STAGE 1 SOURCE CONTROL EVALUATION
TECHNICAL MEMORANDUM
RP - PORTLAND SITE

May 19, 2006

Submitted to:

Oregon Department of Environmental Quality
Northwest Region
2020 S.W. 4th Avenue
Portland, Oregon 97201

Submitted for:

SLLI
One Copely Parkway, Suite 309
Morrisville, North Carolina 27560

Submitted by:

AMEC Earth & Environmental, Inc.
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0-61M-107030/Phase 69

May 19, 2006

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Mr. Tom Roick
Project Manager, Cleanup & Portland Harbor
Department of Environmental Quality
2020 S.W. 4th Avenue
Portland, Oregon 97201

Dear Mr. Roick:

Re: Stage 1 Source Control Evaluation Technical Memorandum
RP - Portland Site

On behalf of SLLI, AMEC Earth & Environmental, Inc. (AMEC) is submitting to the Oregon Department of Environmental Quality (DEQ) the enclosed Stage 1 Source Control Evaluation (SCE) Technical Memorandum (Stage 1 SCE TM). Activities described herein include Arkema Lots 1 and 2 and Siltronic Riverbank Task 1 reconnaissance activities and Task 2 monitoring well installations. This Stage 1 SCE TM represents an interim deliverable documenting Stage 1 SCE activities completed in 2005 as agreed to during the meeting with DEQ on December 14, 2005. Results from outstanding Stage 1 SCE activities will be reported separately following their completion.

Field activities associated with the SCE investigation were completed in general accordance with the DEQ-approved Final Stage 1 SCE Work Plan (Stage 1 SCE WP) dated October 31, 2005. Although there were some minor variations from the Final Stage 1 SCE WP, none of these variations affect the quality of the Task 1 and 2 field sampling event results achieved to date. However, some activities in the Stage 1 SCE WP could not be completed because Arkema, Inc. denied SLLI access to its property.

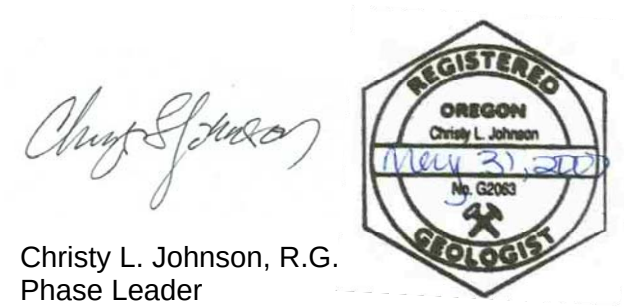
The tables in the Stage 1 SCE TM summarize planned versus actual sampling activities, analytical results, and a comparison of analytical results to screening level criteria. The enclosed figures depict updated hydrogeologic cross-sections and spatial distributions of analytical data for each hydrogeologic zone. A copy of the completed field sampling forms, soil boring logs, detailed data validation reports, and laboratory data reports are included as appendices.

As Roger Gresh discussed with you by telephone on May 11, the contents of this Stage 1 SCE TM do not match the description for a “Source Control Evaluation Technical Memorandum” that you provided in your April 17 email to SLLI. We appreciate your understanding and approval that SLLI will submit at a later date a comprehensive Source Control Evaluation Report (SCE Report) that satisfies your April 17 document description. SLLI will need to conduct additional data collection before the SCE Report can be prepared. This subject will be discussed with DEQ in more detail during our scheduled June 8 meeting.

Please find enclosed two bound copies and one compact disk containing a Portable Document Format (pdf) file of this technical memorandum. If you should have any questions, feel free to call Roger Gresh at (503) 639-3400.

Sincerely,

AMEC Earth & Environmental, Inc.



Roger T. Gresh, P.G.
Project Manager

Christy L. Johnson, R.G.
Phase Leader

Encl: Stage 1 Source Control Evaluation Technical Memorandum

CLJ/lp

c: S. Dearden, sanofi aventis US, Inc.
R. Ferguson, SLLI
J. Benedict, CHBH&L
M. Kent, DEQ

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1.0 INTRODUCTION

This Stage 1 Source Control Evaluation (SCE) Technical Memorandum (Stage 1 SCE TM) presents the hydrogeological data and soil and groundwater analytical data, collected by AMEC Earth & Environmental, Inc. (AMEC) on behalf of SLLI between August and December 2005 at Arkema, Inc. (Arkema) Lots 1 and 2 and Siltronic Corporation (Siltronic) riverbank, as part of the SCE activities conducted adjacent to the Willamette River (River) near the former Rhône-Poulenc (RP) Portland site (Site). The Site is located at 6200 N.W. St. Helens Road in Portland, Oregon (Figure 1).

The SCE is being conducted in response to a letter from the Oregon Department of Environmental Quality (DEQ), dated February 22, 2005, directing SLLI to conduct an "investigation between the existing downgradient groundwater monitoring wells and the river to evaluate the extent and concentration of RP-related contaminant discharges to the Willamette River" (DEQ, 2005a). In addition to evaluating RP-related contaminants, this report evaluates Arkema related contaminants, particularly in the area of Arkema Lots 1 and 2. Denial of access by the owner (discussed elsewhere in this report) has prevented SLLI from completing the investigation. Activities described herein were conducted as part of the scope of work defined in the DEQ-approved Final Stage 1 SCE Work Plan (Stage 1 SCE WP), dated October 31, 2005 (AMEC, 2005a). The portion of the Stage 1 SCE scope of work completed at Arkema Lots 1 and 2 was approved by DEQ in a letter, dated July 20, 2005, and the remainder of the work plan was approved in a letter, dated August 1, 2005 (DEQ, 2005b,c). Proposed modifications to the scope of work to be conducted at Siltronic were approved by DEQ in an email, dated September 22, 2005 (AMEC, 2005b, DEQ, 2005d). Final approval of the Stage 1 SCE WP was documented in a letter from DEQ, dated November 3, 2005 (DEQ, 2005e).

The investigative activities completed to date as described in the Stage 1 SCE WP, were implemented in general accordance with procedures outlined in the Stage 1 SCE Field Sampling Plan (FSP) (Appendix A, Stage 1 SCE WP), the Revised Quality Assurance Project Plan (QAPP), dated June 13, 2001 (AMEC, 2001) and Draft QAPP Addendum No. 1, dated August 1, 2002 (AMEC, 2002), and the Site-Specific Health and Safety Plan (HASP), dated June 24, 2005 (AMEC, 2005c).

The primary objective of source control evaluation is to collect the data necessary to evaluate the scope of potential source control actions. The Stage 1 SCE was designed to collect data needed to evaluate whether source control is warranted and, if warranted, the scope of the source control action(s).

The data quality objectives (DQOs) of the Stage 1 SCE are to evaluate:

1. Whether constituents are present in near-River groundwater at potential regulatory levels of concern;

2. Whether constituents present in groundwater near the River are from a Site-related source or from other sources;

3. The extent and the chemical makeup of the dioxin and chlorinated solvent plumes originating at the Arkema property flowing to the north/northwest and the potential for the Arkema plumes to commingle with the Site plume;

4. The connection, if any, between Siltronic's trichloroethene (TCE) plume and deep TCE detected on the Siltronic property;

5. Regional (Arkema, RP, Siltronic) groundwater flow direction within the Alluvium and Basalt Zones near the River; and

6. Scope of potential source control action(s) associated with Site-related groundwater discharge to the River, if warranted.

In addition, data from this Stage 1 SCE will be used to support SLLI's planned bioremediation pilot study and colloid evaluation (AMEC, 2006a).

Appendices to this Stage 1 SCE TM include completed soil and groundwater sampling field forms (Appendix A), soil boring logs (Appendix B), data validation reports for soil and groundwater sample analytical results (Appendix C), and electronic copies in Portable Document Format (pdf) of the laboratory data reports (Appendix D).

Arkema, after providing access to its property, withdrew its access following completion of the reconnaissance and monitoring well installation activities. Consequently, SLLI has been unable to complete the Stage 1 SCE activities on Arkema property. Lack of the data that SLLI had planned to collect from monitoring wells on Arkema property leads to a currently incomplete view of groundwater near the River. Further discussion regarding the Stage 1 SCE schedule, as it relates to Arkema access, is provided in Section 7.0.

2.0 FIELD ACTIVITIES

The Stage 1 SCE scope of work included collection of lithologic data to refine the conceptual hydrogeologic site model and collection and analysis of soil and groundwater samples to evaluate whether constituents at or above regulatory levels of potential concern are present near the River at various elevations within multiple water-bearing zones.

The Stage 1 SCE study area was divided into three individual areas as shown on Figure 1 and listed below:

- **Arkema Lots 1 and 2:** The upland area of Lots 1 and 2 within the Arkema property;
- **Beach Area:** The area directly adjacent to the River from just north of the Burlington Northern Santa Fe Company (BNSF) railroad bridge to the southeastern boundary of Arkema Lot 2; and
- **Siltronic Riverbank:** The upland area directly adjacent to the River from near the BNSF railroad bridge to the north property boundary of Siltronic.

Only investigation activities conducted on Arkema Lots 1 and 2 and Siltronic Riverbank are covered in this Stage 1 SCE TM. As of the date of this Stage 1 SCE TM, Beach Area activities are planned to start during the next in-water work window beginning July 1, 2006 pending successful property access negotiations and permitting. Further discussion regarding the Stage 1 SCE schedule is provided in Section 7.0.

This section describes soil and groundwater sampling activities and monitoring well installations conducted within the Arkema Lots 1 and 2 and Siltronic Riverbank areas included in Tasks 1 and 2 of the Stage 1 SCE.

2.1 Task 1 - Reconnaissance Activities

Task 1 consisted of drilling investigative borings within the Stage 1 SCE study area using both direct-push and sonic drilling technologies for lithologic logging and the collection of soil and groundwater samples. The Task 1 field investigation approach for Arkema Lots 1 and 2 and Siltronic Riverbank is described below. The investigative activities were implemented in general accordance with procedures outlined in the Stage 1 SCE FSP. All drilling activities were conducted by a driller licensed in the State of Oregon and were monitored and recorded by an AMEC field representative working under the supervision of an AMEC State of Oregon Registered Geologist.

2.1.1 Arkema Lots 1 and 2 Investigation

Task 1 reconnaissance activities conducted on Arkema Lots 1 and 2 occurred between August 9 and 28 and September 6 and 9, 2005, and included direct-push and sonic borings. The basic purposes of the reconnaissance borings were for lithologic logging and soil and groundwater characterization. Lithologic data collected from these boring locations were used to refine the conceptual hydrogeologic site model discussed in Section 3.0. Groundwater analytical data collected from the water-bearing zones were used to evaluate both vertical and lateral distribution of constituents and to help

differentiate between the sources of those constituents. Specific sampling activities for Arkema Lots 1 and 2 are described below.

Sampling Locations and Procedures

Boring locations ARK-01 through ARK-09, as shown on Figure 1, initially were drilled using direct-push methods. At borings ARK-02, ARK-03, ARK-05, ARK-06, and ARK-09, borings were terminated due to heaving sands and/or drill rod removal difficulty. The lower portions of these borings were extended to the bottom of the Alluvium Zone using sonic drilling, with the exception of ARK-02. Because of the proximity of RP-08 to ARK-02, an additional sonic boring was not drilled at ARK-02, as agreed to by DEQ on September 9, 2005. At each boring location, soil samples were collected continuously from the surface to total depth. Soil and groundwater sampling was conducted in general accordance with the standard operating procedures (SOPs) provided in the Stage 1 SCE FSP, and as described below.

Field Procedures

Nine boring locations, as shown on Figure 1, were drilled to a total depth ranging from 43.5 feet below ground surface (bgs) at ARK-08 to 107.5 feet bgs at ARK-06. At each boring location soil was sampled continuously for: 1) lithologic logging; 2) field screening with a photoionization detector (PID) for the presence of volatile organic compounds (VOCs); and 3) visual inspection. Soil samples for potential chemical analysis were collected as specified in the Stage 1 SCE FSP. Six soil samples from Arkema Lots 1 and 2 were submitted for analysis of chemical constituents and three samples were collected and submitted for mechanical analysis. Forty additional soil samples from Arkema Lots 1 and 2 were collected and archived at the laboratory for potential future analysis, if necessary.

Three reconnaissance groundwater samples were planned per boring for laboratory analysis. Water samples were collected from: 1) the first water-bearing zone; 2) immediately below a less permeable layer (silt or sandy silt); and 3) drill refusal depth. Twenty-eight groundwater samples from Arkema Lots 1 and 2 were submitted for chemical analyses. Groundwater samples were collected in general accordance with SOPs provided in the Stage 1 SCE FSP, except as discussed below in *Variations from the Stage 1 SCE FSP - Arkema Lots 1 and 2*.

A summary of planned versus actual soil and groundwater samples collected from Arkema Lots 1 and 2 is presented in Table 1. Field documentation was completed for each sample location including a Soil Sampling Form (Appendix A-1), Groundwater

Sampling Form (Appendix A-2), Soil Boring Log (Appendix B-1), and a Chain of Custody (COC) form (Appendix D).

Sample Handling and Analysis

All analytical samples were collected and submitted to the contract laboratories in accordance with the procedures described in the Stage 1 SCE FSP and the QAPP. Soil and groundwater samples submitted for analysis are summarized in Table 1. The contract laboratories used for the Task 1 reconnaissance activities included: Severn Trent Laboratory (STL) in Burlington, Vermont; University of Oklahoma in Norman, Oklahoma; Axys Analytical Services (Axys) in Sydney, British Columbia, Canada; Columbia Analytical Services (CAS) in Kelso, Washington; and Analytical Perspective in Wilmington, North Carolina.

Quality Assurance/Quality Control Requirements

Quality control (QC) samples were collected for groundwater samples in general accordance with the Stage 1 SCE FSP. Two equipment rinsate blanks, two field duplicates, and two interlaboratory split samples were collected during the Arkema Lots 1 and 2 investigation. The QC samples were collected and analyzed in accordance with the Stage 1 SCE FSP and QAPP. One trip blank was submitted and analyzed for VOCs by United States Environmental Protection Agency (EPA) Method 8260B on each day that sampling for VOC analysis occurred. A complete quality assurance (QA) review of the analytical data associated with the QA/QC samples is provided in the data validation reports in Appendix C.

Variations from the Stage 1 SCE FSP - Arkema Lots 1 and 2

The variations from the Stage 1 SCE FSP, including planned versus actual sampling locations and analyses on Arkema Lots 1 and 2, are summarized in Table 1 and are further discussed below.

- As previously stated, boring locations ARK-02, ARK-03, ARK-05, ARK-06, and ARK-09 direct-push borings were terminated due to heaving sands and drill rod removal difficulty. A sonic drilling rig was used to complete the borings to the bottom of the Alluvium Zone. With the concurrence of DEQ boring ARK-02 also was terminated prior to drill refusal but, with concurrence of DEQ, the boring was not extended to the bottom of the Alluvium Zone due to its proximity to the planned monitoring well cluster location RP-08. Lower Alluvium Zone groundwater characterization samples in the area of ARK-02 will, instead, be collected from monitoring well cluster RP-08.

- Collection of a groundwater sample was attempted immediately above the less permeable silt layer (planned first water-bearing zone) at ARK-02; but, because the screen interval was dry, a sample could not be obtained.
- A groundwater sample was not collected from immediately below the less permeable layer at boring location ARK-08. Due to the bottom depth of the less permeable layer (28 feet bgs) and the close proximity of the groundwater sample collected from the refusal depth of the boring (39 to 43 feet bgs), a unique groundwater sample could not be obtained.
- At boring locations where direct-push drilling refusal occurred before the bottom of the Alluvium Zone (ARK-03, ARK-06, and ARK-09), one groundwater sample was collected at the bottom of the direct-push boring, and a second sample was collected at the bottom of the sonic boring at the base of the Alluvium Zone.
- Laboratory analysis of metals (both total and dissolved) was not completed for the groundwater sample collected from the first water-bearing zone at boring location ARK-01 (10 to 15 feet bgs) as a result of a typographical error on the COC form.
- Laboratory analysis of metals (both total and dissolved) and ammonia was not completed for the groundwater sample collected from the water-bearing unit below the less permeable layer from ARK-07 (22 to 26 feet bgs) as a result of insufficient groundwater recharge to allow collection of the sample volume required for analysis.
- Laboratory analysis of ammonia could not be completed for the groundwater sample collected from the water-bearing unit below the less permeable layer from ARK-09 (30 to 35 feet bgs) due to a field error in not filling the appropriate bottle for this analysis.

