6.3E-01	1.7E+03	ND	2.0E+02	ND	1.7E+03	ND	6.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
o-Xylene	95-47-6	ug/kg	7	0					3.9E-01	5.7E-01	2.8E+05	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
m,p Xylenes	179601-23-1	ug/kg	7	0					9.6E-01	1.4E+00	2.4E+05	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Perchlorate	14797-73-0	ug/kg	21	2	9.0E+01	9.0E+01	5.5E+01	5.5E+01	2.1E+01	2.9E+01	8.2E+04	1.1E-03	NSV	NSV	NSV	NSV	NSV	NSV	1.1E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Cyanide, Total	74-90-8	ug/kg	21	0					2.1E-01	3.1E-01	1.2E+03	ND	1.2E+02	ND	2.3E+03	ND	1.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-3
PRI 9 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Calculated TEQ (ND=0), Mammalian	CALC_DX_0	ug/kg	16	16	9.2E-02	5.7E-01	2.6E-05	4.6E-01			7.2E-02	**7.9E+00**	2.0E-04	**4.6E+02**	4.6E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Mammalian	CALC_DX_2	ug/kg	16	16	9.2E-02	5.0E-01	1.4E-04	3.9E-01			7.2E-02	**6.9E+00**	2.0E-04	**4.6E+02**	4.6E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	ug/kg	16	16	3.3E+00	4.7E+01	2.1E-04	4.2E+01			NSV	NSV	2.0E-04	**1.7E+04**	1.7E+04	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	ug/kg	16	16	3.3E+00	3.7E+01	1.4E-02	3.2E+01			NSV	NSV	2.0E-04	**1.7E+04**	1.7E+04	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total PCBs	1336-36-3	ug/kg	16	16	7.9E+01	1.7E+02	1.1E-01	7.2E+01			9.7E+02	1.8E-01	3.3E-01	**2.4E+02**	2.4E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Aluminum	7429-90-5	ug/kg	16	16	1.6E+07	1.5E+07	9.6E+05	9.1E+05			1.1E+08	1.4E-01	5.0E+03	**3.2E+03**	3.2E+03	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Antimony	7440-36-0	ug/kg	16	4	2.1E+03	1.8E+03	1.6E+02	1.4E+02	1.3E+02	1.3E+03	1.1E+05	1.7E-02	2.7E+02	**7.8E+00**	7.8E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Arsenic	7440-38-2	ug/kg	16	13	1.0E+04	1.0E+04	3.4E+02	3.5E+02	4.7E+02	1.8E+03	3.0E+03	**3.4E+00**	1.8E+04	5.6E-01	3.4E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Barium	7440-39-3	ug/kg	16	16	8.4E+05	5.2E+05	2.5E+04	1.6E+04			2.2E+07	2.4E-02	3.3E+05	**2.5E+00**	2.5E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Beryllium	7440-41-7	ug/kg	16	15	2.0E+05	2.1E+05	5.9E+01	6.2E+01	1.2E+02	1.2E+02	2.3E+05	9.1E-01	2.1E+04	**9.5E+00**	9.5E+00	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total Cadmium	7440-43-9	ug/kg	16	6	1.2E+03	1.0E+03	2.3E+02	2.0E+02	6.7E+01	6.1E+02	9.8E+04	1.0E-02	3.6E+02	**3.3E+00**	3.3E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Calcium	7440-70-2	ug/kg	16	16	1.0E+08	8.5E+07	3.7E+07	3.1E+07			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Chromium	7440-47-3	ug/kg	16	16	5.9E+04	5.7E+04	4.1E+03	4.0E+03			6.3E+03	**9.1E+00**	2.6E+04	**2.3E+00**	9.1E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cobalt	7440-48-4	ug/kg	16	16	2.4E+04	2.4E+04	4.6E+02	4.5E+02			3.5E+04	6.8E-01	1.3E+04	**1.8E+00**	1.8E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Copper	7440-50-8	ug/kg	16	16	1.4E+05	1.2E+05	1.9E+03	1.7E+03			4.7E+06	2.7E-02	2.8E+04	**5.0E+00**	5.0E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Iron	7439-89-6	ug/kg	16	16	6.9E+07	6.8E+07	2.3E+06	2.3E+06			8.2E+07	8.3E-01	NSV	NSV	8.3E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Lead	7439-92-1	ug/kg	16	16	6.9E+04	6.2E+04	1.3E+03	1.2E+03			8.0E+05	7.8E-02	1.1E+04	**6.3E+00**	6.3E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Magnesium	7439-95-4	ug/kg	16	16	2.0E+08	2.2E+08	3.3E+07	3.6E+07			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Manganese	7439-96-5	ug/kg	16	16	7.3E+06	9.0E+06	5.2E+04	6.4E+04			2.6E+06	**3.5E+00**	2.2E+05	**3.3E+01**	3.3E+01	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total Mercury	7439-97-6	ug/kg	16	7	1.6E+02	2.3E+02	1.1E+01	1.6E+01	1.0E+01	1.5E+01	3.5E+04	6.7E-03	5.1E-01	**3.1E+02**	3.1E+02	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Molybdenum	7439-98-7	ug/kg	16	14	1.5E+04	1.2E+04	6.6E+02	5.2E+02	1.1E+02	4.9E+02	5.8E+05	2.0E-02	2.0E+03	**7.5E+00**	7.5E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Nickel	7440-02-0	ug/kg	16	16	2.0E+05	3.1E+05	2.5E+03	3.9E+03			2.2E+06	1.4E-01	3.8E+04	**5.2E+00**	5.2E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Potassium	7440-09-7	ug/kg	16	16	2.3E+07	2.3E+07	4.4E+06	4.4E+06			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Selenium	7782-49-2	ug/kg	16	3	1.8E+03	1.0E+03	4.8E+02	2.7E+02	1.3E+02	3.4E+02	5.8E+05	1.8E-03	5.2E+02	**3.5E+00**	3.5E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Silver	7440-22-4	ug/kg	16	3	1.2E+02	1.2E+02	9.9E+01	9.9E+01	4.0E+01	3.8E+02	5.8E+05	2.1E-04	4.2E+03	2.9E-02	2.9E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Sodium	7440-23-5	ug/kg	16	16	1.3E+08	6.6E+07	2.1E+06	1.1E+06			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Thallium	7440-28-0	ug/kg	16	1	2.1E+02	2.1E+02	2.1E+02	2.1E+02	6.7E+01	6.4E+02	1.2E+03	1.8E-01	1.0E+01	**2.1E+01**	2.1E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Vanadium	7440-62-2	ug/kg	16	16	4.6E+04	4.5E+04	3.4E+03	3.3E+03			5.8E+05	7.7E-02	7.8E+03	**5.9E+00**	5.9E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Zinc	7440-66-6	ug/kg	16	15	1.8E+05	1.7E+05	3.5E+03	3.3E+03	7.7E+03	7.7E+03	3.5E+07	4.8E-03	4.6E+04	**3.9E+00**	3.9E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
1,1'-Biphenyl	92-52-4	ug/kg	16	0					2.0E+02	2.8E+02	2.0E+04	ND	6.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/kg	16	0					3.2E+01	4.4E+01	3.5E+04	ND	2.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,3,4,6-Tetrachlorophenol	58-90-2	ug/kg	16	0					1.0E+02	1.4E+02	2.5E+06	ND	2.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4,5-Trichlorophenol	95-95-4	ug/kg	16	0					1.0E+02	1.4E+02	8.2E+06	ND	4.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4,6-Trichlorophenol	88-06-2	ug/kg	14	2	8.7E+00	1.7E+01	7.1E+00	1.4E+01	5.3E+00	7.5E+00	8.2E+04	2.1E-04	4.0E+03	2.2E-03	2.2E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
2,2-Oxybis(1-chloropropane)	108-60-1	ug/kg	16	0					9.6E+01	1.3E+02	2.2E+04	ND	2.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dichlorophenol	120-83-2	ug/kg	16	0					1.1E+02	1.5E+02	2.5E+05	ND	8.8E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dimethylphenol	105-67-9	ug/kg	16	0					2.0E+02	2.9E+02	1.6E+06	ND	1.0E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dinitrophenol	51-28-5	ug/kg	16	2	3.4E+02	6.8E+02	3.3E+02	6.6E+02	2.6E+02	3.7E+02	1.6E+05	4.3E-03	6.1E+01	**5.6E+00**	5.6E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
2,4-Dinitrotoluene	121-14-2	ug/kg	16	0					1.1E+02	1.5E+02	7.4E+03	ND	1.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,6-Dinitrotoluene	606-20-2	ug/kg	16	0					1.2E+02	1.7E+02	1.5E+03	ND	3.3E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chloronaphthalene	91-58-7	ug/kg	16	0					9.9E+01	1.4E+02	6.0E+06	ND	1.2E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chlorophenol	95-57-8	ug/kg	16	0					1.1E+02	1.5E+02	5.8E+05	ND	2.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Methylphenol	95-48-7	ug/kg	16	0					7.1E+01	9.9E+01	4.1E+06	ND	4.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitroaniline	88-74-4	ug/kg	16	0					1.0E+02	1.4E+02	8.0E+05	ND	7.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitrophenol	88-75-5	ug/kg	16	0					1.0E+02	1.4E+02	NSV	NSV	1.6E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
3,3'-Dichlorobenzidine	91-94-1	ug/kg	16	0					1.1E+02	1.6E+02	5.1E+03	ND	6.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
3-Nitroaniline	99-09-2	ug/kg	16	0					2.0E+02	2.9E+02	NSV	NSV	3.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4,6-Dinitro-2-methylphenol	534-52-1	ug/kg	16	0					9.9E+01	1.4E+02	6.6E+03	ND	1.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Bromophenyl-phenylether	101-55-3	ug/kg	16	0					1.0E+02	1.5E+02	NSV	NSV	NSV	ND	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
4-Chloro-3-methylphenol	59-50-7	ug/kg	16	0					1.1E+02	1.6E+02	8.2E+06	ND	8.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chloroaniline	106-47-8	ug/kg	16	0					7.1E+01	9.9E+01	1.1E+04	ND	1.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chlorophenyl-phenylether	7005-72-3	ug/kg	16	0					1.1E+02	1.6E+02	NSV	NSV	NSV	ND	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
3 & 4 Methylphenol	15831-10-4	ug/kg	16	0					4.0E+02	5.6E+02	8.2E+06	ND	1.6E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitroaniline	100-01-6	ug/kg	16	0					1.1E+02	1.5E+02	1.1E+05	ND	2.2E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitrophenol	100-02-7	ug/kg	16	0					3.4E+02	4.8E+02	NSV	NSV	5.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acetophenone	98-86-2	ug/kg	16	2	5.5E+01	1.1E+02	3.8E+01	7.6E+01	3.0E+01	4.0E+01	1.2E+07	9.2E-06	3.0E+05	1.8E-04	1.8E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzaldehyde	100-52-7	ug/kg	16	0					2.0E+02	2.8E+02	1.2E+07	ND	NSV	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzylbutylphthalate	85-68-7	ug/kg	16	0					1.2E+02	1.6E+02	1.2E+06	ND	2.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-3
PRI 9 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Bis(2-chloroethoxy)methane	111-91-1	ug/kg	16	0					1.1E+02	1.5E+02	2.5E+05	ND	3.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
bis(2-Chloroethyl) ether	111-44-4	ug/kg	16	0					9.9E+01	1.4E+02	1.0E+03	ND	2.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bis(2-ethylhexyl)phthalate	117-81-7	ug/kg	16	0					1.2E+02	1.7E+02	1.6E+05	ND	9.3E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Carbazole	86-74-8	ug/kg	16	0					1.2E+02	1.6E+02	NSV	NSV	NSV	ND	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Dibenzofuran	132-64-9	ug/kg	16	0					1.0E+02	1.5E+02	1.0E+05	ND	NSV	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Diethyl phthalate	84-66-2	ug/kg	16	0					1.1E+02	1.5E+02	6.6E+07	ND	2.5E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dimethylphthalate	131-11-3	ug/kg	16	0					1.1E+02	1.5E+02	NSV	NSV	2.0E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Di-n-butylphthalate	84-74-2	ug/kg	16	0					1.2E+02	1.7E+02	8.2E+06	ND	1.5E+02	ND	NA	Yes	ND	No	NA	No	13%	Yes	--	Adequate	Adequate
Di-n-octylphthalate	117-84-0	ug/kg	16	1	1.4E+02	2.8E+02	1.4E+02	2.8E+02	1.2E+02	1.7E+02	8.2E+05	3.4E-04	7.1E+05	2.0E-04	3.4E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorobenzene	118-74-1	ug/kg	14	9	3.2E+02	4.3E+02	9.4E+00	1.5E+01	2.7E+00	3.5E+00	9.6E+02	4.5E-01	2.0E+02	**1.6E+00**	1.6E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Hexachlorobutadiene	87-68-3	ug/kg	14	0					4.5E+00	6.3E+00	5.3E+03	ND	4.0E+01	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorocyclopentadiene	77-47-4	ug/kg	16	0					7.6E+01	1.1E+02	7.5E+02	ND	1.0E+02	ND	NA	Yes	ND	No	NA	No	6%	Yes	--	Adequate	Adequate
Hexachloroethane	67-72-1	ug/kg	16	0					9.9E+01	1.4E+02	8.0E+03	ND	6.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Isophorone	78-59-1	ug/kg	16	0					1.1E+02	1.6E+02	2.4E+06	ND	1.4E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Nitrobenzene	98-95-3	ug/kg	16	0					9.3E+01	1.3E+02	2.2E+04	ND	1.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
N-Nitrosodimethylamine	62-75-9	ug/kg	14	0					1.2E+02	1.6E+02	3.4E+01	ND	3.2E-02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
N-Nitroso-di-n-propylamine	621-64-7	ug/kg	16	0					1.0E+02	1.4E+02	3.3E+02	ND	5.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
N-Nitrosodiphenylamine	86-30-6	ug/kg	16	0					1.0E+02	1.5E+02	4.7E+05	ND	5.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Pentachlorophenol	87-86-5	ug/kg	14	2	5.2E+02	1.0E+03	1.3E+02	2.6E+02	2.9E+01	4.1E+01	4.0E+03	2.6E-01	2.1E+03	2.5E-01	2.6E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Phenol	108-95-2	ug/kg	16	0					1.0E+02	1.4E+02	2.5E+07	ND	3.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Methylnaphthalene	91-57-6	ug/kg	16	10	6.0E+00	1.2E+01	8.2E-01	1.6E+00	5.1E-01	6.0E-01	3.0E+05	4.0E-05	NSV	NSV	4.0E-05	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Acenaphthene	83-32-9	ug/kg	16	0					5.6E-01	7.8E-01	4.5E+06	ND	NSV	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthylene	208-96-8	ug/kg	16	0					3.9E-01	5.5E-01	NSV	NSV	NSV	ND	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Anthracene	120-12-7	ug/kg	16	0					4.7E-01	6.6E-01	2.3E+07	ND	NSV	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)anthracene	56-55-3	ug/kg	16	0					3.6E-01	5.0E-01	2.9E+03	ND	NSV	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)pyrene	50-32-8	ug/kg	16	0					4.7E-01	6.6E-01	2.9E+02	ND	NSV	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(b)fluoranthene	205-99-2	ug/kg	16	0					6.0E-01	8.4E-01	2.9E+03	ND	NSV	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(g,h,i)perylene	191-24-2	ug/kg	16	0					1.2E+00	1.7E+00	NSV	NSV	NSV	ND	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Benzo(k)fluoranthene	207-08-9	ug/kg	16	0					9.0E-01	1.3E+00	2.9E+04	ND	NSV	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Chrysene	218-01-9	ug/kg	16	2	7.4E-01	1.5E+00	5.7E-01	1.1E+00	4.1E-01	5.8E-01	2.9E+05	5.1E-06	NSV	NSV	5.1E-06	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Dibenzo(a,h)anthracene	53-70-3	ug/kg	16	0					1.4E+00	2.0E+00	2.9E+02	ND	NSV	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Fluoranthene	206-44-0	ug/kg	16	2	6.6E-01	1.3E+00	5.6E-01	1.1E+00	3.5E-01	4.6E-01	3.0E+06	4.4E-07	NSV	NSV	4.4E-07	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Fluorene	86-73-7	ug/kg	16	0					5.8E-01	8.1E-01	3.0E+06	ND	NSV	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	16	0					5.7E-01	8.0E-01	2.9E+03	ND	NSV	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Naphthalene	91-20-3	ug/kg	16	14	3.3E+00	6.6E+00	4.3E-01	8.6E-01	3.6E-01	4.0E-01	1.7E+04	3.9E-04	NSV	NSV	3.9E-04	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Phenanthrene	85-01-8	ug/kg	16	8	4.8E+00	9.6E+00	5.2E-01	1.0E+00	4.5E-01	2.6E+00	NSV	NSV	NSV	NSV	NA	No	NA	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Pyrene	129-00-0	ug/kg	16	2	8.8E-01	1.8E+00	6.7E-01	1.3E+00	4.2E-01	5.4E-01	2.3E+06	7.7E-07	NSV	NSV	7.7E-07	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Low Molecular Weight PAH (ND=0)	LPAH-0	ug/kg	16	15	9.3E+00	1.9E+01	7.3E-01	1.5E+00	5.8E-01	5.8E-01	NSV	NSV	2.9E+04	3.2E-04	3.2E-04	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	ug/kg	16	15	1.1E+01	2.2E+01	2.3E+00	4.6E+00	1.7E+00	1.7E+00	NSV	NSV	2.9E+04	3.8E-04	3.8E-04	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
High Molecular Weight PAH (ND=0)	HPAH-0	ug/kg	16	3	2.3E+00	4.6E+00	5.7E-01	1.1E+00	1.4E+00	1.9E+00	NSV	NSV	1.1E+03	2.1E-03	2.1E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	ug/kg	16	3	5.8E+00	1.2E+01	4.0E+00	8.0E+00	3.3E+00	4.4E+00	NSV	NSV	1.1E+03	5.3E-03	5.3E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Perchlorate	14797-73-0	ug/kg	14	0					2.4E+01	2.7E+02	8.2E+04	ND	NSV	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Cyanide, Total	74-90-8	ug/kg	16	6	1.0E+03	1.0E+03	2.6E-01	2.6E-01	2.6E+02	3.4E+02	1.2E+03	8.3E-01	1.3E+03	7.7E-01	8.3E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-4
PRI 10 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Calculated TEQ (ND=0), Mammalian	CALC_DX_0	ug/kg	19	19	6.4E-03	4.7E-01	1.0E-06	4.6E-01			7.2E-02	**6.5E+00**	2.0E-04	**3.2E+01**	3.2E+01	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Mammalian	CALC_DX_2	ug/kg	19	19	7.2E-03	4.0E-01	1.8E-04	3.9E-01			7.2E-02	**5.6E+00**	2.0E-04	**3.6E+01**	3.6E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	ug/kg	19	19	1.1E-01	4.3E+01	3.5E-07	4.2E+01			NSV	NSV	2.0E-04	**5.5E+02**	5.5E+02	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	ug/kg	19	19	1.1E-01	3.3E+01	1.3E-02	3.2E+01			NSV	NSV	2.0E-04	**5.5E+02**	5.5E+02	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total PCBs	1336-36-3	ug/kg	19	19	4.2E+01	1.3E+02	1.9E-02	7.2E+01			9.7E+02	1.3E-01	3.3E-01	**1.3E+02**	1.3E+02	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total Aluminum	7429-90-5	ug/kg	19	19	1.7E+07	1.6E+07	4.6E+05	4.4E+05			1.1E+08	1.5E-01	5.0E+03	**3.4E+03**	3.4E+03	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Antimony	7440-36-0	ug/kg	19	5	5.6E+02	4.9E+02	4.4E+02	3.8E+02	1.8E+02	4.5E+02	1.1E+05	4.4E-03	2.7E+02	**2.1E+00**	2.1E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Arsenic	7440-38-2	ug/kg	19	19	1.3E+04	1.3E+04	2.0E+03	2.0E+03			3.0E+03	**4.4E+00**	1.8E+04	7.2E-01	4.4E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Barium	7440-39-3	ug/kg	19	19	4.0E+06	2.5E+06	1.2E+05	7.5E+04			2.2E+07	1.1E-01	3.3E+05	**1.2E+01**	1.2E+01	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total Beryllium	7440-41-7	ug/kg	19	19	7.4E+03	7.8E+03	2.6E+01	2.7E+01			2.3E+05	3.4E-02	2.1E+04	3.5E-01	3.5E-01	Yes	No	Yes	No	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Cadmium	7440-43-9	ug/kg	19	18	3.4E+02	2.9E+02	9.0E+01	7.7E+01	9.1E+01	9.1E+01	9.8E+04	3.0E-03	3.6E+02	9.4E-01	9.4E-01	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Total Calcium	7440-70-2	ug/kg	19	19	3.2E+08	2.7E+08	8.6E+07	7.3E+07			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Chromium	7440-47-3	ug/kg	19	19	1.8E+04	1.7E+04	9.4E+02	9.1E+02			6.3E+03	**2.8E+00**	2.6E+04	6.9E-01	2.8E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cobalt	7440-48-4	ug/kg	19	19	6.6E+03	6.5E+03	9.8E+02	9.7E+02			3.5E+04	1.9E-01	1.3E+04	5.1E-01	5.1E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Copper	7440-50-8	ug/kg	19	19	2.2E+04	2.0E+04	8.9E+02	8.1E+02			4.7E+06	4.2E-03	2.8E+04	7.9E-01	7.9E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Iron	7439-89-6	ug/kg	19	19	1.7E+07	1.7E+07	9.4E+05	9.3E+05			8.2E+07	2.1E-01	NSV	NSV	2.1E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Lead	7439-92-1	ug/kg	19	19	1.8E+04	1.6E+04	1.9E+03	1.7E+03			8.0E+05	2.0E-02	1.1E+04	**1.6E+00**	1.6E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Magnesium	7439-95-4	ug/kg	19	19	1.2E+08	1.3E+08	1.6E+07	1.7E+07			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Manganese	7439-96-5	ug/kg	19	19	1.2E+06	1.5E+06	1.7E+05	2.1E+05			2.6E+06	5.7E-01	2.2E+05	**5.5E+00**	5.5E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Mercury	7439-97-6	ug/kg	19	10	2.2E+01	3.2E+01	1.1E+01	1.6E+01	9.1E+00	1.2E+01	3.5E+04	9.2E-04	5.1E-01	**4.3E+01**	4.3E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Molybdenum	7439-98-7	ug/kg	19	9	9.7E+02	7.6E+02	2.8E+02	2.2E+02	3.5E+01	4.5E+02	5.8E+05	1.3E-03	2.0E+03	4.9E-01	4.9E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Nickel	7440-02-0	ug/kg	19	19	1.6E+04	2.5E+04	2.3E+03	3.6E+03			2.2E+06	1.1E-02	3.8E+04	4.2E-01	4.2E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Potassium	7440-09-7	ug/kg	19	19	1.6E+07	1.6E+07	4.6E+05	4.6E+05			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Selenium	7782-49-2	ug/kg	19	14	3.8E+02	2.2E+02	2.4E+02	1.4E+02	1.6E+02	2.4E+02	5.8E+05	3.7E-04	5.2E+02	7.3E-01	7.3E-01	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Total Silver	7440-22-4	ug/kg	19	5	8.8E+01	8.8E+01	5.0E+01	5.0E+01	5.2E+01	7.6E+01	5.8E+05	1.5E-04	4.2E+03	2.1E-02	2.1E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Sodium	7440-23-5	ug/kg	19	19	1.4E+07	7.1E+06	2.7E+06	1.4E+06			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Thallium	7440-28-0	ug/kg	19	0					8.1E+01	1.7E+02	1.2E+03	ND	1.0E+01	ND	NA	Yes	ND	No	NA	No	X	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Total Vanadium	7440-62-2	ug/kg	19	19	3.6E+04	3.5E+04	7.7E+03	7.5E+03			5.8E+05	6.1E-02	7.8E+03	**4.6E+00**	4.6E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Zinc	7440-66-6	ug/kg	19	19	8.4E+04	7.9E+04	2.6E+03	2.4E+03			3.5E+07	2.2E-03	4.6E+04	**1.8E+00**	1.8E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
1,1'-Biphenyl	92-52-4	ug/kg	19	0					1.9E+02	2.4E+02	2.0E+04	ND	6.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/kg	19	0					3.0E+01	3.8E+01	3.5E+04	ND	2.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,3,4,6-Tetrachlorophenol	58-90-2	ug/kg	19	0					9.3E+01	1.2E+02	2.5E+06	ND	2.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4,5-Trichlorophenol	95-95-4	ug/kg	19	0					9.5E+01	1.2E+02	8.2E+06	ND	4.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4,6-Trichlorophenol	88-06-2	ug/kg	19	0					5.0E+00	6.5E+00	8.2E+04	ND	4.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,2-Oxybis(1-chloropropane)	108-60-1	ug/kg	19	0					9.0E+01	1.2E+02	2.2E+04	ND	2.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dichlorophenol	120-83-2	ug/kg	19	0					1.0E+02	1.3E+02	2.5E+05	ND	8.8E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dimethylphenol	105-67-9	ug/kg	19	0					1.9E+02	2.5E+02	1.6E+06	ND	1.0E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dinitrophenol	51-28-5	ug/kg	19	0					2.4E+02	3.1E+02	1.6E+05	ND	6.1E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dinitrotoluene	121-14-2	ug/kg	19	0					1.0E+02	1.3E+02	7.4E+03	ND	1.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,6-Dinitrotoluene	606-20-2	ug/kg	19	0					1.1E+02	1.5E+02	1.5E+03	ND	3.3E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chloronaphthalene	91-58-7	ug/kg	19	0					9.2E+01	1.2E+02	6.0E+06	ND	1.2E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chlorophenol	95-57-8	ug/kg	19	0					1.0E+02	1.3E+02	5.8E+05	ND	2.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Methylphenol	95-48-7	ug/kg	19	0					6.6E+01	8.5E+01	4.1E+06	ND	4.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitroaniline	88-74-4	ug/kg	19	0					9.6E+01	1.2E+02	8.0E+05	ND	7.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitrophenol	88-75-5	ug/kg	19	0					9.3E+01	1.2E+02	NSV	NSV	1.6E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
3,3'-Dichlorobenzidine	91-94-1	ug/kg	19	0					1.1E+02	1.4E+02	5.1E+03	ND	6.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
3-Nitroaniline	99-09-2	ug/kg	19	0					1.9E+02	2.5E+02	NSV	NSV	3.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4,6-Dinitro-2-methylphenol	534-52-1	ug/kg	19	0					9.2E+01	1.2E+02	6.6E+03	ND	1.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Bromophenyl-phenylether	101-55-3	ug/kg	19	0					9.7E+01	1.2E+02	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
4-Chloro-3-methylphenol	59-50-7	ug/kg	19	0					1.0E+02	1.4E+02	8.2E+06	ND	8.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chloroaniline	106-47-8	ug/kg	19	0					6.6E+01	8.5E+01	1.1E+04	ND	1.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chlorophenyl-phenylether	7005-72-3	ug/kg	19	0					1.1E+02	1.4E+02	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
3 & 4 Methylphenol	15831-10-4	ug/kg	19	0					3.8E+02	4.9E+02	8.2E+06	ND	1.6E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-4
PRI 10 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
4-Nitroaniline	100-01-6	ug/kg	19	0					1.0E+02	1.3E+02	1.1E+05	ND	2.2E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitrophenol	100-02-7	ug/kg	19	0					3.2E+02	4.1E+02	NSV	NSV	5.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acetophenone	98-86-2	ug/kg	19	1	3.8E+01	7.6E+01	3.8E+01	7.6E+01	2.8E+01	4.0E+01	1.2E+07	6.3E-06	3.0E+05	1.3E-04	1.3E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzaldehyde	100-52-7	ug/kg	19	0					1.9E+02	2.4E+02	1.2E+07	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzylbutylphthalate	85-68-7	ug/kg	19	0					1.1E+02	1.4E+02	1.2E+06	ND	2.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bis(2-chloroethoxy)methane	111-91-1	ug/kg	19	0					1.0E+02	1.3E+02	2.5E+05	ND	3.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
bis(2-Chloroethyl) ether	111-44-4	ug/kg	19	0					9.2E+01	1.2E+02	1.0E+03	ND	2.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bis(2-ethylhexyl)phthalate	117-81-7	ug/kg	19	4	1.8E+02	3.6E+02	1.5E+02	3.0E+02	1.1E+02	1.4E+02	1.6E+05	2.3E-03	9.3E+02	1.9E-01	1.9E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Carbazole	86-74-8	ug/kg	19	0					1.1E+02	1.4E+02	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Dibenzofuran	132-64-9	ug/kg	19	0					9.8E+01	1.3E+02	1.0E+05	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Diethyl phthalate	84-66-2	ug/kg	19	0					1.0E+02	1.3E+02	6.6E+07	ND	2.5E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dimethylphthalate	131-11-3	ug/kg	19	0					9.9E+01	1.3E+02	NSV	NSV	2.0E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Di-n-butylphthalate	84-74-2	ug/kg	19	0					1.1E+02	1.4E+02	8.2E+06	ND	1.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Di-n-octylphthalate	117-84-0	ug/kg	19	0					1.1E+02	1.4E+02	8.2E+05	ND	7.1E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorobenzene	118-74-1	ug/kg	19	3	9.6E+00	1.5E+01	7.2E+00	1.2E+01	2.5E+00	3.2E+00	9.6E+02	1.5E-02	2.0E+02	4.8E-02	4.8E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorobutadiene	87-68-3	ug/kg	19	0					4.2E+00	5.4E+00	5.3E+03	ND	4.0E+01	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorocyclopentadiene	77-47-4	ug/kg	19	0					7.1E+01	9.1E+01	7.5E+02	ND	1.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachloroethane	67-72-1	ug/kg	19	0					9.2E+01	1.2E+02	8.0E+03	ND	6.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Isophorone	78-59-1	ug/kg	19	0					1.1E+02	1.4E+02	2.4E+06	ND	1.4E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Nitrobenzene	98-95-3	ug/kg	19	0					8.7E+01	1.1E+02	2.2E+04	ND	1.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
N-Nitrosodimethylamine	62-75-9	ug/kg	19	0					1.1E+02	1.4E+02	3.4E+01	ND	3.2E-02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
N-Nitroso-di-n-propylamine	621-64-7	ug/kg	19	0					9.6E+01	1.2E+02	3.3E+02	ND	5.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
N-Nitrosodiphenylamine	86-30-6	ug/kg	19	0					9.8E+01	1.3E+02	4.7E+05	ND	5.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Pentachlorophenol	87-86-5	ug/kg	19	1	4.7E+01	9.4E+01	4.7E+01	9.4E+01	2.7E+01	3.5E+01	4.0E+03	2.4E-02	2.1E+03	2.2E-02	2.4E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Phenol	108-95-2	ug/kg	19	0					9.5E+01	1.2E+02	2.5E+07	ND	3.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Methylnaphthalene	91-57-6	ug/kg	19	1	9.2E-01	1.8E+00	9.2E-01	1.8E+00	4.5E-01	6.6E-01	3.0E+05	6.1E-06	NSV	NSV	6.1E-06	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthene	83-32-9	ug/kg	19	0					4.9E-01	7.5E-01	4.5E+06	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthylene	208-96-8	ug/kg	19	0					3.5E-01	5.3E-01	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Anthracene	120-12-7	ug/kg	19	0					4.2E-01	6.3E-01	2.3E+07	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)anthracene	56-55-3	ug/kg	19	0					3.2E-01	4.8E-01	2.9E+03	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)pyrene	50-32-8	ug/kg	19	0					4.2E-01	6.4E-01	2.9E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(b)fluoranthene	205-99-2	ug/kg	19	0					5.3E-01	8.1E-01	2.9E+03	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(g,h,i)perylene	191-24-2	ug/kg	19	0					1.1E+00	1.6E+00	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Benzo(k)fluoranthene	207-08-9	ug/kg	19	0					8.0E-01	1.2E+00	2.9E+04	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Chrysene	218-01-9	ug/kg	19	0					3.7E-01	5.5E-01	2.9E+05	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dibenzo(a,h)anthracene	53-70-3	ug/kg	19	0					1.3E+00	1.9E+00	2.9E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Fluoranthene	206-44-0	ug/kg	19	3	7.7E-01	1.5E+00	3.5E-01	7.0E-01	3.1E-01	4.7E-01	3.0E+06	5.1E-07	NSV	NSV	5.1E-07	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Fluorene	86-73-7	ug/kg	19	0					5.2E-01	7.8E-01	3.0E+06	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	19	0					5.0E-01	7.6E-01	2.9E+03	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Naphthalene	91-20-3	ug/kg	19	1	4.9E-01	9.8E-01	4.9E-01	9.8E-01	3.2E-01	6.3E-01	1.7E+04	5.8E-05	NSV	NSV	5.8E-05	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Phenanthrene	85-01-8	ug/kg	19	13	1.3E+00	2.6E+00	4.1E-01	8.2E-01	3.7E-01	1.4E+00	NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Pyrene	129-00-0	ug/kg	19	1	9.2E-01	1.8E+00	9.2E-01	1.8E+00	3.7E-01	5.6E-01	2.3E+06	8.0E-07	NSV	NSV	8.0E-07	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Low Molecular Weight PAH (ND=0)	LPAH-0	ug/kg	19	14	1.3E+00	2.6E+00	4.1E-01	8.2E-01	5.2E-01	7.5E-01	NSV	NSV	2.9E+04	4.5E-05	4.5E-05	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	ug/kg	19	14	3.2E+00	6.4E+00	1.8E+00	3.6E+00	1.5E+00	2.2E+00	NSV	NSV	2.9E+04	1.1E-04	1.1E-04	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
High Molecular Weight PAH (ND=0)	HPAH-0	ug/kg	19	3	1.7E+00	3.4E+00	3.5E-01	7.0E-01	1.3E+00	1.9E+00	NSV	NSV	1.1E+03	1.5E-03	1.5E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	ug/kg	19	3	4.9E+00	9.8E+00	3.5E+00	7.0E+00	3.0E+00	4.5E+00	NSV	NSV	1.1E+03	4.5E-03	4.5E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
1,4-Dioxane	123-91-1	ug/kg	5	0					4.7E+01	7.4E+01	2.4E+04	ND	2.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1-Dichloroethane	75-34-3	ug/kg	5	0					3.5E-01	5.5E-01	1.6E+04	ND	2.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1-Dichloroethene	75-35-4	ug/kg	5	0					3.1E-01	4.9E-01	1.0E+05	ND	8.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dibromo-3-chloropropane	96-12-8	ug/kg	5	0					1.1E+00	1.7E+00	6.4E+01	ND	3.5E+01	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dibromoethane	106-93-4	ug/kg	5	0					3.2E-01	5.1E-01	1.6E+02	ND	1.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dichlorobenzene	95-50-1	ug/kg	5	0					7.7E-01	1.2E+00	9.3E+05	ND	3.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dichloroethane	107-06-2	ug/kg	5	0					8.8E-01	1.4E+00	2.0E+03	ND	2.1E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
cis-1,2-Dichloroethene	156-59-2	ug/kg	5	0					1.1E+00	1.7E+00	2.3E+05	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
trans-1,2-Dichloroethene	156-60-5	ug/kg	5	0					4.6E-01	7.2E-01	2.3E+06	ND	7.8E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dichloropropane	78-87-5	ug/kg	5	0					7.2E-01	1.1E+00	4.4E+03	ND	3.3E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,3-Dichlorobenzene	541-73-1	ug/kg	5	0					3.6E-01	5.7E-01	NSV	NSV	3.8E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
cis-1,3-Dichloropropene	10061-01-5	ug/kg	5	0					7.7E-01	1.2E+00	8.2E+03	ND	4.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
trans-1,3-Dichloropropene	10061-02-6	ug/kg	5	0					9.0E-01	1.4E+00	8.2E+03	ND	4.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,4-Dichlorobenzene	106-46-7	ug/kg	5	0					9.4E-01	1.5E+00	1.1E+04	ND	5.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,1-Trichloroethane	71-55-6	ug/kg	5	0					4.3E-01	6.8E-01	3.6E+06	ND	3.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,2-Trichloroethane	79-00-5	ug/kg	5	0					5.3E-01	8.4E-01	6.3E+02	ND	2.9E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	76-13-1	ug/kg	5	0					1.0E+00	1.6E+00	1.7E+07	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,3-Trichlorobenzene	87-61-6	ug/kg	5	0					9.0E-01	1.4E+00	9.3E+04	ND	2.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,4-Trichlorobenzene	120-82-1	ug/kg	5	0					9.0E-01	1.4E+00	2.6E+04	ND	1.1E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,2,2-Tetrachloroethane	79-34-5	ug/kg	5	0					8.2E-01	1.3E+00	2.7E+03	ND	1.3E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Butanone	78-93-3	ug/kg	5	3	1.7E+01	1.7E+01	8.0E+00	8.0E+00	1.7E+00	2.5E+00	1.9E+07	8.9E-07	9.0E+04	1.9E-04	1.9E-04	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
2-Hexanone	591-78-6	ug/kg	5	0					8.9E-01	1.4E+00	1.3E+05	ND	1.3E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Methyl-2-pentanone	108-10-1	ug/kg	5	0					1.1E+00	1.7E+00	5.6E+06	ND	4.4E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acetone	67-64-1	ug/kg	5	2	8.6E+01	8.6E+01	6.5E+01	6.5E+01	1.7E+00	2.2E+01	6.7E+07	1.3E-06	2.5E+03	3.4E-02	3.4E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-4
PRI 10 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Benzene	71-43-2	ug/kg	5	0					3.1E-01	4.9E-01	5.1E+03	ND	2.6E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bromochloromethane	74-97-5	ug/kg	5	2	4.7E+00	4.7E+00	1.9E+00	1.9E+00	1.1E+00	1.6E+00	6.3E+04	7.5E-05	NSV	NSV	7.5E-05	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Bromodichloromethane	75-27-4	ug/kg	5	2	2.3E+00	2.3E+00	1.2E+00	1.2E+00	6.4E-01	1.0E+00	1.3E+03	1.8E-03	5.4E+02	4.3E-03	4.3E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Bromoform	75-25-2	ug/kg	5	1	1.4E+00	1.4E+00	1.4E+00	1.4E+00	4.8E-01	7.6E-01	8.6E+04	1.6E-05	1.6E+04	8.8E-05	8.8E-05	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Bromomethane	74-83-9	ug/kg	5	0					1.0E+00	1.6E+00	3.0E+03	ND	2.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Carbon disulfide	75-15-0	ug/kg	5	0					5.9E-01	6.6E+00	3.5E+05	ND	9.4E+01	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Carbon tetrachloride	56-23-5	ug/kg	5	0					6.4E-01	1.0E+00	2.9E+03	ND	3.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Chlorobenzene	108-90-7	ug/kg	5	0					3.5E-01	5.5E-01	1.3E+05	ND	1.3E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Cyclohexane	110-82-7	ug/kg	5	0					3.2E+00	5.0E+00	2.7E+06	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dibromochloromethane	124-48-1	ug/kg	5	2	1.9E+00	1.9E+00	1.3E+00	1.3E+00	2.5E-01	4.0E-01	3.3E+03	5.8E-04	2.1E+03	9.3E-04	9.3E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Chloroethane	75-00-3	ug/kg	5	0					5.4E-01	8.6E-01	5.7E+06	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Chloroform	67-66-3	ug/kg	5	4	1.6E+01	1.6E+01	1.5E+00	1.5E+00	3.1E-01	3.1E-01	1.4E+03	1.1E-02	1.2E+03	1.3E-02	1.3E-02	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Chloromethane	74-87-3	ug/kg	5	0					6.0E-01	9.5E-01	4.6E+04	ND	1.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dichlorodifluoromethane (Freon-12)	75-71-8	ug/kg	5	0					1.1E+00	1.7E+00	3.7E+04	ND	4.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Ethyl benzene	100-41-4	ug/kg	5	0					4.1E-01	6.5E-01	2.5E+04	ND	5.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Isopropylbenzene	98-82-8	ug/kg	5	0					6.2E-01	9.9E-01	9.9E+05	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Methyl tertbutyl ether (MTBE)	1634-04-4	ug/kg	5	0					7.2E-01	1.1E+00	2.1E+05	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dichloromethane (Methylene chloride)	75-09-2	ug/kg	5	1	3.2E+00	3.2E+00	3.2E+00	3.2E+00	1.0E+00	1.6E+00	3.2E+05	1.0E-05	4.1E+03	7.9E-04	7.9E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Styrene	100-42-5	ug/kg	5	0					3.7E-01	5.9E-01	3.5E+06	ND	4.7E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Tetrachloroethene	127-18-4	ug/kg	5	0					7.3E-01	1.2E+00	3.9E+04	ND	9.9E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Toluene	108-88-3	ug/kg	5	0					7.3E-01	1.2E+00	4.7E+06	ND	5.5E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Trichloroethene	79-01-6	ug/kg	5	0					7.2E-01	1.1E+00	1.9E+03	ND	1.2E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Trichlorofluoromethane (Freon-11)	75-69-4	ug/kg	5	0					4.1E-01	6.5E-01	3.1E+05	ND	1.6E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Vinyl chloride	75-01-4	ug/kg	5	0					4.3E-01	6.8E-01	1.7E+03	ND	6.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
o-Xylene	95-47-6	ug/kg	5	0					4.0E-01	6.3E-01	2.8E+05	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
m,p Xylenes	179601-23-1	ug/kg	5	0					9.7E-01	1.5E+00	2.4E+05	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Perchlorate	14797-73-0	ug/kg	19	0					2.2E+01	2.9E+01	8.2E+04	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Cyanide, Total	74-90-8	ug/kg	19	1	2.7E-01	2.7E-01	2.7E-01	2.7E-01	2.3E-01	3.0E-01	1.2E+03	2.3E-04	1.3E+03	2.1E-04	2.3E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-5
PRI 11 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Calculated TEQ (ND=0), Mammalian	CALC_DX_0	ug/kg	14	14	1.7E-02	4.8E-01	1.1E-04	4.6E-01			7.2E-02	**6.7E+00**	2.0E-04	**8.5E+01**	8.5E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Mammalian	CALC_DX_2	ug/kg	14	14	1.8E-02	4.1E-01	2.4E-04	3.9E-01			7.2E-02	**5.8E+00**	2.0E-04	**9.0E+01**	9.0E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	ug/kg	14	14	7.2E-01	4.3E+01	1.1E-03	4.2E+01			NSV	NSV	2.0E-04	**3.6E+03**	3.6E+03	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	ug/kg	14	14	7.2E-01	3.3E+01	1.4E-02	3.2E+01			NSV	NSV	2.0E-04	**3.6E+03**	3.6E+03	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total PCBs	1336-36-3	ug/kg	14	14	7.3E+01	1.6E+02	2.1E-01	7.2E+01			9.7E+02	1.7E-01	3.3E-01	**2.2E+02**	2.2E+02	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total Aluminum	7429-90-5	ug/kg	14	14	1.6E+07	1.5E+07	4.0E+06	3.8E+06			1.1E+08	1.4E-01	5.0E+03	**3.2E+03**	3.2E+03	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Antimony	7440-36-0	ug/kg	14	3	6.0E+02	5.2E+02	3.2E+02	2.8E+02	2.1E+02	3.6E+02	1.1E+05	4.7E-03	2.7E+02	**2.2E+00**	2.2E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Arsenic	7440-38-2	ug/kg	14	14	2.3E+04	2.3E+04	4.0E+03	4.1E+03			3.0E+03	**7.8E+00**	1.8E+04	**1.3E+00**	7.8E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Barium	7440-39-3	ug/kg	14	14	3.6E+05	2.2E+05	7.8E+04	4.9E+04			2.2E+07	1.0E-02	3.3E+05	**1.1E+00**	1.1E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Beryllium	7440-41-7	ug/kg	14	14	8.5E+02	8.9E+02	2.4E+02	2.5E+02			2.3E+05	3.9E-03	2.1E+04	4.0E-02	4.0E-02	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cadmium	7440-43-9	ug/kg	14	13	4.6E+02	3.9E+02	1.2E+02	1.0E+02	1.1E+02	1.1E+02	9.8E+04	4.0E-03	3.6E+02	**1.3E+00**	1.3E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Calcium	7440-70-2	ug/kg	14	14	1.1E+08	9.3E+07	4.2E+07	3.6E+07			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Chromium	7440-47-3	ug/kg	14	14	2.1E+04	2.0E+04	5.9E+03	5.7E+03			6.3E+03	**3.2E+00**	2.6E+04	8.1E-01	3.2E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cobalt	7440-48-4	ug/kg	14	14	8.9E+03	8.8E+03	1.4E+03	1.4E+03			3.5E+04	2.5E-01	1.3E+04	6.8E-01	6.8E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Copper	7440-50-8	ug/kg	14	14	2.2E+05	2.0E+05	5.1E+03	4.6E+03			4.7E+06	4.2E-02	2.8E+04	**7.9E+00**	7.9E+00	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total Iron	7439-89-6	ug/kg	14	14	1.8E+07	1.8E+07	5.4E+06	5.3E+06			8.2E+07	2.2E-01	NSV	NSV	2.2E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Lead	7439-92-1	ug/kg	14	14	1.9E+04	1.7E+04	4.8E+03	4.3E+03			8.0E+05	2.1E-02	1.1E+04	**1.7E+00**	1.7E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Magnesium	7439-95-4	ug/kg	14	14	3.0E+07	3.2E+07	9.8E+06	1.1E+07			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Manganese	7439-96-5	ug/kg	14	14	5.3E+05	6.5E+05	1.3E+05	1.6E+05			2.6E+06	2.5E-01	2.2E+05	**2.4E+00**	2.4E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Mercury	7439-97-6	ug/kg	14	6	9.2E+01	1.3E+02	1.2E+01	1.8E+01	9.0E+00	2.0E+01	3.5E+04	3.8E-03	5.1E-01	**1.8E+02**	1.8E+02	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Molybdenum	7439-98-7	ug/kg	14	12	2.9E+04	2.3E+04	4.7E+01	3.7E+01	2.5E+02	3.7E+02	5.8E+05	3.9E-02	2.0E+03	**1.5E+01**	1.5E+01	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total Nickel	7440-02-0	ug/kg	14	14	2.2E+04	3.5E+04	4.0E+03	6.3E+03			2.2E+06	1.6E-02	3.8E+04	5.8E-01	5.8E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Potassium	7440-09-7	ug/kg	14	14	5.9E+06	5.9E+06	1.5E+06	1.5E+06			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Selenium	7782-49-2	ug/kg	14	6	4.3E+02	2.5E+02	2.7E+02	1.5E+02	2.1E+02	2.4E+02	5.8E+05	4.2E-04	5.2E+02	8.3E-01	8.3E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Silver	7440-22-4	ug/kg	14	1	2.1E+02	2.1E+02	2.1E+02	2.1E+02	6.1E+01	7.2E+01	5.8E+05	3.6E-04	4.2E+03	5.0E-02	5.0E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Sodium	7440-23-5	ug/kg	14	14	2.9E+06	1.5E+06	4.0E+05	2.0E+05			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Thallium	7440-28-0	ug/kg	14	3	2.0E+02	2.0E+02	1.2E+02	1.2E+02	1.0E+02	1.2E+02	1.2E+03	1.7E-01	1.0E+01	**2.0E+01**	2.0E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Vanadium	7440-62-2	ug/kg	14	14	3.4E+04	3.3E+04	9.9E+03	9.7E+03			5.8E+05	5.7E-02	7.8E+03	**4.4E+00**	4.4E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Zinc	7440-66-6	ug/kg	14	14	3.9E+05	3.7E+05	1.9E+04	1.8E+04			3.5E+07	1.0E-02	4.6E+04	**8.5E+00**	8.5E+00	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
1,1'-Biphenyl	92-52-4	ug/kg	14	0					1.7E+02	1.9E+02	2.0E+04	ND	6.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/kg	14	0					2.7E+01	3.1E+01	3.5E+04	ND	2.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,3,4,6-Tetrachlorophenol	58-90-2	ug/kg	14	0					8.6E+01	9.6E+01	2.5E+06	ND	2.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4,5-Trichlorophenol	95-95-4	ug/kg	14	0					8.7E+01	9.8E+01	8.2E+06	ND	4.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4,6-Trichlorophenol	88-06-2	ug/kg	14	0					4.6E+00	5.2E+00	8.2E+04	ND	4.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,2-Oxybis(1-chloropropane)	108-60-1	ug/kg	14	0					8.3E+01	9.3E+01	2.2E+04	ND	2.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dichlorophenol	120-83-2	ug/kg	14	0					9.3E+01	1.0E+02	2.5E+05	ND	8.8E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dimethylphenol	105-67-9	ug/kg	14	0					1.8E+02	2.0E+02	1.6E+06	ND	1.0E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dinitrophenol	51-28-5	ug/kg	14	1	2.8E+02	5.6E+02	2.8E+02	5.6E+02	2.2E+02	2.5E+02	1.6E+05	3.5E-03	6.1E+01	**4.6E+00**	4.6E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
2,4-Dinitrotoluene	121-14-2	ug/kg	14	0					9.3E+01	1.0E+02	7.4E+03	ND	1.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,6-Dinitrotoluene	606-20-2	ug/kg	14	0					1.0E+02	1.2E+02	1.5E+03	ND	3.3E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chloronaphthalene	91-58-7	ug/kg	14	0					8.5E+01	9.5E+01	6.0E+06	ND	1.2E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chlorophenol	95-57-8	ug/kg	14	0					9.2E+01	1.0E+02	5.8E+05	ND	2.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Methylphenol	95-48-7	ug/kg	14	0					6.1E+01	6.8E+01	4.1E+06	ND	4.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitroaniline	88-74-4	ug/kg	14	0					8.8E+01	9.9E+01	8.0E+05	ND	7.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitrophenol	88-75-5	ug/kg	14	0					8.6E+01	9.6E+01	NSV	NSV	1.6E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
3,3'-Dichlorobenzidine	91-94-1	ug/kg	14	0					9.9E+01	1.1E+02	5.1E+03	ND	6.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
3-Nitroaniline	99-09-2	ug/kg	14	0					1.8E+02	2.0E+02	NSV	NSV	3.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4,6-Dinitro-2-methylphenol	534-52-1	ug/kg	14	0					8.5E+01	9.5E+01	6.6E+03	ND	1.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Bromophenyl-phenylether	101-55-3	ug/kg	14	0					8.9E+01	1.0E+02	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
4-Chloro-3-methylphenol	59-50-7	ug/kg	14	0					9.6E+01	1.1E+02	8.2E+06	ND	8.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chloroaniline	106-47-8	ug/kg	14	0					6.1E+01	6.8E+01	1.1E+04	ND	1.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chlorophenyl-phenylether	7005-72-3	ug/kg	14	0					9.8E+01	1.1E+02	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
3 & 4 Methylphenol	15831-10-4	ug/kg	14	0					3.5E+02	3.9E+02	8.2E+06	ND	1.6E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitroaniline	100-01-6	ug/kg	14	0					9.2E+01	1.0E+02	1.1E+05	ND	2.2E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitrophenol	100-02-7	ug/kg	14	0					2.9E+02	3.3E+02	NSV	NSV	5.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acetophenone	98-86-2	ug/kg	14	0					2.6E+01	3.8E+01	1.2E+07	ND	3.0E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-5
PRI 11 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Benzaldehyde	100-52-7	ug/kg	14	0					1.7E+02	1.9E+02	1.2E+07	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzylbutylphthalate	85-68-7	ug/kg	14	2	1.1E+03	2.2E+03	1.1E+02	2.2E+02	1.0E+02	1.1E+02	1.2E+06	1.8E-03	2.4E+02	**4.6E+00**	4.6E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Bis(2-chloroethoxy)methane	111-91-1	ug/kg	14	0					9.2E+01	1.0E+02	2.5E+05	ND	3.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
bis(2-Chloroethyl) ether	111-44-4	ug/kg	14	0					8.5E+01	9.5E+01	1.0E+03	ND	2.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bis(2-ethylhexyl)phthalate	117-81-7	ug/kg	14	9	1.8E+02	3.6E+02	1.2E+02	2.4E+02	1.1E+02	1.1E+02	1.6E+05	2.3E-03	9.3E+02	1.9E-01	1.9E-01	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Carbazole	86-74-8	ug/kg	14	0					1.0E+02	1.1E+02	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Dibenzofuran	132-64-9	ug/kg	14	0					9.0E+01	1.0E+02	1.0E+05	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Diethyl phthalate	84-66-2	ug/kg	14	0					9.4E+01	1.1E+02	6.6E+07	ND	2.5E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dimethylphthalate	131-11-3	ug/kg	14	0					9.1E+01	1.0E+02	NSV	NSV	2.0E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Di-n-butylphthalate	84-74-2	ug/kg	14	0					1.0E+02	1.1E+02	8.2E+06	ND	1.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Di-n-octylphthalate	117-84-0	ug/kg	14	0					1.0E+02	1.1E+02	8.2E+05	ND	7.1E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorobenzene	118-74-1	ug/kg	14	8	6.7E+01	9.2E+01	2.8E+00	5.7E+00	2.4E+00	2.6E+00	9.6E+02	9.6E-02	2.0E+02	3.4E-01	3.4E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorobutadiene	87-68-3	ug/kg	14	0					3.9E+00	4.3E+00	5.3E+03	ND	4.0E+01	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorocyclopentadiene	77-47-4	ug/kg	14	0					6.5E+01	7.3E+01	7.5E+02	ND	1.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachloroethane	67-72-1	ug/kg	14	0					8.5E+01	9.5E+01	8.0E+03	ND	6.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Isophorone	78-59-1	ug/kg	14	0					9.8E+01	1.1E+02	2.4E+06	ND	1.4E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Nitrobenzene	98-95-3	ug/kg	14	0					8.0E+01	8.9E+01	2.2E+04	ND	1.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
n-Nitrosodimethylamine	62-75-9	ug/kg	14	0					1.0E+02	1.1E+02	3.4E+01	ND	3.2E-02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
N-Nitroso-di-n-propylamine	621-64-7	ug/kg	14	0					8.8E+01	9.9E+01	3.3E+02	ND	5.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
N-Nitrosodiphenylamine	86-30-6	ug/kg	14	0					9.0E+01	1.0E+02	4.7E+05	ND	5.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Pentachlorophenol	87-86-5	ug/kg	14	2	4.5E+01	9.0E+01	3.7E+01	7.4E+01	2.5E+01	2.8E+01	4.0E+03	2.3E-02	2.1E+03	2.1E-02	2.3E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Phenol	108-95-2	ug/kg	14	0					8.7E+01	9.8E+01	2.5E+07	ND	3.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Methylnaphthalene	91-57-6	ug/kg	14	2	6.3E-01	1.3E+00	6.1E-01	1.2E+00	4.3E-01	5.1E-01	3.0E+05	4.2E-06	NSV	NSV	4.2E-06	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthene	83-32-9	ug/kg	14	0					4.7E-01	5.6E-01	4.5E+06	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthylene	208-96-8	ug/kg	14	0					3.3E-01	3.9E-01	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Anthracene	120-12-7	ug/kg	14	3	1.2E+00	2.4E+00	6.3E-01	1.3E+00	4.0E-01	4.7E-01	2.3E+07	1.0E-07	NSV	NSV	1.0E-07	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)anthracene	56-55-3	ug/kg	14	7	1.4E+01	2.8E+01	3.8E-01	7.6E-01	3.1E-01	3.6E-01	2.9E+03	9.7E-03	NSV	NSV	9.7E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)pyrene	50-32-8	ug/kg	14	4	2.1E+01	4.2E+01	8.7E-01	1.7E+00	4.1E-01	4.8E-01	2.9E+02	1.4E-01	NSV	NSV	1.4E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(b)fluoranthene	205-99-2	ug/kg	14	8	2.4E+01	4.8E+01	5.7E-01	1.1E+00	5.2E-01	6.0E-01	2.9E+03	1.7E-02	NSV	NSV	1.7E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(g,h,i)perylene	191-24-2	ug/kg	14	2	1.1E+01	2.2E+01	2.3E+00	4.6E+00	1.0E+00	1.2E+00	NSV	NSV	NSV	NSV	NA	No	NA	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Benzo(k)fluoranthene	207-08-9	ug/kg	14	3	1.8E+01	3.6E+01	9.4E-01	1.9E+00	7.8E-01	9.1E-01	2.9E+04	1.2E-03	NSV	NSV	1.2E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Chrysene	218-01-9	ug/kg	14	11	2.0E+01	4.0E+01	5.3E-01	1.1E+00	3.6E-01	4.1E-01	2.9E+05	1.4E-04	NSV	NSV	1.4E-04	Yes	No	Yes	No	Yes	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Dibenzo(a,h)anthracene	53-70-3	ug/kg	14	1	3.6E+00	7.2E+00	3.6E+00	7.2E+00	1.2E+00	1.4E+00	2.9E+02	2.5E-02	NSV	NSV	2.5E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Fluoranthene	206-44-0	ug/kg	14	10	8.4E+00	1.7E+01	9.7E-01	1.9E+00	3.0E-01	3.5E-01	3.0E+06	5.6E-06	NSV	NSV	5.6E-06	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Fluorene	86-73-7	ug/kg	14	0					4.9E-01	5.9E-01	3.0E+06	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	14	5	1.3E+01	2.6E+01	5.5E-01	1.1E+00	4.9E-01	5.7E-01	2.9E+03	9.0E-03	NSV	NSV	9.0E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Naphthalene	91-20-3	ug/kg	14	3	6.1E-01	1.2E+00	4.8E-01	9.6E-01	3.2E-01	3.7E-01	1.7E+04	7.2E-05	NSV	NSV	7.2E-05	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Phenanthrene	85-01-8	ug/kg	14	8	2.1E+00	4.2E+00	3.7E-01	7.4E-01	4.2E-01	1.6E+00	NSV	NSV	NSV	NSV	NA	No	NA	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Pyrene	129-00-0	ug/kg	14	10	9.3E+00	1.9E+01	8.8E-01	1.8E+00	3.6E-01	4.2E-01	2.3E+06	8.1E-06	NSV	NSV	8.1E-06	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Low Molecular Weight PAH (ND=0)	LPAH-0	ug/kg	14	10	3.1E+00	6.2E+00	3.7E-01	7.4E-01	5.9E-01	1.3E+00	NSV	NSV	2.9E+04	1.1E-04	1.1E-04	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	ug/kg	14	10	4.1E+00	8.2E+00	1.6E+00	3.2E+00	1.7E+00	2.1E+00	NSV	NSV	2.9E+04	1.4E-04	1.4E-04	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
High Molecular Weight PAH (ND=0)	HPAH-0	ug/kg	14	11	1.4E+02	2.8E+02	5.3E-01	1.1E+00	1.2E+00	1.4E+00	NSV	NSV	1.1E+03	1.3E-01	1.3E-01	Yes	No	Yes	No	Yes	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	ug/kg	14	11	1.4E+02	2.8E+02	3.5E+00	7.0E+00	2.9E+00	3.4E+00	NSV	NSV	1.1E+03	1.3E-01	1.3E-01	Yes	No	Yes	No	Yes	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Perchlorate	14797-73-0	ug/kg	14	0					2.1E+01	2.3E+01	8.2E+04	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Cyanide, Total	74-90-8	ug/kg	14	1	4.4E+02	4.4E+02	4.4E+02	4.4E+02	2.2E+02	2.4E+02	1.2E+03	3.7E-01	1.3E+03	3.4E-01	3.7E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-6
PRI 12 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decsion 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Calculated TEQ (ND=0), Mammalian	CALC_DX_0	ug/kg	14	14	1.5E-01	6.3E-01	8.1E-04	4.6E-01			7.2E-02	**8.8E+00**	2.0E-04	**7.5E+02**	7.5E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Mammalian	CALC_DX_2	ug/kg	14	14	1.5E-01	5.6E-01	8.8E-04	3.9E-01			7.2E-02	**7.8E+00**	2.0E-04	**7.5E+02**	7.5E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	ug/kg	14	14	7.1E-01	4.3E+01	9.4E-03	4.2E+01			NSV	NSV	2.0E-04	**3.6E+03**	3.6E+03	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	ug/kg	14	14	7.2E-01	3.3E+01	2.3E-02	3.2E+01			NSV	NSV	2.0E-04	**3.6E+03**	3.6E+03	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total PCBs	1336-36-3	ug/kg	14	14	1.4E+02	2.5E+02	7.5E-01	7.3E+01			9.7E+02	2.6E-01	3.3E-01	**4.2E+02**	4.2E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Aluminum	7429-90-5	ug/kg	14	14	1.3E+07	1.2E+07	8.4E+05	8.0E+05			1.1E+08	1.1E-01	5.0E+03	**2.6E+03**	2.6E+03	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Antimony	7440-36-0	ug/kg	14	2	8.7E+03	7.6E+03	8.4E+02	7.3E+02	2.1E+02	3.4E+02	1.1E+05	6.9E-02	2.7E+02	**3.2E+01**	3.2E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Arsenic	7440-38-2	ug/kg	14	14	5.9E+03	6.0E+03	2.7E+03	2.8E+03			3.0E+03	**2.0E+00**	1.8E+04	3.3E-01	2.0E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Barium	7440-39-3	ug/kg	14	14	3.0E+05	1.9E+05	3.1E+04	1.9E+04			2.2E+07	8.5E-03	3.3E+05	9.1E-01	9.1E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Beryllium	7440-41-7	ug/kg	14	14	5.8E+02	6.1E+02	3.4E+01	3.6E+01			2.3E+05	2.6E-03	2.1E+04	2.8E-02	2.8E-02	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cadmium	7440-43-9	ug/kg	14	11	4.7E+02	4.0E+02	1.1E+02	9.4E+01	1.1E+02	1.5E+02	9.8E+04	4.1E-03	3.6E+02	**1.3E+00**	1.3E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Calcium	7440-70-2	ug/kg	14	14	3.1E+08	2.6E+08	3.4E+07	2.9E+07			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Chromium	7440-47-3	ug/kg	14	14	1.3E+04	1.3E+04	1.1E+03	1.1E+03			6.3E+03	**2.0E+00**	2.6E+04	5.0E-01	2.0E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cobalt	7440-48-4	ug/kg	14	14	4.1E+03	4.0E+03	3.1E+02	3.1E+02			3.5E+04	1.2E-01	1.3E+04	3.2E-01	3.2E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Copper	7440-50-8	ug/kg	14	14	1.6E+04	1.4E+04	9.4E+02	8.5E+02			4.7E+06	3.0E-03	2.8E+04	5.7E-01	5.7E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Iron	7439-89-6	ug/kg	14	14	1.4E+07	1.4E+07	1.0E+06	9.9E+05			8.2E+07	1.7E-01	NSV	NSV	1.7E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Lead	7439-92-1	ug/kg	14	14	1.4E+04	1.3E+04	1.3E+03	1.2E+03			8.0E+05	1.6E-02	1.1E+04	**1.3E+00**	1.3E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Magnesium	7439-95-4	ug/kg	14	14	1.1E+08	1.2E+08	4.9E+06	5.3E+06			NSV	NSV	NSV	NSV	NA	No	NA	Yes	No	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Manganese	7439-96-5	ug/kg	14	14	4.2E+05	5.2E+05	2.1E+04	2.6E+04			2.6E+06	2.0E-01	2.2E+05	**1.9E+00**	1.9E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Mercury	7439-97-6	ug/kg	14	11	1.1E+02	1.6E+02	1.1E+01	1.6E+01	9.1E+00	1.2E+01	3.5E+04	4.6E-03	5.1E-01	**2.2E+02**	2.2E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Molybdenum	7439-98-7	ug/kg	14	8	1.4E+03	1.1E+03	5.0E+02	3.9E+02	1.8E+02	5.5E+02	5.8E+05	1.9E-03	2.0E+03	7.0E-01	7.0E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Nickel	7440-02-0	ug/kg	14	14	1.0E+04	1.6E+04	8.7E+02	1.4E+03			2.2E+06	7.1E-03	3.8E+04	2.6E-01	2.6E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Potassium	7440-09-7	ug/kg	14	14	7.2E+07	7.2E+07	9.9E+05	9.9E+05			NSV	NSV	NSV	NSV	NA	No	NA	Yes	No	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Selenium	7782-49-2	ug/kg	14	2	2.9E+02	1.7E+02	2.6E+02	1.5E+02	2.1E+02	2.9E+02	5.8E+05	2.9E-04	5.2E+02	5.6E-01	5.6E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Silver	7440-22-4	ug/kg	14	0					6.3E+01	8.7E+01	5.8E+05	ND	4.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Sodium	7440-23-5	ug/kg	14	14	3.2E+07	1.6E+07	7.0E+05	3.6E+05			NSV	NSV	NSV	NSV	NA	No	NA	Yes	No	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Thallium	7440-28-0	ug/kg	14	0					1.0E+02	1.5E+02	1.2E+03	ND	1.0E+01	ND	NA	Yes	ND	No	NA	No	X	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Total Vanadium	7440-62-2	ug/kg	14	14	2.2E+04	2.1E+04	2.1E+03	2.1E+03			5.8E+05	3.7E-02	7.8E+03	**2.8E+00**	2.8E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Zinc	7440-66-6	ug/kg	14	14	7.5E+04	7.0E+04	4.6E+03	4.3E+03			3.5E+07	2.0E-03	4.6E+04	**1.6E+00**	1.6E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
1,1'-Biphenyl	92-52-4	ug/kg	14	0					1.7E+02	2.4E+02	2.0E+04	ND	6.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/kg	14	0					2.7E+01	3.8E+01	3.5E+04	ND	2.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,3,4,6-Tetrachlorophenol	58-90-2	ug/kg	14	0					8.6E+01	1.2E+02	2.5E+06	ND	2.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4,5-Trichlorophenol	95-95-4	ug/kg	14	0					8.7E+01	1.2E+02	8.2E+06	ND	4.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4,6-Trichlorophenol	88-06-2	ug/kg	14	0					4.6E+00	6.5E+00	8.2E+04	ND	4.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,2-Oxybis(1-chloropropane)	108-60-1	ug/kg	14	0					8.3E+01	1.2E+02	2.2E+04	ND	2.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dichlorophenol	120-83-2	ug/kg	14	0					9.4E+01	1.3E+02	2.5E+05	ND	8.8E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dimethylphenol	105-67-9	ug/kg	14	0					1.8E+02	2.5E+02	1.6E+06	ND	1.0E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dinitrophenol	51-28-5	ug/kg	14	2	2.6E+02	5.2E+02	2.5E+02	5.0E+02	2.3E+02	3.2E+02	1.6E+05	3.3E-03	6.1E+01	**4.3E+00**	4.3E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
2,4-Dinitrotoluene	121-14-2	ug/kg	14	0					9.4E+01	1.3E+02	7.4E+03	ND	1.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,6-Dinitrotoluene	606-20-2	ug/kg	14	0					1.0E+02	1.5E+02	1.5E+03	ND	3.3E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chloronaphthalene	91-58-7	ug/kg	14	0					8.5E+01	1.2E+02	6.0E+06	ND	1.2E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chlorophenol	95-57-8	ug/kg	14	0					9.3E+01	1.3E+02	5.8E+05	ND	2.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Methylphenol	95-48-7	ug/kg	14	0					6.1E+01	8.6E+01	4.1E+06	ND	4.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitroaniline	88-74-4	ug/kg	14	0					8.8E+01	1.2E+02	8.0E+05	ND	7.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitrophenol	88-75-5	ug/kg	14	0					8.6E+01	1.2E+02	NSV	NSV	1.6E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
3,3'-Dichlorobenzidine	91-94-1	ug/kg	14	0					9.9E+01	1.4E+02	5.1E+03	ND	6.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
3-Nitroaniline	99-09-2	ug/kg	14	0					1.8E+02	2.5E+02	NSV	NSV	3.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4,6-Dinitro-2-methylphenol	534-52-1	ug/kg	14	0					8.5E+01	1.2E+02	6.6E+03	ND	1.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Bromophenyl-phenylether	101-55-3	ug/kg	14	0					9.0E+01	1.3E+02	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
4-Chloro-3-methylphenol	59-50-7	ug/kg	14	0					9.7E+01	1.4E+02	8.2E+06	ND	8.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chloroaniline	106-47-8	ug/kg	14	0					6.1E+01	8.6E+01	1.1E+04	ND	1.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chlorophenyl-phenylether	7005-72-3	ug/kg	14	0					9.8E+01	1.4E+02	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
3 & 4 Methylphenol	15831-10-4	ug/kg	14	0					3.5E+02	4.9E+02	8.2E+06	ND	1.6E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitroaniline	100-01-6	ug/kg	14	0					9.3E+01	1.3E+02	1.1E+05	ND	2.2E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitrophenol	100-02-7	ug/kg	14	0					2.9E+02	4.1E+02	NSV	NSV	5.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acetophenone	98-86-2	ug/kg	14	0					2.7E+01	3.7E+01	1.2E+07	ND	3.0E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-6
PRI 12 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decsion 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Benzaldehyde	100-52-7	ug/kg	14	0					1.7E+02	2.4E+02	1.2E+07	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzylbutylphthalate	85-68-7	ug/kg	14	0					1.0E+02	1.4E+02	1.2E+06	ND	2.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bis(2-chloroethoxy)methane	111-91-1	ug/kg	14	0					9.3E+01	1.3E+02	2.5E+05	ND	3.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
bis(2-Chloroethyl) ether	111-44-4	ug/kg	14	0					8.5E+01	1.2E+02	1.0E+03	ND	2.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bis(2-ethylhexyl)phthalate	117-81-7	ug/kg	14	0					1.0E+02	1.4E+02	1.6E+05	ND	9.3E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Carbazole	86-74-8	ug/kg	14	0					1.0E+02	1.4E+02	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Dibenzofuran	132-64-9	ug/kg	14	0					9.1E+01	1.3E+02	1.0E+05	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Diethyl phthalate	84-66-2	ug/kg	14	0					9.5E+01	1.3E+02	6.6E+07	ND	2.5E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dimethylphthalate	131-11-3	ug/kg	14	0					9.2E+01	1.3E+02	NSV	NSV	2.0E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Di-n-butylphthalate	84-74-2	ug/kg	14	0					1.0E+02	1.4E+02	8.2E+06	ND	1.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Di-n-octylphthalate	117-84-0	ug/kg	14	0					1.0E+02	1.4E+02	8.2E+05	ND	7.1E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorobenzene	118-74-1	ug/kg	14	12	5.9E+01	8.1E+01	7.2E+00	1.2E+01	2.6E+00	3.2E+00	9.6E+02	8.4E-02	2.0E+02	3.0E-01	3.0E-01	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Hexachlorobutadiene	87-68-3	ug/kg	14	0					3.9E+00	5.5E+00	5.3E+03	ND	4.0E+01	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorobutadiene (SIM Screen)	87-68-3	ug/kg	14	0					3.9E+00	5.5E+00	5.3E+03	ND	4.0E+01	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorocyclopentadiene	77-47-4	ug/kg	14	0					6.5E+01	9.2E+01	7.5E+02	ND	1.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachloroethane	67-72-1	ug/kg	14	0					8.5E+01	1.2E+02	8.0E+03	ND	6.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Isophorone	78-59-1	ug/kg	14	0					9.8E+01	1.4E+02	2.4E+06	ND	1.4E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Nitrobenzene	98-95-3	ug/kg	14	0					8.0E+01	1.1E+02	2.2E+04	ND	1.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
N-Nitrosodimethylamine	62-75-9	ug/kg	14	0					1.0E+02	1.4E+02	3.4E+01	ND	3.2E-02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
N-Nitroso-di-n-propylamine	621-64-7	ug/kg	14	0					8.8E+01	1.2E+02	3.3E+02	ND	5.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
N-Nitrosodiphenylamine	86-30-6	ug/kg	14	0					9.1E+01	1.3E+02	4.7E+05	ND	5.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Pentachlorophenol (Combined)	87-86-5	ug/kg	14	2	6.7E+01	1.3E+02	3.4E+01	6.8E+01	2.6E+01	3.5E+01	4.0E+03	3.4E-02	2.1E+03	3.2E-02	3.4E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Phenol	108-95-2	ug/kg	14	0					8.7E+01	1.2E+02	2.5E+07	ND	3.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Methylnaphthalene	91-57-6	ug/kg	14	6	3.7E+00	7.4E+00	6.6E-01	1.3E+00	4.4E-01	5.9E-01	3.0E+05	2.5E-05	NSV	NSV	2.5E-05	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthene	83-32-9	ug/kg	14	0					4.7E-01	6.6E-01	4.5E+06	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthylene	208-96-8	ug/kg	14	0					3.3E-01	4.6E-01	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Anthracene	120-12-7	ug/kg	14	2	1.8E+00	3.6E+00	5.2E-01	1.0E+00	3.9E-01	5.5E-01	2.3E+07	1.6E-07	NSV	NSV	1.6E-07	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)anthracene	56-55-3	ug/kg	14	9	3.5E+00	7.0E+00	4.3E-01	8.6E-01	3.2E-01	4.1E-01	2.9E+03	2.4E-03	NSV	NSV	2.4E-03	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Benzo(a)pyrene	50-32-8	ug/kg	14	8	3.5E+00	7.0E+00	5.7E-01	1.1E+00	4.3E-01	5.4E-01	2.9E+02	2.4E-02	NSV	NSV	2.4E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(b)fluoranthene	205-99-2	ug/kg	14	7	4.9E+00	9.8E+00	5.7E-01	1.1E+00	5.4E-01	6.9E-01	2.9E+03	3.4E-03	NSV	NSV	3.4E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(g,h,i)perylene	191-24-2	ug/kg	14	5	4.8E+00	9.6E+00	1.1E+00	2.2E+00	1.0E+00	1.4E+00	NSV	NSV	NSV	NSV	NA	No	NA	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Benzo(k)fluoranthene	207-08-9	ug/kg	14	4	1.6E+00	3.2E+00	1.1E+00	2.2E+00	7.6E-01	1.0E+00	2.9E+04	1.1E-04	NSV	NSV	1.1E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Chrysene	218-01-9	ug/kg	14	12	1.1E+01	2.2E+01	3.8E-01	7.6E-01	3.7E-01	4.7E-01	2.9E+05	7.6E-05	NSV	NSV	7.6E-05	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Dibenzo(a,h)anthracene	53-70-3	ug/kg	14	1	1.6E+00	3.2E+00	1.6E+00	3.2E+00	1.2E+00	1.7E+00	2.9E+02	1.1E-02	NSV	NSV	1.1E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Fluoranthene	206-44-0	ug/kg	14	10	3.9E+00	7.8E+00	3.5E-01	7.0E-01	3.1E-01	4.0E-01	3.0E+06	2.6E-06	NSV	NSV	2.6E-06	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Fluorene	86-73-7	ug/kg	14	0					4.9E-01	6.8E-01	3.0E+06	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	14	4	1.8E+00	3.6E+00	1.1E+00	2.2E+00	4.8E-01	6.5E-01	2.9E+03	1.2E-03	NSV	NSV	1.2E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Naphthalene	91-20-3	ug/kg	14	8	1.4E+00	2.8E+00	4.2E-01	8.4E-01	3.3E-01	4.4E-01	1.7E+04	1.6E-04	NSV	NSV	1.6E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Phenanthrene	85-01-8	ug/kg	14	14	6.3E+00	1.3E+01	5.0E-01	1.0E+00			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Pyrene	129-00-0	ug/kg	14	11	7.1E+00	1.4E+01	5.0E-01	1.0E+00	3.7E-01	4.1E-01	2.3E+06	6.2E-06	NSV	NSV	6.2E-06	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Low Molecular Weight PAH (ND=0)	LPAH-0	ug/kg	14	14	1.1E+01	2.2E+01	5.0E-01	1.0E+00			NSV	NSV	2.9E+04	3.8E-04	3.8E-04	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	ug/kg	14	14	1.2E+01	2.4E+01	1.8E+00	3.6E+00			NSV	NSV	2.9E+04	4.1E-04	4.1E-04	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
High Molecular Weight PAH (ND=0)	HPAH-0	ug/kg	14	13	4.2E+01	8.4E+01	5.9E-01	1.2E+00	1.3E+00	1.3E+00	NSV	NSV	1.1E+03	3.8E-02	3.8E-02	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	ug/kg	14	13	4.3E+01	8.6E+01	3.6E+00	7.2E+00	3.0E+00	3.0E+00	NSV	NSV	1.1E+03	3.9E-02	3.9E-02	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Perchlorate	14797-73-0	ug/kg	14	0					2.1E+01	2.8E+02	8.2E+04	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Cyanide, Total	74-90-8	ug/kg	14	0					2.2E+02	4.7E+02	1.2E+03	ND	1.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-7
PRI 13 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Freshwater Sediment RBESL (ug/kg)	Freshwater Sediment ESR	Saltwater Sediment RBESL (ug/kg)	Saltwater Sediment ESR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Calculated TEQ (ND=0), Mammalian	CALC_DX_0	ug/kg	14	14	1.7E-02	4.8E-01	1.1E-04	4.6E-01			7.2E-02	**6.7E+00**	1.2E-04	**1.4E+02**	8.5E-04	**2.0E+01**	2.0E-04	**8.5E+01**	1.4E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Mammalian	CALC_DX_2	ug/kg	14	14	1.7E-02	4.1E-01	4.1E-04	3.9E-01			7.2E-02	**5.7E+00**	1.2E-04	**1.4E+02**	8.5E-04	**2.0E+01**	2.0E-04	**8.5E+01**	1.4E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	ug/kg	14	14	3.3E-01	4.3E+01	8.7E-04	4.2E+01			NSV	NSV	1.2E-04	**2.8E+03**	8.5E-04	**3.9E+02**	2.0E-04	**1.7E+03**	2.8E+03	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	ug/kg	14	14	3.3E-01	3.3E+01	1.3E-02	3.2E+01			NSV	NSV	1.2E-04	**2.8E+03**	8.5E-04	**3.9E+02**	2.0E-04	**1.7E+03**	2.8E+03	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total PCBs	1336-36-3	ug/kg	14	14	1.3E+01	8.9E+01	2.6E-01	7.2E+01			9.7E+02	9.1E-02	6.0E+01	2.2E-01	2.3E+01	5.7E-01	3.3E-01	**3.9E+01**	3.9E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Aluminum	7429-90-5	ug/kg	14	14	1.5E+07	1.4E+07	1.2E+06	1.1E+06			1.1E+08	1.3E-01	1.4E+07	**1.1E+00**	1.8E+07	8.3E-01	5.0E+03	**3.0E+03**	3.0E+03	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Antimony	7440-36-0	ug/kg	14	13	1.1E+03	9.5E+02	2.3E+02	2.0E+02	5.7E+02	5.7E+02	1.1E+05	8.7E-03	6.4E+04	1.7E-02	2.0E+03	5.5E-01	2.7E+02	**4.1E+00**	4.1E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Arsenic	7440-38-2	ug/kg	14	14	2.0E+04	2.0E+04	6.5E+03	6.6E+03			3.0E+03	**6.8E+00**	9.8E+03	**2.0E+00**	8.2E+03	**2.4E+00**	1.8E+04	**1.1E+00**	6.8E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Barium	7440-39-3	ug/kg	14	14	4.6E+05	2.9E+05	1.9E+05	1.2E+05			2.2E+07	1.3E-02	2.0E+04	**2.3E+01**	2.0E+04	**2.3E+01**	3.3E+05	**1.4E+00**	2.3E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Beryllium	7440-41-7	ug/kg	14	14	6.6E+02	6.9E+02	5.7E+01	6.0E+01			2.3E+05	3.0E-03	NSV	NSV	NSV	NSV	2.1E+04	3.1E-02	3.1E-02	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cadmium	7440-43-9	ug/kg	14	6	1.8E+02	1.5E+02	9.1E+01	7.8E+01	1.1E+02	2.8E+02	9.8E+04	1.6E-03	9.9E+02	1.8E-01	1.2E+03	1.5E-01	3.6E+02	5.0E-01	5.0E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Calcium	7440-70-2	ug/kg	14	14	8.8E+08	7.5E+08	1.2E+08	1.0E+08			NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Chromium	7440-47-3	ug/kg	14	14	1.8E+04	1.7E+04	1.8E+03	1.7E+03			6.3E+03	**2.8E+00**	4.3E+04	4.1E-01	8.1E+04	2.2E-01	2.6E+04	6.9E-01	2.8E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cobalt	7440-48-4	ug/kg	14	14	5.4E+03	5.3E+03	5.9E+02	5.8E+02			3.5E+04	1.5E-01	5.0E+04	1.1E-01	1.0E+04	5.4E-01	1.3E+04	4.2E-01	5.4E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Copper	7440-50-8	ug/kg	14	14	1.4E+04	1.2E+04	2.2E+03	2.0E+03			4.7E+06	2.7E-03	3.2E+04	4.4E-01	3.4E+04	4.1E-01	2.8E+04	5.0E-01	5.0E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Iron	7439-89-6	ug/kg	14	14	1.5E+07	1.5E+07	1.5E+06	1.5E+06			8.2E+07	1.8E-01	2.0E+07	7.5E-01	2.2E+08	6.8E-02	NSV	NSV	7.5E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Lead	7439-92-1	ug/kg	14	14	1.8E+04	1.6E+04	6.3E+03	5.7E+03			8.0E+05	2.0E-02	3.6E+04	5.0E-01	4.7E+04	3.9E-01	1.1E+04	**1.6E+00**	1.6E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Magnesium	7439-95-4	ug/kg	14	14	4.6E+07	5.0E+07	9.9E+06	1.1E+07			NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Manganese	7439-96-5	ug/kg	14	14	3.2E+05	3.9E+05	3.7E+04	4.5E+04			2.6E+06	1.5E-01	4.6E+05	7.0E-01	2.6E+05	**1.2E+00**	2.2E+05	**1.5E+00**	1.5E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Mercury	7439-97-6	ug/kg	14	6	2.1E+01	3.1E+01	1.1E+01	1.6E+01	8.0E+00	2.5E+01	3.5E+04	8.8E-04	1.8E+02	1.2E-01	1.5E+02	1.4E-01	5.1E-01	**4.1E+01**	4.1E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Molybdenum	7439-98-7	ug/kg	14	7	8.6E+02	6.7E+02	4.5E+02	3.5E+02	9.3E+01	3.6E+02	5.8E+05	1.2E-03	NSV	NSV	NSV	NSV	2.0E+03	4.3E-01	4.3E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Nickel	7440-02-0	ug/kg	14	14	1.5E+04	2.4E+04	1.5E+03	2.4E+03			2.2E+06	1.1E-02	2.3E+04	6.6E-01	2.1E+04	7.2E-01	3.8E+04	3.9E-01	7.2E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Potassium	7440-09-7	ug/kg	14	14	6.7E+06	6.7E+06	7.6E+05	7.6E+05			NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Selenium	7782-49-2	ug/kg	14	7	4.6E+02	2.6E+02	2.5E+02	1.4E+02	1.8E+02	5.7E+02	5.8E+05	4.5E-04	1.0E+02	**4.6E+00**	1.0E+03	4.6E-01	5.2E+02	8.8E-01	4.6E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Silver	7440-22-4	ug/kg	14	0					5.3E+01	1.7E+02	5.8E+05	ND	5.0E+02	ND	1.0E+03	ND	4.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Sodium	7440-23-5	ug/kg	14	14	2.9E+07	1.5E+07	6.5E+06	3.3E+06			NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Thallium	7440-28-0	ug/kg	14	0					8.9E+01	2.8E+02	1.2E+03	ND	NSV	NSV	NSV	NSV	1.0E+01	ND	NA	Yes	ND	No	NA	No	X	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Total Vanadium	7440-62-2	ug/kg	14	14	3.5E+04	3.4E+04	5.1E+03	5.0E+03			5.8E+05	5.9E-02	NSV	NSV	5.7E+04	6.1E-01	7.8E+03	**4.5E+00**	4.5E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Zinc	7440-66-6	ug/kg	14	14	8.0E+04	7.5E+04	1.7E+04	1.6E+04			3.5E+07	2.1E-03	1.2E+05	6.6E-01	1.5E+05	5.3E-01	4.6E+04	**1.7E+00**	1.7E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
1,1'-Biphenyl	92-52-4	ug/kg	14	0					1.8E+02	4.7E+02	2.0E+04	ND	NSV	NSV	NSV	NSV	6.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/kg	14	0					2.8E+01	7.4E+01	3.5E+04	ND	1.3E+03	ND	NSV	NSV	2.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,3,4,6-Tetrachlorophenol	58-90-2	ug/kg	14	0					8.7E+01	2.3E+02	2.5E+06	ND	1.3E+02	ND	NSV	NSV	2.0E+02	ND	NA	Yes	ND	No	NA	No	7%	Yes	--	Adequate	Adequate
2,4,5-Trichlorophenol	95-95-4	ug/kg	14	0					8.8E+01	2.4E+02	8.2E+06	ND	NSV	NSV	3.0E+00	ND	4.0E+03	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4,6-Trichlorophenol	88-06-2	ug/kg	14	0					4.7E+00	1.2E+01	8.2E+04	ND	2.1E+02	ND	6.0E+00	ND	4.0E+03	ND	NA	Yes	ND	No	NA	No	29%	Yes	--	Adequate	Adequate
2,2-Oxybis(1-chloropropane)	108-60-1	ug/kg	14	0					8.4E+01	2.2E+02	2.2E+04	ND	NSV	NSV	NSV	NSV	2.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dichlorophenol	120-83-2	ug/kg	14	0					9.5E+01	2.5E+02	2.5E+05	ND	8.2E+01	ND	2.1E-01	ND	8.8E+04	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dimethylphenol	105-67-9	ug/kg	14	0					1.8E+02	4.7E+02	1.6E+06	ND	3.0E+02	ND	1.8E+01	ND	1.0E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dinitrophenol	51-28-5	ug/kg	14	0					2.3E+02	6.1E+02	1.6E+05	ND	6.2E+00	ND	NSV	NSV	6.1E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dinitrotoluene	121-14-2	ug/kg	14	0					9.5E+01	2.5E+02	7.4E+03	ND	1.4E+01	ND	7.5E+02	ND	1.3E+03	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,6-Dinitrotoluene	606-20-2	ug/kg	14	0					1.1E+02	2.8E+02	1.5E+03	ND	4.0E+01	ND	6.2E+02	ND	3.3E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chloronaphthalene	91-58-7	ug/kg	14	0					8.6E+01	2.3E+02	6.0E+06	ND	4.2E+02	ND	NSV	NSV	1.2E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chlorophenol	95-57-8	ug/kg	14	0					9.4E+01	2.5E+02	5.8E+05	ND	3.2E+01	ND	3.3E-01	ND	2.4E+02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Methylphenol	95-48-7	ug/kg	14	0					6.2E+01	1.6E+02	4.1E+06	ND	5.5E+01	ND	8.0E+00	ND	4.0E+04	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Nitroaniline	88-74-4	ug/kg	14	0					9.0E+01	2.4E+02	8.0E+05	ND	NSV	NSV	NSV	NSV	7.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitrophenol	88-75-5	ug/kg	14	0					8.7E+01	2.3E+02	NSV	NSV	NSV	NSV	NSV	NSV	1.6E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
3,3'-Dichlorobenzidine	91-94-1	ug/kg	14	0					1.0E+02	2.7E+02	5.1E+03	ND	1.3E+02	ND	NSV	NSV	6.5E+02	ND	NA	Yes	ND	No	NA	No	43%	Yes	--	Adequate	Adequate
3-Nitroaniline	99-09-2	ug/kg	14	0					1.8E+02	4.7E+02	NSV	NSV	NSV	NSV	NSV	NSV	3.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4,6-Dinitro-2-methylphenol	534-52-1	ug/kg	14	0					8.6E+01	2.3E+02	6.6E+03	ND	1.0E+02	ND	NSV	NSV	1.4E+02	ND	NA	Yes	ND	No	NA	No	50%	Yes	--	Adequate	Adequate
4-Bromophenyl-phenylether	101-55-3	ug/kg	14	0					9.1E+01	2.4E+02	NSV	NSV	1.6E+03	ND	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chloro-3-methylphenol	59-50-7	ug/kg	14	0					9.8E+01	2.6E+02	8.2E+06	ND	3.9E+02	ND	NSV	NSV	8.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chloroaniline	106-47-8	ug/kg	14	0					6.2E+01	1.6E+02	1.1E+04	ND	1.5E+02	ND	NSV	NSV	1.1E+03	ND	NA	Yes	ND	No	NA	No	7%	Yes	--	Adequate	Adequate