These variations from the Stage 1 SCE FSP did not adversely affect the quality of the Task 1 soil and groundwater sampling program at Arkema Lots 1 and 2.

2.1.2 Siltronic Riverbank Investigation

Investigative activities conducted in the Siltronic Riverbank area occurred from October 31 through December 9, 2005 and included direct-push and sonic borings. These borings were advanced for the basic purposes of lithologic logging, to document the basalt surface elevation and surface condition (e.g., fracturing and weathering), gravel thickness (if observed), and to evaluate groundwater quality. Lithologic data collected from these boring locations were used to refine the conceptual hydrogeologic site model discussed in Section 3.0. Groundwater analytical data collected from the water-bearing zones were used to evaluate both vertical and lateral distribution of Site-related constituents and to help differentiate between the sources of those

constituents within the Siltronic Riverbank area. Task 1 reconnaissance activities were completed in general accordance with the procedures described within the Stage 1 SCE WP and sampling procedures detailed in the Stage 1 SCE FSP. Specific sampling activities for the Siltronic Riverbank area are described below.

Sampling Locations and Procedures

Five boring locations, SIL-01 through SIL-04 and RP-11, as shown on Figure 1, were drilled using both direct-push and sonic drilling methods. The boring locations were originally planned to be drilled by sonic drilling methods only. A discussion regarding the change in drilling method is presented below in *Variations from the Stage 1 SCE FSP - Siltronic Riverbank*. At each boring location, soil samples were collected continuously from the surface until drill refusal or to at least 10 feet into the Basalt Zone. Soil and groundwater sampling was conducted in general accordance with the SOPs provided in the Stage 1 SCE FSP, and as described below.

Field Procedures

Reconnaissance borings within the Siltronic Riverbank area were advanced to a total depth ranging from 120 feet bgs at SIL-04 to 235 feet bgs at SIL-02. At each boring location soil was sampled continuously for: 1) lithologic logging; 2) field screening by a PID for the presence of VOCs; and 3) visual inspection. Soil samples for potential chemical analyses were collected and analyzed in general accordance with SOPs within the Stage 1 SCE FSP. One soil sample from the Siltronic Riverbank was submitted for analysis of chemical constituents and four samples were collected and submitted for mechanical analysis.

Up to seven reconnaissance groundwater samples were planned per boring for laboratory analysis. Water samples were collected from the first water-bearing zone, 100 feet bgs, 130 feet bgs, 160 feet bgs, 190 feet bgs, gravel water-bearing zone (if encountered), and the Basalt Zone. Twenty-five groundwater samples from the Siltronic Riverbank were submitted for chemical analysis. Groundwater samples were collected in general accordance with SOPs provided in the Stage 1 SCE FSP except as discussed below in *Variations from the Stage 1 SCE FSP - Siltronic Riverbank*.

A summary of planned versus actual soil and groundwater samples collected from the Siltronic Riverbank is presented in Table 1. Field documentation was completed for each sample location including a Soil Sampling Form (Appendix A-1), Groundwater Sampling Form (Appendix A-2), Soil Boring Log (Appendix B-2), and a COC form (Appendix D).

Sample Handling and Analysis

All analytical samples were collected and submitted to the contract laboratories in accordance with the procedures described in the Stage 1 SCE FSP and the QAPP. Soil and groundwater samples submitted for analysis are summarized in Table 1. The contract laboratories used for the Task 1 reconnaissance activities included: STL; University of Oklahoma; Axys; CAS; and Analytical Perspective.

Quality Assurance/Quality Control Requirements

QC samples were collected for the groundwater samples in general accordance with the Stage 1 SCE FSP. Nine equipment rinsate blanks, two field duplicates, and two interlaboratory split samples were collected from the Siltronic Riverbank area investigation. The QC samples were collected and analyzed in accordance with the Stage 1 SCE FSP and QAPP. One trip blank was submitted and analyzed for VOCs by EPA Method 8260B on each day that sampling for VOC analysis occurred. A complete QA review of the analytical data associated with the QA/QC samples is provided in the data validation reports in Appendix C.

Variations from the Stage 1 SCE FSP - Siltronic Riverbank

The variations from the Stage 1 SCE FSP, including planned versus actual sampling locations and analyses in the Siltronic Riverbank area are summarized in Table 1 and are discussed further below.

- Planned methods for collection of discrete groundwater samples during sonic drilling at boring location SIL-01 were unsuccessful. The saturated zone for the first water-bearing zone groundwater sample (26.5 to 31.5 feet bgs) was not thick enough to accommodate the packer and pump assembly. A temporary 2-inch poly-vinyl chloride (PVC) casing and filter pack were installed in boring SIL-01 for collection of the first water-bearing zone groundwater sample at a depth of 26.5 to 31.5 feet bgs. A peristaltic pump and dedicated polyethylene tubing were used for sample collection. Multiple attempts to collect the 100-foot bgs sample from SIL-01 using the planned packer and pump assembly also were unsuccessful due to heaving fine-grained sands seizing the pump. Several attempts with different sampling setups were tried with no success. Due to problems with subsurface sandy material heaving into the drill casing, a direct-push rig was employed to retrieve as many planned Fill/Shallow Alluvium and Alluvium Zone groundwater samples as possible. This method of groundwater sampling was implemented for the remainder of the Siltronic Riverbank investigation boring locations. The groundwater samples from below the depth attainable using direct-push drilling

methods were collected during sonic drilling using the planned packer and pump assembly.

- Analysis of a soil sample was not planned for the Siltronic Riverbank area investigation. However, one soil sample collected from boring RP-11 (7.5 to 8 feet bgs) was submitted for analytical analysis based on the visual appearance of soil the being heavily impacted by NW Natural/GASCO Manufacture Gas Plant (MGP) waste. The soil sample was analyzed as outlined on Table 1.

These variations from the Stage 1 SCE FSP did not adversely affect the quality of the Task 1 soil and groundwater sampling program in the Siltronic Riverbank area.

2.2 Task 2 - Monitoring Well Installations

Task 2 consists of installation of monitoring well clusters within the Stage 1 SCE study area. The location and installation of monitoring wells within Arkema Lots 1 and 2 and Siltronic Riverbank are described below. The monitoring well installation activities were implemented in general accordance with procedures outlined in the Stage 1 SCE FSP. All drilling activities were conducted by a driller licensed in the State of Oregon and were monitored and recorded by an AMEC field representative working under the supervision of an AMEC State of Oregon registered geologist.

2.2.1 Arkema Lots 1 and 2 and Siltronic Riverbank Monitoring Well Installations

Three monitoring well clusters were installed at Arkema Lots 1 and 2 (RP-08, RP-09, and RP-10) from September 13 through 26, 2005 and one well cluster (RP-11) was installed in the Siltronic Riverbank area from November 17 through December 2, 2005, in general accordance with the Stage 1 SCE WP. A final installation location for each of the monitoring well clusters is shown on Figure 1. Monitoring well clusters were screened within each groundwater characterization zone (i.e., Fill/Shallow Zone, Alluvium Zone, and Basalt Zone). A gravel water-bearing zone at the base of the Alluvium Zone was encountered at monitoring well cluster location RP-10 on Arkema Lots 1 and 2; therefore, an additional monitoring well was installed and completed within the gravel water-bearing zone per the Stage 1 SCE FSP.

The monitoring wells were installed as clusters of wells, with an approximate 10-foot separation between each monitoring well within a cluster. Monitoring well designations had been temporarily assigned to the proposed wells for clarity during planning. These designations (e.g., RP-08-S, RP-08-A, and RP-08-B) were changed to include the actual completion depth of each well. Below is a summary of final monitoring well designations and completion depths:

- Monitoring well cluster location RP-08 located on Arkema Lot 1 included RP-08-23 completed to a depth of 23 feet bgs, RP-08-80 completed to a depth of 80 feet bgs, and RP-08-107 completed to a depth of 107 feet bgs;
- Monitoring well cluster location RP-09 located on Arkema Lot 2 included RP-09-35 completed to a depth of 35 feet bgs, RP-09-47 completed to a depth of 47 feet bgs, and RP-09-64 completed to a depth of 64 feet bgs;
- Monitoring well cluster location RP-10 located on Arkema Lot 2 included RP-10-30 completed to a depth of 30 feet bgs, RP-10-60 completed to a depth of 60 feet bgs, RP-10-97 completed to a depth of 97 feet bgs, and RP-10-130 completed to a depth of 130 feet bgs; and
- Monitoring well cluster location RP-11 located in the Siltronic Riverbank area included RP-11-30 completed to a depth of 30 feet bgs, RP-11-160 completed to a depth of 160 feet bgs, and RP-11-216 completed to a depth of 216 feet bgs.

Borings for the monitoring well installations included continuous soil sampling to confirm lithologic logging from the direct-push borings, to document the basalt surface elevation and gravel thickness (if observed), and to document visually impacted soils.

All monitoring wells were installed according to the Stage 1 SCE FSP except as noted in the *Variations from the Stage 1 SCE FSP - Task 2 Monitoring Well Installations*. Final well installation details are provided in Appendix B. Monitoring well development procedures were conducted in accordance with the Stage 1 SCE FSP. Monitoring well development activities were recorded on the Well Development Logs included in Appendix A-4.

Variations from the Stage 1 SCE FSP- Task 2 Monitoring Well Installations

The variations from the Stage 1 SCE FSP Task 2 Monitoring Well Installation procedures are discussed below.

- Pre-pack well screens were not used during the installation of Stage 1 SCE monitoring well locations;
- Screened intervals were not limited to 5 feet in length. Monitoring well locations RP-08-23, RP-09-35, RP-10-30, and RP-11-30 were constructed with 10- or 15-foot screened intervals so that the top of the screen extended above the anticipated seasonal high water elevation;
- Flush-mount monuments were used at each well location regardless of traffic patterns at the request of the property owners, Arkema and Siltronic; and

- At monitoring well locations where grout was used, 2 feet of #20/40 sand was placed above the filter pack versus the planned bentonite chips based on concerns from the driller in having an adequate barrier in place before grout placement.

These variations from the Stage 1 SCE FSP did not adversely affect the quality or usability of the Task 2 monitoring wells installed.

3.0 CONCEPTUAL HYDROGEOLOGIC SITE MODEL

The geologic framework of the Site and surrounding properties previously has been characterized from geologic logs of borings completed in the area. Lithologic units at the Site and near the River are grouped into three characterization zones: the Fill/Shallow Alluvium Zone, Alluvium Zone, and Basalt Zone. Characterization zone designations were chosen based on soil or rock type, the presence or absence of vertical gradients, and hydraulic properties (e.g., hydraulic conductivity), as presented in the Final Groundwater Characterization Report (GCR) (AMEC, 2003). Following the completion of the Arkema Lots 1 and 2 and Siltronic Riverbank drilling activities, the conceptual hydrogeologic site model was updated to include the new lithologic information from these borings. A discussion regarding the updated conceptual hydrogeologic site model is provided in the following sections.

The cross section location map, provided in Figure 2, shows the location of four cross sections. Two cross sections extend from the Site to the River (Figures 3 and 4); one cross section extends from the northern Siltronic property boundary to Arkema's southern property boundary (Figure 5); and one cross section extends from North Doane Lake (NDL) south to the Plant Area (Figure 6). Figure 7 provides an elevation contour of the surface of the Basalt Zone.

3.1 Fill/Shallow Alluvium Zone

The Fill/Shallow Alluvium Zone includes the fill lithologic unit and the upper 10 to 15 feet of the silt and silty sand lithologic unit as shown on the cross sections. The fill lithologic unit consists of variable amounts of sand, silt, clay, organic matter, occasional gravel, and miscellaneous debris that were used to infill the former Doane Lake and the western bank of the River. The silt and silty sand lithologic unit consists of interbedded sands, silts, and sandy silts.

On the Arkema property, the fill lithologic unit varies in thickness from a few feet to over 25 feet and consists of River dredge spoils with wood debris used to infill topographic depressions (Figures 3 and 4). At the Siltronic property, the fill lithologic unit adjacent to the River is approximately 30 feet thick and is fairly uniform in

thickness (Figure 5). The fill lithologic unit at the Siltronic Riverbank consists of River dredge spoils with wood and metal debris.

The shallow alluvium, underlying the fill lithologic unit, consists of primarily native silts near the Site and Siltronic and silty sands near Arkema. The fill lithologic unit is unsaturated in the Site Herbicide Area (HA), the Site Insecticide Area (IA), and northeast of NW Front Avenue. The fill lithologic unit is partially saturated in the Site Lake Area (LA) and north of the BNSF railroad berm on the Siltronic property.

Groundwater elevation measurements collected from monitoring wells completed in the Fill/Shallow Alluvium Zone indicate a generally downward vertical gradient between the fill lithologic unit and the Alluvium Zone. However, groundwater in the Fill/Shallow Alluvium Zone is influenced by local surface water features, including West Doane Lake (WDL), NDL, and the Northwest Drainage Pond (NDP). Groundwater near the surface water features can discharge to the surface water feature or the surface water feature can recharge the groundwater system, depending on the water elevation in the surface water feature and seasonal changes in groundwater elevation (AMEC, 2003, 2005d).

3.2 Alluvium Zone

The Alluvium Zone includes the silt, silty sand, sandy silt, clay, and gravel lithologic units, as depicted in Figures 3 through 6.

- Interbedded silts, silty sands, and sandy silts range in thickness from about 50 feet in the HA, to about 85 feet near monitoring well cluster W-09 (ESCO property/Figure 3), to 30 feet near monitoring well cluster RP-02 (Arkema property/Figure 5). The unit grades from silt near the Site to silty sands and sandy silts near the River and is alluvial in origin (Figure 5).
- The clay lithologic unit is observed beneath the historical Doane Lake area, with an average thickness of about 15 feet. The clay lithologic unit is observed from monitoring well BST5W-74 within the LA east towards monitoring well cluster W-11 (Figures 3 and 4). The unit consists of low permeability interbedded clayey silts and clays.
- The gravel lithologic unit is alluvial in nature and consists of highly permeable, rounded to sub-rounded gravel with cobble-sized clasts. The gravel unit is thickest at monitoring well RP-07-119 (42 feet) and extends north to an inferred fault-like feature between boring SIL-03 and monitoring well cluster RP-11 (Figure 5). The gravel unit thins to the south between SIL-04 and monitoring well cluster RP-01. The gravel unit is also observed at thicknesses of 2 feet at boring ARK-01;16.5 feet

at monitoring well W-19-D; 1.5 feet at monitoring well RP-06-87; 7 feet at boring NB-15; and thicknesses ranging from 5 to 10 feet between monitoring well cluster WS-14 and boring SIL-01 (Figures 3 through 5).

The Alluvium Zone groundwater elevations indicate the regional groundwater flow direction is from southwest to northeast, from the Tualatin Mountains toward the River. Seasonally, the general direction of groundwater flow and groundwater gradient does not change significantly (AMEC, 2003, 2005d).

3.3 Basalt Zone

The Basalt Zone consists of the basalt lithologic unit, which underlies the alluvial deposits, as depicted in the four cross sections (Figures 3 through 6). Basalt at RP and surrounding properties is part of the Columbia River Basalt Group (CRBG). In the west Portland business district, the Columbia River Basalt is at least 700 feet thick and consists of a series of lava flows separated by discontinuous layers of interflow tuff and sediment. At the Site, the uppermost portion of the basalt is observed as highly fractured to massive and highly weathered to fresh.

Groundwater elevations at monitoring well clusters screened in the Alluvium and Basalt Zones generally indicate a downward vertical gradient between these zones. Groundwater elevations in the Basalt Zone generally flow from the southwest to the northeast, from the Tualatin Mountains towards the River.

A contour map depicting the top of the basalt surface is provided on Figure 7. The basalt surface at and near the Site dips downward towards NW Front Ave and rises to a high located on Lots 2 and 3 of the Arkema property resulting in a trough centered beneath the northern portion of the ESCO property. The observed juxtaposition of the Basalt Zone and portions of the Alluvium Zone beneath the Siltronic property between monitoring well cluster RP-11 and boring SIL-03 (Figure 5) suggests a fault. The basalt surface vertical displacement of the fault ranges from 76 to 104 feet (Figure 7).

4.0 DATA QUALITY EVALUATION

AMEC validated 100% of the analytical results generated as part of the Stage 1 SCE Tasks 1 and 2 sampling activities. Validation reports for the data quality evaluation are included as Appendix C. In addition, all data entered into the project database from electronic data deliverables were verified against hard copy laboratory reports. Electronic copies of the laboratory data reports are provided in Appendix D. This level of validation exceeds requirements agreed upon in the DEQ-approved Project QAPP (AMEC, 2001) and the QAPP Addendum (AMEC, 2002). The remainder of Section

4.0 of this report provides a brief overview of any data quality issues identified. For a full description of data quality limitations, refer to the complete validation reports in Appendix C of this document.

Overall quality of the dataset is sufficient to meet DQOs previously established in the Stage 1 SCE FSP. Any limitations to usability noted during data validation were documented in the project database, by the addition of expert review qualifiers to any affected result, and are discussed below. Overall completeness of the data set exceeded 95%.

A total of 47 results (38 of those were isobutyl alcohol or benzoic acid results) were rejected during data validation. These results include:

- The non-detected isobutyl alcohol results from the VOC analyses of several samples were rejected due to very low relative response factors observed in the associated initial calibrations;
- The non-detected benzoic acid, hexachlorocyclopentadiene, n-nitrosodimethylamine, and/or 4-nitrophenol results from the semivolatile organic compound (SVOC) analyses of several samples were rejected due to very low recoveries in the associated laboratory control and/or matrix spike samples;
- The Total Petroleum Hydrocarbon (TPH) diesel range organics (DRO) and residual range organics (RRO) results from groundwater sample ARK-03 (90 to 102.5 feet bgs) were rejected due to an exceeded holding time; however, a review of the associated SVOC results and chromatograms found no indication of significant hydrocarbon background. Any adverse effect of these rejected results from this single sample on usability of the overall data set is considered to be negligible; and
- The dinoseb (chlorinated herbicide) result from groundwater sample SIL-01 (26.5 to 31.5 feet bgs) was rejected due to a very low recovery in the associated laboratory control sample; however, chlorinated herbicides were not detected in this sample and dinoseb detections were not observed in other samples collected from the Siltronic Riverbank. Any adverse effect of this rejected result on usability of the overall data set is considered negligible.

The specific VOCs and SVOCs mentioned in the first two bullets above are well known to be “poor performers” as related to their respective analytical methods. In addition, these compounds are not constituents of potential concern for the Site; therefore, any adverse effect of these rejected results on usability of the overall data set is considered to be negligible.

Any identified QC anomalies other than those discussed above were relatively minor and did not adversely affect overall usability of the data set for constituents of potential concern.

In addition to the above data validation discussion, grain size of the silts and sands within Site water-bearing zones resulted in turbid groundwater samples from the direct-push and sonic boring locations. Constituent concentrations in grab groundwater samples collected using direct-push and sonic techniques are typically higher than what would be observed in groundwater samples collected from permanent monitoring wells. Task 3 of the Stage 1 SCE will involve groundwater monitoring from all existing and newly installed Task 2 monitoring wells. Section 7.0 discusses the schedule for the Task 3 groundwater monitoring events.

5.0 DISCUSSION OF ANALYTICAL RESULTS

This section presents a discussion of Task 1 reconnaissance activities soil and groundwater analytical results. Arkema Lots 1 and 2 soil analytical results are tabulated on Tables 2A through 2H and groundwater results are tabulated on Tables 3A through 3J. Siltronic Riverbank soil analytical results are tabulated on Tables 4A through 4F and groundwater results are tabulated on Tables 5A through 5I.

The analytical results for reconnaissance groundwater samples collected from both Arkema Lots 1 and 2 and the Siltronic Riverbank were compared to preliminary ecological and human health screening values. Screening results are presented on Table 6. The preliminary screening values provided in Table 6 are those screening values for human health and ecological receptors provided in Table 3-1 of the final Portland Harbor Joint Source Control Strategy, issued by DEQ and EPA in December 2005 (DEQ and EPA, 2005g). The screening values include EPA's 2004 National Recommended Water Quality Criteria (NRWQC) for human health and both chronic and acute levels for ecological receptors, and EPA's drinking water Maximum Contaminant Levels (MCLs) for human health. Note that Table 6 includes only those results that exceeded one or more of the screening values. The preliminary screening values provided in Table 6 do not represent cleanup goals and do not represent the level of potential risk at the River, but rather are included only for discussion and presentation purposes. A detailed evaluation of potential impacts to human and ecological receptors is beyond the scope of this Stage 1 SCE TM.

Figures 8 through 19 summarize analyte concentrations detected within the three Site groundwater characterization zones (Fill/Shallow Alluvium Zone, Alluvium Zone and Basalt Zone) for selected VOCs including 1,2-dichlorobenzene (1,2-DCB), TCE, tetrachloroethene (PCE), cis-1,2-dichloroethene (cis-1,2-DCE), vinyl chloride, and

benzene. Compound specific carbon isotopic composition, as determined by the University of Oklahoma stable isotope laboratory, are presented on Figures 20 through 22.

Constituent distribution in groundwater within the three characterization zones are presented for the chlorinated herbicide 2,4,5-TP (silvex) on Figures 23 through 25; the sum of organochlorine insecticides 4,4'-DDD (DDD), 4,4'-DDE (DDE), and 4,4'-DDT (DDT) on Figures 26 through 28; polychlorinated dibenzo-p-dioxins (dioxins) and polychlorinated dibenzofurans (furans) provided as toxicity equivalent quotient (TEQ) concentrations on Figures 29 through 31; total and dissolved arsenic on Figures 32 through 37; and chloride on Figures 38 through 40. Exceedance ratios for selected constituents from each of the chemical classes are presented on Figures 41 through 43.

Figures 44, 45, and 46 are based on similar figures in the Stage 1 SCE WP that provided outlines of groundwater concentrations for selected representative constituents. The figures have been updated to include the analytical results from the Task 1 reconnaissance activities per DEQ's request in its comment letter to the Draft Stage 1 SCE WP (DEQ, 2005c). Screening values used to define the lateral and vertical extent of constituents are based on criteria provided in Table 8. The criteria used for the constituent extents were those identified by DEQ in its August 1, 2005 letter regarding the Draft Stage 1 SCE WP (DEQ, 2005c). Analytical results from the Task 1 reconnaissance activities do not necessarily represent actual groundwater chemistry.

5.1 Arkema Lots 1 and 2

5.1.1 Soil

Soil analytical results from Task 1 reconnaissance activities at Arkema Lots 1 and 2 are discussed below. Analytical results are tabulated on Tables 2A through 2H.

VOCs

VOCs (e.g., chlorinated benzenes) were detected in two of the six soil samples analyzed from Arkema Lots 1 and 2 (Table 2A). 1,2-DCB was detected in soil samples collected at the RP-08 monitoring well boring location from 86 to 88 feet bgs and 92 to 93 feet bgs, at concentrations of 15.0 microgram per kilogram (µg/kg) and 170 µg/kg, respectively. Other chlorinated VOCs detected at RP-08 from 92 to 93 feet bgs included TCE (1.60 µg/kg, estimated) and cis-1,2-DCE (1.50 µg/kg, estimated),

SVOCs

SVOC detections were primarily polycyclic aromatic hydrocarbons (PAHs) within soil samples collected from the unsaturated zone at ARK-03 (5 to 6 feet bgs), ARK-04 (5 to 6 feet bgs), and ARK-06 (2 to 3 feet bgs) as shown in Table 2B. Detected individual PAH concentrations ranged from 21.0 µg/kg (estimated, benzo(a)anthracene) to 210 µg/kg (estimated, benzo(ghi)-perylene). Other than PAHs, the common laboratory contaminant bis(2-ethyl-hexyl)phthalate was the only other SVOC detected and it was detected in five of the six soil samples analyzed.

Chlorinated Herbicides and Organochlorine Insecticides

No chlorinated herbicides were detected in the six soil samples analyzed from Arkema Lots 1 and 2 (Table 2C). Only three organochlorine insecticides were detected in soil samples from Arkema Lots 1 and 2 (Table 2D). DDT was detected only in the soil sample collected directly above the capillary fringe at boring location ARK-08 (77.0 µg/kg). The DDT metabolite DDE also was detected at ARK-08 and at ARK-04 (5 to 6 feet bgs). Endrin was detected at ARK-06 (2 to 3 feet bgs) at 5.50 µg/kg (estimated).

Dioxins-Furans

Dioxin and/or furan congeners were detected in every soil sample analyzed from Arkema Lots 1 and 2 (Table 2E). Each soil sample collected from the unsaturated zone exhibited detections of all analyzed congeners; samples collected at depth (86 to 88 and 92 to 93 feet bgs) had limited congener detections. In general, furan congeners were detected at greater concentrations than dioxin congeners. The congener fingerprint of soil samples from the unsaturated zone at Arkema Lots 1 and 2 is consistent with fingerprints associated with use of graphite electrodes in chloralkali production prior to the 1970s (EPA, 2004).

Polychlorinated Biphenyls

Polychlorinated biphenyls (PCBs) were not detected in the six soil samples analyzed from Arkema Lots 1 and 2 (Table 2F).

Total Petroleum Hydrocarbons

TPH DRO and RRO were detected in three soil samples collected from the unsaturated zone (Table 2G). Maximum DRO detection was observed at ARK-03 (5 to 6 feet bgs) with a concentration of 26.0 milligrams per kilogram (mg/kg) and maximum RRO detection was observed at ARK-06 (2 to 3 feet bgs) with a concentration of 3,000 mg/kg.

Metals

All requested metals except for cadmium were detected in each of the six soil samples (Table 2H). Maximum concentration of mercury (2.60 mg/kg) was detected in soil sample ARK-06 (2 to 3 feet bgs).

5.1.2 Groundwater

Below is a discussion of groundwater analytical results collected from Arkema Lots 1 and 2 during Task 1 reconnaissance activities. Tabulated groundwater analytical results are presented in Tables 3A through 3J. Preliminary ecological and human health screening values and screening results are presented in Table 6. As mentioned previously in this section, comparisons to preliminary screening values in Table 6 are included only for discussion and presentation purposes. A detailed risk evaluation for humans and the environment is beyond the scope of this Stage 1 SCE TM.

VOCs

VOCs (e.g., chlorinated benzenes) were primarily detected in six groundwater samples analyzed from five boring locations at Arkema Lots 1 and 2 (Table 3A). Concentrations of 1,2-DCB exceeded the Ambient Water Quality Criteria (AWQC) Human Health-Consumption of Organism Only (COO) screening value divided by 10 in groundwater samples collected from the lower Alluvium Zone and Basalt Zone at boring locations ARK-01, ARK-03, and ARK-06 located on Arkema Lot 1 (Table 6). The highest concentrations of 1,3-dichlorobenezene (1,3-DCB) and 1,4-dichlorobenzene (1,4-DCB) were detected at the same boring locations, but did not exceed screening criteria. Distribution of 1,2-DCB in the three groundwater characterization zones, illustrated on Figures 8 through 10, indicates that the southern lateral extent of the 1,2-DCB is approximately limited to the border between Arkema Lots 1 and 2.

In a letter dated August 1, 2005 providing comments on the Draft Stage 1 SCE WP, DEQ stated that: *"The report should include an evaluation of total chlorinated benzenes [see DEQ Table 33C Water Quality Guidance Values Summary]."* As part of preparation of the Stage 1 SCE TM, SLLI has reviewed the background information relevant to development of the Table 33C guidance values for chlorinated benzenes, and concludes that these screening values are not appropriate for a screening level assessment of the chlorinated benzenes detected in samples collected during the Stage 1 SCE for the following reasons:

- Table 33C values for "chlorinated benzenes" reflect toxicity data derived by EPA for pentachlorobenzene, as presented in the *Ambient Water Quality Criteria for*

Chlorinated Benzenes (EPA, 1980). In fact, this document states that "the toxicity of chlorinated benzenes to freshwater organisms increases with increasing chlorination. Toxicity reaches its maximum with acute effect concentrations of pentachlorobenzene in the range of 250 micrograms per liter (µg/L) for the bluegill to 5,280 µg/L for Daphnia magna." The "chlorinated benzene" guidance levels are clearly inappropriate for monochlorobenzene (MCB) and the dichlorobenzenes (DCB). EPA 1980, cited above, provides data that clearly demonstrates that the toxicity of MCB and the DCBs is significantly lower than the toxicity of the higher chlorinated benzenes such as pentachlorobenzene; and

- Table 33C also includes guidance values for "dichlorobenzenes", and it should be noted that nearly all the chlorinated benzenes detected in samples collected during the Stage 1 SCE consist of MCB and the DCBs. From a structural and toxicological standpoint, it makes more sense to compare a mixture of MCB and DCBs to the guidance level for "dichlorobenzenes" than it does to compare such a mixture to a guidance level derived from pentachlorobenzene, which is known to be far more toxic.

In place of the proposed total chlorinated benzene approach, SLLI has prepared a Table (Table 7) that presents all chlorinated benzene analytical results for groundwater samples collected as part of the Stage 1 SCE investigation. Results for MCB, 1,2-DCB, 1,3-DCB and 1,4-DCB were also summed, and are reported in Table 7 as Sum MCB/DCBs. The Sum MCB/DCBs results in Table 7 were then compared to the freshwater acute and chronic "dichlorobenzene" guidance levels from DEQ Table 33C.

As can be seen by examining Table 7, DCB isomers were observed in 20 of the 57 groundwater samples and MCB was observed in 21 of the 57 groundwater samples collected during the Stage 1 SCE investigation. Only one sample, ARK-03 (90 to 102.5 feet bgs), had a total MCB/DCB greater than the chronic freshwater (763 µg/L) criteria and none of the samples exceeded the acute freshwater (1,120 µg/L) criteria. It is also important to note that only one sample, ARK-03 (90 to 102.5 feet bgs), had detections of any chlorinated benzenes other than MCB or the DCBs. The additional chlorinated benzenes detected in this sample consisted of only 0.28 µg/L of 1,2,3-trichlorobenzene and 0.45 µg/L of 1,2,4-trichlorobenzene, both of which are orders of magnitude lower than any of the guidance levels for chlorinated benzenes. Based on these data, direct toxicity of chlorinated benzenes in groundwater near the river appears to be of minimal concern.

TCE and/or PCE, cis-1,2-DCE, and vinyl chloride were detected in eight of the nine groundwater samples collected from boring locations on Arkema Lots 1 and 2. As seen on Figures 11 through 16, the majority of the detections were observed at depths

greater than 50 feet bgs within the lower Alluvium Zone and Basalt Zone except for groundwater samples collected between 10 and 15 feet bgs at ARK-07 and ARK-08. PCE at both ARK-08 (10 to 15 feet bgs) and ARK-07 (10 to 14 feet bgs) exceeded the Human Health-COO screening value and TCE at ARK-08 (10 to 15 feet bgs) exceeded the Human Health-COO screening value divided by 10 (Table 6). The TCE detections at ARK-07 and ARK-08, on the border of Arkema Lots 2 and 3 within the first water-bearing zone, appear to be a separate source of TCE than that observed in the lower Alluvium and Basalt Zones on Lots 1 and 2 since TCE was not detected upgradient of these locations in the first water-bearing zone (Figures 12 and 13).

Four groundwater samples collected from Arkema Lots 1 and 2 exhibited detections of benzene as shown on Figures 17 through 19; however, no concentrations exceeded ecological or human health screening criteria.