Table 4-7
PRI 13 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Freshwater Sediment RBESL (ug/kg)	Freshwater Sediment ESR	Saltwater Sediment RBESL (ug/kg)	Saltwater Sediment ESR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
4-Chlorophenyl-phenylether	7005-72-3	ug/kg	14	0					9.9E+01	2.6E+02	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
3 & 4 Methylphenol	15831-10-4	ug/kg	14	0					3.5E+02	9.4E+02	8.2E+06	ND	2.0E+01	ND	1.0E+02	ND	1.6E+05	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
4-Nitroaniline	100-01-6	ug/kg	14	0					9.4E+01	2.5E+02	1.1E+05	ND	NSV	NSV	NSV	NSV	2.2E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitrophenol	100-02-7	ug/kg	14	0					3.0E+02	7.9E+02	NSV	NSV	1.3E+01	ND	NSV	NSV	5.1E+03	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Acetophenone	98-86-2	ug/kg	14	0					2.7E+01	7.1E+01	1.2E+07	ND	NSV	NSV	NSV	NSV	3.0E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzaldehyde	100-52-7	ug/kg	14	0					1.8E+02	4.7E+02	1.2E+07	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzylbutylphthalate	85-68-7	ug/kg	14	0					1.0E+02	2.7E+02	1.2E+06	ND	2.0E+03	ND	6.3E+01	ND	2.4E+02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Bis(2-chloroethoxy)methane	111-91-1	ug/kg	14	0					9.4E+01	2.5E+02	2.5E+05	ND	NSV	NSV	NSV	NSV	3.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
bis(2-Chloroethyl) ether	111-44-4	ug/kg	14	0					8.6E+01	2.3E+02	1.0E+03	ND	3.5E+03	ND	NSV	NSV	2.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bis(2-ethylhexyl)phthalate	117-81-7	ug/kg	14	0					1.0E+02	2.8E+02	1.6E+05	ND	1.8E+02	ND	1.8E+02	ND	9.3E+02	ND	NA	Yes	ND	No	NA	No	7%	Yes	--	Adequate	Adequate
Carbazole	86-74-8	ug/kg	14	0					1.0E+02	2.7E+02	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Dibenzofuran	132-64-9	ug/kg	14	0					9.2E+01	2.4E+02	1.0E+05	ND	4.5E+02	ND	1.1E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	No	43%	Yes	--	Adequate	Adequate
Diethyl phthalate	84-66-2	ug/kg	14	0					9.6E+01	2.6E+02	6.6E+07	ND	3.0E+02	ND	6.0E+00	ND	2.5E+04	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Dimethylphthalate	131-11-3	ug/kg	14	0					9.3E+01	2.5E+02	NSV	NSV	NSV	NSV	6.0E+00	ND	2.0E+05	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Di-n-butylphthalate	84-74-2	ug/kg	14	0					1.0E+02	2.8E+02	8.2E+06	ND	1.1E+03	ND	NSV	NSV	1.5E+02	ND	NA	Yes	ND	No	NA	No	7%	Yes	--	Adequate	Adequate
Di-n-octylphthalate	117-84-0	ug/kg	14	0					1.0E+02	2.8E+02	8.2E+05	ND	4.1E+04	ND	5.8E+02	ND	7.1E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorobenzene	118-74-1	ug/kg	14	3	3.2E+01	4.5E+01	3.1E+00	6.1E+00	2.4E+00	6.2E+00	9.6E+02	4.7E-02	2.0E+01	**1.6E+00**	6.0E+00	**5.3E+00**	2.0E+02	1.6E-01	5.3E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Hexachlorobutadiene	87-68-3	ug/kg	14	0					3.9E+00	1.0E+01	5.3E+03	ND	2.7E+01	ND	1.3E+00	ND	4.0E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Hexachlorocyclopentadiene	77-47-4	ug/kg	14	0					6.6E+01	1.8E+02	7.5E+02	ND	2.0E+02	ND	2.7E+01	ND	1.0E+02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Hexachloroethane	67-72-1	ug/kg	14	0					8.6E+01	2.3E+02	8.0E+03	ND	5.8E+02	ND	7.3E+01	ND	6.0E+02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Isophorone	78-59-1	ug/kg	14	0					9.9E+01	2.6E+02	2.4E+06	ND	4.3E+02	ND	NSV	NSV	1.4E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Nitrobenzene	98-95-3	ug/kg	14	0					8.1E+01	2.2E+02	2.2E+04	ND	1.5E+02	ND	2.1E+01	ND	1.3E+03	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
N-Nitrosodimethylamine	62-75-9	ug/kg	14	0					1.0E+02	2.7E+02	3.4E+01	ND	NSV	NSV	NSV	NSV	3.2E-02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
N-Nitroso-di-n-propylamine	621-64-7	ug/kg	14	0					9.0E+01	2.4E+02	3.3E+02	ND	NSV	NSV	NSV	NSV	5.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
N-Nitrosodiphenylamine	86-30-6	ug/kg	14	0					9.2E+01	2.4E+02	4.7E+05	ND	NSV	NSV	2.8E+01	ND	5.5E+02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Pentachlorophenol	87-86-5	ug/kg	14	0					2.6E+01	6.8E+01	4.0E+03	ND	7.0E+03	ND	1.7E+01	ND	2.1E+03	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Phenol	108-95-2	ug/kg	14	0					8.8E+01	2.4E+02	2.5E+07	ND	4.9E+01	ND	1.3E+02	ND	3.0E+04	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Methylnaphthalene	91-57-6	ug/kg	14	0					4.3E-01	1.2E+00	3.0E+05	ND	2.0E+01	ND	7.0E+01	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthene	83-32-9	ug/kg	14	0					4.7E-01	1.3E+00	4.5E+06	ND	6.7E+00	ND	1.6E+01	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthylene	208-96-8	ug/kg	14	0					3.3E-01	9.3E-01	NSV	NSV	5.9E+00	ND	4.4E+01	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Anthracene	120-12-7	ug/kg	14	1	6.3E-01	1.3E+00	6.3E-01	1.3E+00	4.0E-01	1.1E+00	2.3E+07	5.5E-08	5.7E+01	1.1E-02	8.5E+01	7.4E-03	NSV	NSV	1.1E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)anthracene	56-55-3	ug/kg	14	0					3.0E-01	8.5E-01	2.9E+03	ND	1.1E+02	ND	2.6E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)pyrene	50-32-8	ug/kg	14	0					4.0E-01	1.1E+00	2.9E+02	ND	1.5E+02	ND	4.3E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(b)fluoranthene	205-99-2	ug/kg	14	0					5.1E-01	1.4E+00	2.9E+03	ND	3.7E+01	ND	1.8E+03	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(g,h,i)perylene	191-24-2	ug/kg	14	0					1.0E+00	2.8E+00	NSV	NSV	1.7E+02	ND	6.7E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(k)fluoranthene	207-08-9	ug/kg	14	0					7.6E-01	2.1E+00	2.9E+04	ND	3.7E+01	ND	2.4E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Chrysene	218-01-9	ug/kg	14	4	1.0E+00	2.0E+00	4.0E-01	8.0E-01	3.5E-01	9.7E-01	2.9E+05	6.9E-06	1.7E+02	5.9E-03	3.8E+02	2.6E-03	NSV	NSV	5.9E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Dibenzo(a,h)anthracene	53-70-3	ug/kg	14	0					1.2E+00	3.4E+00	2.9E+02	ND	3.3E+01	ND	6.3E+01	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Fluoranthene	206-44-0	ug/kg	14	4	1.8E+00	3.6E+00	3.5E-01	7.0E-01	2.9E-01	8.2E-01	3.0E+06	1.2E-06	4.2E+02	4.3E-03	6.0E+02	3.0E-03	NSV	NSV	4.3E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Fluorene	86-73-7	ug/kg	14	0					4.9E-01	1.4E+00	3.0E+06	ND	7.7E+01	ND	1.9E+01	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	14	1	5.3E-01	1.1E+00	5.3E-01	1.1E+00	4.8E-01	1.3E+00	2.9E+03	3.7E-04	3.0E+01	1.8E-02	6.0E+02	8.8E-04	NSV	NSV	1.8E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Naphthalene	91-20-3	ug/kg	14	2	5.3E-01	1.1E+00	4.5E-01	9.0E-01	3.1E-01	8.6E-01	1.7E+04	6.2E-05	1.8E+02	2.9E-03	1.6E+02	3.3E-03	NSV	NSV	3.3E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Phenanthrene	85-01-8	ug/kg	14	12	2.1E+00	4.2E+00	4.1E-01	8.2E-01	4.3E-01	9.8E-01	NSV	NSV	2.0E+02	1.1E-02	2.4E+02	8.8E-03	NSV	NSV	1.1E-02	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Pyrene	129-00-0	ug/kg	14	3	1.4E+00	2.8E+00	5.8E-01	1.2E+00	3.5E-01	9.8E-01	2.3E+06	1.2E-06	2.0E+02	7.0E-03	6.7E+02	2.1E-03	NSV	NSV	7.0E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Low Molecular Weight PAH (ND=0)	LPAH-0	ug/kg	14	12	3.2E+00	6.4E+00	4.1E-01	8.2E-01	6.0E-01	1.4E+00	NSV	NSV	NSV	NSV	NSV	NSV	2.9E+04	1.1E-04	1.1E-04	Yes	No	Yes	No	Yes	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	ug/kg	14	12	4.1E+00	8.2E+00	1.6E+00	3.2E+00	1.7E+00	3.9E+00	NSV	NSV	NSV	NSV	NSV	NSV	2.9E+04	1.4E-04	1.4E-04	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
High Molecular Weight PAH (ND=0)	HPAH-0	ug/kg	14	4	4.7E+00	9.4E+00	7.5E-01	1.5E+00	1.2E+00	3.4E+00	NSV	NSV	NSV	NSV	NSV	NSV	1.1E+03	4.3E-03	4.3E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	ug/kg	14	4	7.0E+00	1.4E+01	3.4E+00	6.8E+00	2.8E+00	7.9E+00	NSV	NSV	NSV	NSV	NSV	NSV	1.1E+03	6.4E-03	6.4E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Perchlorate	14797-73-0	ug/kg	14	0					2.0E+01	5.7E+01	8.2E+04	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Cyanide, Total	74-90-8	ug/kg	14	0					2.1E+02	6.0E+02	1.2E+03	ND	1.2E+02	ND	2.3E+03	ND	1.3E+03	ND	NA	Yes	ND	No	NA	No	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation

Table 4-8
PRI 14 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Freshwater Sediment RBESL (ug/kg)	Freshwater Sediment ESR	Saltwater Sediment RBESL (ug/kg)	Saltwater Sediment ESR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Calculated TEQ (ND=0), Mammalian	CALC_DX_0	ug/kg	19	19	9.1E-01	1.5E+00	5.6E-04	4.6E-01			7.2E-02	**2.1E+01**	1.2E-04	**7.6E+03**	8.5E-04	**1.1E+03**	2.0E-04	**4.6E+03**	7.6E+03	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Mammalian	CALC_DX_2	ug/kg	19	19	9.1E-01	1.4E+00	7.1E-04	3.9E-01			7.2E-02	**2.0E+01**	1.2E-04	**7.6E+03**	8.5E-04	**1.1E+03**	2.0E-04	**4.6E+03**	7.6E+03	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	ug/kg	19	19	9.8E+01	1.7E+02	1.2E-03	4.2E+01			NSV	NSV	1.2E-04	**8.2E+05**	8.5E-04	**1.2E+05**	2.0E-04	**4.9E+05**	8.2E+05	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	ug/kg	19	19	9.8E+01	1.6E+02	1.4E-02	3.2E+01			NSV	NSV	1.2E-04	**8.2E+05**	8.5E-04	**1.2E+05**	2.0E-04	**4.9E+05**	8.2E+05	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total PCBs	1336-36-3	ug/kg	19	19	7.6E+02	1.0E+03	5.6E-01	7.3E+01			9.7E+02	**1.1E+00**	6.0E+01	**1.3E+01**	2.3E+01	**3.3E+01**	3.3E-01	**2.3E+03**	2.3E+03	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total Aluminum	7429-90-5	ug/kg	19	19	1.7E+07	1.6E+07	6.3E+05	6.0E+05			1.1E+08	1.5E-01	1.4E+07	**1.2E+00**	1.8E+07	9.4E-01	5.0E+03	**3.4E+03**	3.4E+03	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Antimony	7440-36-0	ug/kg	19	16	1.3E+03	1.1E+03	2.8E+02	2.4E+02	1.3E+02	1.3E+03	1.1E+05	1.0E-02	6.4E+04	2.0E-02	2.0E+03	6.5E-01	2.7E+02	**4.8E+00**	4.8E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Arsenic	7440-38-2	ug/kg	19	19	1.9E+04	1.9E+04	1.6E+03	1.6E+03			3.0E+03	**6.5E+00**	9.8E+03	**1.9E+00**	8.2E+03	**2.3E+00**	1.8E+04	**1.1E+00**	6.5E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Barium	7440-39-3	ug/kg	19	19	4.9E+05	3.0E+05	1.7E+04	1.1E+04			2.2E+07	1.4E-02	2.0E+04	**2.5E+01**	2.0E+04	**2.5E+01**	3.3E+05	**1.5E+00**	2.5E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Beryllium	7440-41-7	ug/kg	19	19	7.1E+02	7.5E+02	3.5E+01	3.7E+01			2.3E+05	3.2E-03	NSV	NSV	NSV	NSV	2.1E+04	3.4E-02	3.4E-02	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cadmium	7440-43-9	ug/kg	19	11	3.7E+02	3.2E+02	8.6E+01	7.4E+01	6.7E+01	6.3E+02	9.8E+04	3.2E-03	9.9E+02	3.7E-01	1.2E+03	3.1E-01	3.6E+02	**1.0E+00**	1.0E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Calcium	7440-70-2	ug/kg	19	19	2.8E+08	2.4E+08	5.2E+07	4.4E+07			NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Chromium	7440-47-3	ug/kg	19	19	1.8E+04	1.7E+04	9.9E+02	9.6E+02			6.3E+03	**2.8E+00**	4.3E+04	4.1E-01	8.1E+04	2.2E-01	2.6E+04	6.9E-01	2.8E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cobalt	7440-48-4	ug/kg	19	19	6.3E+03	6.2E+03	3.0E+02	3.0E+02			3.5E+04	1.8E-01	5.0E+04	1.3E-01	1.0E+04	6.3E-01	1.3E+04	4.8E-01	6.3E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Copper	7440-50-8	ug/kg	19	19	1.4E+04	1.2E+04	1.3E+03	1.2E+03			4.7E+06	2.7E-03	3.2E+04	4.4E-01	3.4E+04	4.1E-01	2.8E+04	5.0E-01	5.0E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Iron	7439-89-6	ug/kg	19	19	1.4E+07	1.4E+07	9.1E+05	9.0E+05			8.2E+07	1.7E-01	2.0E+07	7.0E-01	2.2E+08	6.4E-02	NSV	NSV	7.0E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Lead	7439-92-1	ug/kg	19	19	1.4E+04	1.3E+04	1.4E+03	1.3E+03			8.0E+05	1.6E-02	3.6E+04	3.9E-01	4.7E+04	3.0E-01	1.1E+04	**1.3E+00**	1.3E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Magnesium	7439-95-4	ug/kg	19	19	5.6E+07	6.0E+07	8.1E+06	8.7E+06			NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Manganese	7439-96-5	ug/kg	19	19	4.7E+05	5.8E+05	2.8E+04	3.4E+04			2.6E+06	2.2E-01	4.6E+05	**1.0E+00**	2.6E+05	**1.8E+00**	2.2E+05	**2.1E+00**	2.1E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Mercury	7439-97-6	ug/kg	19	7	5.4E+01	7.9E+01	1.2E+01	1.8E+01	8.7E+00	1.6E+01	3.5E+04	2.3E-03	1.8E+02	3.0E-01	1.5E+02	3.6E-01	5.1E-01	**1.1E+02**	1.1E+02	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Molybdenum	7439-98-7	ug/kg	19	15	2.2E+04	1.7E+04	1.1E+02	8.6E+01	4.2E+01	3.2E+02	5.8E+05	3.0E-02	NSV	NSV	NSV	NSV	2.0E+03	**1.1E+01**	1.1E+01	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total Nickel	7440-02-0	ug/kg	19	19	1.6E+04	2.5E+04	7.9E+02	1.2E+03			2.2E+06	1.1E-02	2.3E+04	7.0E-01	2.1E+04	7.7E-01	3.8E+04	4.2E-01	7.7E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Potassium	7440-09-7	ug/kg	19	19	9.1E+06	9.1E+06	6.5E+05	6.5E+05			NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Selenium	7782-49-2	ug/kg	19	8	7.2E+02	4.1E+02	2.2E+02	1.3E+02	1.3E+02	1.3E+03	5.8E+05	7.1E-04	1.0E+02	**7.2E+00**	1.0E+03	7.2E-01	5.2E+02	**1.4E+00**	7.2E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Silver	7440-22-4	ug/kg	19	3	9.4E+01	9.4E+01	4.3E+01	4.3E+01	4.0E+01	3.8E+02	5.8E+05	1.6E-04	5.0E+02	1.9E-01	1.0E+03	9.4E-02	4.2E+03	2.2E-02	1.9E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Sodium	7440-23-5	ug/kg	19	19	2.2E+08	1.1E+08	3.3E+06	1.7E+06			NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	NA	Yes	No	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Thallium	7440-28-0	ug/kg	19	2	1.8E+02	1.8E+02	1.4E+02	1.4E+02	6.7E+01	6.3E+02	1.2E+03	1.5E-01	NSV	NSV	NSV	NSV	1.0E+01	**1.8E+01**	1.8E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Vanadium	7440-62-2	ug/kg	19	19	4.0E+04	3.9E+04	1.6E+03	1.6E+03			5.8E+05	6.7E-02	NSV	NSV	5.7E+04	7.0E-01	7.8E+03	**5.1E+00**	5.1E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Zinc	7440-66-6	ug/kg	19	19	5.2E+04	4.9E+04	3.2E+03	3.0E+03			3.5E+07	1.4E-03	1.2E+05	4.3E-01	1.5E+05	3.5E-01	4.6E+04	**1.1E+00**	1.1E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
1,1'-Biphenyl	92-52-4	ug/kg	19	0					1.7E+02	2.1E+03	2.0E+04	ND	NSV	NSV	NSV	NSV	6.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/kg	19	0					2.6E+01	3.3E+02	3.5E+04	ND	1.3E+03	ND	NSV	NSV	2.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,3,4,6-Tetrachlorophenol	58-90-2	ug/kg	19	0					8.3E+01	1.1E+03	2.5E+06	ND	1.3E+02	ND	NSV	NSV	2.0E+02	ND	NA	Yes	ND	No	NA	No	18%	Yes	--	Adequate	Adequate
2,4-Dimethylphenol	105-67-9	ug/kg	19	0					1.7E+02	2.1E+03	1.6E+06	ND	3.0E+02	ND	1.8E+01	ND	1.0E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Methylphenol	95-48-7	ug/kg	19	0					5.9E+01	7.4E+02	4.1E+06	ND	5.5E+01	ND	8.0E+00	ND	4.0E+04	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Nitroaniline	88-74-4	ug/kg	19	0					8.5E+01	1.1E+03	8.0E+05	ND	NSV	NSV	NSV	NSV	7.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitrophenol	88-75-5	ug/kg	19	0					8.3E+01	1.0E+03	NSV	NSV	NSV	NSV	NSV	NSV	1.6E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,2-Oxybis(1-chloropropane)	108-60-1	ug/kg	19	0					8.0E+01	1.0E+03	2.2E+04	ND	NSV	NSV	NSV	NSV	2.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dinitrophenol	51-28-5	ug/kg	19	0					2.2E+02	2.7E+03	1.6E+05	ND	6.2E+00	ND	NSV	NSV	6.1E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,6-Dinitrotoluene	606-20-2	ug/kg	19	0					1.0E+02	1.3E+03	1.5E+03	ND	4.0E+01	ND	6.2E+02	ND	3.3E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dinitrotoluene	121-14-2	ug/kg	19	0					9.0E+01	1.1E+03	7.4E+03	ND	1.4E+01	ND	7.5E+02	ND	1.3E+03	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dichlorophenol	120-83-2	ug/kg	19	0					9.0E+01	1.1E+03	2.5E+05	ND	8.2E+01	ND	2.1E-01	ND	8.8E+04	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chloronaphthalene	91-58-7	ug/kg	19	0					8.2E+01	1.0E+03	6.0E+06	ND	4.2E+02	ND	NSV	NSV	1.2E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4,5-Trichlorophenol	95-95-4	ug/kg	19	0					8.4E+01	1.1E+03	8.2E+06	ND	NSV	NSV	3.0E+00	ND	4.0E+03	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4,6-Trichlorophenol	88-06-2	ug/kg	18	0					4.5E+00	8.8E+00	8.2E+04	ND	2.1E+02	ND	6.0E+00	ND	4.0E+03	ND	NA	Yes	ND	No	NA	No	50%	Yes	--	Adequate	Adequate
3-Nitroaniline	99-09-2	ug/kg	19	0					1.7E+02	2.1E+03	NSV	NSV	NSV	NSV	NSV	NSV	3.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Chlorophenol	95-57-8	ug/kg	19	0					8.9E+01	1.1E+03	5.8E+05	ND	3.2E+01	ND	3.3E-01	ND	2.4E+02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
4-Bromophenyl-phenylether	101-55-3	ug/kg	19	0					8.6E+01	1.1E+03	NSV	NSV	1.6E+03	ND	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chloro-3-methylphenol	59-50-7	ug/kg	19	0					9.3E+01	1.2E+03	8.2E+06	ND	3.9E+02	ND	NSV	NSV	8.0E+03	ND	NA	Yes	ND	No	NA	No	0%	Yes	--	Adequate	Adequate
4-Chloroaniline	106-47-8	ug/kg	19	0					5.9E+01	7.4E+02	1.1E+04	ND	1.5E+02	ND	NSV	NSV	1.1E+03	ND	NA	Yes	ND	No	NA	No	0%	Yes	--	Adequate	Adequate
4-Chlorophenyl-phenylether	7005-72-3	ug/kg	19	0					9.4E+01	1.2E+03	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
3 & 4 Methylphenol	15831-10-4	ug/kg	19	0					3.3E+02	4.2E+03	8.2E+06	ND	2.0E+01	ND	1.0E+02	ND	1.6E+05	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
4-Nitroaniline	100-01-6	ug/kg	19	0					8.9E+01	1.1E+03	1.1E+05	ND	NSV	NSV	NSV	NSV	2.2E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitrophenol	100-02-7	ug/kg	19	0					2.8E+02	3.6E+03	NSV	NSV	1.3E+01	ND	NSV	NSV	5.1E+03	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
3,3'-Dichlorobenzidine	91-94-1	ug/kg	19	0					9.5E+01	1.2E+03	5.1E+03	ND	1.3E+02	ND	NSV	NSV	6.5E+02	ND	NA	Yes	ND	No	NA	No	47%	Yes	--	Adequate	Adequate