As would be anticipated due to: 1) use of chloroform in DDT manufacturing and 2) common presence of chloroform in graphite electrode waste, chloroform was detected in boring locations ARK-04 (33 to 36 feet bgs) and ARK-07 at all sampling depths (EPA, 1970). Chloroform detected in groundwater sample ARK-07 (22 to 26 feet bgs) exceeded the Human Health-COO screening value divided by 10 (Table 6). Since groundwater sampling locations upgradient from these borings indicate no detection of chloroform, a potential source of chloroform may be present on Arkema Lot 2 within or near the historic waste ponds on Lots 2 and 3.

Compound specific isotope analysis was conducted on groundwater samples that exhibited reportable detections of selected VOCs. Analysis was conducted on 17 samples from Arkema Lots 1 and 2 (Table 3G and Figures 20-22). Interpretation of the compound specific isotope analytical results is inconclusive based on the limited amount of data available to date due to the number of samples with no detectable VOCs from Arkema Lots 1 and 2. It is anticipated that groundwater samples collected from site monitoring wells will fill gaps in the Task 1 data available to date for Arkema Lots 1 and 2. Sampling of the Stage 1 SCE monitoring wells and installation of the remainder of the originally proposed monitoring wells to address data gaps are discussed further in Section 7.0. Due to Arkema's continued denial of access to their property, it is currently unknown when the reminder of the Stage 1 SCE program will be completed.

SVOCs

PAHs were detected in one groundwater sample, ARK-01 (10 to 15 feet bgs), with individual concentrations ranging from 0.710 µg/L (estimated, naphthalene) to 2.20

µg/L (estimated, phenanthrene), as shown in Table 3B. PAH detections did not exceed ecological or human health screening values.

Other SVOC detections include 4-methylphenol (p-cresol) and benzoic acid (often associated with wood debris), bis(2-ethyl-hexyl)phthalate, and diethylphthalate. Bis(2-ethyl-hexyl)phthalate exceeded the Human Health-COO screening value (Table 6); however all detections were qualified as estimates and this compound is a common laboratory contaminant.

Chlorinated Herbicides

Chlorinated herbicide detections were limited to 2,4,5-TP (silvex) at five boring locations (ARK-01, ARK-03, ARK-04, ARK-05, and ARK-06) with concentrations ranging from 1.60 µg/L to 22.0 µg/L (Table 3C). Silvex distribution, as shown on Figures 23 through 25, is limited to the lower Alluvium and Basalt Zones beneath Arkema Lot 1 and the western edge of Lot 2 near monitoring well cluster RP-02. However, all detections were well below the human health screening values presented in Table 6.

Organochlorine Insecticides

Organochlorine insecticides DDD, DDE, and DDT were detected in groundwater only at boring location ARK-07 at 22 to 26 feet bgs and 41 to 45 feet bgs with total concentrations of 1.79 µg/L (estimated) and 1.56 µg/L (estimated), respectively (Table 3D). The distribution of total DDD, DDE, and DDT (Figures 26 through 28) indicates a source area for DDT located on the border between Arkema Lots 2 and 3 that is separate from the limited source area located on and near the Site. The location of this source area is consistent with the waste disposal ponds located on Arkema Lots 2 and 3.

Dioxins-Furans

Dioxin-furan congeners were detected in all groundwater samples collected from Arkema Lots 1 and 2 (Table 3E). 2,3,7,8-TCDD detections exceeded both the Human Health-COO screening value and the Human Health-COO screening value divided by 10 for all sampling depths at boring locations ARK-01, ARK-02, ARK-05, ARK-07, and ARK-09 (Table 6). The highest detection of 2,3,7,8-TCDD was observed at boring ARK-01 (10 to 15 feet bgs) located within the first water-bearing zone on Lot 1. Toxic equivalent quotient (TEQ) concentrations were calculated using the 1998 World Health Organization's (WHO) Toxic Equivalency Factors (TEFs) (Van den Berg et.al., 1998). TEQ distributions for the three groundwater characterization zones are presented on Figures 29 through 31.

However, the concentrations of these constituents from reconnaissance groundwater samples are likely higher than results that will be obtained from sampling monitoring wells and, therefore, may not accurately represent dioxin-furan congeners in groundwater.

TPH

TPH DRO and RRO were detected in groundwater at six boring locations (ARK-01, ARK-02, ARK-04, ARK-06, ARK-07, and ARK-09) at depths ranging from 10 to 45 feet bgs on Arkema Lots 1 and 2 (Table 3F). The highest concentrations of both DRO and RRO were observed at boring location ARK-04 (33 to 36 feet bgs) at 850 µg/L (estimated) and 2,900 µg/L (estimated), respectively. These detections correspond with the TPH detections observed in the unsaturated zone soil samples (Table 2G).

Metals

All requested metals were detected in the total metals analysis of one or more groundwater samples collected from Arkema Lots 1 and 2 (Table 3H). All requested metals were detected in the dissolved metals analysis of one or more groundwater samples, except for cadmium (Table 3I). The majority of total metals detections exceeded Freshwater Criteria Maximum Concentration (CMC) and/or Freshwater Criterion Continuous Concentration (CCC) screening values, as shown in Table 6.

Figures 32 through 34 present distribution of total arsenic and Figures 35 through 37 present the distribution of dissolved arsenic. The arsenic distribution on Figure 33 indicates two separate sources of total arsenic, one near monitoring well RP-04-16 located within the LA that does not extend downgradient toward the River, and a second source on Arkema Lots 1 and 2.

Chloride and Ammonia-nitrogen

Chloride and ammonia-nitrogen were detected in all groundwater samples analyzed (Table 3J). Chloride concentrations in groundwater samples from the reconnaissance borings ranged from 17.8 milligrams per liter (mg/L) (ARK-05 [18 to 22 feet bgs]) and 8,270 mg/L (ARK-01 [50 to 54 feet bgs]). Ammonia-nitrogen concentrations ranged from 0.100 mg/L (ARK-08 [38.5 to 43.5 feet bgs]) to 4.30 mg/L (ARK-03 [22 to 26 feet bgs]). Figures 38 through 40 indicate two separate sources of chloride: one in the LA between monitoring well AL2-23 and monitoring well cluster W-08; and a second and much higher source area on Arkema Lots 1 and 2 located near historical waste disposal areas associated with former Arkema operations.

5.2 Siltronic Riverbank

5.2.1 Soil

The collection of soil samples for chemical analysis was not planned for the investigative borings located on the Siltronic Riverbank. However, with Siltronic's approval, one soil sample was obtained from boring RP-11 (7.5 to 8 feet bgs) and was submitted for chemical analysis. Analytical results are tabulated on Table 4A through 4F. Below is a discussion of soil sample analytical results.

VOCs

No chlorinated benzenes or other chlorinated VOCs were detected in the soil sample collected from the Siltronic Riverbank (Table 4A). Seven VOCs were detected in this soil sample: 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; 4-isopropyltoluene; ethylbenzene; isopropylbenzene; m,p xylenes; and o-xylenes. These VOCs are typical of documented GASCO/NW Natural MGP waste.

SVOCs

SVOC detections within soil sample RP-11 (7.5 to 8 feet bgs) were primarily PAHs (Table 4B). Detected individual PAH concentrations ranged from 9,600 µg/kg (estimated, dibenzo-(a,h)anthracene) to 630,000 µg/kg (phenanthrene). Other than PAHs, 2-methylnaphthalene was the only other SVOC detected. The range and concentration of PAHs within this soil sample are consistent with MGP waste.

Dioxins-Furans

Dioxin and furan congeners were detected in the soil sample collected from the Siltronic Riverbank (Table 4C). However, only a limited number of congeners were detected and all detections were qualified as an estimate. 2,3,7,8-TCDD was not detected in the soil sample.

TPH

TPH DRO and RRO were detected in the soil sample from boring RP-11. DRO was detected at a concentration of 23,000 mg/kg and RRO was detected at a concentration of 11,000 mg/kg (Table 4D).

Metals

Fourteen of the 16 metals analyzed were detected in the RP-11 soil sample (Table 4E). Cadmium and mercury were not detected.

5.2.2 Groundwater

Below is a discussion of groundwater analytical results collected from the Siltronic Riverbank during the Task 1 reconnaissance activities. Tabulated groundwater analytical results are presented on Tables 5A through 5I. Preliminary ecological and human health screening values and screening results are presented on Table 6. As mentioned previously, comparisons to preliminary screening values in Table 6 are included only for discussion and presentation purposes. A detailed risk evaluation for humans and the environment is beyond the scope of this Stage 1 SCE TM.

VOCs

Chlorinated benzenes were detected in 11 lower Alluvium Zone and Basalt Zone groundwater samples collected from five boring locations along the Siltronic Riverbank (Table 5A). Concentrations of 1,2-DCB exceeded Human Health-COO screening value divided by 10 in only four of those 11 groundwater samples which were collected from boring locations RP-11 (210 to 216 feet bgs), SIL-03 (95 to 99 feet bgs and 110 to 130 feet bgs), and SIL-04 (80 to 89 feet bgs) as presented in Table 6. Three of these exceedances were in the Basalt Zone and only one was in the Alluvium Zone. No 1,2-DCB detections occurred in the Fill/Shallow Alluvium Zone. The only detection of 1,3-DCB occurred at boring location SIL-04 (80 to 89 feet bgs), but did not exceed screening values. Concentrations of 1,4-DCB exceeded Human Health-COO screening value divided by 10 in six groundwater samples collected from four boring locations. The distribution of 1,2-DCB exceeding Human Health-COO screening value divided by 10 in the three groundwater characterization zones, presented on Figures 8 through 10, suggests that 1,2-DCB may be present only in a limited area of the Siltronic Riverbank at the southernmost end of the property and only within the Alluvium and Basalt Zones. It should also be noted that groundwater from the lower Alluvium and Basalt Zones in the northern portion of the Siltronic property currently has not been shown to discharge into the River.

TCE, cis-1,2-DCE, and vinyl chloride were detected in 12 lower Alluvium Zone and Basalt Zone groundwater samples collected from the five boring locations on the Siltronic Riverbank (Table 5A). As seen on Figures 14 through 16, the majority of the detections were from depths greater than 50 feet bgs within the lower Alluvium Zone and Basalt Zone. PCE was not detected above the method detection limit (MDL) in

any groundwater samples collected from the Siltronic Riverbank. TCE exceeded the Human Health-COO screening value divided by 10 in groundwater samples from RP-11, SIL-03, and SIL-04 (Table 6). Vinyl chloride exceeded the Human Health-COO screening value in groundwater samples from SIL-01 and exceeded the Human Health-COO screening value divided by 10 in groundwater samples from RP-11, SIL-01, and SIL-04.

Benzene was detected in eight groundwater samples collected from the five borings along the Siltronic Riverbank (Table 5A). As seen on Figures 17 through 19, seven of the eight detections were from depths greater than 90 feet bgs within the lower Alluvium and Basalt Zones. Concentrations of benzene exceeded the Human Health-COO screening value divided by 10 for two groundwater samples from boring SIL-01 (at depths of 96 to 100 feet bgs and 126 to 130 feet bgs).

Methyl-t-Butyl Ether (MTBE) was detected in eight groundwater samples collected from the five borings along the Siltronic Riverbank (Table 5A). Detections were from depths greater than 160 feet bgs within the lower Alluvium and Basalt Zones with concentrations ranging from 0.72 µg/L at SIL-02 (186 to 190 feet bgs) to 22 µg/L at SIL-01 (184 to 188 feet bgs) and SIL-02 (214 to 216 feet bgs).

Compound specific isotope analysis was conducted on groundwater samples that exhibited reportable detections of selected VOCs (Table 5G and Figures 20 through 22). This analysis was conducted on 16 samples from the Siltronic Riverbank. Interpretation of the compound specific isotope analytical results is inconclusive based on the amount of data available to date, and the presence of an excessive number of samples with VOC concentrations below detection limits. It is anticipated that groundwater samples planned to be collected from Site monitoring wells will fill data gaps currently present in the Task 1 data available to date at Siltronic. Sampling of the Site monitoring wells to address data gaps is discussed further in Section 7.0.

SVOCs

PAHs were detected in one or more groundwater samples per boring location (Table 5B). PAHs were detected at all sampling depths in boring SIL-02, where analyzed. The highest detections of PAHs were observed at SIL-01 from 26.5 to 31.5 feet bgs, with individual concentrations ranging from 5.50 µg/L (estimated, acenaphthylene) to 1,800 µg/L (naphthalene). Several PAHs exceeded Human Health-COO, Human Health-COO divided by 10 and MCL screening values at this depth only (Table 6). Their distribution suggests the presence of MGP waste from former GASCO/NW Natural operations on the Siltronic property.

Other SVOC detections included 2-chlorophenol, 2-methylnaphthalene, benzoic acid, bis(2-ethyl-hexyl)phthalate, and di-n-octyl phthalate. Bis(2-ethyl-hexyl)phthalate exceeded the Human Health-COO screening value; however, all detections were qualified as estimates during data validation. In addition, bis(2-ethyl-hexyl)phthalate is considered to be a common laboratory contaminant.

Chlorinated Herbicides

Chlorinated herbicide detections included silvex at all five boring locations at concentrations ranging from 1.10 µg/L to 9.60 µg/L (Table 5C). Silvex distribution beneath the Siltronic Riverbank, as shown on Figures 23 through 25, is limited to the lower Alluvium Zone and Basalt Zone; however, no detections exceeded the human health screening values. Dicamba, dichlorprop, and MCPP also were detected but did not exceed their respective screening values.

Organochlorine Insecticides

Organochlorine insecticides alpha-BHC, beta-BHC and gamma chlordane were detected at SIL-01 from 26.5 to 31.5 feet bgs (Table 5D). However, the results were qualified as a “tentatively identified analyte” during data validation. Gamma-BHC also was detected in SIL-01 (26.5 to 31.5 feet bgs). Only alpha-BHC and beta-BHC exceeded the Human Health-COO and Human Health-COO divided by 10 screening values.

Dioxin-Furans

Dioxin-furan congeners were detected in all groundwater samples collected from the Siltronic Riverbank (Table 5E). Where detected, 2,3,7,8-TCDD concentrations exceeded the Human Health-COO screening values (Table 6). The highest concentration of 2,3,7,8-TCDD was observed at boring SIL-03 (95 to 99 feet bgs). However, the concentrations of these constituents from reconnaissance groundwater samples are likely higher than results that will be obtained from sampling monitoring wells and, therefore, may not accurately represent dioxin-furan congeners in groundwater. Total dioxin TEQs for the three groundwater characterization zones are presented on Figures 29 through 31.

TPH

TPH DRO and RRO were detected in all groundwater samples collected from the Fill/Shallow Alluvium Zone (Table 5F). Detections also were observed within the Alluvium Zone at boring locations SIL-01 and SIL-02. The highest concentrations of

both DRO and RRO were observed at boring location SIL-01 in the sample from 26.5 to 31.5 feet bgs at 4,400 µg/L (estimated) and 1,300 µg/L (estimated), respectively.

Metals

All requested metals were detected in the total metals and dissolved metals analysis of one or more groundwater samples collected from the Siltronic Riverbank except for cadmium and mercury (Table 5H). The majority of total metals detections exceeded Freshwater-CMC and/or Freshwater-CCC screening criteria (Table 6). Figures 32 through 34 present the distribution of total arsenic and Figures 35 through 37 present the distribution of dissolved arsenic. The maximum concentration of dissolved arsenic at the Siltronic Riverbank was observed at SIL-01 (26.5 to 31.5 feet bgs) at 14.4 µg/L. Dissolved arsenic was not detected within the lower Alluvium and Basalt Zones.

6.0 CONCLUSIONS

Based on the Task 1 reconnaissance activities and Task 2 monitoring well installations scope of work, the following conclusions have been drawn regarding the Arkema Lots 1 and 2 and the Siltronic Riverbank. As mentioned previously, comparisons to preliminary screening values is only for discussion and presentation purposes.

Arkema Lots 1 and 2

- 1,2-DCB and TCE were observed in groundwater only in the lower Alluvium and Basalt Zones on Arkema Lot 1. 1,2-DCB exceeded the Human-Health COO screening value at boring locations ARK-01, ARK-03, and ARK-06 on Arkema Lot 1. The detections of TCE and PCE observed within the first water-bearing zone at ARK-07 and ARK-08 on the border of Arkema Lots 2 and 3 appear to be from a separate source of TCE than that observed in the lower Alluvium and Basalt Zones on Lot 1 since TCE was not detected in the Fill/Shallow Alluvium Zone upgradient of these locations.
- Chloroform was detected in boring locations ARK-04 and ARK-07. Since chloroform was not detected at groundwater sampling locations upgradient from these borings, a potential source of chloroform may be present on Arkema Lot 2. These borings are located at or near the former waste pond areas on Lots 2 and 3.
- PAHs were detected in one groundwater sample collected from the first water-bearing zone from Arkema Lots 1 and 2, ARK-01 (10 to 15 feet bgs). This isolated detection indicates a source of contamination on Arkema Lot 1. PAH detections did not exceed ecological or human health screening values.

- Silvex was detected in groundwater within the lower Alluvium and Basalt Zones on Arkema Lot 1 and the western boundary of Lot 2; however, no detections exceeded the human health screening values.
- DDD, DDE, and DDT were detected only in groundwater samples from boring location ARK-07 located on the border between Lots 2 and 3 near historical waste disposal ponds, indicating a local source for these constituents. These detections did exceed the Human Health-COO and Human Health-COO divided by 10 screening values.
- Dioxin-furan congeners were detected in all soil and groundwater samples collected from Arkema Lots 1 and 2. 2,3,7,8-TCDD detections from boring locations ARK-01, ARK-02, ARK-05, ARK-07, and ARK-09 exceeded both the Human Health-COO and Human-Health-COO divided by 10 screening values. However, the concentrations of these constituents from reconnaissance groundwater samples are likely higher than results that will be obtained from sampling monitoring wells and, therefore, may not accurately represent dioxin-furan congeners in groundwater.
- Total arsenic data indicates the presence of two separate source areas for total arsenic: a localized area near monitoring well RP-04-16 (located within the RP LA) and a second larger source area on Arkema Lots 1 and 2. Dissolved arsenic detections within the reconnaissance borings were limited to the first water-bearing zone at boring locations ARK-05, ARK-08, and ARK-09 indicating a source of arsenic on Arkema Lots 1 and 2.
- Chloride analytical results indicate two separate sources for chloride: one in the LA between monitoring well AL2-23 and monitoring well cluster W-08; and a second higher-concentration source area on Arkema Lots 1 and 2 located near historical waste disposal areas.
- Unsaturated soil analytical results for PAHs, organochlorine insecticides, and TPH DRO and RRO indicate the presence of source areas of soil contamination on Arkema Lots 1 and 2.

Siltronic Riverbank

- 1,2-DCB was detected only in the lower Alluvium and Basalt Zone groundwater samples collected from all five boring locations along the Siltronic Riverbank. 1,2-DCB concentrations at RP-11 (210 to 216 feet bgs), SIL-03 (95 to 99 feet bgs and 110 to 130 feet bgs), and SIL-04 (80 to 89 feet bgs) exceeded the Human Health-COO divided by 10 screening value. The distribution of 1,2-DCB exceeding Human Health-COO screening value divided by 10 suggests that 1,2-DCB may be present only in a limited area of the Siltronic Riverbank at the southernmost end of

the property and only within the Alluvium and Basalt Zones. It should also be noted that groundwater from the lower Alluvium and Basalt Zones in the northern portion of the Siltronic property currently has not been shown to discharge into the River.

- The highest detections of PAHs in groundwater were observed at SIL-01 from 26.5 to 31.5 feet bgs. PAHs also were detected in all groundwater sampled from boring SIL-02 that were analyzed. This distribution suggests a commingling of MGP waste from former GASCO/NW Natural operations on the Siltronic property. PAH concentrations from the RP-11 (7.5 to 8 feet bgs) soil sample ranged from 9,600 µg/kg (estimated, dibenzo-(a,h)anthracene) to 630,000 µg/kg (phenanthrene).
- Silvex was detected only in groundwater at a depth greater than 80 feet bgs within the lower Alluvium Zone and Basalt Zone beneath the Siltronic Riverbank; however no detections exceeded the human health screening values.
- Dioxin-furan congeners were detected in all groundwater samples collected from the Siltronic Riverbank. Where detected, 2,3,7,8-TCDD concentrations exceeded the Human Health-COO screening value. However, the concentrations of these constituents from reconnaissance groundwater samples are likely higher than results that will be obtained from sampling monitoring wells and, therefore, may not accurately represent dioxin-furan congeners in groundwater.

The evaluations and conclusions from Task 1 reconnaissance activities and Task 2 monitoring well installations will be reviewed and revised, if necessary, following the completion of the Stage 1 SCE scope of work.

7.0 OUTSTANDING TASKS

The scope of work as proposed in the Final Stage 1 SCE WP has not been completed. Outstanding tasks include: Task 1 reconnaissance activities within the Beach Area; Task 2 monitoring well installations within the Beach Area; Task 3 groundwater monitoring of newly installed SCE monitoring well clusters on BNSF Beach Area, Arkema Beach Area, Arkema Lots 1 and 2, and selected preexisting monitoring wells on Arkema Lots 1 through 4; and Task 4 transducer study. Currently, SLLI has been repeatedly denied access to the Arkema property to complete groundwater monitoring on Lots 1 through 4 and the Beach Area investigation activities. SLLI is actively negotiating with Arkema for access to their property to complete outstanding SCE tasks.

Pending access negotiations with Arkema, SLLI anticipates Beach Area Task 1 and Task 2 drilling activities will be conducted during the next in-water work window between July 1 and October 31, 2006. SLLI has received the Division of State Lands

Fill/Removal permit, United States Army Corp of Engineers Fill/Removal permit, and the City of Portland Greenway Decision for the Beach Area investigation. The City of Portland Site Development Permit is currently in progress with the City of Portland.

In order to continue the SCE investigation, SLLI proposed the collection of groundwater samples from the newly installed Siltronic Riverbank RP-11 monitoring well cluster and additional Siltronic and Site wells in a work plan to DEQ, dated March 10, 2006 (AMEC, 2006b). Groundwater samples were collected between March 20, 2006 and April 3, 2006. Results from this sampling event and the remainder of the SCE scope of work will be reported separately following their completion.

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LIMITATIONS

This report was prepared exclusively for SLLI by AMEC Earth & Environmental, Inc. (AMEC). The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in AMEC services and based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This Stage 1 Source Control Evaluation Technical Memorandum is intended to be used by SLLI for the RP - Portland Site, 6200 N.W. St. Helens Road, Portland, Oregon only, subject to the terms and conditions of its contract with AMEC. Any other use of, or reliance on, this report by any third party is at that party's sole risk.

TABLES

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Tables 2 - 3J	Reconnaissance Analytical Results - Arkema Lots 1 and 2
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Table 6	Stage 1 SCE Reconnaissance Borings and Selected MW Results Exceeding Water Quality Screening Values
Table 7	Chlorinated Benzene Comparison
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TABLE 1
Planned Versus Actual Sampling Locations and Analyses for Soil and Groundwater Sampling
Stage 1 Source Control Evaluation
RP - Portland Site

Sampling Area and Location	Sample Depth (feet bgs)	Sampling Media	VOCs by EPA Method 8260B	SVOCs by EPA Method 8270C	Chlorinated Herbicides by EPA Method 8151A	Organochlorine Pesticides by EPA Method 8081A	Dioxins/ Furans by EPA Method 1613	PCBs by EPA Method 8082A	TPH Diesel Range by NWTPH-Dx	Metals by EPA Methods 6010A/6020/7470A[1]	Compound Specific Isotope Analysis (GC/C/IRMS)	Chloride by EPA Method 300.0	Ammonia by EPA Method 350.3	Hydrogeologic Parameters[2]	Explanation for Inclusion or Exclusion
Arkema Lots 1 and 2															
ARK-01	10-15	GW	X	X	X	X	X		X	•	•	X	X		Metals analysis not requested on COC. Isotope analysis bottle breakage.
	28.5-31.5	GW	X	X	X	X	X		X	X	X	X	X		
	50-54	GW	X	X	X	X	X		X	X	X	X	X		
ARK-02	36-40	GW	X	X	X	X	X		X	X	X	X	X		
	76-80	GW	X	X	X	X	X		X	X	•	X	X		VOCs not detected by EPA Method 8260B; analysis not conducted.
ARK-03	22-26	GW	X	X	X	X	X		X	X	X	X	X		
	54-58	GW	X	X	X	X	X		X	X	•	X	X		VOCs not detected by EPA Method 8260B; analysis not conducted.
	76-80	GW	X	X	X	X	X		X	X	•	X	X		VOCs not detected by EPA Method 8260B; analysis not conducted.
	90-102.5	GW	X	X	X	X	X		X	X	X	X	X		
ARK-04	10-15	GW	X	X	X	X	X		X	X	•	X	X		VOCs not detected by EPA Method 8260B; analysis not conducted.
	33-36	GW	X	X	X	X	X		X	X	X	X	X		
	44-47	GW	X	X	X	X	X		X	X	X	X	X		
ARK-05	18-22	GW	X	X	X	X	X		X	X	•	X	X		VOCs not detected by EPA Method 8260B; analysis not conducted.
	37-41	GW	X	X	X	X	X		X	X	•	X	X		VOCs not detected by EPA Method 8260B; analysis not conducted.
	62-67.5	GW	X	X	X	X	X		X	X	X	X	X		
ARK-06	23-27*	GW	X	X	X	X	X		X	X	X	X	X		
	54-58	GW	X	X	X	X	X		X	X	•	X	X		VOCs not detected by EPA Method 8260B; analysis not conducted.
	76-80	GW	X	X	X	X	X		X	X	•	X	X		VOCs not detected by EPA Method 8260B; analysis not conducted.
	88-97.5	GW	X	X	X	X	X		X	X	X	X	X		
ARK-07	10-14	GW	X	X	X	X	X		X	X	X	X	X		
	22-26	GW	X	X	X	X	X		X	•	X	X	•		Insufficent recharge for required volume.
	41-45	GW	X	X	X	X	X		X	X	X	X	X		
ARK-08	10-15	GW	X	X	X	X	X		X	X	X	X	X		
	38.5-43.5*	GW	X	X	X	X	X		X	X	•	X	X		VOCs not detected by EPA Method 8260B; analysis not conducted.
ARK-09	11-16	GW	X	X	X	X	X		X	X	•	X	X		VOCs not detected by EPA Method 8260B; analysis not conducted.
	30-35	GW	X	X	X	X	X		X	X	•	X	•		VOCs not detected by EPA Method 8260B; analysis not conducted. Ammonia bottle inadvertently not filled in field.
	52-56	GW	X	X	X	X	X		X	X	X	X	X		
	86-94	GW	X	X	X	X	X		X	X	X	X	X		
ARK-01	various	SO	A	A	A	A	A	A	A	A				X	Archived at 1 feet bgs; 5 feet bgs; 6 feet bgs; 15 feet bgs; and 62 feet bgs.
ARK-02	various	SO	A	A	A	A	A	A	A	A					Archived at 1 feet bgs; 6 feet bgs; 11 feet bgs; 15 feet bgs; and 80 feet bgs.
ARK-03	5-6	SO	X	X	X	X	X	A	X	X					Additional samples archived at 1 feet bgs and 80 feet bgs.
ARK-04	5-6	SO	X	X	X	X	X	X	X	X					Additional samples archived at 1 feet bgs; 16 feet bgs; 17 feet bgs; and 47 feet bgs.
ARK-05	various	SO	A	A	A	A	A	A	A	A					Archived at 1 feet bgs; 6 feet bgs; 17feet bgs; 22 feet bgs; and 60 feet bgs.
ARK-06	2-3	SO	X	X	X	X	X	X	X	X					Additional samples archived at 1 feet bgs; 6 feet bgs; 10 feet bgs; and 76 feet bgs.
ARK-07	various	SO	A	A	A	A	A	A	A	A					Archived at 1 feet bgs; 6 feet bgs; 9 feet bgs; 32 feet bgs; and 45 feet bgs.
ARK-08	12-13	SO	X	X	X	X	X		X	X					Additional samples archived at 1 feet bgs; 6 feet bgs; 14.5 feet bgs; 16 feet bgs; and 43.5 feet bgs.
ARK-09	various	SO	A	A	A	A	A	A	A					X	Archived at 1 feet bgs; 6 feet bgs; 12 feet bgs; 16 feet bgs; and 84 feet bgs.
RP-08	86-88	SO	X	X	X	X	X		X	X					
	92-93	SO	X	X	X	X	X		X	X					
Siltronic Riverbank															
SIL-01	26.5-31.5	GW	X	X	X	X	X		X	X	X				
	96-100	GW	X	X	X	X	X		X	X	X				
	126-130	GW	X												
	156-160	GW	X												
	184-188	GW	X												
	207-208	GW	X	X	X	X	X		X	X	X				
	212-217	GW	X	X	X	X	X		X	X	X				
SIL-02	28-32	GW	X	X	X	X	X		X	X	X				
	96-100	GW	X	X	X	X	X		X	X	X				
	126-130	GW	X												
	156-160*	GW	X												
	186-190	GW	X												
	214-216	GW	X	X	X	X	X		X	X	X				
SIL-03	31-35	GW	X	X	X	X	X		X	X	X				
	95-99	GW	X	X	X	X	X		X	X	X				
	110-130	GW	X	X	X	X	X		X	X	X				
SIL-04	26-30	GW	X	X	X	X	X		X	X					
	70-74	GW	X	X	X	X	X		X	X	X				
	80-89	GW	X	X	X	X	X		X	X	X				

TABLE 1
Planned Versus Actual Sampling Locations and Analyses for Soil and Groundwater Sampling
Stage 1 Source Control Evaluation
RP - Portland Site

Sampling Area and Location	Sample Depth (feet bgs)	Sampling Media	VOCs by EPA Method 8260B	SVOCs by EPA Method 8270C	Chlorinated Herbicides by EPA Method 8151A	Organochlorine Pesticides by EPA Method 8081A	Dioxins/ Furans by EPA Method 1613	PCBs by EPA Method 8082A	TPH Diesel Range by NWTPH-Dx	Metals by EPA Methods 6010A/6020/7470A[1]	Compound Specific Isotope Analysis (GC/C/IRMS)	Chloride by EPA Method 300.0	Ammonia by EPA Method 350.3	Hydrogeologic Parameters[2]	Explanation for Inclusion or Exclusion
RP-11	27-31	GW	X	X	X	X	X		X	X	X				
	96-100*	GW	X	X	X	X	X		X	X	X				
	126-130	GW	X												
	148-152	GW	X												
	190-190	GW	X												
	210-216	GW	X	X	X	X	X		X	X	X				
SIL-02	216-218	SO												X	
RP-11	7.5-8	SO	O	O			O		O	O					Added to program to evaluate potential contribution of MGP impacted soil to groundwater, with permission from Siltronic.
	27-31	SO												X	
	154-155	SO												X	
	208-210	SO												X	

Notes:
[1] Total and dissolved metals analysis for groundwater samples. Metals include: aluminum, calcium, iron, magnesium, potassium, sodium, arsenic, cadmium, chromium, copper, lead, manganese, nickel, vanadium, zinc, and mercury.
[2] Hydrogeologic parameters include: total organic carbon, mechanical sieve and 200 wash.
X = Sample was collected and analyzed in accordance with Table 2 of *Final Stage 1 Source Control Evaluation Work Plan* (AMEC, 2005)
● Analysis planned, but not conducted; see explanation in Inclusion or Exclusion column for reasoning.
O Analysis added, see explanation in Inclusion or Exclusion column for reasoning.
* Duplicate sample was collected for quality control/quality assurance.