Table 4-8
PRI 14 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Freshwater Sediment RBESL (ug/kg)	Freshwater Sediment ESR	Saltwater Sediment RBESL (ug/kg)	Saltwater Sediment ESR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Acetophenone	98-86-2	ug/kg	19	8	4.5E+02	9.0E+02	4.2E+01	8.4E+01	2.5E+01	3.1E+02	1.2E+07	7.5E-05	NSV	NSV	NSV	NSV	3.0E+05	1.5E-03	1.5E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzaldehyde	100-52-7	ug/kg	19	0					1.7E+02	2.1E+03	1.2E+07	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bis(2-chloroethoxy)methane	111-91-1	ug/kg	19	0					8.9E+01	1.1E+03	2.5E+05	ND	NSV	NSV	NSV	NSV	3.0E+02	ND	NA	Yes	ND	No	NA	No	0%	Yes	--	Adequate	Adequate
bis(2-Chloroethyl) ether	111-44-4	ug/kg	19	0					8.2E+01	1.0E+03	1.0E+03	ND	3.5E+03	ND	NSV	NSV	2.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bis(2-ethylhexyl)phthalate	117-81-7	ug/kg	19	0					9.9E+01	1.3E+03	1.6E+05	ND	1.8E+02	ND	1.8E+02	ND	9.3E+02	ND	NA	Yes	ND	No	NA	No	6%	Yes	--	Adequate	Adequate
4,6-Dinitro-2-methylphenol	534-52-1	ug/kg	19	0					8.2E+01	1.0E+03	6.6E+03	ND	1.0E+02	ND	NSV	NSV	1.4E+02	ND	NA	Yes	ND	No	NA	No	53%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Carbazole	86-74-8	ug/kg	19	0					9.6E+01	1.2E+03	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Dibenzofuran	132-64-9	ug/kg	19	0					8.7E+01	1.1E+03	1.0E+05	ND	4.5E+02	ND	1.1E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	No	47%	Yes	--	Adequate	Adequate
Diethyl phthalate	84-66-2	ug/kg	19	0					9.1E+01	1.2E+03	6.6E+07	ND	3.0E+02	ND	6.0E+00	ND	2.5E+04	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Dimethylphthalate	131-11-3	ug/kg	19	0					8.8E+01	1.1E+03	NSV	NSV	NSV	NSV	6.0E+00	ND	2.0E+05	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Benzylbutylphthalate	85-68-7	ug/kg	19	0					9.6E+01	1.2E+03	1.2E+06	ND	2.0E+03	ND	6.3E+01	ND	2.4E+02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Di-n-octylphthalate	117-84-0	ug/kg	19	0					9.8E+01	1.2E+03	8.2E+05	ND	4.1E+04	ND	5.8E+02	ND	7.1E+05	ND	NA	Yes	ND	No	NA	No	0%	Yes	--	Adequate	Adequate
Hexachlorobenzene	118-74-1	ug/kg	18	11	9.7E+03	1.3E+04	8.8E+00	1.4E+01	2.5E+00	4.4E+00	9.6E+02	**1.4E+01**	2.0E+01	**4.9E+02**	6.0E+00	**1.6E+03**	2.0E+02	**4.9E+01**	1.6E+03	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Di-n-butylphthalate	84-74-2	ug/kg	19	0					9.8E+01	1.2E+03	8.2E+06	ND	1.1E+03	ND	NSV	NSV	1.5E+02	ND	NA	Yes	ND	No	NA	No	12%	Yes	--	Adequate	Adequate
Hexachlorobutadiene	87-68-3	ug/kg	18	0					3.7E+00	7.4E+00	5.3E+03	ND	2.7E+01	ND	1.3E+00	ND	4.0E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Hexachlorocyclopentadiene	77-47-4	ug/kg	19	0					6.3E+01	7.9E+02	7.5E+02	ND	2.0E+02	ND	2.7E+01	ND	1.0E+02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Isophorone	78-59-1	ug/kg	19	0					9.4E+01	1.2E+03	2.4E+06	ND	4.3E+02	ND	NSV	NSV	1.4E+05	ND	NA	Yes	ND	No	NA	No	0%	Yes	--	Adequate	Adequate
Hexachloroethane	67-72-1	ug/kg	19	0					8.2E+01	1.0E+03	8.0E+03	ND	5.8E+02	ND	7.3E+01	ND	6.0E+02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
N-Nitrosodimethylamine	62-75-9	ug/kg	18	0					9.7E+01	1.9E+02	3.4E+01	ND	NSV	NSV	NSV	NSV	3.2E-02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
N-Nitroso-di-n-propylamine	621-64-7	ug/kg	19	0					8.5E+01	1.1E+03	3.3E+02	ND	NSV	NSV	NSV	NSV	5.4E+02	ND	NA	Yes	ND	No	NA	No	0%	Yes	--	Adequate	Adequate
Nitrobenzene	98-95-3	ug/kg	19	0					7.7E+01	9.7E+02	2.2E+04	ND	1.5E+02	ND	2.1E+01	ND	1.3E+03	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Pentachlorophenol	87-86-5	ug/kg	18	0					2.4E+01	4.8E+01	4.0E+03	ND	7.0E+03	ND	1.7E+01	ND	2.1E+03	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Phenol	108-95-2	ug/kg	19	1	1.7E+02	3.4E+02	1.7E+02	3.4E+02	8.4E+01	1.1E+03	2.5E+07	1.4E-05	4.9E+01	**3.5E+00**	1.3E+02	**1.3E+00**	3.0E+04	5.7E-03	3.5E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
N-Nitrosodiphenylamine	86-30-6	ug/kg	19	0					8.7E+01	1.1E+03	4.7E+05	ND	NSV	NSV	2.8E+01	ND	5.5E+02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Methylnaphthalene	91-57-6	ug/kg	19	6	2.0E+01	4.0E+01	7.7E-01	1.5E+00	4.2E-01	2.8E+00	3.0E+05	1.3E-04	2.0E+01	1.0E+00	7.0E+01	2.9E-01	NSV	NSV	1.0E+00	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthene	83-32-9	ug/kg	19	1	2.7E+01	5.4E+01	2.7E+01	5.4E+01	4.6E-01	3.1E+00	4.5E+06	1.2E-05	6.7E+00	**4.0E+00**	1.6E+01	**1.7E+00**	NSV	NSV	4.0E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Acenaphthylene	208-96-8	ug/kg	19	1	1.1E+01	2.2E+01	1.1E+01	2.2E+01	3.2E-01	2.2E+00	NSV	NSV	5.9E+00	**1.9E+00**	4.4E+01	2.5E-01	NSV	NSV	1.9E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Anthracene	120-12-7	ug/kg	19	3	1.5E+00	3.0E+00	5.6E-01	1.1E+00	3.9E-01	2.6E+00	2.3E+07	1.3E-07	5.7E+01	2.6E-02	8.5E+01	1.8E-02	NSV	NSV	2.6E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)anthracene	56-55-3	ug/kg	19	0					3.0E-01	2.0E+00	2.9E+03	ND	1.1E+02	ND	2.6E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)pyrene	50-32-8	ug/kg	19	0					3.9E-01	2.6E+00	2.9E+02	ND	1.5E+02	ND	4.3E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(b)fluoranthene	205-99-2	ug/kg	19	0					4.9E-01	3.3E+00	2.9E+03	ND	3.7E+01	ND	1.8E+03	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(g,h,i)perylene	191-24-2	ug/kg	19	0					9.8E-01	6.5E+00	NSV	NSV	1.7E+02	ND	6.7E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(k)fluoranthene	207-08-9	ug/kg	19	0					7.4E-01	5.0E+00	2.9E+04	ND	3.7E+01	ND	2.4E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Chrysene	218-01-9	ug/kg	19	4	1.0E+00	2.0E+00	3.9E-01	7.8E-01	3.4E-01	2.3E+00	2.9E+05	6.9E-06	1.7E+02	5.9E-03	3.8E+02	2.6E-03	NSV	NSV	5.9E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Dibenzo(a,h)anthracene	53-70-3	ug/kg	19	0					1.2E+00	7.8E+00	2.9E+02	ND	3.3E+01	ND	6.3E+01	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Fluoranthene	206-44-0	ug/kg	19	5	5.8E-01	1.2E+00	4.0E-01	8.0E-01	2.9E-01	1.9E+00	3.0E+06	3.9E-07	4.2E+02	1.4E-03	6.0E+02	9.7E-04	NSV	NSV	1.4E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Fluorene	86-73-7	ug/kg	19	1	1.0E+00	2.0E+00	1.0E+00	2.0E+00	4.8E-01	3.2E+00	3.0E+06	6.7E-07	7.7E+01	1.3E-02	1.9E+01	5.3E-02	NSV	NSV	5.3E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	19	0					4.7E-01	3.1E+00	2.9E+03	ND	3.0E+01	ND	6.0E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Naphthalene	91-20-3	ug/kg	19	4	1.7E+00	3.4E+00	6.0E-01	1.2E+00	3.0E-01	9.0E+00	1.7E+04	2.0E-04	1.8E+02	9.4E-03	1.6E+02	1.1E-02	NSV	NSV	1.1E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Phenanthrene	85-01-8	ug/kg	19	10	1.4E+01	2.8E+01	4.5E-01	9.0E-01	3.4E-01	2.3E+00	NSV	NSV	2.0E+02	7.0E-02	2.4E+02	5.8E-02	NSV	NSV	7.0E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Pyrene	129-00-0	ug/kg	19	2	5.7E-01	1.1E+00	5.1E-01	1.0E+00	3.4E-01	2.3E+00	2.3E+06	5.0E-07	2.0E+02	2.9E-03	6.7E+02	8.5E-04	NSV	NSV	2.9E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Low Molecular Weight PAH (ND=0)	LPAH-0	ug/kg	19	11	7.2E+01	1.4E+02	4.5E-01	9.0E-01	4.8E-01	9.0E+00	NSV	NSV	NSV	NSV	NSV	NSV	2.9E+04	2.5E-03	2.5E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	ug/kg	19	11	7.3E+01	1.5E+02	1.8E+00	3.6E+00	1.4E+00	9.1E+00	NSV	NSV	NSV	NSV	NSV	NSV	2.9E+04	2.5E-03	2.5E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
High Molecular Weight PAH (ND=0)	HPAH-0	ug/kg	19	6	1.7E+00	3.4E+00	4.7E-01	9.4E-01	1.2E+00	7.8E+00	NSV	NSV	NSV	NSV	NSV	NSV	1.1E+03	1.5E-03	1.5E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	ug/kg	19	6	6.1E+00	1.2E+01	3.5E+00	7.0E+00	2.8E+00	1.8E+01	NSV	NSV	NSV	NSV	NSV	NSV	1.1E+03	5.5E-03	5.5E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
1,4-Dioxane	123-91-1	ug/kg	10	0					4.1E+01	8.6E+01	2.4E+04	ND	1.2E+02	ND	2.3E+03	ND	2.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1-Dichloroethane	75-34-3	ug/kg	10	0					3.1E-01	6.4E-01	1.6E+04	ND	5.8E-01	ND	NSV	NSV	2.0E+04	ND	NA	Yes	ND	No	NA	No	30%	Yes	--	Adequate	Adequate
1,1-Dichloroethene	75-35-4	ug/kg	10	0					2.7E-01	5.7E-01	1.0E+05	ND	1.9E+01	ND	NSV	NSV	8.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dibromo-3-chloropropane	96-12-8	ug/kg	10	0					9.3E-01	1.9E+00	6.4E+01	ND	NSV	NSV	NSV	NSV	3.5E+01	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dibromoethane	106-93-4	ug/kg	10	0					2.8E-01	5.9E-01	1.6E+02	ND	NSV	NSV	NSV	NSV	1.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dichlorobenzene	95-50-1	ug/kg	10	0					6.8E-01	1.4E+00	9.3E+05	ND	2.9E+02	ND	1.3E+01	ND	3.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dichloroethane	107-06-2	ug/kg	10	0					7.7E-01	1.6E+00	2.0E+03	ND	2.6E+02	ND	NSV	NSV	2.1E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
cis-1,2-Dichloroethene	156-59-2	ug/kg	10	0					9.4E-01	2.0E+00	2.3E+05	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
trans-1,2-Dichloroethene	156-60-5	ug/kg	10	0					4.0E-01	8.3E-01	2.3E+06	ND	6.5E+02	ND	NSV	NSV	7.8E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dichloropropane	78-87-5	ug/kg	10	0					6.3E-01	1.3E+00	4.4E+03	ND	3.3E+02	ND	NSV	NSV	3.3E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,3-Dichlorobenzene	541-73-1	ug/kg	10	0					3.2E-01	6.6E-01	NSV	NSV	1.3E+03	ND	NSV	NSV	3.8E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
cis-1,3-Dichloropropene	10061-01-5	ug/kg	10	0					6.8E-01	1.4E+00	8.2E+03	ND	NSV	NSV	NSV	NSV	4.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
trans-1,3-Dichloropropene	10061-02-6	ug/kg	10	0					7.9E-01	1.6E+00	8.2E+03	ND	NSV	NSV	NSV	NSV	4.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,4-Dichlorobenzene	106-46-7	ug/kg	10	0					8.2E-01	1.7E+00	1.1E+04	ND	3.2E+02	ND	1.1E+02	ND	5.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,1-Trichloroethane	71-55-6	ug/kg	10	0					3.8E-01	7.9E-01	3.6E+06	ND	2.1E+02	ND	NSV	NSV	3.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,2-Trichloroethane	79-00-5	ug/kg	10	0					4.6E-01	9.7E-01	6.3E+02	ND	5.2E+02	ND	NSV	NSV	2.9E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	76-13-1	ug/kg	10	0					8.8E-01	1.8E+00	1.7E+07	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-8
PRI 14 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Corrected Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Corrected Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Freshwater Sediment RBESL (ug/kg)	Freshwater Sediment ESR	Saltwater Sediment RBESL (ug/kg)	Saltwater Sediment ESR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
1,2,3-Trichlorobenzene	87-61-6	ug/kg	10	0					7.9E-01	1.6E+00	9.3E+04	ND	NSV	NSV	NSV	NSV	2.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,4-Trichlorobenzene	120-82-1	ug/kg	10	0					7.9E-01	1.6E+00	2.6E+04	ND	5.1E+03	ND	4.8E+00	ND	1.1E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,2,2-Tetrachloroethane	79-34-5	ug/kg	10	0					7.2E-01	1.5E+00	2.7E+03	ND	8.5E+02	ND	NSV	NSV	1.3E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Butanone	78-93-3	ug/kg	10	7	2.4E+01	2.4E+01	5.9E+00	5.9E+00	1.6E+00	2.9E+00	1.9E+07	1.3E-06	4.2E+01	5.7E-01	NSV	NSV	9.0E+04	2.7E-04	5.7E-01	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
2-Hexanone	591-78-6	ug/kg	10	1	1.1E+00	1.1E+00	1.1E+00	1.1E+00	7.8E-01	1.6E+00	1.3E+05	8.5E-06	5.8E+01	1.9E-02	NSV	NSV	1.3E+04	8.7E-05	1.9E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Methyl-2-pentanone	108-10-1	ug/kg	10	1	1.5E+00	1.5E+00	1.5E+00	1.5E+00	9.7E-01	2.0E+00	5.6E+06	2.7E-07	2.5E+01	6.0E-02	NSV	NSV	4.4E+05	3.4E-06	6.0E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Acetone	67-64-1	ug/kg	10	10	7.3E+01	7.3E+01	7.3E+00	7.3E+00			6.7E+07	1.1E-06	9.9E+00	**7.4E+00**	8.0E+02	9.1E-02	2.5E+03	2.9E-02	7.4E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Benzene	71-43-2	ug/kg	10	0					2.7E-01	5.7E-01	5.1E+03	ND	1.4E+02	ND	NSV	NSV	2.6E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bromochloromethane	74-97-5	ug/kg	10	0					9.9E-01	2.1E+00	6.3E+04	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bromodichloromethane	75-27-4	ug/kg	10	0					5.6E-01	1.2E+00	1.3E+03	ND	NSV	NSV	NSV	NSV	5.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bromoform	75-25-2	ug/kg	10	0					4.2E-01	8.8E-01	8.6E+04	ND	4.9E+02	ND	NSV	NSV	1.6E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bromomethane	74-83-9	ug/kg	10	0					9.1E-01	1.9E+00	3.0E+03	ND	1.4E+00	ND	NSV	NSV	2.4E+02	ND	NA	Yes	ND	No	NA	No	50%	Yes	--	Adequate	Adequate
Carbon disulfide	75-15-0	ug/kg	10	9	5.0E+00	5.0E+00	1.4E+00	1.4E+00	6.0E-01	6.0E-01	3.5E+05	1.4E-05	2.4E+01	2.1E-01	NSV	NSV	9.4E+01	5.3E-02	2.1E-01	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Carbon tetrachloride	56-23-5	ug/kg	10	0					5.6E-01	1.2E+00	2.9E+03	ND	1.5E+03	ND	NSV	NSV	3.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Chlorobenzene	108-90-7	ug/kg	10	0					3.1E-01	6.4E-01	1.3E+05	ND	2.9E+02	ND	NSV	NSV	1.3E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Cyclohexane	110-82-7	ug/kg	10	0					2.8E+00	5.8E+00	2.7E+06	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dibromochloromethane	124-48-1	ug/kg	10	0					2.2E-01	4.6E-01	3.3E+03	ND	NSV	NSV	NSV	NSV	2.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Chloroethane	75-00-3	ug/kg	10	0					4.7E-01	9.9E-01	5.7E+06	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Chloroform	67-66-3	ug/kg	10	2	1.1E+00	1.1E+00	7.0E-01	7.0E-01	2.7E-01	5.7E-01	1.4E+03	7.9E-04	5.9E+01	1.9E-02	3.8E+02	2.9E-03	1.2E+03	9.2E-04	1.9E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Chloromethane	74-87-3	ug/kg	10	0					5.3E-01	1.1E+00	4.6E+04	ND	NSV	NSV	NSV	NSV	1.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dichlorodifluoromethane (Freon-12)	75-71-8	ug/kg	10	0					9.4E-01	2.0E+00	3.7E+04	ND	NSV	NSV	NSV	NSV	4.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Ethyl benzene	100-41-4	ug/kg	10	0					3.6E-01	7.5E-01	2.5E+04	ND	1.8E+02	ND	4.0E+00	ND	5.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Isopropylbenzene	98-82-8	ug/kg	10	0					5.5E-01	1.1E+00	9.9E+05	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Methyl tertbutyl ether (MTBE)	1634-04-4	ug/kg	10	0					6.3E-01	1.3E+00	2.1E+05	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dichloromethane (Methylene chloride)	75-09-2	ug/kg	10	0					8.9E-01	1.8E+00	3.2E+05	ND	1.6E+02	ND	NSV	NSV	4.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Styrene	100-42-5	ug/kg	10	0					3.3E-01	6.8E-01	3.5E+06	ND	2.5E+02	ND	NSV	NSV	4.7E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Tetrachloroethene	127-18-4	ug/kg	10	0					6.4E-01	1.3E+00	3.9E+04	ND	9.9E+02	ND	5.7E+01	ND	9.9E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Toluene	108-88-3	ug/kg	10	0					6.4E-01	1.3E+00	4.7E+06	ND	1.2E+03	ND	NSV	NSV	5.5E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Trichloroethene	79-01-6	ug/kg	10	0					6.3E-01	1.3E+00	1.9E+03	ND	1.1E+02	ND	NSV	NSV	1.2E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Trichlorofluoromethane (Freon-11)	75-69-4	ug/kg	10	0					3.6E-01	7.5E-01	3.1E+05	ND	NSV	NSV	NSV	NSV	1.6E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Vinyl chloride	75-01-4	ug/kg	10	0					3.8E-01	7.9E-01	1.7E+03	ND	2.0E+02	ND	1.7E+03	ND	6.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
o-Xylene	95-47-6	ug/kg	10	0					3.5E-01	7.2E-01	2.8E+05	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
m,p Xylenes	179601-23-1	ug/kg	10	0					8.5E-01	1.8E+00	2.4E+05	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Perchlorate	14797-73-0	ug/kg	18	0					2.0E+01	2.6E+02	8.2E+04	ND	NSV	NSV	NSV	NSV	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Cyanide, Total	74-90-8	ug/kg	19	2	7.9E+02	7.9E+02	3.3E+02	3.3E+02	2.2E+02	4.0E+02	1.2E+03	6.6E-01	1.2E+02	**6.6E+00**	2.3E+03	3.4E-01	1.3E+03	6.1E-01	6.6E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate

Table 4-9
PRI 15 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Calculated TEQ (ND=0), Mammalian	CALC_DX_0	ug/kg	15	15	5.2E-03	7.5E-05			7.2E-02	7.2E-02	2.0E-04	**2.6E+01**	2.6E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Mammalian	CALC_DX_2	ug/kg	15	15	5.5E-03	2.3E-04			7.2E-02	7.6E-02	2.0E-04	**2.8E+01**	2.8E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	ug/kg	15	15	3.6E-01	1.3E-04			NSV	NSV	2.0E-04	**1.8E+03**	1.8E+03	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	ug/kg	15	15	4.4E-01	1.2E-02			NSV	NSV	2.0E-04	**2.2E+03**	2.2E+03	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total PCBs	1336-36-3	ug/kg	15	15	2.4E+01	3.2E-01			9.7E+02	2.5E-02	3.3E-01	**7.3E+01**	7.3E+01	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total Aluminum	7429-90-5	ug/kg	15	15	1.5E+07	4.8E+06			1.1E+08	1.4E-01	5.0E+03	**3.0E+03**	3.0E+03	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Antimony	7440-36-0	ug/kg	15	13	4.2E+02	2.3E+02	2.1E+02	2.3E+02	1.1E+05	3.8E-03	2.7E+02	**1.6E+00**	1.6E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Arsenic	7440-38-2	ug/kg	15	15	6.8E+03	3.0E+03			3.0E+03	**2.3E+00**	1.8E+04	3.8E-01	2.3E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Barium	7440-39-3	ug/kg	15	15	4.2E+05	7.4E+04			2.2E+07	1.9E-02	3.3E+05	**1.3E+00**	1.3E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Beryllium	7440-41-7	ug/kg	15	15	6.1E+02	2.1E+02			2.3E+05	2.7E-03	2.1E+04	2.9E-02	2.9E-02	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cadmium	7440-43-9	ug/kg	15	15	5.1E+02	1.8E+02			9.8E+04	5.2E-03	3.6E+02	**1.4E+00**	1.4E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Calcium	7440-70-2	ug/kg	15	15	2.0E+08	2.5E+07			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Chromium	7440-47-3	ug/kg	15	15	1.7E+04	5.5E+03			6.3E+03	**2.7E+00**	2.6E+04	6.5E-01	2.7E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cobalt	7440-48-4	ug/kg	15	15	5.4E+03	1.8E+03			3.5E+04	1.5E-01	1.3E+04	4.2E-01	4.2E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Copper	7440-50-8	ug/kg	15	15	2.1E+04	7.4E+03			4.7E+06	4.5E-03	2.8E+04	7.5E-01	7.5E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Iron	7439-89-6	ug/kg	15	15	1.3E+07	4.6E+06			8.2E+07	1.6E-01	NSV	NSV	1.6E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Lead	7439-92-1	ug/kg	15	15	2.2E+04	8.9E+03			8.0E+05	2.8E-02	1.1E+04	**2.0E+00**	2.0E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Magnesium	7439-95-4	ug/kg	15	15	3.2E+07	6.8E+06			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Manganese	7439-96-5	ug/kg	15	15	5.5E+05	1.6E+05			2.6E+06	2.1E-01	2.2E+05	**2.5E+00**	2.5E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Mercury	7439-97-6	ug/kg	15	13	4.1E+01	8.8E+00	8.5E+00	8.9E+00	3.5E+04	1.2E-03	5.1E-01	**8.0E+01**	8.0E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Molybdenum	7439-98-7	ug/kg	15	15	1.4E+03	1.6E+02			5.8E+05	2.4E-03	2.0E+03	7.0E-01	7.0E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Nickel	7440-02-0	ug/kg	15	15	1.4E+04	4.4E+03			2.2E+06	6.4E-03	3.8E+04	3.7E-01	3.7E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Potassium	7440-09-7	ug/kg	15	15	6.4E+06	1.7E+06			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Selenium	7782-49-2	ug/kg	15	11	3.9E+02	2.5E+02	2.1E+02	2.3E+02	5.8E+05	6.7E-04	5.2E+02	7.5E-01	7.5E-01	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Total Silver	7440-22-4	ug/kg	15	6	8.5E+01	5.9E+01	6.4E+01	7.0E+01	5.8E+05	1.5E-04	4.2E+03	2.0E-02	2.0E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Sodium	7440-23-5	ug/kg	15	15	1.6E+07	2.8E+05			NSV	NSV	NSV	NSV	NA	No	NA	Yes	No	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Thallium	7440-28-0	ug/kg	15	4	1.3E+02	1.1E+02	1.0E+02	1.2E+02	1.2E+03	1.1E-01	1.0E+01	**1.3E+01**	1.3E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Vanadium	7440-62-2	ug/kg	15	15	2.3E+04	9.7E+03			5.8E+05	4.0E-02	7.8E+03	**2.9E+00**	2.9E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Zinc	7440-66-6	ug/kg	15	15	6.3E+04	2.2E+04			3.5E+07	1.8E-03	4.6E+04	**1.4E+00**	1.4E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
1,1'-Biphenyl	92-52-4	ug/kg	15	0			1.6E+02	1.9E+02	2.0E+04	ND	6.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/kg	15	0			2.5E+01	3.1E+01	3.5E+04	ND	2.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dimethylphenol	105-67-9	ug/kg	15	0			1.6E+02	2.0E+02	1.6E+06	ND	1.0E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chlorophenol	95-57-8	ug/kg	15	0			8.6E+01	1.0E+02	5.8E+05	ND	2.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Methylphenol	95-48-7	ug/kg	15	0			5.7E+01	6.8E+01	4.1E+06	ND	4.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitroaniline	88-74-4	ug/kg	15	0			8.2E+01	9.9E+01	8.0E+05	ND	7.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitrophenol	88-75-5	ug/kg	15	0			8.0E+01	9.6E+01	NSV	NSV	1.6E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,2-Oxybis(1-chloropropane)	108-60-1	ug/kg	15	0			7.7E+01	9.3E+01	2.2E+04	ND	2.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dinitrophenol	51-28-5	ug/kg	15	0			2.1E+02	2.5E+02	1.6E+05	ND	6.1E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,6-Dinitrotoluene	606-20-2	ug/kg	15	0			9.7E+01	1.2E+02	1.5E+03	ND	3.3E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dinitrotoluene	121-14-2	ug/kg	15	0			8.7E+01	1.0E+02	7.4E+03	ND	1.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dichlorophenol	120-83-2	ug/kg	15	0			8.7E+01	1.0E+02	2.5E+05	ND	8.8E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Chloronaphthalene	91-58-7	ug/kg	15	0			7.9E+01	9.5E+01	6.0E+06	ND	1.2E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4,5-Trichlorophenol	95-95-4	ug/kg	15	0			8.1E+01	9.7E+01	8.2E+06	ND	4.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4,6-Trichlorophenol	88-06-2	ug/kg	14	0			4.5E+00	5.2E+00	8.2E+04	ND	4.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
3-Nitroaniline	99-09-2	ug/kg	15	0			1.6E+02	2.0E+02	NSV	NSV	3.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
3,3'-Dichlorobenzidine	91-94-1	ug/kg	15	0			9.2E+01	1.1E+02	5.1E+03	ND	6.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Bromophenyl-phenylether	101-55-3	ug/kg	15	0			8.3E+01	1.0E+02	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
4-Chloro-3-methylphenol	59-50-7	ug/kg	15	0			9.0E+01	1.1E+02	8.2E+06	ND	8.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chloroaniline	106-47-8	ug/kg	15	0			5.7E+01	6.8E+01	1.1E+04	ND	1.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-9
PRI 15 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
4-Chlorophenyl-phenylether	7005-72-3	ug/kg	15	0			9.1E+01	1.1E+02	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
3 & 4 Methylphenol	15831-10-4	ug/kg	15	0			3.2E+02	3.9E+02	8.2E+06	ND	1.6E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitroaniline	100-01-6	ug/kg	15	0			8.6E+01	1.0E+02	1.1E+05	ND	2.2E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitrophenol	100-02-7	ug/kg	15	0			2.7E+02	3.3E+02	NSV	NSV	5.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4,6-Dinitro-2-methylphenol	534-52-1	ug/kg	15	0			7.9E+01	9.5E+01	6.6E+03	ND	1.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acetophenone	98-86-2	ug/kg	15	0			2.4E+01	2.9E+01	1.2E+07	ND	3.0E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzaldehyde	100-52-7	ug/kg	15	0			1.6E+02	1.9E+02	1.2E+07	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bis(2-chloroethoxy)methane	111-91-1	ug/kg	15	0			8.6E+01	1.0E+02	2.5E+05	ND	3.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
bis(2-Chloroethyl) ether	111-44-4	ug/kg	15	0			7.9E+01	9.5E+01	1.0E+03	ND	2.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bis(2-ethylhexyl)phthalate	117-81-7	ug/kg	15	0			9.6E+01	1.2E+02	1.6E+05	ND	9.3E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzylbutylphthalate	85-68-7	ug/kg	15	0			9.3E+01	1.1E+02	1.2E+06	ND	2.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Carbazole	86-74-8	ug/kg	15	0			9.3E+01	1.1E+02	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Dibenzofuran	132-64-9	ug/kg	15	0			8.4E+01	1.0E+02	1.0E+05	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Diethyl phthalate	84-66-2	ug/kg	15	0			8.8E+01	1.1E+02	6.6E+07	ND	2.5E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dimethylphthalate	131-11-3	ug/kg	15	0			8.5E+01	1.0E+02	NSV	NSV	2.0E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Di-n-butylphthalate	84-74-2	ug/kg	15	0			9.5E+01	1.1E+02	8.2E+06	ND	1.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Di-n-octylphthalate	117-84-0	ug/kg	15	0			9.5E+01	1.1E+02	8.2E+05	ND	7.1E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorobenzene	118-74-1	ug/kg	14	3	3.5E+01	3.0E+00	2.3E+00	2.5E+00	9.6E+02	3.6E-02	2.0E+02	1.8E-01	1.8E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorobutadiene	87-68-3	ug/kg	14	0			3.8E+00	4.3E+00	5.3E+03	ND	4.0E+01	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorocyclopentadiene	77-47-4	ug/kg	15	0			6.0E+01	7.3E+01	7.5E+02	ND	1.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachloroethane	67-72-1	ug/kg	15	0			7.9E+01	9.5E+01	8.0E+03	ND	6.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Isophorone	78-59-1	ug/kg	15	0			9.1E+01	1.1E+02	2.4E+06	ND	1.4E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
n-Nitrosodimethylamine	62-75-9	ug/kg	14	0			9.9E+01	1.1E+02	3.4E+01	ND	3.2E-02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
N-Nitrosodiphenylamine	86-30-6	ug/kg	15	0			8.4E+01	1.0E+02	4.7E+05	ND	5.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
N-Nitroso-di-n-propylamine	621-64-7	ug/kg	15	0			8.2E+01	9.9E+01	3.3E+02	ND	5.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Nitrobenzene	98-95-3	ug/kg	15	0			7.4E+01	8.9E+01	2.2E+04	ND	1.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Pentachlorophenol	87-86-5	ug/kg	14	1	2.7E+01	2.7E+01	2.5E+01	2.8E+01	4.0E+03	6.8E-03	2.1E+03	1.3E-02	1.3E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Phenol	108-95-2	ug/kg	15	0			8.1E+01	9.7E+01	2.5E+07	ND	3.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,3,4,6-Tetrachlorophenol	58-90-2	ug/kg	15	0			8.0E+01	9.6E+01	2.5E+06	ND	2.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Methylnaphthalene	91-57-6	ug/kg	15	1	9.1E-01	9.1E-01	4.3E-01	1.0E+00	3.0E+05	3.0E-06	NSV	NSV	3.0E-06	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthene	83-32-9	ug/kg	15	0			4.7E-01	1.1E+00	4.5E+06	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthylene	208-96-8	ug/kg	15	0			3.3E-01	4.0E-01	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Anthracene	120-12-7	ug/kg	15	1	4.7E-01	4.7E-01	3.9E-01	4.8E-01	2.3E+07	2.0E-08	NSV	NSV	2.0E-08	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)anthracene	56-55-3	ug/kg	15	7	6.7E-01	3.2E-01	3.0E-01	3.5E-01	2.9E+03	2.3E-04	NSV	NSV	2.3E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)pyrene	50-32-8	ug/kg	15	2	6.2E-01	5.1E-01	4.0E-01	4.6E-01	2.9E+02	2.1E-03	NSV	NSV	2.1E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(b)fluoranthene	205-99-2	ug/kg	15	4	1.0E+00	5.5E-01	5.0E-01	5.8E-01	2.9E+03	3.4E-04	NSV	NSV	3.4E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(g,h,i)perylene	191-24-2	ug/kg	15	0			1.0E+00	1.2E+00	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Benzo(k)fluoranthene	207-08-9	ug/kg	15	1	1.0E+00	1.0E+00	7.6E-01	8.8E-01	2.9E+04	3.4E-05	NSV	NSV	3.4E-05	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Chrysene	218-01-9	ug/kg	15	12	2.0E+00	8.1E-01	3.8E-01	4.0E-01	2.9E+05	6.9E-06	NSV	NSV	6.9E-06	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Dibenzo(a,h)anthracene	53-70-3	ug/kg	15	0			1.2E+00	1.4E+00	2.9E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Fluoranthene	206-44-0	ug/kg	15	12	1.5E+00	3.9E-01	2.9E-01	3.4E-01	3.0E+06	5.0E-07	NSV	NSV	5.0E-07	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Fluorene	86-73-7	ug/kg	15	1	7.3E-01	7.3E-01	4.9E-01	5.9E-01	3.0E+06	2.4E-07	NSV	NSV	2.4E-07	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	15	1	7.6E-01	7.6E-01	4.8E-01	5.5E-01	2.9E+03	2.6E-04	NSV	NSV	2.6E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Naphthalene	91-20-3	ug/kg	15	7	7.0E+00	4.0E-01	3.6E-01	5.1E+00	1.7E+04	4.1E-04	NSV	NSV	4.1E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Phenanthrene	85-01-8	ug/kg	15	3	1.7E+00	6.2E-01	3.5E-01	2.1E+00	NSV	NSV	NSV	NSV	NA	No	NA	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Pyrene	129-00-0	ug/kg	15	11	1.3E+00	3.8E-01	3.5E-01	4.1E-01	2.3E+06	5.7E-07	NSV	NSV	5.7E-07	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Low Molecular Weight PAH (ND=0)	LPAH-0	ug/kg	15	8	7.0E+00	6.2E-01	5.6E-01	5.1E+00	NSV	NSV	2.9E+04	2.4E-04	2.4E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	ug/kg	15	8	9.2E+00	2.0E+00	1.7E+00	4.5E+00	NSV	NSV	2.9E+04	3.2E-04	3.2E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
High Molecular Weight PAH (ND=0)	HPAH-0	ug/kg	15	13	8.8E+00	3.9E-01	1.4E+00	1.4E+00	NSV	NSV	1.1E+03	8.0E-03	8.0E-03	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	ug/kg	15	13	1.0E+01	3.3E+00	3.2E+00	3.3E+00	NSV	NSV	1.1E+03	9.1E-03	9.1E-03	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Perchlorate	14797-73-0	ug/kg	3	0			2.0E+01	2.2E+01	8.2E+04	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Cyanide, Total	74-90-8	ug/kg	15	2	2.3E+02	2.1E+02	2.1E+02	2.4E+02	1.2E+03	1.9E-01	1.3E+03	1.8E-01	1.9E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-10
PRI 16 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/kg)	Minimum Detection (µg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/kg)	HHSR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Calculated TEQ (ND=0), Mammalian	CALC_DX_0	ug/kg	14	14	7.5E-04	5.4E-05			7.2E-02	1.0E-02	2.0E-04	**3.8E+00**	3.8E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Mammalian	CALC_DX_2	ug/kg	14	14	8.0E-04	1.0E-04			7.2E-02	1.1E-02	2.0E-04	**4.0E+00**	4.0E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	ug/kg	14	14	1.3E-03	8.0E-05			NSV	NSV	2.0E-04	**6.5E+00**	6.5E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	ug/kg	14	14	1.4E-02	1.1E-02			NSV	NSV	2.0E-04	**7.0E+01**	7.0E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total PCBs	1336-36-3	ug/kg	14	14	1.2E+00	1.3E-01			9.7E+02	1.2E-03	3.3E-01	**3.6E+00**	3.6E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Aluminum	7429-90-5	ug/kg	14	14	1.6E+07	5.1E+06			1.1E+08	1.5E-01	5.0E+03	**3.2E+03**	3.2E+03	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Antimony	7440-36-0	ug/kg	14	12	3.8E+02	2.1E+02	2.1E+02	2.1E+02	1.1E+05	3.5E-03	2.7E+02	**1.4E+00**	1.4E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Arsenic	7440-38-2	ug/kg	14	14	7.2E+03	2.5E+03			3.0E+03	**2.4E+00**	1.8E+04	4.0E-01	2.4E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Barium	7440-39-3	ug/kg	14	14	2.1E+05	6.9E+04			2.2E+07	9.5E-03	3.3E+05	6.4E-01	6.4E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Beryllium	7440-41-7	ug/kg	14	14	7.4E+02	2.3E+02			2.3E+05	3.2E-03	2.1E+04	3.5E-02	3.5E-02	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cadmium	7440-43-9	ug/kg	14	14	5.1E+02	1.2E+02			9.8E+04	5.2E-03	3.6E+02	**1.4E+00**	1.4E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Calcium	7440-70-2	ug/kg	14	14	1.7E+08	3.9E+07			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Chromium	7440-47-3	ug/kg	14	14	1.8E+04	5.0E+03			6.3E+03	**2.9E+00**	2.6E+04	6.9E-01	2.9E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Cobalt	7440-48-4	ug/kg	14	14	5.5E+03	1.7E+03			3.5E+04	1.6E-01	1.3E+04	4.2E-01	4.2E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Copper	7440-50-8	ug/kg	14	14	2.0E+04	4.7E+03			4.7E+06	4.3E-03	2.8E+04	7.1E-01	7.1E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Iron	7439-89-6	ug/kg	14	14	1.7E+07	6.0E+06			8.2E+07	2.1E-01	NSV	NSV	2.1E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Lead	7439-92-1	ug/kg	14	14	2.8E+04	8.9E+03			8.0E+05	3.5E-02	1.1E+04	**2.5E+00**	2.5E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Magnesium	7439-95-4	ug/kg	14	14	4.5E+07	8.0E+06			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Manganese	7439-96-5	ug/kg	14	14	5.0E+05	1.1E+05			2.6E+06	1.9E-01	2.2E+05	**2.3E+00**	2.3E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Mercury	7439-97-6	ug/kg	14	13	4.3E+01	1.0E+01	8.4E+00	8.4E+00	3.5E+04	1.2E-03	5.1E-01	**8.4E+01**	8.4E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Molybdenum	7439-98-7	ug/kg	14	14	1.1E+03	1.2E+02			5.8E+05	1.9E-03	2.0E+03	5.5E-01	5.5E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Nickel	7440-02-0	ug/kg	14	14	1.2E+04	3.5E+03			2.2E+06	5.5E-03	3.8E+04	3.2E-01	3.2E-01	Yes	No	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Potassium	7440-09-7	ug/kg	14	14	4.9E+06	1.5E+06			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Selenium	7782-49-2	ug/kg	14	9	3.4E+02	2.2E+02	2.0E+02	2.3E+02	5.8E+05	5.9E-04	5.2E+02	6.5E-01	6.5E-01	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Total Silver	7440-22-4	ug/kg	14	5	7.5E+01	6.3E+01	6.1E+01	7.8E+01	5.8E+05	1.3E-04	4.2E+03	1.8E-02	1.8E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Sodium	7440-23-5	ug/kg	14	14	5.1E+05	2.1E+05			NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Thallium	7440-28-0	ug/kg	14	4	1.5E+02	1.0E+02	1.0E+02	1.3E+02	1.2E+03	1.3E-01	1.0E+01	**1.5E+01**	1.5E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Vanadium	7440-62-2	ug/kg	14	14	2.6E+04	1.1E+04			5.8E+05	4.5E-02	7.8E+03	**3.3E+00**	3.3E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Zinc	7440-66-6	ug/kg	14	14	6.2E+04	2.6E+04			3.5E+07	1.8E-03	4.6E+04	**1.3E+00**	1.3E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
1,1'-Biphenyl	92-52-4	ug/kg	14	0			1.7E+02	2.0E+02	2.0E+04	ND	6.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/kg	14	0			2.6E+01	3.2E+01	3.5E+04	ND	2.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dimethylphenol	105-67-9	ug/kg	14	0			1.7E+02	2.1E+02	1.6E+06	ND	1.0E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chlorophenol	95-57-8	ug/kg	14	0			8.9E+01	1.1E+02	5.8E+05	ND	2.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Methylphenol	95-48-7	ug/kg	14	0			5.8E+01	7.2E+01	4.1E+06	ND	4.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitroaniline	88-74-4	ug/kg	14	0			8.5E+01	1.0E+02	8.0E+05	ND	7.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitrophenol	88-75-5	ug/kg	14	0			8.3E+01	1.0E+02	NSV	NSV	1.6E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,2-Oxybis(1-chloropropane)	108-60-1	ug/kg	14	0			8.0E+01	9.8E+01	2.2E+04	ND	2.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dinitrophenol	51-28-5	ug/kg	14	0			2.2E+02	2.7E+02	1.6E+05	ND	6.1E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,6-Dinitrotoluene	606-20-2	ug/kg	14	0			1.0E+02	1.2E+02	1.5E+03	ND	3.3E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dinitrotoluene	121-14-2	ug/kg	14	0			9.0E+01	1.1E+02	7.4E+03	ND	1.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dichlorophenol	120-83-2	ug/kg	14	0			9.0E+01	1.1E+02	2.5E+05	ND	8.8E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Chloronaphthalene	91-58-7	ug/kg	14	0			8.2E+01	1.0E+02	6.0E+06	ND	1.2E+01	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4,5-Trichlorophenol	95-95-4	ug/kg	14	0			8.4E+01	1.0E+02	8.2E+06	ND	4.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4,6-Trichlorophenol	88-06-2	ug/kg	14	0			4.4E+00	5.5E+00	8.2E+04	ND	4.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
3-Nitroaniline	99-09-2	ug/kg	14	0			1.7E+02	2.1E+02	NSV	NSV	3.2E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
3,3'-Dichlorobenzidine	91-94-1	ug/kg	14	0			9.5E+01	1.2E+02	5.1E+03	ND	6.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Bromophenyl-phenylether	101-55-3	ug/kg	14	0			8.6E+01	1.1E+02	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
4-Chloro-3-methylphenol	59-50-7	ug/kg	14	0			9.3E+01	1.1E+02	8.2E+06	ND	8.0E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chloroaniline	106-47-8	ug/kg	14	0			5.8E+01	7.2E+01	1.1E+04	ND	1.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chlorophenyl-phenylether	7005-72-3	ug/kg	14	0			9.4E+01	1.2E+02	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
3 & 4 Methylphenol	15831-10-4	ug/kg	14	0			3.3E+02	4.1E+02	8.2E+06	ND	1.6E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitroaniline	100-01-6	ug/kg	14	0			8.9E+01	1.1E+02	1.1E+05	ND	2.2E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitrophenol	100-02-7	ug/kg	14	0			2.8E+02	3.5E+02	NSV	NSV	5.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4,6-Dinitro-2-methylphenol	534-52-1	ug/kg	14	0			8.2E+01	1.0E+02	6.6E+03	ND	1.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-10
PRI 16 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (μg/kg)	Minimum Detection (μg/kg)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (μg/kg)	HHSR	Soil RBESL (ug/kg)	Soil ESR	Maximum Screening Ratio	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Acetophenone	98-86-2	ug/kg	14	0			2.5E+01	3.1E+01	1.2E+07	ND	3.0E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzaldehyde	100-52-7	ug/kg	14	0			1.7E+02	2.0E+02	1.2E+07	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bis(2-chloroethoxy)methane	111-91-1	ug/kg	14	0			8.9E+01	1.1E+02	2.5E+05	ND	3.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
bis(2-Chloroethyl) ether	111-44-4	ug/kg	14	0			8.2E+01	1.0E+02	1.0E+03	ND	2.4E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bis(2-ethylhexyl)phthalate	117-81-7	ug/kg	14	0			9.9E+01	1.2E+02	1.6E+05	ND	9.3E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzylbutylphthalate	85-68-7	ug/kg	14	0			9.6E+01	1.2E+02	1.2E+06	ND	2.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Carbazole	86-74-8	ug/kg	14	0			9.6E+01	1.2E+02	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Dibenzofuran	132-64-9	ug/kg	14	0			8.7E+01	1.1E+02	1.0E+05	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Diethyl phthalate	84-66-2	ug/kg	14	0			9.1E+01	1.1E+02	6.6E+07	ND	2.5E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dimethylphthalate	131-11-3	ug/kg	14	0			8.8E+01	1.1E+02	NSV	NSV	2.0E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Di-n-butylphthalate	84-74-2	ug/kg	14	0			9.8E+01	1.2E+02	8.2E+06	ND	1.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Di-n-octylphthalate	117-84-0	ug/kg	14	0			9.8E+01	1.2E+02	8.2E+05	ND	7.1E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorobenzene	118-74-1	ug/kg	14	0			2.2E+00	2.7E+00	9.6E+02	ND	2.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorobutadiene	87-68-3	ug/kg	14	0			3.7E+00	4.6E+00	5.3E+03	ND	4.0E+01	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachlorocyclopentadiene	77-47-4	ug/kg	14	0			6.2E+01	7.7E+01	7.5E+02	ND	1.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Hexachloroethane	67-72-1	ug/kg	14	0			8.2E+01	1.0E+02	8.0E+03	ND	6.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Isophorone	78-59-1	ug/kg	14	0			9.4E+01	1.2E+02	2.4E+06	ND	1.4E+05	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
N-Nitrosodimethylamine	62-75-9	ug/kg	14	0			9.7E+01	1.2E+02	3.4E+01	ND	3.2E-02	ND	NA	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
N-Nitrosodiphenylamine	86-30-6	ug/kg	14	0			8.7E+01	1.1E+02	4.7E+05	ND	5.5E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
N-Nitroso-di-n-propylamine	621-64-7	ug/kg	14	0			8.5E+01	1.0E+02	3.3E+02	ND	5.4E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Nitrobenzene	98-95-3	ug/kg	14	0			7.6E+01	9.4E+01	2.2E+04	ND	1.3E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Pentachlorophenol	87-86-5	ug/kg	14	0			2.4E+01	3.0E+01	4.0E+03	ND	2.1E+03	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Phenol	108-95-2	ug/kg	14	0			8.4E+01	1.0E+02	2.5E+07	ND	3.0E+04	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,3,4,6-Tetrachlorophenol	58-90-2	ug/kg	14	0			8.3E+01	1.0E+02	2.5E+06	ND	2.0E+02	ND	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Methylnaphthalene	91-57-6	ug/kg	14	2	1.4E+00	5.5E-01	4.1E-01	7.9E-01	3.0E+05	4.7E-06	NSV	NSV	4.7E-06	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthene	83-32-9	ug/kg	14	0			4.5E-01	9.9E-01	4.5E+06	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthylene	208-96-8	ug/kg	14	0			3.2E-01	3.9E-01	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Anthracene	120-12-7	ug/kg	14	0			3.8E-01	4.6E-01	2.3E+07	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)anthracene	56-55-3	ug/kg	14	2	6.2E-01	3.3E-01	2.9E-01	3.5E-01	2.9E+03	2.1E-04	NSV	NSV	2.1E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)pyrene	50-32-8	ug/kg	14	1	7.2E-01	7.2E-01	3.8E-01	4.7E-01	2.9E+02	2.5E-03	NSV	NSV	2.5E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(b)fluoranthene	205-99-2	ug/kg	14	1	1.4E+00	1.4E+00	4.8E-01	5.9E-01	2.9E+03	4.8E-04	NSV	NSV	4.8E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(g,h,i)perylene	191-24-2	ug/kg	14	0			9.6E-01	1.2E+00	NSV	NSV	NSV	NSV	NA	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Benzo(k)fluoranthene	207-08-9	ug/kg	14	1	8.5E-01	8.5E-01	7.3E-01	8.9E-01	2.9E+04	2.9E-05	NSV	NSV	2.9E-05	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Chrysene	218-01-9	ug/kg	14	10	1.9E+00	4.1E-01	3.3E-01	4.0E-01	2.9E+05	6.6E-06	NSV	NSV	6.6E-06	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Dibenzo(a,h)anthracene	53-70-3	ug/kg	14	0			1.2E+00	1.4E+00	2.9E+02	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Fluoranthene	206-44-0	ug/kg	14	9	2.0E+00	3.4E-01	2.8E-01	3.4E-01	3.0E+06	6.7E-07	NSV	NSV	6.7E-07	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Fluorene	86-73-7	ug/kg	14	0			4.7E-01	5.7E-01	3.0E+06	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	14	1	1.0E+00	1.0E+00	4.6E-01	5.6E-01	2.9E+03	3.4E-04	NSV	NSV	3.4E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Naphthalene	91-20-3	ug/kg	14	11	5.8E+00	6.1E-01	2.9E-01	3.3E-01	1.7E+04	3.4E-04	NSV	NSV	3.4E-04	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Phenanthrene	85-01-8	ug/kg	14	11	3.0E+00	4.6E-01	3.4E-01	1.2E+00	NSV	NSV	NSV	NSV	NA	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Pyrene	129-00-0	ug/kg	14	8	1.9E+00	4.4E-01	3.4E-01	4.1E-01	2.3E+06	8.3E-07	NSV	NSV	8.3E-07	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Low Molecular Weight PAH (ND=0)	LPAH-0	ug/kg	14	12	8.8E+00	8.3E-01			NSV	NSV	2.9E+04	3.0E-04	3.0E-04	Yes	No	Yes	Yes	No	NA	--	Adequate	--	Adequate
Low Molecular Weight PAH (ND=1/2DL)	LPAH-5	ug/kg	14	12	9.7E+00	1.3E+00			NSV	NSV	2.9E+04	3.3E-04	3.3E-04	Yes	No	Yes	Yes	No	NA	--	Adequate	--	Adequate
High Molecular Weight PAH (ND=0)	HPAH-0	ug/kg	14	10	1.0E+01	7.5E-01			NSV	NSV	1.1E+03	9.1E-03	9.1E-03	Yes	No	Yes	Yes	No	NA	--	Adequate	--	Adequate
High Molecular Weight PAH (ND=1/2DL)	HPAH-5	ug/kg	14	10	1.2E+01	2.7E+00			NSV	NSV	1.1E+03	1.1E-02	1.1E-02	Yes	No	Yes	Yes	No	NA	--	Adequate	--	Adequate
Perchlorate	14797-73-0	ug/kg	13	0			2.0E+01	2.4E+01	8.2E+04	ND	NSV	NSV	NA	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Cyanide, Total	74-90-8	ug/kg	14	4	4.6E+02	2.8E+02	2.1E+02	2.3E+02	1.2E+03	3.8E-01	1.3E+03	3.5E-01	3.8E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-11
PRI 17 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/L)	Minimum Detection (µg/L)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/L)	HHSR	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Calculated TEQ (ND=0), Mammalian	CALC_DX_0	µg/L	30	19	9.20E-07	2.70E-11	1.30E-10	6.00E-07	1.20E-06	7.7E-01	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=1/2 DL), Mammalian	CALC_DX_2	µg/L	30	19	5.60E-06	6.40E-07	5.70E-07	4.10E-06	1.20E-06	4.7E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Calculated TEQ (ND=0), Avian	CALC_DX_0_AV	µg/L	30	19	2.00E-02	9.10E-12	5.60E-04	7.10E-04	NSV	NSV	No	NA	Yes	No	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Calculated TEQ (ND=1/2 DL), Avian	CALC_DX_2_Av	µg/L	30	19	2.00E-02	3.10E-04	2.80E-04	3.60E-04	NSV	NSV	No	NA	Yes	No	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total PCBs	1336-36-3	ug/L	30	30	3.40E-01	4.60E-05			4.40E-02	7.7E+00	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total Aluminum	7429-90-5	µg/L	30	11	6.30E+03	5.10E+01	5.00E+01	2.50E+02	2.00E+03	3.2E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Dissolved Aluminum	7429-90-5	µg/L	30	9	6.10E+03	5.40E+01	5.00E+01	2.50E+02	2.00E+03	3.1E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Antimony	7440-36-0	µg/L	30	21	8.60E+00	6.50E-01	4.00E-01	2.00E+00	1.80E+00	4.8E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Dissolved Antimony	7440-36-0	µg/L	30	21	9.00E+00	5.40E-01	4.00E-01	2.00E+00	1.80E+00	5.0E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Arsenic	7440-38-2	µg/L	30	30	1.70E+02	2.10E+00			5.20E-02	3.3E+03	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Dissolved Arsenic	7440-38-2	µg/L	30	30	1.70E+02	2.10E+00			5.20E-02	3.3E+03	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Barium	7440-39-3	µg/L	30	30	3.00E+03	1.80E+01			3.80E+02	7.9E+00	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Dissolved Barium	7440-39-3	µg/L	30	30	3.40E+03	1.70E+01			3.80E+02	8.9E+00	Yes	Yes	Yes	No	NA	NA	--	Adequate	--	Adequate
Total Beryllium	7440-41-7	µg/L	30	9	2.50E+00	3.80E-01	2.00E-01	1.00E+00	2.50E+00	1.0E+00	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Dissolved Beryllium	7440-41-7	µg/L	30	12	2.50E+00	2.90E-01	2.00E-01	1.00E+00	2.50E+00	1.0E+00	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Cadmium	7440-43-9	µg/L	30	6	1.70E+01	1.00E+00	1.00E+00	5.00E+00	NSV	NSV	No	NA	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Dissolved Cadmium	7440-43-9	µg/L	30	5	1.80E+01	1.50E+00	1.00E+00	5.00E+00	NSV	NSV	No	NA	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Total Calcium	7440-70-2	µg/L	30	30	5.00E+07	4.90E+05			NSV	NSV	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Dissolved Calcium	7440-70-2	µg/L	30	30	4.80E+07	4.70E+05			NSV	NSV	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Chromium	7440-47-3	µg/L	30	3	5.20E+00	2.10E+00	2.00E+00	1.00E+01	2.20E+03	2.4E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Dissolved Chromium	7440-47-3	µg/L	30	3	2.70E+00	2.10E+00	2.00E+00	1.00E+01	2.20E+03	1.2E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Chromium, Hexavalent	18540-29-9	µg/L	30	16	1.76E+00	1.29E-01	5.10E-02	4.03E-01	3.50E-02	5.0E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Cobalt	7440-48-4	µg/L	30	19	1.40E+02	1.40E+00	1.20E+00	6.00E+00	6.00E-01	2.3E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Dissolved Cobalt	7440-48-4	µg/L	30	19	1.30E+02	1.40E+00	1.20E+00	6.00E+00	6.00E-01	2.2E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Copper	7440-50-8	µg/L	30	7	5.30E+01	2.30E+00	2.00E+00	1.00E+01	8.00E+01	6.6E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Dissolved Copper	7440-50-8	µg/L	30	11	4.70E+01	2.00E+00	2.00E+00	1.00E+01	8.00E+01	5.9E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Iron	7439-89-6	µg/L	30	25	6.80E+05	4.90E+02	5.00E+01	5.00E+01	1.40E+03	4.9E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Dissolved Iron	7439-89-6	µg/L	30	26	6.70E+05	4.90E+02	5.00E+01	5.00E+01	1.40E+03	4.8E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Lead	7439-92-1	µg/L	30	2	5.10E+01	3.10E+00	1.20E+00	6.00E+00	1.50E+01	3.4E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Dissolved Lead	7439-92-1	µg/L	30	2	5.10E+01	3.10E+00	1.20E+00	6.00E+00	1.50E+01	3.4E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Magnesium	7439-95-4	µg/L	30	30	5.10E+07	1.50E+06			NSV	NSV	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Dissolved Magnesium	7439-95-4	µg/L	30	30	3.80E+07	1.50E+06			NSV	NSV	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Manganese	7439-96-5	µg/L	30	30	1.60E+04	6.60E+01			4.30E+01	3.7E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate

Table 4-11
PRI 17 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/L)	Minimum Detection (µg/L)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/L)	HHSR	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Dissolved Manganese	7439-96-5	µg/L	30	30	1.60E+04	4.30E+01			4.30E+01	3.7E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Dissolved Mercury	7439-97-6	µg/L	30	0			1.00E-01	1.00E-01	5.70E-01	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Mercury	7439-97-6	µg/L	30	1	5.30E-01	5.30E-01	1.00E-01	1.00E-01	5.70E-01	9.3E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Molybdenum	7439-98-7	µg/L	30	26	2.00E+02	1.40E+00	1.20E+00	6.00E+00	1.00E+01	2.0E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Dissolved Molybdenum	7439-98-7	µg/L	30	22	1.90E+02	2.80E+00	1.20E+00	7.00E+00	1.00E+01	1.9E+01	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Nickel	7440-02-0	µg/L	30	26	3.10E+02	2.00E+00	2.00E+00	1.00E+01	3.90E+01	7.9E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Dissolved Nickel	7440-02-0	µg/L	30	24	3.00E+02	2.20E+00	2.00E+00	1.00E+01	3.90E+01	7.7E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Total Potassium	7440-09-7	µg/L	30	30	7.90E+06	1.00E+05			NSV	NSV	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Dissolved Potassium	7440-09-7	µg/L	30	30	7.40E+06	1.00E+05			NSV	NSV	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Selenium	7782-49-2	µg/L	30	15	6.30E+00	2.10E+00	2.00E+00	1.00E+01	1.00E+01	6.3E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Dissolved Selenium	7782-49-2	µg/L	30	14	6.40E+00	2.00E+00	2.00E+00	1.00E+01	1.00E+01	6.4E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Silver	7440-22-4	µg/L	30	2	1.60E+00	6.10E-01	6.00E-01	3.00E+00	9.40E+00	1.7E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Dissolved Silver	7440-22-4	µg/L	30	1	1.50E+00	1.50E+00	6.00E-01	3.00E+00	9.40E+00	1.6E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Total Sodium	7440-23-5	µg/L	30	30	1.90E+07	1.30E+06			NSV	NSV	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Dissolved Sodium	7440-23-5	µg/L	30	30	2.20E+07	1.30E+06			NSV	NSV	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Thallium	7440-28-0	µg/L	30	3	5.10E+00	1.60E+00	1.00E+00	5.00E+00	2.00E-02	2.6E+02	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Dissolved Thallium	7440-28-0	µg/L	30	3	5.30E+00	1.30E+00	1.00E+00	5.00E+00	2.00E-02	2.7E+02	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Vanadium	7440-62-2	µg/L	30	8	1.80E+01	6.50E+00	6.00E+00	3.00E+01	8.60E+00	2.1E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Dissolved Vanadium	7440-62-2	µg/L	30	7	1.90E+01	6.70E+00	6.00E+00	3.00E+01	8.60E+00	2.2E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Zinc	7440-66-6	µg/L	30	19	6.30E+02	9.90E+00	8.00E+00	8.00E+00	6.00E+02	1.1E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Dissolved Zinc	7440-66-6	µg/L	30	16	6.90E+02	9.10E+00	8.00E+00	8.00E+00	6.00E+02	1.2E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
1,1'-Biphenyl	92-52-4	µg/L	30	0			4.00E+00	4.80E+01	8.30E-02	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
1,2,4,5-Tetrachlorobenzene	95-94-3	µg/L	30	3	1.00E+01	5.20E-01	4.30E-01	5.20E+00	1.70E-01	5.9E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
2,3,4,6-Tetrachlorophenol	58-90-2	µg/L	30	0			2.00E+00	2.40E+01	2.40E+01	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4,5-Trichlorophenol	95-95-4	µg/L	30	0			1.60E+00	1.90E+01	1.20E+02	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4,6-Trichlorophenol	88-06-2	µg/L	30	6	3.50E+00	2.00E-01	1.50E-01	1.90E-01	1.20E+00	2.9E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
2,2-Oxybis(1-chloropropane)	108-60-1	µg/L	30	0			1.00E+00	1.20E+01	3.60E-01	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dichlorophenol	120-83-2	µg/L	30	0			2.10E+00	2.50E+01	4.60E+00	ND	Yes	ND	No	NA	No	0%	Yes	--	Adequate	Adequate
2,4-Dimethylphenol	105-67-9	µg/L	30	0			1.70E+00	2.10E+01	3.60E+01	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2,4-Dinitrophenol	51-28-5	µg/L	30	0			1.60E+01	1.90E+02	3.90E+00	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2,4-Dinitrotoluene	121-14-2	µg/L	30	0			1.60E+00	1.90E+01	2.40E-01	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation

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PRI 17 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/L)	Minimum Detection (µg/L)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/L)	HHSR	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
2,6-Dinitrotoluene	606-20-2	µg/L	30	0			1.60E+00	1.90E+01	4.80E-02	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Chloronaphthalene	91-58-7	µg/L	30	0			1.00E+00	1.20E+01	7.50E+01	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Chlorophenol	95-57-8	µg/L	30	0			1.30E+00	1.50E+01	9.10E+00	ND	Yes	ND	No	NA	No	0%	Yes	--	Adequate	Adequate
2-Methylphenol	95-48-7	µg/L	30	0			7.40E-01	8.90E+00	9.30E+01	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitroaniline	88-74-4	µg/L	30	0			1.60E+00	1.90E+01	1.90E+01	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Nitrophenol	88-75-5	µg/L	30	0			1.50E+00	1.80E+01	NSV	NSV	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
3,3'-Dichlorobenzidine	91-94-1	µg/L	30	0			7.60E-01	9.20E+00	1.20E-01	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
3-Nitroaniline	99-09-2	µg/L	30	0			1.10E+00	1.30E+01	NSV	NSV	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	30	1	6.80E+00	6.80E+00	1.70E+00	2.10E+01	1.50E-01	4.5E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
4-Bromophenyl-phenylether	101-55-3	µg/L	30	0			8.70E-01	1.00E+01	NSV	NSV	No	ND	No	NA	NA	0%	Yes	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
4-Chloro-3-methylphenol	59-50-7	µg/L	30	0			1.60E+00	1.90E+01	1.40E+02	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Chloroaniline	106-47-8	µg/L	30	0			1.60E+00	1.90E+01	3.60E-01	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
4-Chlorophenyl-phenylether	7005-72-3	µg/L	30	0			8.70E-01	1.00E+01	NSV	NSV	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
3 & 4 Methylphenol	15831-10-4	µg/L	30	7	7.80E+00	1.20E+00	9.10E-01	1.10E+01	1.90E+02	4.1E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Nitroaniline	100-01-6	µg/L	30	0			1.20E+00	1.40E+01	3.80E+00	ND	Yes	ND	No	NA	No	0%	Yes	--	Adequate	Adequate
4-Nitrophenol	100-02-7	µg/L	30	0			4.90E+00	5.80E+01	NSV	NSV	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Acetophenone	98-86-2	µg/L	30	12	2.50E+00	7.50E-01	6.20E-01	7.40E+00	1.90E+02	1.3E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzaldehyde	100-52-7	µg/L	30	0			6.60E+00	8.00E+01	1.90E+02	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzylbutylphthalate	85-68-7	µg/L	30	0			1.10E+00	1.30E+01	1.60E+01	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Bis(2-chloroethoxy)methane	111-91-1	µg/L	30	0			8.00E-01	9.50E+00	5.90E+00	ND	Yes	ND	No	NA	No	0%	Yes	--	Adequate	Adequate
bis(2-Chloroethyl) ether	111-44-4	µg/L	30	0			1.20E+00	1.40E+01	1.40E-02	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Bis(2-ethylhexyl)phthalate	117-81-7	µg/L	30	17	5.60E+00	1.90E+00	8.50E-01	9.50E+00	5.60E+00	1.0E+00	Yes	No	No	NA	No	0%	Yes	--	Adequate	Adequate
Carbazole	86-74-8	µg/L	30	0			9.50E-01	1.10E+01	NSV	NSV	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Dibenzofuran	132-64-9	µg/L	30	0			8.70E-01	1.00E+01	7.90E-01	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Diethyl phthalate	84-66-2	µg/L	30	0			7.40E-01	8.90E+00	1.50E+03	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dimethylphthalate	131-11-3	µg/L	30	0			7.00E-01	8.40E+00	NSV	NSV	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Di-n-butylphthalate	84-74-2	µg/L	30	0			8.70E-01	1.00E+01	9.00E+01	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Di-n-octylphthalate	117-84-0	µg/L	30	0			1.20E+00	1.40E+01	2.00E+01	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate

Table 4-11
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US Magnesium RI/FS
Rowley, Utah

											Decision 0	Decision 1	Decision 2	Decision 3	Decision 4		Decision 5			
Chemical Name	**CAS #**	**Units**	**Number of Samples**	**Number of Detections**	**Maximum Detection (µg/L)**	**Minimum Detection (µg/L)**	**Minimum Detection Limit**	**Maximum Detection Limit**	**HHRA Screening Benchmark (µg/L)**	**HHSR**	**RBSL or RBESL available?**	**Maximum Detect > Lowest RBSL**	**Are there at least 60% detected values?**	**Is Mean ≤ 80th Percentile?**	**Maximum DL ≤ Lowest RBSL**	**Percent Exceedances of Undiluted Samples**	**DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?**	**Datasets with ≥ 60% Detects Adequacy**	**Datasets with < 60% Detects Adequacy**	**Final Adequacy Determination**
Hexachlorobenzene	118-74-1	µg/L	30	1	2.00E+00	2.00E+00	5.60E-02	7.10E-02	9.80E-03	2.0E+02	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Hexachlorobutadiene	87-68-3	µg/L	30	1	1.90E-01	1.90E-01	6.40E-02	8.10E-02	1.40E-01	1.4E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Hexachlorocyclopentadiene	77-47-4	µg/L	30	0			4.00E+00	4.80E+01	4.10E-02	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Hexachloroethane	67-72-1	µg/L	30	0			1.10E+00	1.30E+01	3.30E-01	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Isophorone	78-59-1	µg/L	30	0			8.00E-01	9.50E+00	7.80E+01	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Nitrobenzene	98-95-3	µg/L	30	0			1.30E+00	1.50E+01	1.40E-01	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
N-Nitrosodimethylamine	62-75-9	µg/L	30	0			5.60E-02	7.10E-02	1.12E-04	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
N-Nitroso-di-n-propylamine	621-64-7	µg/L	30	0			1.10E+00	1.30E+01	1.10E-02	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
N-Nitrosodiphenylamine	86-30-6	µg/L	30	0			4.30E-01	5.20E+00	1.20E+01	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Pentachlorophenol	87-86-5	µg/L	30	1	5.50E+00	5.50E+00	1.60E+00	2.00E+00	4.00E-02	1.4E+02	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Phenol	108-95-2	µg/L	30	1	2.20E+00	2.20E+00	8.70E-01	1.00E+01	5.80E+02	3.8E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Methylnaphthalene	91-57-6	µg/L	30	22	5.00E+00	1.20E-02	4.40E-03	5.40E-03	3.60E+00	1.4E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Acenaphthene	83-32-9	µg/L	30	6	2.70E-01	9.30E-03	2.50E-03	3.10E-02	5.30E+01	5.1E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Acenaphthylene	208-96-8	µg/L	30	1	2.50E-02	2.50E-02	2.40E-03	3.00E-02	NSV	NSV	No	NA	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Anthracene	120-12-7	µg/L	30	4	2.90E-02	6.20E-03	3.50E-03	4.40E-02	1.80E+02	1.6E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Benzo(a)anthracene	56-55-3	µg/L	30	1	3.60E-02	3.60E-02	3.70E-03	4.50E-02	1.20E-02	3.0E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Benzo(a)pyrene	50-32-8	µg/L	30	1	1.70E-02	1.70E-02	3.50E-03	4.30E-02	3.40E-03	5.0E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Benzo(b)fluoranthene	205-99-2	µg/L	30	1	9.30E-02	9.30E-02	9.80E-03	1.20E-01	3.40E-02	2.7E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Benzo(g,h,i)perylene	191-24-2	µg/L	30	2	5.80E-02	6.00E-03	4.40E-03	5.40E-02	NSV	NSV	No	NA	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Benzo(k)fluoranthene	207-08-9	µg/L	30	1	8.30E-02	8.30E-02	6.20E-03	7.70E-02	3.40E-01	2.4E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Chrysene	218-01-9	µg/L	30	1	7.10E-02	7.10E-02	3.20E-03	3.90E-02	3.40E+00	2.1E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Dibenzo(a,h)anthracene	53-70-3	µg/L	30	1	7.10E-02	7.10E-02	1.20E-02	1.40E-01	3.40E-03	2.1E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Fluoranthene	206-44-0	µg/L	30	6	3.90E-02	4.00E-03	3.40E-03	4.20E-02	8.00E+01	4.9E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Fluorene	86-73-7	µg/L	30	11	4.00E-01	6.90E-03	3.20E-03	4.00E-02	2.90E+01	1.4E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	30	1	6.20E-02	6.20E-02	1.10E-02	1.40E-01	3.40E-02	1.8E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Naphthalene	91-20-3	µg/L	30	22	2.00E+01	7.00E-03	2.90E-03	7.20E-03	1.70E-01	1.2E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Phenanthrene	85-01-8	µg/L	30	6	1.60E-01	9.90E-03	5.00E-03	6.20E-02	NSV	NSV	No	NA	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Pyrene	129-00-0	µg/L	30	3	1.20E-02	3.80E-03	3.30E-03	4.10E-02	1.20E+01	1.0E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
1,4-Dioxane	123-91-1	µg/L	30	0			2.50E+01	2.50E+01	4.60E-01	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
1,1-Dichloroethane	75-34-3	µg/L	30	25	1.30E+01	1.50E-01	1.00E-01	1.00E-01	2.70E+00	4.8E+00	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
1,1-Dichloroethene	75-35-4	µg/L	30	22	8.20E+00	1.40E-01	1.40E-01	1.40E-01	2.80E+01	2.9E-01	Yes	No	Yes	No	Yes	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation

Table 4-11
PRI 17 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/L)	Minimum Detection (µg/L)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/L)	HHSR	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
1,2-Dibromo-3-chloropropane	96-12-8	µg/L	30	0			3.20E-01	3.20E-01	3.34E-04	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
1,2-Dibromoethane	106-93-4	µg/L	30	0			2.20E-01	2.20E-01	7.50E-03	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
1,2-Dichlorobenzene	95-50-1	µg/L	30	0			1.40E-01	1.40E-01	3.00E+01	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dichloroethane	107-06-2	µg/L	30	9	5.30E-01	2.70E-01	2.20E-01	2.20E-01	1.70E-01	3.1E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
cis-1,2-Dichloroethene	156-59-2	µg/L	30	17	2.90E+01	1.80E-01	1.00E-01	1.00E-01	3.60E+00	8.1E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
trans-1,2-Dichloroethene	156-60-5	µg/L	30	12	7.30E+00	1.70E-01	1.10E-01	1.10E-01	3.60E+01	2.0E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2-Dichloropropane	78-87-5	µg/L	30	12	6.10E-01	1.90E-01	1.50E-01	1.50E-01	4.40E-01	1.4E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
1,3-Dichlorobenzene	541-73-1	µg/L	30	2	2.80E-01	1.20E-01	1.10E-01	1.10E-01	NSV	NSV	No	NA	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
cis-1,3-Dichloropropene	10061-01-5	µg/L	30	0			2.20E-01	2.20E-01	4.70E-01	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
trans-1,3-Dichloropropene	10061-02-6	µg/L	30	0			8.00E-02	8.00E-02	4.70E-01	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,4-Dichlorobenzene	106-46-7	µg/L	30	2	1.50E-01	1.30E-01	1.30E-01	1.30E-01	4.80E-01	3.1E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,1-Trichloroethane	71-55-6	µg/L	30	1	2.80E-01	2.80E-01	1.90E-01	1.90E-01	8.00E+02	3.5E-04	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
1,1,2-Trichloroethane	79-00-5	µg/L	30	0			3.10E-01	3.10E-01	4.10E-02	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	76-13-1	µg/L	30	0			2.50E-01	2.50E-01	5.50E+03	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,3-Trichlorobenzene	87-61-6	µg/L	30	0			1.40E-01	1.40E-01	7.00E-01	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
1,2,4-Trichlorobenzene	120-82-1	µg/L	30	6	4.40E+00	2.80E-01	1.00E-01	1.00E-01	4.00E-01	1.1E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	30	0			9.00E-02	6.30E-01	7.60E-02	ND	Yes	ND	No	NA	No	100%	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
2-Butanone	78-93-3	µg/L	30	15	3.00E+01	3.50E-01	3.50E-01	3.50E-01	5.60E+02	5.4E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
2-Hexanone	591-78-6	µg/L	30	11	2.00E+00	5.30E-01	1.70E-01	1.70E-01	3.80E+00	5.3E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
4-Methyl-2-pentanone	108-10-1	µg/L	30	22	3.90E+01	2.60E-01	1.80E-01	1.80E-01	1.20E+02	3.3E-01	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Acetone	67-64-1	µg/L	30	20	1.50E+02	2.30E+00	2.10E+00	2.10E+00	1.40E+03	1.1E-01	Yes	No	Yes	Yes	Yes	NA	--	Adequate	--	Adequate
Benzene	71-43-2	µg/L	30	17	1.10E+00	1.30E-01	1.30E-01	1.30E-01	4.50E-01	2.4E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Bromochloromethane	74-97-5	µg/L	30	9	1.80E+01	8.30E-01	1.40E-01	1.40E-01	8.30E+00	2.2E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Bromodichloromethane	75-27-4	µg/L	30	9	1.30E+02	9.20E-01	1.40E-01	1.40E-01	1.30E-01	1.0E+03	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Bromoform	75-25-2	µg/L	30	13	3.00E+02	2.50E-01	1.00E-01	1.00E-01	3.30E+00	9.1E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Bromomethane	74-83-9	µg/L	30	6	1.90E+00	4.90E-01	2.90E-01	2.90E-01	7.50E-01	2.5E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Carbon disulfide	75-15-0	µg/L	30	15	8.80E+01	2.70E-01	1.60E-01	1.90E+00	8.10E+01	1.1E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Carbon tetrachloride	56-23-5	µg/L	30	7	4.20E+00	2.80E-01	1.50E-01	1.50E-01	4.50E-01	9.3E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Chlorobenzene	108-90-7	µg/L	30	0			1.20E-01	1.20E-01	7.80E+00	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Cyclohexane	110-82-7	µg/L	30	5	2.40E+00	1.30E-01	1.20E-01	1.20E-01	1.30E+03	1.8E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Dibromochloromethane	124-48-1	µg/L	30	9	2.40E+02	9.50E-01	1.30E-01	1.30E-01	1.70E-01	1.4E+03	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Chloroethane	75-00-3	µg/L	30	11	6.10E+00	3.70E-01	3.40E-01	3.40E-01	2.10E+03	2.9E-03	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Chloroform	67-66-3	µg/L	30	24	1.00E+02	1.30E-01	1.20E-01	1.20E-01	2.20E-01	4.5E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Chloromethane	74-87-3	µg/L	30	11	2.00E+01	8.50E-01	2.50E-01	2.50E-01	1.90E+01	1.1E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Dichlorodifluoromethane (Freon-12)	75-71-8	µg/L	30	1	2.90E-01	2.90E-01	1.60E-01	1.60E-01	2.00E+01	1.5E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Ethyl benzene	100-41-4	µg/L	30	9	9.30E+00	1.60E-01	1.00E-01	1.00E-01	1.50E+00	6.2E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Isopropylbenzene	98-82-8	µg/L	30	8	2.00E+00	1.50E-01	1.20E-01	1.20E-01	4.50E+01	4.4E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Methyl tertbutyl ether (MTBE)	1634-04-4	µg/L	30	0			1.90E-01	1.90E-01	1.40E+01	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Dichloromethane (Methylene chloride)	75-09-2	µg/L	30	13	1.30E+01	4.10E-01	3.50E-01	3.50E-01	1.10E+01	1.2E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate

Table 4-11
PRI 17 Data Adequacy Evaluation
US Magnesium RI/FS
Rowley, Utah

Chemical Name	CAS #	Units	Number of Samples	Number of Detections	Maximum Detection (µg/L)	Minimum Detection (µg/L)	Minimum Detection Limit	Maximum Detection Limit	HHRA Screening Benchmark (µg/L)	HHSR	Decision 0 RBSL or RBESL available?	Decision 1 Maximum Detect > Lowest RBSL	Decision 2 Are there at least 60% detected values?	Decision 3 Is Mean ≤ 80th Percentile?	Decision 4 Maximum DL ≤ Lowest RBSL	Percent Exceedances of Undiluted Samples	Decision 5 DL in ≥ 50% undiluted samples ≤ Lowest RBSL or RBESL?	Datasets with ≥ 60% Detects Adequacy	Datasets with < 60% Detects Adequacy	Final Adequacy Determination
Styrene	100-42-5	µg/L	30	0			1.50E-01	1.50E-01	1.20E+02	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Tetrachloroethene	127-18-4	µg/L	30	16	8.50E+00	1.10E-01	1.00E-01	1.00E-01	4.10E+00	2.1E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Toluene	108-88-3	µg/L	30	12	4.50E+00	2.70E-01	2.50E-01	2.50E-01	1.10E+02	4.1E-02	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Trichloroethene	79-01-6	µg/L	30	25	3.20E+01	1.30E-01	1.30E-01	1.30E-01	2.80E-01	1.1E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Trichlorofluoromethane (Freon-11)	75-69-4	µg/L	30	0			2.30E-01	2.30E-01	1.10E+02	ND	Yes	ND	No	NA	Yes	NA	--	--	Adequate	Adequate
Vinyl chloride	75-01-4	µg/L	30	9	1.30E+01	2.70E-01	2.20E-01	2.20E-01	1.90E-02	6.8E+02	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
o-Xylene	95-47-6	µg/L	30	14	1.80E+01	1.30E-01	1.00E-01	1.00E-01	1.90E+01	9.5E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
m,p Xylenes	179601-23-1	µg/L	30	12	2.20E+01	2.80E-01	1.80E-01	1.80E-01	1.90E+01	1.2E+00	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Dissolved Solids	TDS	µg/L	30	30	3.00E+08	2.20E+07			NSV	NSV	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Bromide	24959-67-9	µg/L	30	14	4.00E+05	2.20E+04	8.80E+03	1.80E+04	NSV	NSV	No	NA	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Chloride	16887-00-6	µg/L	30	30	1.80E+08	1.20E+07			NSV	NSV	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Chlorine, Field	7782-50-5	µg/L	30	30	1.40E+02	0.00E+00			3.00E-02	4.7E+03	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Fluoride	16984-48-8	µg/L	30	29	2.00E+04	7.70E+02	1.20E+03	1.20E+03	8.00E+01	2.5E+02	Yes	Yes	Yes	Yes	NA	NA	--	Adequate	--	Adequate
Nitrate as N	14797-55-8	µg/L	30	10	2.20E+03	2.90E+02	1.10E+02	1.10E+03	3.20E+03	6.9E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Nitrite as N	14797-65-0	µg/L	30	0			8.00E+01	8.00E+02	2.00E+02	ND	Yes	ND	No	NA	No	X	No	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Sulfate	14808-79-8	µg/L	30	30	2.60E+07	4.60E+05			NSV	NSV	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Perchlorate	14797-73-0	µg/L	30	11	1.10E+00	1.10E-01	8.20E-02	8.20E-01	1.40E+00	7.9E-01	Yes	No	No	NA	Yes	NA	--	--	Adequate	Adequate
Monochloroacetic Acid	79-11-8	µg/L	30	9	3.60E+02	1.30E+01	4.00E+00	4.00E+00	4.00E+00	9.0E+01	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Monobromoacetic acid	79-08-3	µg/L	30	7	2.00E+01	7.70E+00	7.50E+00	7.50E+00	NSV	NSV	No	NA	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Dichloroacetic Acid	79-43-6	µg/L	30	11	1.50E+03	9.90E+00	9.80E+00	9.80E+00	1.50E+00	1.0E+03	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Dibromoacetic acid	631-64-1	µg/L	30	7	1.10E+03	2.00E+02	3.80E+00	3.80E+00	NSV	NSV	No	NA	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
Trichloroacetic acid	76-03-9	µg/L	30	11	1.30E+03	1.30E+01	3.80E+00	3.80E+00	1.10E+00	1.2E+03	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Organic Carbon	TOC	µg/L	30	30	1.90E+05	3.50E+03			NSV	NSV	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Total Alkalinity	ALK	µg/L	30	30	1.10E+06	6.40E+04			NSV	NSV	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Orthophosphate as P	PHOSPHATE AS P,	µg/L	30	0			3.90E+02	3.90E+03	NSV	NSV	No	ND	No	NA	NA	NA	--	--	Address in Uncertainty Evaluation	Address in Uncertainty Evaluation
pH, Field	PH	pH units	30	30	8.21E+00	5.30E+00			NSV	NSV	No	NA	Yes	Yes	NA	NA	--	Address in Uncertainty Evaluation	--	Address in Uncertainty Evaluation
Dissolved Cyanide	74-90-8	µg/L	30	14	97	5	5	25	1.50E-01	6.5E+02	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate
Total Cyanide	74-90-8	µg/L	30	13	47	6	5	25	1.50E-01	3.1E+02	Yes	Yes	No	NA	NA	NA	--	--	Adequate	Adequate

Table 4-12
Summary of Outer PRI Data Adequacy Results
US Magnesium RI/FS
Rowley, Utah