A = archived
bgs = below ground surface
EPA = United States Environmental Protection Agency
GC/C/IRMS = Gas Chromatography/Combustion Interface/Isotope Ratio Mass Spectrometer
GW = groundwater
PCBs = polychlorinated biphenyls
SO = soil
SVOCs = semivolatile organic compounds
TPH = total petroleum hydrocarbons
VOCs = volatile organic compounds

TABLE 2A
Volatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene
				Date	Units														
ARK-03	5-6	069-01	P	08/22/2005	µg/kg	<0.092	<0.140	<0.500	<0.210	<0.110	<0.100	<0.110	<0.091	<0.410	<0.370	<0.370	<0.820	<0.160	<0.130
ARK-04	5-6	029-01	P	08/12/2005	µg/kg	<0.092 UJ	<0.140 UJ	<0.500 UJ	<0.210 UJ	<0.110 UJ	<0.100 UJ	<0.110 UJ	<0.091 UJ	<0.410 UJ	<0.370 UJ	<0.370 UJ	<0.820 UJ	<0.160 UJ	<0.130 UJ
ARK-06	2-3	053-01	P	08/18/2005	µg/kg	<0.092	<0.140	<0.500	<0.210	<0.110	<0.100	<0.110	<0.091	<0.410	<0.370	<0.370	<0.820	<0.160	<0.130
ARK-08	12-13	011-01	P	08/10/2005	µg/kg	<0.092	<0.140	<0.500	<0.210	<0.110	<0.100	<0.110	<0.091	<0.410	<0.370	<0.370	<0.820	<0.160	<0.130
RP-08	86-88	077-01	P	09/21/2005	µg/kg	<0.092	<0.140	<0.500	<0.210	<0.110	<0.100	<0.110	<0.091	<0.410	<0.370	<0.370	<0.820	<0.160	**15.0**
RP-08	92-93	078-01	P	09/21/2005	µg/kg	<0.092	<0.140	<0.500	<0.210	<0.110	<0.100	<0.110	<0.091	<0.410	<0.370	<0.370	<0.820	<0.160	**170**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/kg = micrograms per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 2A
Volatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone (MEK)	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-methyl-2-pentanone (MIBK)	Acetone
				Date	Units														
ARK-03	5-6	069-01	P	08/22/2005	µg/kg	<0.190	<0.120	<0.150	<0.110	<0.240	<0.240	<0.130	<0.410	<0.140	<0.410	<0.170	<0.230	<0.380	**18.0 J**
ARK-04	5-6	029-01	P	08/12/2005	µg/kg	<0.190 UJ	<0.120 UJ	<0.150 UJ	<0.110 UJ	<0.240 UJ	<0.240 UJ	<0.130 UJ	<0.410 UJ	<0.140 UJ	<0.410 UJ	<0.170 UJ	<0.230 UJ	<0.380 UJ	<0.730 UJ
ARK-06	2-3	053-01	P	08/18/2005	µg/kg	<0.190	<0.120	<0.150	<0.110	<0.240	<0.240	<0.130	<0.410	<0.140	<0.410	<0.170	<0.230	<0.380	<0.730 UJ
ARK-08	12-13	011-01	P	08/10/2005	µg/kg	<0.190	<0.120	<0.150	<0.110	<0.240	<0.240	<0.130	<0.410	<0.140	<0.410	<0.170	<0.230	<0.380	<0.730 UJ
RP-08	86-88	077-01	P	09/21/2005	µg/kg	<0.190	<0.120	<0.150	<0.110	<0.240	**3.80 J**	<0.130	<0.410	<0.140	<0.410	<0.170	<0.230 UJ	<0.380	**5.50 J**
RP-08	92-93	078-01	P	09/21/2005	µg/kg	<0.190	<0.120	<0.150	**4.10 J**	<0.240	**36.0**	<0.130	<0.410	<0.140	<0.410	<0.170	<0.230 UJ	<0.380	**8.80 J**

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TABLE 2A
Volatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene
				Date	Units														
ARK-03	5-6	069-01	P	08/22/2005	µg/kg	<0.081	<0.170	<0.120	<0.150	<0.160	<0.810 UJ	<0.110	<0.150	<0.068	<0.670	<0.072	<0.400	<0.120	<0.100
ARK-04	5-6	029-01	P	08/12/2005	µg/kg	<0.081 UJ	<0.170 UJ	<0.120 UJ	<0.150 UJ	<0.160 UJ	<0.810 UJ	<0.110 UJ	<0.150 UJ	<0.068 UJ	<0.670 UJ	<0.072 UJ	<0.400 UJ	<0.120 UJ	<0.100 UJ
ARK-06	2-3	053-01	P	08/18/2005	µg/kg	<0.081	<0.170	<0.120	<0.150	<0.160	<0.810	<0.110	<0.150	<0.068	<0.670	<0.072	<0.400	<0.120	<0.100
ARK-08	12-13	011-01	P	08/10/2005	µg/kg	<0.081	<0.170	<0.120	<0.150	<0.160	<0.810	<0.110	<0.150	<0.068	<0.670	<0.072	<0.400	<0.120	<0.100
RP-08	86-88	077-01	P	09/21/2005	µg/kg	<0.081	<0.170	<0.120	<0.150	<0.160	<0.810 UJ	<0.110	<0.150	<0.068	<0.670 UJ	<0.072	<0.400	<0.120	<0.100
RP-08	92-93	078-01	P	09/21/2005	µg/kg	**2.20 J**	<0.170	<0.120	<0.150	<0.160	<0.810 UJ	<0.110	<0.150	**20.0**	<0.670 UJ	<0.072	<0.400	**1.50 J**	<0.100

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TABLE 2A
Volatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Iodomethane	Isobutyl alcohol	Isopropylbenzene	m,p Xylenes	Methylene chloride	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene
				Date	Units														
ARK-03	5-6	069-01	P	08/22/2005	µg/kg	<0.130	<0.220	<0.230 UJ	<1.10	<0.240	<0.270	<22.0	<0.160	<2.40 U	<0.370	<0.230	<0.210	<0.130	<0.720 U
ARK-04	5-6	029-01	P	08/12/2005	µg/kg	<0.130 UJ	<0.220 UJ	<0.230 UJ	<1.10 UJ	<0.240 UJ	<0.270 UJ	<22.0 UJ	<0.160 UJ	<2.40 UJ	<0.370 UJ	<0.230 UJ	<0.210 UJ	<0.130 UJ	<0.720 UJ
ARK-06	2-3	053-01	P	08/18/2005	µg/kg	<0.130	<0.220	<0.230 UJ	<1.10	<0.240	<0.270	<22.0	<0.160	<2.40	<0.370	<0.230	<0.210	<0.130	<0.720
ARK-08	12-13	011-01	P	08/10/2005	µg/kg	<0.130	<0.220	<0.230 UJ	<1.10	<0.240	<0.270	<22.0	<0.160	<2.40	<0.370	<0.230	<0.210	<0.130	<0.720
RP-08	86-88	077-01	P	09/21/2005	µg/kg	<0.130	<0.220	<0.230	<1.10	<0.240 UJ	<0.270 UJ	<22.0	<0.160	<2.40	<0.370	<0.230	<0.210 UJ	<0.130	<0.720
RP-08	92-93	078-01	P	09/21/2005	µg/kg	<0.130	<0.220	<0.230	<1.10	<0.240 UJ	<0.270 UJ	<22.0	<0.160	<2.40	<0.370	<0.230	<0.210 UJ	<0.130	<0.720

Notes:
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TABLE 2A
Volatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		sec-Butylbenzene	Styrene	tertButylbenzene	Tetrachloroethene	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene	Trichlorofluoromethane	Vinyl chloride
				Date	Units										
ARK-03	5-6	069-01	P	08/22/2005	µg/kg	<0.160	<0.170	<0.150	<0.350	<0.110	<0.096	<0.150	<0.130	<0.100	<0.220
ARK-04	5-6	029-01	P	08/12/2005	µg/kg	<0.160 UJ	<0.170 UJ	<0.150 UJ	<0.350 UJ	<0.110 UJ	<0.096 UJ	<0.150 UJ	<0.130 UJ	<0.100 UJ	<0.220 UJ
ARK-06	2-3	053-01	P	08/18/2005	µg/kg	<0.160	<0.170	<0.150	<0.350	<0.110	<0.096	<0.150	<0.130	<0.100	<0.220
ARK-08	12-13	011-01	P	08/10/2005	µg/kg	<0.160	<0.170	<0.150	<0.350	<0.110	<0.096	<0.150	<0.130	<0.100	<0.220
RP-08	86-88	077-01	P	09/21/2005	µg/kg	<0.160 UJ	<0.170	<0.150	<0.350	<0.110	<0.096	<0.150	<0.130	<0.100	<0.220
RP-08	92-93	078-01	P	09/21/2005	µg/kg	<0.160 UJ	<0.170	<0.150	<0.350	<0.110	<0.096	<0.150	**1.60 J**	<0.100	<0.220

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TABLE 2B
Semivolatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	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-Dichlorophenol	2,6-Dinitrotoluene	2-Chloronaphthalene	2-Chlorophenol	2-Methyl 4,6-dinitrophenol	2-Methylnaphthalene	2-Methylphenol
				Date	Units																		
ARK-03	5-6	069-01	P	08/22/2005	µg/kg	<83.0	<80.0 UJ	<81.0	<78.0	<76.0 UJ	<61.0 UJ	<77.0 UJ	<70.0 UJ	<170 UJ	<330 UJ	<79.0	<61.0 UJ	<77.0	<89.0	<74.0 UJ	<89.0 UJ	<87.0	<62.0 UJ
ARK-04	5-6	029-01	P	08/12/2005	µg/kg	<83.0	<80.0	<81.0	<78.0	<76.0	<61.0	<77.0	<70.0	<170 UJ	<330 UJ	<79.0	<61.0	<77.0	<89.0	<74.0	<89.0	<87.0	<62.0
ARK-06	2-3	053-01	P	08/18/2005	µg/kg	<920	<887 UJ	<898	<865	<843	<676	<854	<776	<1,890 UJ	<3,660 UJ	<876	<676	<854	<987	<821	<987	<965	<688
ARK-08	12-13	011-01	P	08/10/2005	µg/kg	<83.0	<80.0	<81.0	<78.0	<76.0	<61.0	<77.0	<70.0	<170	<330 UJ	<79.0	<61.0	<77.0	<89.0	<74.0	<89.0	<87.0	<62.0
RP-08	86-88	077-01	P	09/21/2005	µg/kg	<83.0	<80.0	<81.0	<78.0	<76.0	<61.0	<77.0	<70.0	<170	<330	<79.0	<61.0	<77.0	<89.0	<74.0	<89.0	<87.0	<62.0
RP-08	92-93	078-01	P	09/21/2005	µg/kg	<83.0	<80.0	<81.0	<78.0	<76.0	<61.0	<77.0	<70.0	<170	<330	<79.0	<61.0	<77.0	<89.0	<74.0	<89.0	<87.0	<62.0

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
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TABLE 2B
Semivolatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		2-Nitroaniline	2-Nitrophenol	3,3'-Dichlorobenzidine	3-Nitroaniline	4-Bromophenylphenyl ether	4-Chloro 3-methylphenol	4-Chloroaniline	4-Chlorophenylphenyl ether	4-Methylphenol (p-cresol)	4-Nitroaniline	4-Nitrophenol	Acenaphthene	Acenaphthylene	Anthracene	Benzo-(a)anthracene	Benzo(a)pyrene	Benzo(b)-fluoranthene
				Date	Units																	
ARK-03	5-6	069-01	P	08/22/2005	µg/kg	<73.0	<69.0 UJ	<140 UJ	<100 UJ	<99.0 UJ	<60.0 UJ	<180 UJ	<100 UJ	<160	<75.0 UJ	<110 R	<91.0	<90.0	<83.0	<89.0	<81.0	<83.0
ARK-04	5-6	029-01	P	08/12/2005	µg/kg	<73.0	<69.0	<140 UJ	<100 UJ	<99.0	<60.0	<180 UJ	<100	<160	<75.0	<110	<91.0	<90.0	<83.0	**35.0 J**	**55.0 J**	**34.0 J**
ARK-06	2-3	053-01	P	08/18/2005	µg/kg	<809	<765	<1,550 UJ	<1,110 UJ	<1,100 UJ	<665	<2,000 UJ	<1,110 UJ	<1,770	<832 UJ	<1,220 R	<1,010	<998	<920	<987	<898	<920
ARK-08	12-13	011-01	P	08/10/2005	µg/kg	<73.0	<69.0	<140 UJ	<100 UJ	<99.0	<60.0	<180 UJ	<100	<160	<75.0	<110	<91.0	<90.0	<83.0	**21.0 J**	**32.0 J**	**32.0 J**
RP-08	86-88	077-01	P	09/21/2005	µg/kg	<73.0	<69.0	<140 UJ	<100 UJ	<99.0	<60.0	<180 UJ	<100	<160 UJ	<75.0	<110	<91.0	<90.0	<83.0	<89.0	<81.0	<83.0 UJ
RP-08	92-93	078-01	P	09/21/2005	µg/kg	<73.0	<69.0	<140 UJ	<100 UJ	<99.0	<60.0	<180 UJ	<100	<160 UJ	<75.0	<110	<91.0	<90.0	<83.0	<89.0	<81.0	<83.0 UJ

Notes:
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Sample Type: P = primary sample; D = field duplicate
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TABLE 2B
Semivolatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Benzo(ghi)-perylene	Benzo(k)-fluoranthene	Benzoic acid	Benzyl alcohol	Bis-(2-Chloro-ethoxy) methane	Bis(2-Chloroethyl) ether	Bis(2-Chloroisopropyl) ether	Bis(2-Ethyl-hexyl) pthalate	Butylbenzylphthalate	Chrysene	Dibenzo-(a,h)anthracene	Dibenzofuran	Diethylphthalate	Dimethylphthalate	Di-n-butylphthalate	Di-n-octyl phthalate
				Date	Units																
ARK-03	5-6	069-01	P	08/22/2005	µg/kg	<100	<110	<330 UJ	<81.0 UJ	<84.0 UJ	<77.0 UJ	<75.0 UJ	**40.0 J**	<92.0 UJ	<100	<92.0	<92.0	<89.0 UJ	<86.0 UJ	<83.0 UJ	<100 UJ
ARK-04	5-6	029-01	P	08/12/2005	µg/kg	**88.0 J**	**40.0 J**	<330 UJ	<81.0	<84.0	<77.0	<75.0	**27.0 J**	<92.0	**48.0 J**	<92.0	<92.0	<89.0	<86.0	<83.0	<100
ARK-06	2-3	053-01	P	08/18/2005	µg/kg	**210 J**	<1,220 UJ	<3,660 UJ	<898 UJ	<931 UJ	<854 UJ	<832	**140 J**	<1,020 UJ	<1,110	<1,020	<1,020	<987 UJ	<954 UJ	<920 UJ	<1,110 UJ
ARK-08	12-13	011-01	P	08/10/2005	µg/kg	**25.0 J**	**29.0 J**	<330	<81.0	<84.0	<77.0	<75.0	**490**	<92.0	**36.0 J**	<92.0	<92.0	<89.0	<86.0	<83.0	<100
RP-08	86-88	077-01	P	09/21/2005	µg/kg	<100	<110 UJ	<330 UJ	<81.0	<84.0	<77.0 UJ	<75.0	**47.0 J**	<92.0	<100	<92.0	<92.0 UJ	<89.0	<86.0	<83.0	<100
RP-08	92-93	078-01	P	09/21/2005	µg/kg	<100	<110 UJ	<330 UJ	<81.0	<84.0	<77.0 UJ	<75.0	<100	<92.0	<100	<92.0	<92.0 UJ	<89.0	<86.0	<83.0	<100