PRI	Analytes with Uncertainty	Notes	Conclusion
2	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Fluoranthene, Pyrene, Low Molecular Weight PAH (ND=0), Low Molecular Weight PAH (ND= ½ DL), 4-Methyl-2-pentanone	Mean exceeds 80th percentile.	Uncertain for COPC and/or COPEC selection
2	Thallium, 2,4-Dimethylphenol, 2,4-Dinitrophenol, 2,6-Dinitrotoluene, 2-Chloronaphthalene, N-Nitrosodimethylamine	All ND; greater than 50% of undiluted detection limits exceed lowest RBC, or no undiluted samples and detection limits exceed lowest RBC.	Uncertain for COPC and/or COPEC selection
8	Bromodichloromethane, Dibromochloromethane*	Mean exceeds 80th percentile. *VOCs will be evaluated separately in the SLRA; fewer than 14 samples were analyzed based on field conditions.	Uncertain for COPC and/or COPEC selection
8	2,4,5-Trichlorophenol, 2,4-Dichlorophenol, 2,4-Dimethylphenol, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, 2-Chloronaphthalene, 2-Chlorophenol, 2-Methylphenol, 3 & 4 Methylphenol, 4-Nitrophenol, Benzylbutylphthalate, Diethyl phthalate, Dimethylphthalate, Hexachlorobutadiene, Hexachlorocyclopentadiene, Hexachloroethane, Nitrobenzene, N-Nitrosodimethylamine, N-Nitrosodiphenylamine, Phenol	All ND; greater than 50% of undiluted detection limits exceed lowest RBC.	Uncertain for COPC and/or COPEC selection
9	2,4-Dimethylphenol, 2,6-Dinitrotoluene, 2-Chloronaphthalene, N-Nitrosodimethylamine	All ND; greater than 50% of undiluted detection limits exceed lowest RBC.	Uncertain for COPC and/or COPEC selection
10	Beryllium	All detects: mean exceeds 80th percentile.	Uncertain for COPC and/or COPEC selection
10	Thallium, 2,4-Dimethylphenol, 2,4-Dinitrophenol, 2,6-Dinitrotoluene, 2-Chloronaphthalene, N-Nitrosodimethylamine	All ND; greater than 50% of undiluted detection limits exceed lowest RBC, or no undiluted samples and detection limits exceed lowest RBC.	Uncertain for COPC and/or COPEC selection
11	Chrysene, High Molecular Weight PAH (ND=0), High Molecular Weight PAH (ND=1/2DL)	Mean exceeds 80th percentile.	Uncertain for COPC and/or COPEC selection
11	2,4-Dimethylphenol, 2,6-Dinitrotoluene, 2-Chloronaphthalene, N-Nitrosodimethylamine	All ND; greater than 50% of undiluted detection limits exceed lowest RBC.	Uncertain for COPC and/or COPEC selection
12	Thallium, 2,4-Dimethylphenol, 2,6-Dinitrotoluene, 2-Chloronaphthalene, N-Nitrosodimethylamine	All ND; greater than 50% of undiluted detection limits exceed lowest RBC, or no undiluted samples and detection limits exceed lowest RBC.	Uncertain for COPC and/or COPEC selection
13	Low Molecular Weight PAH (ND=0)	Mean exceeds 80th percentile.	Uncertain for COPEC selection
13	Thallium, 2,4,5-Trichlorophenol, 2,4-Dichlorophenol, 2,4-Dimethylphenol, 2,4-Dinitrophenol, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, 2-Chloronaphthalene, 2-Chlorophenol, 2-Methylphenol, 3 & 4 Methylphenol, 4-Nitrophenol, Benzylbutylphthalate, Diethyl phthalate, Dimethylphthalate, Hexachlorobutadiene, Hexachlorocyclopentadiene, Hexachloroethane, Nitrobenzene, N-Nitrosodimethylamine, N-Nitrosodiphenylamine, Pentachlorophenol, Phenol	All ND; greater than 50% of undiluted detection limits exceed lowest RBC, or no undiluted samples and detection limits exceed lowest RBC.	Uncertain for COPC and/or COPEC selection
14	2,4-Dimethylphenol, 2-Methylphenol, 2,4-Dinitrophenol, 2,6-Dinitrotoluene, 2,4-Dinitrotoluene, 2,4-Dichlorophenol, 2-Chloronaphthalene, 2,4,5-Trichlorophenol, 2-Chlorophenol, 3 & 4 Methylphenol, 4-Nitrophenol, 4,6-Dinitro-2-methylphenol, Diethyl phthalate, Dimethylphthalate, Benzylbutylphthalate, Hexachlorobutadiene, Hexachlorocyclopentadiene, Hexachloroethane, N-Nitrosodimethylamine, Nitrobenzene, Pentachlorophenol, N-Nitrosodiphenylamine	All ND; greater than 50% of undiluted detection limits exceed lowest RBC.	Uncertain for COPC and/or COPEC selection
15	2,4-Dimethylphenol, 2,4-Dinitrophenol, 2,6-Dinitrotoluene, 2-Chloronaphthalene, N-Nitrosodimethylamine	All ND; greater than 50% of undiluted detection limits exceed lowest RBC.	Uncertain for COPC and/or COPEC selection
16	2,4-Dimethylphenol, 2,4-Dinitrophenol, 2,6-Dinitrotoluene, 2-Chloronaphthalene, N-Nitrosodimethylamine	All ND; greater than 50% of undiluted detection limits exceed lowest RBC.	Uncertain for COPC and/or COPEC selection
17	1,1-Dichloroethene	Mean exceeds 80th percentile.	Uncertain for COPC and/or COPEC selection
17	Nitrite as N**, 1,1'-Biphenyl, 2,2-Oxybis(1-chloropropane), 2,4-Dinitrophenol, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, 3,3'-Dichlorobenzidine, 4-Chloroaniline, bis(2-Chloroethyl) ether, Dibenzofuran, Hexachlorocyclopentadiene, Hexachloroethane, Nitrobenzene, N-Nitrosodimethylamine, N-Nitroso-di-n-propylamine, 1,4-Dioxane, 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane, 1,1,2-Trichloroethane, 1,1,2,2-Tetrachloroethane	All ND; greater than 50% of undiluted detection limits exceed lowest RBC, or no undiluted samples and the maximum DL exceeds the lowest RBC. ** These analytes had no undiluted samples, but at least 50% of the adjusted detection limits are less than the lowest RBC.	Uncertain for COPC and/or COPEC selection, unless **.

Table Notes

-- = No relevant results
μg/kg = micrograms per kilogram
μg/L = micrograms per liter
Empty cells = No results
ESR = Ecological screening ratio
HHSR = Human health screening ratio
NA = Not Applicable
ND = Not Detected
NSV = No Screening Value
PCB = Polychlorinated biphenyl
pH = pH units
PRI = Preliminary Remedial Investigation
SIM = Selected ion monitoring
TEQ = Toxicity equivalence
USEPA = United States Environmental Protection Agency
USM = US Magnesium LLC
X = no undiluted samples were analyzed.

Appendix L
Response to Agency Comments

Environmental Resources Management

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Scottsdale, AZ 85251
(480) 998-2401
(480) 998-2106 (fax)

6 March 2015

<u>*Via Electronic Mail*</u>

Mr. Ken Wangerud
Remedial Project Manager
Superfund Remedial Program
USEPA Region 8 – EPR-SR
1595 Wynkoop Street
Denver, CO 80202-1129

Subject: Response to USEPA Comments on the Fines vs. Bulk Evaluation Technical Memorandum, dated 28 January 2015

Dear Mr. Wangerud:

The Fines vs. Bulk Evaluation Technical Memorandum was submitted via email to the United States Environmental Protection Agency (USEPA) on 12 December 2014. USEPA comments on the memorandum were received via e-mail on 28 January 2015. This letter presents ERM-West, Inc.'s (ERM's) responses to USEPA's comments on the Fines vs. Bulk Evaluation Technical Memorandum. A revised version of the Fines vs. Bulk Evaluation Technical Memorandum incorporating the revisions below is attached to this letter.

Each of the USEPA comments is provided below in italic font, followed by ERM's response in green font.

GENERAL COMMENT

The fine vs. bulk relationship is used mainly for human risk assessment. At present, it is not expected that fine vs. bulk adjustments will be used in the ecological assessment. Consequently, references to the BTAG are not appropriate. Rather than referring to discussions with the BTAG, revise the text to refer to discussions with the EPA and other agency partners.

ERM Response: Text will be revised as per the comment.

SPECIFIC COMMENTS

INTRODUCTION

1. ***Page 2, first full paragraph after numbered list****: Although the text is accurately quoting the Phase 1A SAP, revise the text as follows:*

   ~~The Phase 1A SAP states that "t~~ This approach allows development of a quantitative relationship between the bulk ~~coarse~~ fraction and the fine fraction, so that if a meaningful difference is evident, the concentration in the fine-grained fraction may be calculated from the bulk ~~coarse~~ fraction.~~"~~

   ERM Response: Text will be revised as per the comment.

2. ***Page 2, paragraph following bulleted list****: Revise the text as follows:*

   In addition, note that relationships and methods used to adjust bulk concentrations to account for concentrations in the fine fraction as described herein are intended ~~appropriate~~ for use in selection of human health COPCs for the Outer PRIs ~~the screening level risk assessment (SLRA) only~~. The~~y~~ data may or may not be considered adequate ~~are not intended~~ for use in subsequent characterizations of exposure or risk that may be conducted at a later date.

   ERM Response: Text will be revised consistent with the comment as follows:

   > In addition, note that relationships and methods used to adjust bulk concentrations to account for concentrations in the fine fraction as described herein are intended for use in selection of human health COPCs for the Outer PRIs. Methods and findings used herein may or may not be considered adequate for use in subsequent selection of COPCs and/or characterizations of exposure or risk that may be conducted at a later date.

DATA USED IN EVALUATION

3. Include a description of where the raw analytical data may be accessed.

ERM Response: Reader will be referred to where the analytical data may be accessed.

4. ***Page 3, first full paragraph, third sentence***: *The text states that all data were validated. Based on the requirements of the Phase 1A SAP (WS#36), it is expected that 10 percent of the fine vs. bulk data was validated using Stage 3A protocols and the remaining 90 percent was subject to a Stage 2 level of validation. Please confirm this assumption and provide an indication of where the supporting validation documentation can be located.*

ERM Response: Data validation was performed as required by the Phase 1A SAP. The text is correct. All validation reports are included in Appendix H of the Phase 1A Data Report. No change to the memorandum is required.

5. ***Page 3, first full paragraph, fourth sentence***: *It is not necessary to include field duplicate data and other quality assurance data in this report; however, include a cross-reference to the data usability assessment (Section 7.2 of the Phase 1A RI Data Report main document). Include a brief statement that summarizes the conclusions from that report as they relate to the data described in this appendix.*

ERM Response: A reference to Section 7.2 of the Phase 1A RI Data Report and the following text will be included:

> Fines fraction analysis was done on five surface soil samples selected from each PRI Area, and both the fine fraction and the bulk samples were analyzed for select Phase 1A RI constituents. Table 2 provides descriptive statistics of the fines content of the samples from each PRI Area. Field duplicates for bulk and fine samples were excluded from this evaluation.
>
> All data used have been validated by a third party and deemed usable, as described in Section 7.2 of the Phase 1A RI Data Report. Method quality objectives for precision, accuracy, representativeness, completeness, and comparability were met for the Phase 1A RI Data. Additional detail can be found in

the data validation reports included in Appendix H. ~~Field duplicates for bulk and fine samples were excluded from this evaluation.~~

6. ***Page 4, second bullet list:*** *Sample pairs where an analyte was not detected in one or both samples should not be used in assessing the quantitative relation between fine vs. bulk. Revise the text as follows:*

   If both values are detects, use the maximum value; and
   ~~If one value is detected, us the detected value; and~~
   ~~If neither value is detected, use the minimum value.~~
   If one or neither value is detected, do not use the sample pair in the assessment.

   ERM Response: These bullets apply only to the case where two results were reported in a single sample (either a bulk sample or a fine fraction sample) for the same SVOC as a result of two analyses: full scan (SW 8270C) and SIM methods (SW 8270C-SIM). It does not apply to how non-detected values in a bulk-fines pair of samples are handled. Handling of non-detected values is described on Page 7 and states that "…a sample pair was included in this evaluation only if the analyte was detected in both the bulk sample and fine fraction." For further clarity, the following revised text will be included:

   > When two results were reported for the same SVOC in a sample as a result of the use of two analytical methods (SCAN and SIM), the value used in the bulk-fines dataset for that sample was selected based on the following:
   >
   > - If an SVOC was detected in a sample by both regular (SCAN) and confirmation (SIM) analyses, use the maximum value; or
   > - If an SVOC was detected in a sample by only one analysis (SIM or SCAN), use the detected value; or
   > - If an SVOC was not detected in a sample by either analysis (SIM or SCAN), then the associated bulk-fines sample pair would not be included in the bulk-fines dataset as only analytes detected in both the paired bulk and fine fractions were used in this assessment.

DATA ANALYSIS/APPROACH

7. ***Page 4, only paragraph, third sentence:*** *Revise the text as follows:*

> ~~*As agreed with the BTAG, the data from all PRI Areas were combined for the regression analysis.*~~ Data were graphed and a visual examination was performed to see if there were important differences between PRI areas (e.g., see Appendix A plots using color codes to stratify by PRI areas). After discussions with USEPA and agency partners, it was concluded that any differences that may exist between PRI areas are sufficiently minor that data from all PRI areas may be combined to increase the number of data points and to improve the statistical power of the analysis.

ERM Response: Text will be revised as per the comment (see above). Consistent with response to General Comment, "USEPA and agency partners" was inserted into the text.

8. ***Scatterplots, page 5, only paragraph****: The text contains a number of statements regarding the role of distributional form in selecting a regression method. The EPA notes some of the statements are not entirely accurate; however, the EPA agrees with the method selected, therefore it is not necessary to edit the text. If ERM wishes, the EPA will identify the issues as a side discussion.*

ERM Response: Comment noted. No change to the memorandum is required.

Environmental Resources Management

9. ***Scatterplots, page 5, only paragraph****: Revise the text as follows:*

    To provide a visualization of the relationship between bulk sample and their associated fine fraction, concentrations in each of the paired bulk and fine samples were plotted against each other in a scatterplot (see Attachment A). For convenience, the graphs show a ~~The~~ one-to-one line that indicates equal concentrations in the fine fraction and the bulk sample. ~~and is shown on the plots as a visual guide (Figure 1). If the concentration in the fine fraction is greater than concentration in the bulk sample the point falls above the one-to-one line. Visual inspection of the plots showed that concentrations in the fine fraction may be higher or lower than concentrations in the bulk sample, and, in some constituents, are very similar. Further exploration~~ Quantitative evaluation of the fine vs. bulk concentration relationships were conducted using regression analysis.

    ERM Response: Text will be revised as per the comment (see above).

10. ***Characterizing Relationship between Bulk Sample and Fine Fraction, Handling of Non-Detected Values, page 7, only paragraph, second-to-last sentence****: Revise the text to clarify if this includes "J" qualified values below the laboratory quantitation limit.*

    ERM Response: Text will be revised as follows:

    > A detect-detect pair is a sample wherein a detected concentration (including J-qualified concentration) was reported for the analyte in both the bulk sample and the fine fraction.

11. ***Characterizing Relationship between Bulk Sample and Fine Fraction, Evaluation and Selection of Regression Methods, <u>Parametric Regression Methods</u>, Simple Linear Regression, page 7, second-to-last sentence on page****: The text says "Further, the use of SLR is prohibited when the dataset includes left-censored (non-detect) data (Helsel & Hirsch 1991)." However, any sample pair that is ND for one or both samples is excluded from use. Therefore, this is an irrelevant criticism of SLR and cannot be claimed as an advantage of the non-parametric method proposed. Revise the text to delete this sentence.*

ERM Response: Text will be revised as follows:

> SLR is sensitive to outliers and skew~~. Further, the use of SLR is prohibited when the dataset includes left-censored (non-detect) data~~ (Helsel & Hirsch 1991).

12. ***Characterizing Relationship between Bulk Sample and Fine Fraction, Evaluation and Selection of Regression Methods, <u>Nonparametric Regression Methods</u>, Mann-Kendall Test and Sen's Slope Estimator, page 9, first equation****: The equation for S is not clear. Helsel and Hirsh define S as P – N, where P is the count of Y pairs (rank ordered from low to high on X) where the difference is positive and N is the count of the number of Y pairs where the difference is negative. Revise the text to clarify the notation.*

    ERM Response: Equation in the text is correct and properly cited as Kendall (1976). Reference will be added to text as follows:

    > In the case of no ties in the x and y variables, Kendall's rank correlation coefficient, tau (τ), may be expressed as
    >
    > $\tau = S/D$
    >
    > where (Kendall 1976):
    >
    > $$S = \sum_{i<j} (sign(x[j] - x[i]) * sign(y[j] - y[i]))$$

13. ***Characterizing Relationship between Bulk Sample and Fine Fraction, Evaluation and Selection of Regression Methods, <u>Selected Regression Method</u>, page 10, second paragraph, second sentence****: The text states "The median regression model was applied to all analytes with at least eight detect- detect pairs". Revise the text to confirm and re-state that only detect-detect pairs are used, and that any detect-ND or ND-ND pairs are not used.*

ERM Response: Text will be revised as follows:

> The median regression model was applied to all analytes with at least eight detect- detect pairs. As noted in *Handling of Non-Detected Values* (p. 7 of this memorandum), only detect-detect pairs are used—detect-ND or ND-ND pairs are not used.

RESULTS/CONCLUSIONS

14. ***Page 10, only paragraph, last sentence:*** *Revise the text as follows:*

    > *Note that the calculated totals (TEQ mammalian and avian, Total PCBs, and*
    > *HMW/LMW PAHs) are shown with substitutions of both of zero and of one-half the method detection limit for individual non-detect congeners.*

    ERM Response: Text will be revised as per the comment (see above).

15. ***Analytes Excluded from Regression Analysis, page 11, first paragraph after bullet lists, last sentence:*** *The report should state clearly that the data collected on the relationship between fine vs. bulk samples in the outer PRI areas should not be assumed to be applicable to use in the inner PRI areas not included in the study (i.e., PRI 2). In addition, data collection from the remaining inner PRI areas may be needed to make this determination. Revise the text as follows:*

    > *~~Based on this range, a proxy adjustment factor of two (2.0) was selected for all detected SVOCs and PAHs. The adjustment was considered to be reasonably conservative to support a site-specific screening of inner PRI areas.~~ Because the range was relatively narrow across different analytes, for simplicity, it was decided that use of a conservative value of 2.0 for ~~all analytes~~ SVOCs (including PAHs) detected in bulk samples would be useful in the initial evaluation of the data.*

    ERM Response: Text will be revised as per the comment (see above). For clarity, please note that PRI 2 is categorized as an Outer PRI. A revised statement for the intended use of bulk-fine adjustments will be included in the Introduction (see Response to Comment #2).

Whether or not a factor of 2 is adequate to account for the uncertainty remains to be determined. The EPA notes that no adjustment for bulk-fine was used by ERM in the derivation of refined RBCs for US Mag workers exposed in the inner PRI areas.

ERM Response: Refined RBCs were only developed for three bioaccumlative constituents: dioxin-like compounds (as characterized by TCDD TEQ), Total PCBs, and HCB. The proxy adjustment factor of two is proposed for SVOCs (including PAHs) detected in bulk samples – not to adjust concentrations for the three bioaccumulative constituents. Comment noted.

16. ***Summary, page 12, first full paragraph****: The text states "Further in some cases (particularly with the Calculated TEQs), the y intercept of the model far exceeded the measured values. By applying the adjustment factor to these data, seemingly large differences in the range of values for an analyte appeared "dwarfed" by the linear adjustment of the model." The value of the intercept is the predicted concentration in fines when the concentration in bulk is zero. Granted that the median regression line derived using the selected method is appropriate, the value of the intercept should not be identified as a major source of uncertainty. Rather, interpretation of this value must be placed in the context of the sample results as well as the context of the level of concern. While it is appropriate to discuss the limitations in the results, this discussion tends to overstate the problems and undermines confidence in the conclusions. Revise as appropriate to clarify this issue.*

ERM Response: Text will be revised as follows:

> Further, in some cases (particularly with the Calculated TEQs), the y-intercept of the model exceeded the measured values. When applying the adjustment factor to these data, seemingly large differences in the range of values for an analyte appear "dwarfed" by the linear adjustment of the model. For this evaluation, the intended use of the model (including the y-intercept) is to 'best fit' the data for the purposes of predicting concentrations in the fine fraction using bulk fraction data. To attain the 'best fit' for estimation purposes, the regression was not 'forced' through the origin. Given specified goals and latitudes of this evaluation, future assessments

may use a different approach to identify and characterize relationships between bulk and fine fractions.

17. ***Attachment A:*** *Include units of concentration to all scatterplots.*

    ERM Response**:** Scatterplots will be revised to include units.

If you have any questions, please contact me at (480) 998-2401.

Sincerely,

David J. Abranovic, P.E.
Project Coordinator (ERM)

DJA/jcb/0132320
Attachments

cc: David Gibby (US Mag)
Mark Ransom (ERM)

Environmental Resources Management

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Scottsdale, AZ 85251
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30 March 2015

Via Electronic Mail

Mr. Ken Wangerud
Remedial Project Manager
Superfund Remedial Program
USEPA Region 8 – EPR-SR
1595 Wynkoop Street
Denver, CO 80202-1129

Subject: Response to USEPA Comments on the OU-1 Phase 1A Outer PRI Data Adequacy Memorandum, dated 4 February 2015

Dear Mr. Wangerud:

The OU-1 Phase 1A Outer PRI Data Adequacy Memorandum was submitted via email to the United States Environmental Protection Agency (USEPA) on 12 December 2014. USEPA comments on this submittal were received via e-mail on 4 February 2015, and this letter presents ERM-West, Inc.'s (ERM's) responses to USEPA's comments.

Each of the USEPA comments is provided below in italic font, followed by ERM's response in green font.

GENERAL COMMENTS

1. *Separate the surface water and groundwater into individual media throughout this report and for the data adequacy evaluation. The Phase 1A SAP prescribes collection of both surface and groundwater samples; each being a separate media in the Conceptual Site Model. These are distinctly different aqueous media with significantly different potential sources and fate and transport regimes.*

   With regard to groundwater, the data adequacy assessment should note that no sample was collected from MW16.

With regard to surface water, the Phase 1A surface water sampling remains to be fulfilled by ERM. Email correspondence dated 20November 2014, from K. Wangerud to ERM extended the surface water sampling schedule (email attached).

Revise the memorandum to exclude any adequacy evaluation of surface water until completion of Phase 1A data collection for <u>site-wide</u> surface water. Examples include but are not limited to:

a. Page 2, Section 2.0 Approach: "…evaluation (solid samples collected in PRIs 2 and 8 through 16, and water samples collected and combined into PRI 17)."

b. Page 5, partial paragraph on top of page: "A total of 46 aqueous samples collected during Phase 1A were evaluated as PRI 17." Revise to distinguish between the sample sets for surface water (16 thus far) and groundwater (30). Continue to clarify the surface water data set is incomplete and data adequacy has yet to be evaluated.

c. Page 8, Section 3.2 Water: both surface water and groundwater data sets combined for data adequacy evaluation. Revise to indicate only groundwater data is include for the groundwater media data adequacy analysis.

d. Page 10, Section 4.2, Water: include discussion of only the groundwater dataset.

e. Page 11, Section 5.0, Conclusions, third bullet: refers to the "aqueous dataset." Revise to include conclusions regarding the groundwater dataset only.

f. Tables: delete surface water data and dataset discussion.

Response: During the March 2015 Phase 1B RI Scoping Meeting, US Magnesium/ERM and USEPA agreed that data adequacy for groundwater will be evaluated separately from surface water. The data adequacy memo will be revised to include evaluation of solids and groundwater samples only. It will be noted in the data adequacy memo that a sample could not be collected from MW16, and the Draft Phase 1A Data Report will be referenced for the explanation. The text will be revised to indicate that only groundwater data are being evaluated. The tables will be revised to include only groundwater data.

ERM is coordinating with US Magnesium and USEPA to collect the remaining Phase 1A Surface Water samples during spring/summer 2015. After the data are received and validated, the surface water dataset will be evaluated for data adequacy.

SPECIFIC COMMENTS

2. ***Section 1.0 INTRODUCTION, page 1, numbered list****: The text states "By comparing maximum concentrations to risk-based screening levels (RBSLs) or risk-based ecological screening levels (RBESLs)[1], the SLRA will present information on exceedances (or lack thereof) to..... 2) support decisions related to conducting an expedited feasibility study, and…" The primary purpose of the Phase 1A data is COPC selection for the outer PRIs. It is not clear what aspect of the Phase 1A data ERM believes may be relevant to deciding whether an expedited FS is appropriate for one or more of the outer PRIs. Absent an acceptable explanation for this assertion, delete this item from the list.*

   Response: Text will be revised as per the comment.

3. ***Section 2.1 Assessing Adequate Sample Size per Area, page 2, first paragraph of section, first sentence****: Revise the text as follows:*

   …ecological risk-based concentrations (RBCs).

   Response: Text will be revised as per the comment.

4. ***Section 2.1 Assessing Adequate Sample Size per Area, page 2, second paragraph of section****: Revise the text as follows:*

   The DQOs presented in the Phase 1A SAP Worksheet 11 provide the performance criteria for sample size for COPC selection, which is founded on the concept that given a dataset of adequate size, Cmax in that dataset will have a high probability (at least 95%) of exceeding the true mean concentration across the exposure area.

   Response: Text will be revised as per the comment.

5. ***Section 2.2 Evaluation Process for Data Adequacy, page 5, second paragraph of section****:*

   Revise the text as follows:

   …detected values in the dataset. ~~If an RBC is not available for an analyte in a specific medium, data adequacy is based~~

> *~~on an evaluation of analytical sensitivity in detecting concentrations at PRIs.~~ The lack of an RBC…*
>
> *An evaluation of analytical sensitivity cannot help address uncertainty about chemicals with no RBCs.*
>
> ***Response***: Text will be revised as per the comment. In addition, the flow diagram (Figure 2-1) and tables have been revised accordingly. The revised flow diagram (Figure 2-1) is attached.

6. ***Section 2.2 Evaluation Process for Data Adequacy, page 5, third paragraph of section***: *Revise the text as follows:*

   > *…number of detections. As described in Section 1, Phase 1A sample size recommendations were based on the assumption that the mean would generally not be higher than the 80th percentile, and that a sample size of 14 would be sufficient to ~~capture~~ ensure there was a high probability that* Cmax *would exceed the true mean. The mean was calculated…*
   >
   > ***Response***: Text will be revised as per the comment.

7. ***Section 2.2 Evaluation Process for Data Adequacy, page 6, first full paragraph on page***: *The text states "For datasets with at least 60 percent detects, if the mean is less than the 80th percentile (Decision 3), then the data are sufficient for COPC selection. If not, then the dataset is considered to be highly skewed and it is uncertain that the data are adequate)." The second sentence in this paragraph is unlikely to be true in all cases and is not needed. The fact that detection frequency is low does not necessarily imply the data set is strongly skewed. More importantly, the adequacy of the data depends on the relation of the detection limit to the RBC. Such data sets should be evaluated on a case by case basis. Revise the text accordingly.*

   > ***Response***: The text only applies to datasets with at least 60 percent detects. Evaluation of datasets with low detection frequency is discussed in the next paragraph of the text. Text will be revised as follows for additional clarity:
   >
   > *For datasets with at least 60 percent detects, if the mean is less than the 80th percentile (Decision 3), then the data are sufficient for COPC selection. If the mean is greater than the 80th percentile, then the dataset is considered to be highly skewed and it is uncertain that the data are adequate.*

8. ***Section 2.2 Evaluation Process for Data Adequacy, page 6, last paragraph***: *Delete the description of Test 5 from the text (and also from Figure 2-1, noted below). If an analyte is not detected and the analytical method does not provide an adequate detection limit to quantify exceedances of an RBC, the data are not adequate, regardless of whether or not the MDL achieved is similar to what was expected for the method. Revise the text as follows:*

> *If an analyte was not detected in at least 60 percent of the samples in the dataset and Cmax is less than the lowest RBC, the sensitivity of the analytical results was evaluated (Decision 4). If all detects are less than RBCs, and the maximum ~~minimum~~ MDL for non-detects is less than the RBCs, the data are adequate to select COPCs (i.e., all detected concentrations and analytical methods meet DQOs in detecting concentrations below the RBCs). If the maximum ~~minimum~~ MDL is not less than RBCs, the data may or may not be adequate and must be assessed on a case by case as discussed in Section 4 ~~it may be because the analytical technology is not sufficient to achieve the RBC. In this case, at Decision 5, the minimum MDL is compared to the MDL for that analyte in that matrix in Worksheet 15 of the Phase 1A SAP. Comparison to the Phase 1A SAP MDLs provides an indication of the likelihood the constituent will be detected in the future and whether it is worthwhile continuing to test for it. If the minimum MDL is greater than the lowest RBC but less than 30 percent greater than the MDL for that analyte in Worksheet 15 of the Phase 1A SAP, the data are adequate for COPC selection. If the minimum MDL is significantly higher than the Worksheet 15 MDL (greater than typical analytical variability of 30 percent[3]), the dataset may not be adequate for COPC selection. Methods to address this uncertainty at COPC selection are proposed in Section 4~~.*

Footnote 3 shall also be deleted.

Focusing on the minimum MDL in a data set of non-detect samples with variable MDLs is not appropriate. This could create the impression that the MDL is adequate for all samples in a data set, when it is not. Rather, use the maximum MDL in each set of non-detects to screen for data adequacy. If one or more samples is an ND at a level above the RBC, this data set should be evaluated on a case by case basis to determine if the data are or are not adequate.

Response: Text will be revised to reflect the comment and the process described below. In addition, the flow diagram (Figure 2-1) and tables will be revised to use maximum sample detection limits (DLs) for comparison to RBCs. The data adequacy TM will be revised to include a case-by-case assessment of uncertain datasets (excluding HPAH and LPAH, because the constituents included in these sums are evaluated individually), where the maximum detected concentration does not exceed the lowest RBC and either the maximum DL is greater than the RBC or the mean is greater than the 80th percentile.

In cases where detection frequency is greater than or equal to 60 percent, if the mean is greater than the 80th percentile, the factors responsible for the mean exceeding the 80th percentile will be reviewed. In these cases, the uncertainty may be resolved by:

- Providing rationale for not selecting the analyte as a COPC or COPEC,
- Selecting the analyte in question as a COPC and COPEC in the SLRA), or
- Collection of additional data.

VOCs may be evaluated differently, as they were not analyzed in all samples collected in most PRIs and may have fewer than 14 samples, per the SAP.

In cases where detection frequency is less than 60 percent, if the maximum DL is greater than the lowest RBC, the distribution of DLs in each analyte dataset will be reviewed to determine how frequently the DL exceeds the lowest RBC.

- If most DLs are less than the lowest RBC, and the exceeding DLs are due to a challenging sample matrix, the dataset may be deemed adequate.
- If most or all MDLs are greater than the RBC, a comparison to DLs in Worksheet #15 of the SAP will be conducted.
  - If the SAP MQO for sensitivity has been met, the dataset may be deemed adequate.
  - If the MQO has not been met, uncertainty regarding adequacy remains, and may be resolved by:
    - Selection of the analyte as a COPC and/or COPEC (depending whether the DL exceeds the RBSL or lowest RBESL, or both) in the SLRA, or
    - Collection of additional data.

9. ***Section 3.0 DATA USED, page 7, footnote 4****: It is unacceptable to exclude surface water data from PRI 7. Note for future evaluation of surface water data adequacy once a complete surface water dataset is obtained. For this report, the footnote will be deleted.*

   Response: As stated in the response to General Comment 1, the data adequacy memo will be revised to include evaluation of solids and groundwater samples only. Footnote 4 is no longer applicable, as no groundwater data were collected during the DMA, and it will be deleted.

10. ***Section 3.1 Solids, page 8, first paragraph****: Clarify if the reference to "stock pile waste" refers to only PRI 2 or other PRIs in the study area.*

    Response: Stockpiled waste includes samples from PRI 2 (the USM Landfill), PRI 9 (Smut Area), and PRI 12 (Ancillary Worker Exposure Area). Note that solid waste samples were also collected from the subsurface at PRI 10 (Barium Sulfate Area).

11. ***Section 3.1 Solids, page 8, second paragraph****: The last sentence of the paragraph discusses adjustment factors that were developed and applied and found in Appendix J of the Phase 1A Outer PRI Data Report. However, Appendix J indicates that a factor of 2 will be applied for all analytes, independent of PRI. Revise the text to directly note the single adjustment factor of 2.*

    Response: No revision is needed. Appendix J states the following:

    "The BTAG carefully examined both the median fine-to-bulk ratios and the median regression slopes for SVOCs (including PAHs) with sufficient detect-detect pairs and, with the exception of acetophenone, these values ranged from 0.9 to 1.9. Based on this range, a proxy adjustment factor of two (2.0) was selected for all detected SVOCs and PAHs."