Notes:
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TABLE 2B
Semivolatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	Fluoranthene	Fluorene	Hexachlorobenzene	Hexachlorobutadiene	Hexachloro-cyclopentadiene	Hexachloroethane	Indeno (1,2,3-cd)-pyrene	Isophorone	Naphthalene	N-Nitrosodimethylamine	N-Nitrosodinpropyl amine	N-Nitrosodiphenylamine	Pentachlorophenol	Phenanthrene	Phenol	Pyrene
ARK-03	5-6	069-01	P	08/22/2005	µg/kg	**40.0 J**	<98.0	<81.0	<90.0	<70.0 UJ	<85.0 UJ	<95.0	<64.0 UJ	<86.0	<64.0 UJ	<74.0 UJ	<62.0	<89.0 UJ	<87.0	<76.0 UJ	**37.0 J**
ARK-04	5-6	029-01	P	08/12/2005	µg/kg	**78.0 J**	<98.0	<81.0 UJ	<90.0	<70.0 UJ	<85.0	**47.0 J**	<64.0	**31.0 J**	<64.0	<74.0	<62.0	<89.0	**51.0 J**	<76.0	**120 J**
ARK-06	2-3	053-01	P	08/18/2005	µg/kg	<854 UJ	<1,090	<898	<998	<776 UJ	<943 UJ	<1,050	<710 UJ	<954	<710 UJ	<821 UJ	<688	<987 UJ	<965	<843	**94.0 J**
ARK-08	12-13	011-01	P	08/10/2005	µg/kg	**35.0 J**	<98.0	<81.0 UJ	<90.0	<70.0	<85.0	<95.0	<64.0	<86.0	<64.0	<74.0	<62.0	<89.0	<87.0	<76.0	**47.0 J**
RP-08	86-88	077-01	P	09/21/2005	µg/kg	<77.0	<98.0 UJ	<81.0	<90.0	<70.0 UJ	<85.0 UJ	<95.0	<64.0	<86.0	<64.0 UJ	<74.0 UJ	<62.0 UJ	<89.0 UJ	<87.0	<76.0	<120 UJ
RP-08	92-93	078-01	P	09/21/2005	µg/kg	<77.0	<98.0 UJ	<81.0	<90.0	<70.0 UJ	<85.0 UJ	<95.0	<64.0	<86.0	<64.0 UJ	<74.0 UJ	<62.0 UJ	<89.0 UJ	<87.0	<76.0	<120 UJ

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/kg = micrograms per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 2C
Chlorinated Herbicide Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		2,4,5-T	2,4,5-TP (Silvex)	2,4-D	2,4-DB	Bromoxynil	Dalapon	Dicamba	Dichlorprop	Dinoseb	MCPA	MCPP
				Date	Units											
ARK-03	5-6	069-01	P	08/22/2005	µg/kg	<5.00	<5.00	<50.0	<54.3	<1.30	<105 UJ	<6.25	<97.2	<34.1 UJ	<4,820	<4,960
ARK-04	5-6	029-01	P	08/12/2005	µg/kg	<5.00	<5.00	<50.0	<54.3	<1.30	<105 UJ	<6.25	<97.2	<34.1 UJ	<4,820	<4,960
ARK-06	2-3	053-01	P	08/18/2005	µg/kg	<5.00	<5.00	<50.0	<54.3	<1.30	<105 UJ	<6.25	<97.2	<34.1 UJ	<4,820	<4,960
ARK-08	12-13	011-01	P	08/10/2005	µg/kg	<5.00	<5.00	<50.0	<54.3	<1.30	<105 UJ	<6.25	<97.2	<34.1 UJ	<4,820	<4,960
RP-08	86-88	077-01	P	09/21/2005	µg/kg	<5.00 UJ	<5.00 UJ	<50.0 UJ	<54.3 UJ	<1.30 UJ	<105 UJ	<6.25 UJ	<97.2 UJ	<34.1 UJ	<4,820 UJ	<4,960 UJ
RP-08	92-93	078-01	P	09/21/2005	µg/kg	<5.00 UJ	<5.00 UJ	<50.0 UJ	<54.3 UJ	<1.30 UJ	<105 UJ	<6.25 UJ	<97.2 UJ	<34.1 UJ	<4,820 UJ	<4,960 UJ

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/kg = micrograms per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 2D
Organochlorine Insecticide Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate
				Date	Units													
ARK-03	5-6	069-01	P	08/22/2005	µg/kg	<0.320	<0.290	<0.360	<0.120	<0.110	<0.140	<0.160	<2.50	<0.120	<0.290	<0.120	<0.290	<0.390
ARK-04	5-6	029-01	P	08/12/2005	µg/kg	<0.320	**7.20 J**	<0.360	<0.120	<0.110	<0.140	<0.160	<2.50	<0.120	<0.290	<0.120	<0.290	<0.390
ARK-06	2-3	053-01	P	08/18/2005	µg/kg	<0.320 UJ	<0.290 UJ	<0.360 UJ	<0.120 UJ	<0.110 UJ	<0.140 UJ	<0.160 UJ	<2.50 UJ	<0.120 UJ	<0.290 UJ	<0.120 UJ	<0.290 UJ	<0.390 UJ
ARK-08	12-13	011-01	P	08/10/2005	µg/kg	<2.88	**17.0**	**77.0**	<1.08	<0.990	<1.26	<1.44	<22.5	<1.08	<2.61	<1.08	<2.61	<3.51
RP-08	86-88	077-01	P	09/21/2005	µg/kg	<0.320	<0.290	<0.360	<0.120	<0.110	<0.140	<0.160	<2.50	<0.120	<0.290	<0.120	<0.290	<0.390
RP-08	92-93	078-01	P	09/21/2005	µg/kg	<0.320	<0.290	<0.360	<0.120	<0.110	<0.140	<0.160	<2.50	<0.120	<0.290	<0.120	<0.290	<0.390

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/kg = micrograms per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 2D
Organochlorine Insecticide Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Endrin	Endrin aldehyde	Endrin Ketone	gamma-BHC (Lindane)	gamma-Chlordane	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene
				Date	Units									
ARK-03	5-6	069-01	P	08/22/2005	µg/kg	<0.300	<0.490	<0.350	<0.130	<0.150	<0.130	<0.140	<2.10	<24.0
ARK-04	5-6	029-01	P	08/12/2005	µg/kg	<0.300	<0.490	<0.350	<0.130	<0.150	<0.130	<0.140	<2.10	<24.0
ARK-06	2-3	053-01	P	08/18/2005	µg/kg	**5.50 J**	<0.490 UJ	<0.350 UJ	<0.130 UJ	<0.150 UJ	<0.130 UJ	<0.140 UJ	<2.10 UJ	<24.0 UJ
ARK-08	12-13	011-01	P	08/10/2005	µg/kg	<2.70	<4.41 UJ	<3.15	<1.17	<1.35	<1.17	<1.26	<18.9	<216
RP-08	86-88	077-01	P	09/21/2005	µg/kg	<0.300	<0.490	<0.350	<0.130	<0.150	<0.130	<0.140	<2.10	<24.0
RP-08	92-93	078-01	P	09/21/2005	µg/kg	<0.300	<0.490	<0.350	<0.130	<0.150	<0.130	<0.140	<2.10	<24.0

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/kg = micrograms per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 2E
Dioxin-Furan Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		1,2,3,4,6,7,8,9-OCDD	1,2,3,4,6,7,8,9-OCDF	1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-HxCDF	1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-HxCDF	1,2,3,7,8-PeCDD	1,2,3,7,8-PeCDF	2,3,4,6,7,8-HxCDF	2,3,4,7,8-PeCDF
				Date	Units															
ARK-03	5-6	069-01	P	08/22/2005	pg/g	**561 J**	**35.3 J**	**53.9 J**	**18.1 J**	**0.948 J**	**0.225 J**	**1.66 J**	**1.90 J**	**1.09 J**	**0.880 J**	**0.081 J**	**0.194 NJ**	**0.425 J**	**0.338 J**	**0.350 J**
ARK-04	5-6	029-01	P	08/12/2005	pg/g	**238 J**	**36.7 J**	**23.9 J**	**23.0 J**	**8.52 J**	**0.256 J**	**44.1 J**	**1.10 J**	**12.3 J**	**0.876 J**	**0.820 J**	**0.231 J**	**26.5 J**	**2.06 J**	**10.7 J**
ARK-06	2-3	053-01	P	08/18/2005	pg/g	**96.1**	**7.25 J**	**10.5 J**	**3.44 J**	**0.575 J**	**0.314 J**	**1.20 J**	**0.910 J**	**2.13 J**	**0.590 J**	**0.282 J**	**0.462 J**	**0.459 J**	**2.14 J**	**1.42 J**
ARK-08	12-13	011-01	P	08/10/2005	pg/g	**132 J**	**7.67 J**	**15.0 J**	**4.00 J**	**0.858 J**	**0.331 J**	**2.48 J**	**0.880 J**	**1.28 J**	**0.740 J**	**0.076 J**	**0.193 J**	**1.34 J**	**0.734 J**	**0.879 J**
RP-08	86-88	077-01	P	09/21/2005	pg/g	<0.502	<0.370	**1.36 J**	<0.178	<0.078	**0.057 J**	<0.143	**0.095 J**	<0.149	**0.227 J**	<0.143	**0.058 J**	<0.127	<0.087	<0.138
RP-08	92-93	078-01	P	09/21/2005	pg/g	**440**	<0.359	**25.8**	<0.173	<0.076	**0.138 J**	<0.139	**0.150 J**	<0.145	**0.541 J**	<0.139	<0.144	<0.124	<0.084	<0.134

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
pg/g = picograms per gram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 2E
Dioxin-Furan Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	2,3,7,8-TCDD	2,3,7,8-TCDF	Total HpCDD	Total HpCDF	Total HxCDD	Total HxCDF	Total PeCDD	Total PeCDF	Total TCDD	Total TCDF
ARK-03	5-6	069-01	P	08/22/2005	pg/g	**0.134 NJ**	**0.506 J**	**120 J**	**52.9 J**	**13.4 J**	**23.4 J**	**1.60 J**	**8.19 J**	**1.11 J**	**3.44 J**
ARK-04	5-6	029-01	P	08/12/2005	pg/g	**0.095 NJ**	**21.9 J**	**45.8 J**	**50.7 J**	**8.27 J**	**81.6 J**	**2.43 J**	**76.0 J**	**3.02 J**	**58.0 J**
ARK-06	2-3	053-01	P	08/18/2005	pg/g	**0.168 J**	**0.776 NJ**	**20.7**	**12.3**	**6.20**	**82.6**	**2.41 J**	**155 J**	**1.37 J**	**32.6 J**
ARK-08	12-13	011-01	P	08/10/2005	pg/g	**0.095 NJ**	**1.59 J**	**29.5 J**	**9.85 J**	**7.46 J**	**23.2 J**	**4.47 J**	**29.3 J**	**11.7 J**	**8.40 J**
RP-08	86-88	077-01	P	09/21/2005	pg/g	**0.070 N**	<0.075	**3.36**	<0.178	**1.52**	<0.149	**0.116**	<0.138	**0.129**	**0.074**
RP-08	92-93	078-01	P	09/21/2005	pg/g	<0.055	<0.072	**66.9**	<0.173	**6.42**	<0.145	<0.144	**0.060**	<0.055	**0.307**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
pg/g = picograms per gram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 2F
Polychlorinated Biphenyl Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260
				Date	Units							
ARK-04	5-6	029-01	P	08/12/2005	µg/kg	<6.70	<3.50	<6.70	<3.30	<2.90	<3.40	<6.70
ARK-06	2-3	053-01	P	08/18/2005	µg/kg	<6.70 UJ	<3.50 UJ	<6.70 UJ	<3.30 UJ	<2.90 UJ	<3.40 UJ	<6.70 UJ

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/kg = micrograms per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 2G
Total Petroleum Hydrocarbon Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Diesel Range Organics	Residual Range Organics
				Date	Units		
ARK-03	5-6	069-01	P	08/22/05	mg/kg	**29.0**	<4.00
ARK-04	5-6	029-01	P	08/12/05	mg/kg	**26.0**	**120**
ARK-06	2-3	053-01	P	08/18/05	mg/kg	<725	**3,000**
ARK-08	12-13	011-01	P	08/10/05	mg/kg	<3.80	**260**
RP-08	86-88	077-01	P	09/21/05	mg/kg	<4.30	<4.10
RP-08	92-93	078-01	P	09/21/05	mg/kg	<6.80	<6.40