    For analytes with a minimum of eight detect-detect pairs, specific adjustment factors were developed based on the relationship between bulk sample and fine fraction concentrations, as shown in Tables 5 and 7 of Appendix J. These adjustment factors were developed using data combined from all of the PRIs with fines data and applied to data from all PRIs in which fines analyses were conducted (PRIs 2 and 8 to 14).

12. ***Section 3.3 PARCC Assessment, page 8***: *The PARCC assessment in the Phase 1A Outer PRI Data Report provides consolidated statistics across all analytes. This could possibly mask problems with specific analytes. PARCC analyses results should be presented by analyte by PRI. This comment will be noted again for the main portion of the Data Report and any resulting adjustments shall be made herein also.*

    Response: Descriptive statistics for the comparison of analytical results to Measurement Quality Objectives (MQOs) for precision, accuracy, and completeness will be presented by analyte by PRI for solids and groundwater in the revised data adequacy memo as per the comment. Representativeness and comparability will not be evaluated or presented on an analyte or PRI basis for the reasons described below.

    Representativeness is a measure of whether sample data accurately and precisely represent the characteristics of a population, and the SAP identifies that there are no criteria for quantitatively evaluating representativeness. According to the SAP, representative data for this project is obtained through careful selection of sample locations and analytical parameters, proper collection and handling of samples, and consistent application of established field and laboratory procedures. Collection and handling of samples and application of field and laboratory procedures were consistently practiced throughout Phase 1A and it would be inappropriate to present these actions by analyte by PRI as requested. This evaluation is presented in Section 7.2.3 of the Phase 1A data report for the Outer PRIs and is sufficient.

    Comparability expresses the confidence with which one data set can be compared with another. The SAP identifies that there is no quantitative measure for comparability and that comparability will be achieved by consistently following standard field and laboratory procedures and by using standard measurement units in reporting analytical data. It would be inappropriate to present the confidence of comparability of datasets by analyte by PRI as requested. This evaluation is presented in the Phase 1A data report for the Outer PRIs and is sufficient.

13. ***Section 4.1 Solids, page 9, first paragraph***: *Revise the text as follows:*
    … In five of the 10 PRIs, all analytes have adequate data (Table 4-12). The following paragraphs describe the skewed and uncertain data sets. In PRI 2, five…

Response: Text will be revised as per the comment.

14. ***Section 4.1 Solids, page 10, last paragraph***: *Revise the text as follows:*

 …Worksheet 15 MDL ~~by greater than 30 percent~~. Thallium concentrations…

 Response: Text will be revised as per the comment.

15. ***Section 4.2 Water, page 10, only paragraph***: *Revise the text as follows:*
 …Worksheet 15 values. ~~Analytical limitations for these analytes will be further evaluated through discussions with the laboratory prior to including them in the Phase 1B RI~~.

 The decision as to whether limitations in the data prohibit them from being relied upon for COPC selection is a topic for discussion with agency risk assessors and risk managers, not the analytical laboratory.

 Response: Text will be revised as per the comment.

16. ***Section 4.3 Evaluation of Datasets with Fewer than 14 Samples, Page 11, first paragraph:***

 It is premature to determine potential impacts to PRI's 15 and 16. Revise the text as follows:
 ...RBC in PRIs 15 and 16~~, which have little to no impacts from site operations~~. Thus, it...

 Response: Text will be revised as per the comment.

17. ***Figure 2-1***: *Revise the text as follows:*
 4 Is Maximum ~~Minimum~~ MDL $\leq$ Lowest RBSL? (c)

 Response: Text in the figure has been revised as per the comment (see attached).

18. ***Figure 2-1***: *Remove "Step 5" and the "Yes" direction from that step. The figure should reflect a decision: if the answer to Step 4 is "No" then the uncertainty will be addressed during COPC selection.*

 Response: Figure 2-1 (attached) has been revised as per the comment.

If you have any questions, please contact me at (480) 998-2401.

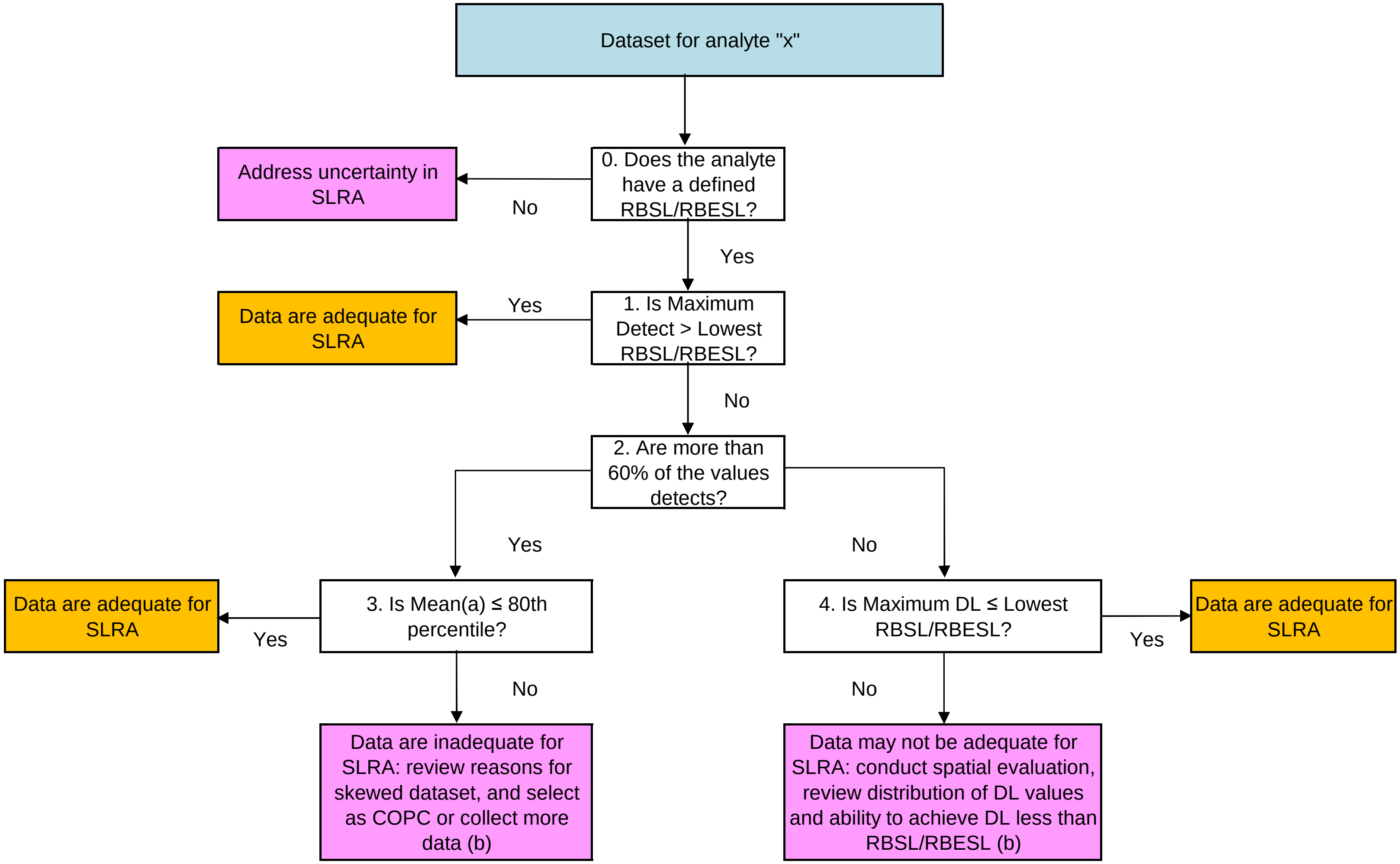
Sincerely,

David J. Abranovic, P.E.
Project Coordinator (ERM)

DJA/jcb/0132320
Attachments

cc: David Gibby (US Mag)
Mark Ransom (ERM)

Figure 2-1. Data Adequacy Assessment Protocol for Phase 1A Outer PRIs



Notes
(a) Mean calculated by using 1/2 DL for NDs
(b) Additional detail provided in data adequacy memorandum text.

COPC = Constituent of potential concern
DL = Detection limit
RBSL = Risk-based screening level
RBESL = Risk-based ecological screening level

Environmental Resources Management

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17 June 2015

Via Electronic Mail

Mr. Ken Wangerud
Remedial Project Manager
Superfund Remedial Program
USEPA Region 8 – EPR-SR
1595 Wynkoop Street
Denver, CO 80202-1129

Subject: Response to USEPA Comments on the Agencies Technical Comments On Environmental Resources Management's Draft Phase 1A Data Report For PRI Areas 2 And 8–17

Dear Mr. Wangerud:

The draft *Phase 1A Data Report for PRI Areas 2 and 8-17* (Data Report) was submitted via email to the United States Environmental Protection Agency (USEPA) on 23 September 2014. The USEPA provided comments on this submittal on behalf of the USEPA and Utah Department of Environmental Quality (collectively "the Agencies") via e-mail on 14 May 2015, and this letter presents ERM-West, Inc.'s (ERM's) responses to the Agencies' comments.

Each of the Agencies' comments is provided below in italic font, followed by ERM's response in green font.

INTRODUCTION

The U.S. Environmental Protection Agency and the Utah Department of Environmental Quality (collectively the Agencies) are providing the following comments on the draft Phase 1A Data Report for PRI Areas 2 and 8-17I (Data Report). This document was prepared by Environmental Resources Management (ERM) and submitted to the EPA 24 September 2014. At that time, Appendix J and Appendix K were not included in the draft document. The following provides a timeline for transmittals of Appendix J and Appendix K.

- *12 December 2014: ERM submitted both Appendix J and K to the EPA.*
- *28 January 2015: Agencies provided technical comments on Appendix J to ERM.*
- *4 February 2015: Agencies provided technical comments on Appendix K to ERM.*
- *6 March 2015: ERM submitted revised Appendix J to the EPA.*
- *30 March 2015: ERM submitted Response to Comments on Appendix K. The following comments are inclusive of the entire Data Report.*

GENERAL COMMENTS

1. *The PARCCS assessment (including sensitivity) in the Data Report, and Appendix K, provides consolidated statistics across all analytes. This could possibly mask problems with specific analytes. PARCCS analyses results should also be presented by analyte by PRI. Revise the Data Report to provide additional PARCCS analyses results by analyte by PRI. In addition, Sections 4.1.2, 4.2.2, and 4.4.3 would benefit from a table showing how the Phase 1A field activities meet the PRI-specific QC requirements (Worksheet #20 from the Phase 1A SAP).*

   Response:

   a. This comment will be addressed in the Data Report for the most part, except for the sensitivity evaluation, which is provided with the data adequacy evaluation.
   b. New tables will be included showing rates of qualifiers added during validation due to accuracy and precision MQOs. Separate summary tables for accuracy and precision will show the overall number of qualifiers for each analyte in each PRI area. In addition, there will be tables showing each analyte in each PRI area that is qualified for either accuracy or precision, organized by reason code (see example). Validation qualifiers are not added for representativeness, comparability, completeness, or sensitivity, so these are addressed separately.
   c. A table will be included summarizing completeness by PRI area. See response to Comment 2 related to completeness evaluation.
   d. An evaluation of representativeness and comparability as related to laboratory analysis was provided in the draft report. See response to Comment 2 regarding the representativeness evaluation related to field modifications.

e. Sensitivity is evaluated in the data adequacy appendix (Appendix K). Each PRI data adequacy table compares the maximum and minimum MDL to the lowest RBC and to the Worksheet # 15 (WS 15) MDL. More detail on sensitivity analysis is provided in the response to Comment 22.
f. Tables will be included that summarize the field QC samples collected for solids in each PRI area and for groundwater. Overall frequency will be compared to requirements in Worksheet # 12.

2. *Although the SAP modifications are not included in this Data Report, the impacts of both SAP and field modifications on the* <u>*completeness*</u> *and* <u>*representativeness*</u> *of the data should be discussed as appropriate throughout the document. In addition, the lack of sample collection from MW-16 and PRI7-009 should be included in the PRI-specific completeness evaluation.*

   Response: The requested revisions will be made to Sections 4.1.3, 4.2.3, and 4.4.4 regarding impacts of SAP and field modifications on representativeness and completeness. The SAP modifications will be provided with the Data Report in Appendix C, with the field modifications.

3. *Revise the headings of Sections 4.1.3, 4.2.3, 4.3.3, 4.4.4, 4.5.2, 4.6.2, and 4.7.3 to better clarify these sections only discuss the* <u>***Field***</u> *Modifications, consistent with the text of Section 1.2.*

   Response: The requested revisions will be made to the text.

SPECIFIC COMMENTS

4. <u>***Section 3.0 Pre-Phase 1A Reconnaissance Activities, page 5:***</u> *The Data Report notes other activities conducted in support of the Phase 1A data collection efforts. Revise the text of this paragraph to include reference to the following sections and appendices where additional detail is provided (e.g., Appendices A, B and J).*

   Response: The requested revisions will be made to the text.

5. ***Section 3.4 Landfill Geophysical Survey, pages 6-7:*** *In addition to stating the geophysical survey results are summarized in Appendix B, revise the text to include a brief summary of the results, including the approximate depth to native soil (approximately 25 ft. across the landfill) and that the electrical resistivity survey indicated that sonic drilling would be the preferred method to obtaining subsurface samples.*

   Response: The requested revisions will be made to the text.

6. ***Section 4.1.1 Sampling Activities, pages 8-9, second bullet (PRI8):*** *Revise the text to include the locations (identification) for the three saturated surface solid samples at PRI8.*

   Response: The requested revisions will be made to the text.

7. ***Section 4.1.3 Modifications to the Phase 1A Sampling and Analysis Plan, page 10, third bullet:*** *Revise the text to explain the field conditions that resulted in sample location PRI8-005 being modified to include two locations, PRI8-005A and PRI8-005B.*

   Response: The requested revisions will be made to the text.

8. ***Section 4.1.3 Modifications to the Phase 1A Sampling and Analysis Plan, page 10, last bullet:*** *Revise the text as follows:*

   …locations (PRI2-00~~2~~6, PRI2-009…

   Response: The requested revision will be made to the text.

9. ***Section 4.2.3 Modifications to the Phase 1A Sampling and Analysis Plan, page 12, only bullet:*** *The Data Report states that PRI 2 boring locations and sample intervals were modified based on the geophysical survey and lithologic observations. Revise the text to summarize the modifications.*

   Response: The requested revisions will be made to the text.

10. ***Section 4.3.2 Well Development, page 13, second paragraph:*** *Revise the text to identify deviations from the SOP with regards to development procedures. One example is PWT field personnel observed deviations at MW-14 related to the use of only a submersible pump and collection of grab samples for water quality parameters.*

    Response: The requested revisions will be made to the text.

11. ***Section 4.3.3 Modifications to the Phase 1A Sampling and Analysis Plan, page 14, bullet list:*** *Several references are made to "observed lithology" for modifying the design, construction or location for the installation of several monitoring wells (MW-18, MW-14, MW-20B, MW-20A and MW-16). Revise the text to include clarification as to how lithology resulted in modifications to the monitoring wells discussed in this section.*

    Response: The requested revisions will be made to the text.

12. ***Section 4.4.2 Surface Water Sampling Activities, page 15, second paragraph:*** *Revise the text as follows:*

    > *Surface water sampling at most Inner PRI Areas (PRIs 1, 3, 5, and 6) was not performed in association with the Phase 1A RI for Outer PRI Areas. Surface water sampling at these PRI areas was postponed pending ~~the outcome of the Resource Conservation and Recovery Act settlement being negotiated between US Magnesium, the USEPA, and the United States Department of Justice, and pending~~* a decision by US *Magnesium to conduct an alternative RI/FS process for one or more of the Inner PRI Areas, as described in Attachment 5 to the SAP cover letter (EPA 2013). An addendum to this Phase 1A Data Report will be prepared to include the remaining surface water sampling activities and data results as well as a separate data adequacy evaluation for surface water (Appendix K).*

    Comment note: RCRA case considerations were not factors in the sampling deferral decision. It was solely to enable US Magnesium to consider the USEPA's alternative RI/FS offer.

Response: The elimination of RCRA case considerations from this discussion is inappropriate, as the potential RCRA settlement was the stated justification for the request by US Magnesium/ERM to eliminate surface water samples from PRI Areas 1, 3, 5, and 6 (SAP Modification submitted by Jill Quillin of ERM on 12 November 2013). In response to this request, the USEPA, in an email from Ken Wangerud on 20 November 2013, stated (emphasis added in shading):

> *While there may be merit in the point you are raising, EPA approval of a change that eliminates the Ph1A sampling of these PRIs at this time would be premature. However, postponing sample collection/analysis until mid-2014 seems appropriate pending the outcome of RCRA proceedings and USMag/ERM's pending deliberations about RIFS options for the Inner-PRIs.*
>
> *As discussed in our November 18 meeting, and as indicated in EPA's November 8, 2013 letter (Enclosure 1 re Options/Process/Schedule for addressing Inner-PRIs), EPA recognizes that development of the Draft SLRA Tech-Memo/Data-Report, the Final SLRA/RI-Report, and problem-formulation may involve deliberations regarding option-choices extending into early-Spring 2014. Accordingly, EPA will approve Ph1A sampling of the OU1 Inner-PRIs to be postponed to a July 2014 start date. I can prepare a SAP-Modification to the WS#16 project schedule accordingly.*
>
> *If a settlement of the RCRA case occurs, and when USMag/ERM addresses pending alternative option-choices for OU1, EPA will consider further modifying Ph1A sampling/analysis plans and schedules for OU1.*

Text will be added regarding preparation of an addendum to the data report that will include the surface water sampling and analysis data, as well as a data adequacy evaluation of surface water results.

13. ***Section 4.4.4 Modifications to the Phase 1A Sampling and Analysis Plan, page 17:*** *Footnote #2 indicates sample PRI7-013 was filtered using a 0.2 micron filter. Revise Table 4-7 to include explanation of the sample identification numbers (-02 and -45) as they relate to filter size.*

    Response: The requested revisions will be made to the text.

14. ***Section 4.6.1 Water Level Measurement Activities:*** *Water level measurement activities have been completed for Phase 1A. The complete water level data set shall be included in the Data Report.*

    Response: Table 4-9 will be updated to include the complete water level dataset.

15. ***Section 5.2 Data Validation:*** *Revise this section to include a Data Validation Summary Table, by PRI, similar to that found in the DMA report and consistent with the PARCCS/QC requirements discussions by PRI.*

    Response: Revisions that address this comment will be made as described in the response to General Comment #1.

16. ***Section 7.2.2, Accuracy, page 33, first paragraph:*** *The Data Report states the total number of results qualified due to accuracy-related MQOs was less than 15 percent of the total number of Phase 1A results and concludes the general level of accuracy appears to be "high" and therefore does not limit the usability of any particular analyte, method or matrix. Clarify the actual percentage qualified due to accuracy-related MQOs as its not apparent it can be concluded that the general level of accuracy is high (an approximate 15% accuracy error would seem to indicate some concern with data usability).*

    Response: Tables and text that will be added to address General Comment #1 will address this comment.

17. ***Figure 1-2 (Preliminary Remedial Investigation Areas):*** *The RI/FS boundary symbol and the symbol used to delineate the Plant boundary are too similar. Revise the line style and color.*

    Response: Figure will be revised as requested.

18. ***Table 4-7 (Surface Water Samples):*** *Revise to include explanation of PRI7-013 sample identification numbers (-02 and -45) as they relate to filter size.*

    Response: The requested revisions will be made to the table.

19. ***Table 6 series (Prevalence Tables):*** *Revise the tables to include a column for frequency of detection (percent detected) and comparison to the TQL's of Worksheet #15 of the Phase 1A SAP, similar to that found in the DMA report and consistent with the PARCCS/QC requirements discussions by PRI.*

    Response:

    a. The frequency of detection (as % detected) will be added to the prevalence tables.
    b. The TQLs in WS 15 of the SAP are obsolete; appropriate values for comparison are the RBCs in the SLRA Technical Memorandum (ERM 2013). Data adequacy tables in Appendix K include a comparison of maximum MDLs to lowest RBCs. In cases where the maximum MDL is higher than the lowest RBC applicable in the PRI area, there will be additional discussion in Appendix K. See response to Comment 22.

20. ***Appendix E (MW-13A and others):*** *The boring log details "void" from 3-4.5 feet. Clarify if there was no material recovered in the "void" interval due to material falling out of the sampler or whether there was actually a void present that prevented sample collection.*

    Response: The boring logs for MW-13A and MW-13B detail "void" from 3-4.5 feet. The void from 3-4.5 feet was observed while advancing a hand auger from the ground surface to 5 feet bgs at the MW-13B borehole. The void may represent a sinkhole, and MW-13A and MW-13B are located in an area where sinkholes are present.

21. ***Appendix J, Summary, page 12, first full paragraph:*** *Revise the text as follows (in accord with meeting of 6 May 2015):*

    > *~~Further, in some cases (particularly with the Calculated TEQs), the y intercept of the model exceeded the measured values. When applying the adjustment factor to these data, seemingly large differences in the range of values for an analyte appear "dwarfed" by the linear adjustment of the model.~~ For this evaluation,…*

Response: The requested revisions will be made to Appendix J text.

Appendix K (based on ERM's Response to Comments dated 30 March 2015): *ERM's response and suggested responses to EPA's comments are acceptable; except as noted below.*

Note: For future data adequacy evaluations, the detection frequency noted as 60 percent should be anything with a detection frequency of 50 percent or greater. Background data set guidance generally uses a "50 percent or greater" guideline for when data distributions can be used reliably to support decision making. For those data sets with a detection frequency between 15 and 50 percent, the non- detected values must be integrated into the data set using a rank sum or slope estimator before the mean can be considered valuable for making data comparisons. While no changes are being directed for the COPC selection, ERM shall consider this in future data set evaluations.

Response to EPA Comment 8, first sentence after first bullet list: The EPA suggests there is no evaluation appropriate to determine the adequacy of the limited VOC data for the identification of COPCs. Based on the limited data set available for the outer PRI areas, VOCs shall be retained as COPCs until an adequate data set is available to make a different determination.

Response: COPC selection will occur in the SLRA, and it is premature to determine that VOCs should be retained in any of the Outer PRI areas. SAP requirements were met for VOC testing, and adequate data are available for consideration in the SLRA as to whether additional VOC testing should be conducted in some areas for the baseline risk assessments.

Response to EPA Comment 8, second bullet list, first and second bullets: Quantitatively (e.g., percentages) define "most" as it applies to detection limits compared to the RBC.

Response: "Most" means greater than 50 percent. See revisions to bullets below.

Response to EPA Comment 8, second bullet list, second bullet, first sub-bullet: Prior to finalization of Appendix K, provide the EPA with the definitive MQOs that will be used to determine if sensitivity is adequate.

Response: The bullets in the Response to EPA Comment 8 on the Data Adequacy Evaluation will be revised as shown below:

> In cases where detection frequency is less than 60 percent, if the maximum DL is greater than the lowest RBC, the DLs in each analyte dataset will be reviewed to determine how frequently the DL exceeds the WS 15 MDL. An exceedance of the WS 15 MDL is defined as a DL that is more than 20 percent higher, to allow for analytical variability. In addition, it is appropriate to include only undiluted samples in the evaluation. Samples are diluted due to either high concentrations of one or more analytes and/or a challenging matrix that contains interfering compounds or would cause damage to the analytical instrument; the DL is adjusted for the dilution factor.
>
> - If the DL is less than 120 percent of the WS 15 MDL in at least 50 percent of the undiluted samples, the MQO for sensitivity will have been met.
> - If the DL is more than 120 percent of the WS 15 MDL in more than 50 percent of the undiluted samples, the rate of exceedance of the lowest RBC will be reviewed.
>   - If the DL is less than the lowest RBC in more than 50 percent of the undiluted samples, the MQO for sensitivity will have been met.
>   - If the DL exceeds the lowest RBC in more than 50 percent of undiluted samples, the sensitivity MQO will not have been met.
> - If the SAP MQO for sensitivity has been met, the dataset will be deemed adequate.
> - If the MQO for sensitivity has not been met, uncertainty regarding adequacy remains, and may be resolved by:
>   - Selection of the analyte as a COPC and/or COPEC (depending whether the DL exceeds the RBSL or lowest RBESL, or both) in the SLRA; or
>   - Collection of additional data.

Review of the datasets with a maximum MDL greater than the lowest RBC indicates:

- In solids datasets, the majority of RBC exceedances are SVOCs. Four SVOCs are in this category, in all PRI areas (2,4-dimethylphenol, 2,6-dinitrotoluene, 2-chloronaphthalene, and N-nitrosodimethylamine). There are two PRI areas where these are the only analytes that exceed RBCs. Thallium is the only non-SVOC in this category; no other analyte class is represented.
- In groundwater datasets, 22 of 28 analytes where the maximum DL is greater than the lowest RBC are SVOCs, five are VOCs, and one is an anion (nitrate).
- In all datasets with maximum MDL greater than the lowest RBC, all results are non-detect, except the hexachloroethane dataset in PRI Area 2 (detected in one sample).
- In general, one or more RBESLs are lower than the DLs; DLs generally meet RBSLs selected for human health screening.
- Not all datasets will meet the sensitivity MQO.

If you have any questions, please contact me at (480) 998-2401.

Sincerely,

David J. Abranovic, P.E.
Project Coordinator (ERM)

DJA/jcb/0132320
Attachments

cc: David Gibby (US Mag)
Mark Ransom (ERM)

AGENCIES RESPONSE TO
ERM-WEST'S RESPONSE (17 June 2015)
TO AGENCIES TECHNICAL COMMENTS (14 May 2015)
ON ENVIRONMENTAL RESOURCES MANAGEMENT'S
DRAFT PHASE 1A DATA REPORT FOR PRI AREAS 2 AND 8–17
(ERM document date: September 2014)
including
Appendix J, Evaluation of Bulk Versus Fines Fraction Soil Analyses
(ERM document date: 6 March 2015)
and
Appendix K, Data Adequacy Evaluation of Phase 1A RI Data for PRI Areas 2 and 8-17
(ERM document date: 30 March 2015 – Response to Comments)

U.S. MAGNESIUM NPL SITE, TOOELE COUNTY, UTAH
9 July 2015

INTRODUCTION

The U.S. Environmental Protection Agency and the Utah Department of Environmental Quality (collectively the Agencies) are providing the following responses to ERM-West's response to agency comments on the draft *Phase 1A Data Report for PRI Areas 2 and 8-17* (Data Report). This document was prepared by Environmental Resources Management (ERM) and submitted to the EPA 24 September 2014. At that time, Appendix J and Appendix K were not included in the draft document. The following provides a timeline for transmittals of Appendix J and Appendix K.

- 12 December 2014: ERM submitted both Appendix J and K to the EPA.
- 28 January 2015: Agencies provided technical comments on Appendix J to ERM.
- 4 February 2015: Agencies provided technical comments on Appendix K to ERM.
- 6 March 2015: ERM submitted revised Appendix J to the EPA.
- 30 March 2015: ERM submitted Response to Comments on Appendix K.
- 14 May 2015: Agencies provided technical comments on draft Phase 1A Data Report, including Appendix J and Appendix K.
- 17 June 2015: ERM submitted response to agency comments of 8 May 2015.

The Agencies accept ERM-West's responses and proposed text changes outlined in the 17 June 2015 response to the Agency comments, with the following exceptions:

Agency Original General Comment #12: Section 4.4.2 *Surface Water Sampling Activities*, page 15, second paragraph: As set forth below, EPA hereby modifies the Sec. 4.4.2 text of its 14 May 2015 comments on the Draft Ph1A Data Report to more accurately reflect the situation and status of the sampling, and finalization of the Phase 1A Data Report. ERM shall insert the text as follows:

> Surface water sampling at most Inner PRI Areas (PRIs 1, 3, 5, and 6) was not performed in association with the Phase 1A RI for Outer PRI Areas. Surface water sampling at PRI areas 1 and 3 was postponed pending resolution of a Resource Conservation and Recovery Act settlement being achieved between US Magnesium, the USEPA, and the United States Department of Justice in 2014 (still pending as of June 2015). Sampling of PRIs 5 and 6 was pending a January 2015 decision by US Magnesium to conduct an alternative RI/FS process for one or more of the Inner PRI Areas, as described in Attachment 5 to the SAP cover letter (EPA 2013); that offer was declined by US Magnesium.

An addendum to this Phase1A Data Report will be prepared to include the remaining surface water sampling activities and data results as well as a separate data adequacy evaluation for surface water (Appendix K).

Appendix K

1. General Comment: As EPA has noted before, it is important to distinguish between the process that is used for ecological risk assessment and for human health risk assessment. Therefore, when describing the COPC selection process, text should indicate that COPEC selection will occur in the SLERA and that human COPC identification will occur within the HHRA.
2. The EPA does not agree that the protocol for evaluation of detection limit adequacy is optimal. Figure 1 shows the protocol proposed by ERM, drawn in decision tree format. The step highlighted in pink is problematic. More specifically, for data sets with low detection frequency (<60%), the protocol will lead to a detection limit being declared adequate if more than half of the (undiluted) samples have detection limits that are lower than the Method Detection Limit (MDL). However, if the MDL is substantially higher than the TQL or RBC, then the detection limit would likely not be adequate for reliable risk assessment purposes. EPA recommends that the highlighted step be deleted, leading to the protocol shown in Figure 2. Note that if a DL does not meet MQOs, that does not automatically mean that method development or re-sampling and analysis are needed. Rather, in some cases, all that may be required is a discussion of the issue in the uncertainty section of the risk assessment.

FIGURE 1
DETECTION LIMIT EVALUATION PROTOCOL PROPOSED BY ERM

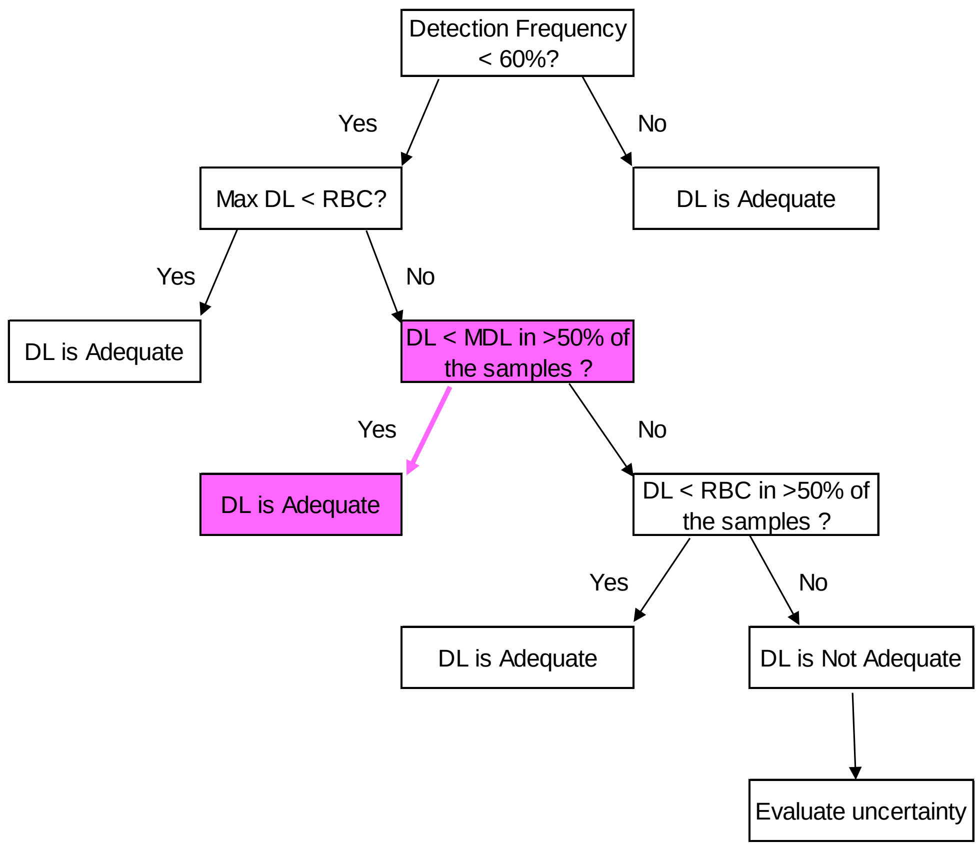

FIGURE 2
DETECTION LIMIT EVALUATION PROTOCOL PROPOSED BY EPA