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
mg/kg= milligrams per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 2H
Total Metals Soil Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Code	Analyte		Aluminum	Arsenic	Cadmium	Calcium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Sodium	Vanadium	Zinc
				Date	Units																
ARK-03	5-6	069-01	P	08/22/05	mg/kg	**10,500 J**	**2.50**	<0.080	**3,820**	**13.4**	**15.8**	**23,200 J**	**4.70**	**3,150**	**195**	<0.015	**13.5**	**625**	**209 J**	**64.2**	**42.9**
ARK-04	5-6	029-01	P	08/12/05	mg/kg	**11,300 J**	**3.10**	<0.080 UJ	**4,590 J**	**14.5 J**	**16.6**	**24,400 J**	**5.40**	**4,000**	**306 J**	**0.032 J**	**14.7**	**623**	**2,360**	**61.7**	**44.0 J**
ARK-06	2-3	053-01	P	08/18/05	mg/kg	**6,530 J**	**2.00**	<0.080	**3,200**	**10.4 J**	**12.7**	**16,500 J**	**4.30**	**2,450**	**200**	**2.60**	**17.1**	**529**	**128 J**	**53.2**	**34.9 J**
ARK-08	12-13	011-01	P	08/10/05	mg/kg	**10,700 J**	**3.70**	<0.080	**3,970 J**	**17.4 J**	**22.3 J**	**25,700 J**	**11.8**	**3,430 J**	**317 J**	<0.015 UJ	**16.6 J**	**740**	**618**	**71.6 J**	**52.6 J**
RP-08	86-88	077-01	P	09/21/05	mg/kg	**6,760 J**	**2.70**	<0.080	**4,010**	**9.20**	**14.3**	**24,500 J**	**2.70**	**4,270**	**466**	<0.015	**10.2**	**605**	**298 J**	**71.0**	**40.5**
RP-08	92-93	078-01	P	09/21/05	mg/kg	**51,100 J**	**1.50 J**	<0.080 UJ	**4,850 J**	**21.1 J**	**29.9 J**	**16,300 J**	**4.40 J**	**2,910 J**	**278 J**	<0.015	**18.5**	**366 J**	**393 J**	**764 J**	**77.2 J**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
mg/kg= milligrams per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3A
Volatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene
ARK-01	10-15	042-01	P	08/15/2005	µg/L	<0.058 UJ	<0.046 UJ	<0.047 UJ	<0.074 UJ	<0.110 UJ	<0.120 UJ	<0.170 UJ	<0.090 UJ	<0.048 UJ	<0.068 UJ	<0.044 UJ	<0.051 UJ	<0.085 UJ	<0.065 UJ
ARK-01	28.5-31.5	044-01	P	08/16/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065 U
ARK-01	50-54	043-01	P	08/16/2005	µg/L	<1.88	<1.49	<1.53	<2.40	<3.57	<3.90	<5.52	<2.92	<1.56	<2.21	<1.43	<1.66	<2.76	**190**
ARK-02	36-40	066-01	P	08/22/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
ARK-02	76-80	065-01	P	08/19/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
ARK-03	22-26	071-01	P	08/23/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	**1.30**
ARK-03	54-58	072-01	P	08/23/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
ARK-03	76-80	067-01	P	08/22/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
ARK-03	90-102.5	076-01	P	09/09/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	**1.90**	<0.170	**0.280 J**	<0.048	**0.450 J**	<0.044	<0.051	<0.085	**660**
ARK-04	10-15	034-01	P	08/12/2005	µg/L	<0.058 UJ	<0.046 UJ	<0.047 UJ	<0.074 UJ	<0.110 UJ	<0.120 UJ	<0.170 UJ	<0.090 UJ	<0.048 UJ	<0.068 UJ	<0.044 UJ	<0.051 UJ	<0.085 UJ	<0.065 UJ
ARK-04	33-36	035-01	P	08/15/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
ARK-04	44-47	033-01	P	08/12/2005	µg/L	<0.058 UJ	<0.046 UJ	<0.047 UJ	<0.074 UJ	<0.110 UJ	<0.120 UJ	<0.170 UJ	<0.090 UJ	<0.048 UJ	<0.068 UJ	<0.044 UJ	<0.051 UJ	<0.085 UJ	<0.065 UJ
ARK-05	18-22	050-01	P	08/17/2005	µg/L	<0.058 UJ	<0.046 UJ	<0.047 UJ	<0.074 UJ	<0.110 UJ	<0.120 UJ	<0.170 UJ	<0.090 UJ	<0.048 UJ	<0.068 UJ	<0.044 UJ	<0.051 UJ	<0.085 UJ	<0.065 UJ
ARK-05	37-41	051-01	P	08/17/2005	µg/L	<0.058 UJ	<0.046 UJ	<0.047 UJ	<0.074 UJ	<0.110 UJ	<0.120 UJ	<0.170 UJ	<0.090 UJ	<0.048 UJ	<0.068 UJ	<0.044 UJ	<0.051 UJ	<0.085 UJ	<0.065 UJ
ARK-05	62-67.5	075-01	P	09/08/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	**16.0**
ARK-06	23-27	058-01	P	08/18/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	**1.30**
ARK-06	23-27	058-02	D	08/18/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	**1.40**
ARK-06	54-58	059-01	P	08/19/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
ARK-06	76-80	057-01	P	08/18/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
ARK-06	88-97.5	074-01	P	09/07/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	**0.320 J**	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	**180**
ARK-07	10-14	007-01	P	08/09/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
ARK-07	22-26	008-01	P	08/09/2005	µg/L	<0.557	<0.442	<0.452	<0.711	<1.06	<1.15	<1.63	<0.865	<0.461	<0.653	<0.423	<0.490	<0.817	<0.625
ARK-07	41-45	006-01	P	08/09/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
ARK-08	10-15	016-01	P	08/10/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
ARK-08	38.5-43.5	015-01	P	08/10/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
ARK-08	38.5-43.5	015-02	D	08/10/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
ARK-09	11-16	023-01	P	08/11/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
ARK-09	30-35	025-01	P	08/12/2005	µg/L	<0.058 UJ	<0.046 UJ	<0.047 UJ	<0.074 UJ	<0.110 UJ	<0.120 UJ	<0.170 UJ	<0.090 UJ	<0.048 UJ	<0.068 UJ	<0.044 UJ	<0.051 UJ	<0.085 UJ	<0.065 UJ
ARK-09	52-56	026-01	P	08/12/2005	µg/L	<0.058 UJ	<0.046 UJ	<0.047 UJ	<0.074 UJ	<0.110 UJ	<0.120 UJ	<0.170 UJ	<0.090 UJ	<0.048 UJ	<0.068 UJ	<0.044 UJ	<0.051 UJ	<0.085 UJ	**0.440 J**
ARK-09	88-97.5	073-01	P	09/06/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3A
Volatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone (MEK)	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-methyl-2-pentanone (MIBK)	Acetone
ARK-01	10-15	042-01	P	08/15/2005	µg/L	<0.095 UJ	<0.059 UJ	<0.040 UJ	<0.036 UJ	<0.096 UJ	<0.072 UJ	<0.180 UJ	<0.820 UJ	<0.049 UJ	<0.590 UJ	<0.077 UJ	<0.045 UJ	<0.570 UJ	**12.0 J**
ARK-01	28.5-31.5	044-01	P	08/16/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820 UJ	<0.049	<0.590	<0.077	<0.045	<0.570	**2.40 J**
ARK-01	50-54	043-01	P	08/16/2005	µg/L	<3.09	<1.92	<1.30	<1.17	<3.12	**46.0**	<5.85	<26.6	**1.20 J**	<19.2	**1.40 J**	<1.46	<18.5	<35.7
ARK-02	36-40	066-01	P	08/22/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10
ARK-02	76-80	065-01	P	08/19/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820 UJ	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10 UJ
ARK-03	22-26	071-01	P	08/23/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10
ARK-03	54-58	072-01	P	08/23/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10
ARK-03	76-80	067-01	P	08/22/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570	**3.40 J**
ARK-03	90-102.5	076-01	P	09/09/2005	µg/L	<0.095	<0.059	<0.040	**21.0**	<0.096	**210**	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10
ARK-04	10-15	034-01	P	08/12/2005	µg/L	<0.095 UJ	<0.059 UJ	<0.040 UJ	<0.036 UJ	<0.096 UJ	<0.072 UJ	<0.180 UJ	<0.820 UJ	<0.049 UJ	<0.590 UJ	<0.077 UJ	<0.045 UJ	<0.570 UJ	**4.10 J**
ARK-04	33-36	035-01	P	08/15/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820 UJ	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10 UJ
ARK-04	44-47	033-01	P	08/12/2005	µg/L	<0.095 UJ	<0.059 UJ	<0.040 UJ	<0.036 UJ	<0.096 UJ	<0.072 UJ	<0.180 UJ	<0.820 UJ	<0.049 UJ	<0.590 UJ	<0.077 UJ	<0.045 UJ	<0.570 UJ	<1.10 UJ
ARK-05	18-22	050-01	P	08/17/2005	µg/L	<0.095 UJ	<0.059 UJ	<0.040 UJ	<0.036 UJ	<0.096 UJ	<0.072 UJ	<0.180 UJ	<0.820 UJ	<0.049 UJ	<0.590 UJ	<0.077 UJ	<0.045 UJ	<0.570 UJ	**3.40 J**
ARK-05	37-41	051-01	P	08/17/2005	µg/L	<0.095 UJ	<0.059 UJ	<0.040 UJ	<0.036 UJ	<0.096 UJ	<0.072 UJ	<0.180 UJ	<0.820 UJ	<0.049 UJ	<0.590 UJ	<0.077 UJ	<0.045 UJ	<0.570 UJ	**4.60 J**
ARK-05	62-67.5	075-01	P	09/08/2005	µg/L	<0.095	<0.059	<0.040	**0.270 J**	<0.096	**3.30**	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570	**5.10 J**
ARK-06	23-27	058-01	P	08/18/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820 UJ	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10 UJ
ARK-06	23-27	058-02	D	08/18/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820 UJ	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10 UJ
ARK-06	54-58	059-01	P	08/19/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820 UJ	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10 UJ
ARK-06	76-80	057-01	P	08/18/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820 UJ	<0.049	<0.590	<0.077	<0.045	<0.570	**5.50 J**
ARK-06	88-97.5	074-01	P	09/07/2005	µg/L	<0.095	<0.059	<0.040	**5.80**	<0.096	**55.0**	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10
ARK-07	10-14	007-01	P	08/09/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10
ARK-07	22-26	008-01	P	08/09/2005	µg/L	<0.913	<0.567	<0.384	<0.346	<0.923	<0.692	<1.73	<7.88 UJ	<0.471	<5.67	<0.740	<0.432	<5.48	<10.6 UJ
ARK-07	41-45	006-01	P	08/09/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10
ARK-08	10-15	016-01	P	08/10/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10
ARK-08	38.5-43.5	015-01	P	08/10/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10
ARK-08	38.5-43.5	015-02	D	08/10/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10
ARK-09	11-16	023-01	P	08/11/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10
ARK-09	30-35	025-01	P	08/12/2005	µg/L	<0.095 UJ	<0.059 UJ	<0.040 UJ	<0.036 UJ	<0.096 UJ	<0.072 UJ	<0.180 UJ	<0.820 UJ	<0.049 UJ	<0.590 UJ	<0.077 UJ	<0.045 UJ	<0.570 UJ	<1.10 UJ
ARK-09	52-56	026-01	P	08/12/2005	µg/L	<0.095 UJ	<0.059 UJ	<0.040 UJ	<0.036 UJ	<0.096 UJ	**0.300 J**	<0.180 UJ	<0.820 UJ	<0.049 UJ	<0.590 UJ	<0.077 UJ	<0.045 UJ	<0.570 UJ	<1.10 UJ
ARK-09	88-97.5	073-01	P	09/06/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570	<1.10

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
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NJ = result is for a tentatively identified analyte
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UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3A
Volatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene
ARK-01	10-15	042-01	P	08/15/2005	µg/L	**0.200 J**	<0.055 UJ	<0.075 UJ	<0.086 UJ	<0.044 UJ	<0.110 UJ	<0.150 UJ	<0.110 UJ	<0.046 UJ	<0.240 UJ	<0.037 UJ	<0.240 UJ	<0.082 UJ	<0.078 UJ
ARK-01	28.5-31.5	044-01	P	08/16/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110 UJ	<0.150	<0.110	<0.046	<0.240	<0.037	<0.240	<0.082	<0.078
ARK-01	50-54	043-01	P	08/16/2005	µg/L	<4.22	<1.79	<2.44	<2.79	<1.43	<3.57 UJ	<4.87	<3.57	**56.0**	<7.80 UJ	<1.20	<7.80	**3.30 J**	<2.53
ARK-02	36-40	066-01	P	08/22/2005	µg/L	**1.40**	<0.055	<0.075	<0.086	<0.044	<0.110	**0.270 J**	<0.110	**0.950 J**	<0.240 UJ	<0.037	<0.240	<0.082	<0.078
ARK-02	76-80	065-01	P	08/19/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044 UJ	<0.110	<0.150	<0.110	<0.046	<0.240 UJ	<0.037	<0.240	<0.082	<0.078
ARK-03	22-26	071-01	P	08/23/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	<0.150	<0.110	**0.450 J**	<0.240 UJ	<0.037	<0.240	<0.082	<0.078
ARK-03	54-58	072-01	P	08/23/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	<0.150	<0.110	<0.046	<0.240 UJ	<0.037	**0.340 J**	<0.082	<0.078
ARK-03	76-80	067-01	P	08/22/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	**0.340 J**	<0.110	<0.046	<0.240 UJ	<0.037	<0.240	<0.082	<0.078
ARK-03	90-102.5	076-01	P	09/09/2005	µg/L	**2.30**	<0.055	<0.075	<0.086	<0.044	<0.110	<0.150	<0.110	**270**	<0.240	<0.037	<0.240	**7.00**	<0.078
ARK-04	10-15	034-01	P	08/12/2005	µg/L	<0.130 UJ	<0.055 UJ	<0.075 UJ	<0.086 UJ	<0.044 UJ	<0.110 UJ	<0.150 UJ	<0.110 UJ	<0.046 UJ	<0.240 UJ	<0.037 UJ	**0.490 J**	<0.082 UJ	<0.078 UJ
ARK-04	33-36	035-01	P	08/15/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	<0.150	<0.110	<0.046	<0.240 UJ	**0.610 J**	<0.240	<0.082	<0.078
ARK-04	44-47	033-01	P	08/12/2005	µg/L	<0.130 UJ	<0.055 UJ	<0.075 UJ	<0.086 UJ	<0.044 UJ	<0.110 UJ	<0.150 UJ	<0.110 UJ	<0.046 UJ	<0.240 UJ	<0.037 UJ	<0.240 UJ	**1.40 J**	<0.078 UJ
ARK-05	18-22	050-01	P	08/17/2005	µg/L	<0.130 UJ	<0.055 UJ	<0.075 UJ	<0.086 UJ	<0.044 UJ	<0.110 UJ	<0.150 UJ	<0.110 UJ	<0.046 UJ	<0.240 UJ	<0.037 UJ	<0.240 UJ	<0.082 UJ	<0.078 UJ
ARK-05	37-41	051-01	P	08/17/2005	µg/L	<0.130 UJ	<0.055 UJ	<0.075 UJ	<0.086 UJ	<0.044 UJ	<0.110 UJ	**0.400 J**	<0.110 UJ	<0.046 UJ	<0.240 UJ	<0.037 UJ	<0.240 UJ	<0.082 UJ	<0.078 UJ
ARK-05	62-67.5	075-01	P	09/08/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	**0.300 J**	<0.110	**3.50**	<0.240	<0.037	<0.240 U	**0.980 J**	<0.078
ARK-06	23-27	058-01	P	08/18/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044 UJ	<0.110	<0.150	<0.110	<0.046	<0.240 UJ	<0.037	<0.240	<0.082	<0.078
ARK-06	23-27	058-02	D	08/18/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044 UJ	<0.110	<0.150	<0.110	<0.046	<0.240 UJ	<0.037	<0.240	<0.082	<0.078
ARK-06	54-58	059-01	P	08/19/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044 UJ	<0.110	<0.150	<0.110	<0.046	<0.240 UJ	<0.037	<0.240	<0.082	<0.078
ARK-06	76-80	057-01	P	08/18/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044 UJ	<0.110	<0.150	<0.110	<0.046	<0.240 UJ	<0.037	<0.240	<0.082	<0.078
ARK-06	88-97.5	074-01	P	09/07/2005	µg/L	**0.330 J**	<0.055	<0.075	<0.086	<0.044	<0.110	<0.150	<0.110	**76.0**	<0.240	<0.037	<0.240	**2.00**	<0.078
ARK-07	10-14	007-01	P	08/09/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	<0.150	<0.110	<0.046	<0.240	**45.0**	<0.240	<0.082	<0.078
ARK-07	22-26	008-01	P	08/09/2005	µg/L	<1.25	<0.529	<0.721	<0.826	<0.423	<1.06	<1.44	<1.06	<0.442	<2.31	**100**	<2.31	<0.788	<0.750
ARK-07	41-45	006-01	P	08/09/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	<0.150	<0.110	<0.046	<0.240	**3.80**	<0.240	<0.082	<0.078
ARK-08	10-15	016-01	P	08/10/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	<0.150	<0.110	<0.046	<0.240 UJ	<0.037	<0.240	**0.710 J**	<0.078
ARK-08	38.5-43.5	015-01	P	08/10/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	<0.150	<0.110	<0.046	<0.240	<0.037	<0.240	<0.082	<0.078
ARK-08	38.5-43.5	015-02	D	08/10/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	<0.150	<0.110	<0.046	<0.240	<0.037	<0.240	<0.082	<0.078
ARK-09	11-16	023-01	P	08/11/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	<0.150	<0.110	<0.046	<0.240	<0.037	<0.240	<0.082	<0.078
ARK-09	30-35	025-01	P	08/12/2005	µg/L	<0.130 UJ	<0.055 UJ	<0.075 UJ	<0.086 UJ	<0.044 UJ	<0.110 UJ	<0.150 UJ	<0.110 UJ	<0.046 UJ	<0.240 UJ	<0.037 UJ	<0.240 UJ	<0.082 UJ	<0.078 UJ
ARK-09	52-56	026-01	P	08/12/2005	µg/L	<0.130 UJ	<0.055 UJ	<0.075 UJ	<0.086 UJ	<0.044 UJ	<0.110 UJ	<0.150 UJ	<0.110 UJ	<0.046 UJ	<0.240 UJ	<0.037 UJ	<0.240 UJ	**0.720 J**	<0.078 UJ
ARK-09	88-97.5	073-01	P	09/06/2005	µg/L	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	<0.150	<0.110	<0.046	<0.240	<0.037	<0.240 U	<0.082	<0.078

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3A
Volatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Iodomethane	Isobutyl alcohol	Isopropylbenzene	m,p Xylenes	Methylene chloride	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene
ARK-01	10-15	042-01	P	08/15/2005	µg/L	<0.054 UJ	<0.042 UJ	<0.075 UJ	<0.120 UJ	<0.120 UJ	<0.110 UJ	<4.50 R	<0.100 UJ	<0.210 UJ	<0.170 UJ	**1.50 J**	<0.082 UJ	<0.081 UJ	<0.076 UJ
ARK-01	28.5-31.5	044-01	P	08/16/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110 UJ	<4.50 R	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-01	50-54	043-01	P	08/16/2005	µg/L	<1.75	<1.36	<2.44	<3.90	<3.90	<3.57 UJ	<146	<3.25	<6.82	<5.52	<3.57	<2.66	<2.63	<2.47
ARK-02	36-40	066-01	P	08/22/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50 R	<0.100	<0.210	**0.280 J**	<0.110	<0.082	<0.081	<0.076
ARK-02	76-80	065-01	P	08/19/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50 R	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-03	22-26	071-01	P	08/23/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50 R	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-03	54-58	072-01	P	08/23/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50 R	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-03	76-80	067-01	P	08/22/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50 R	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-03	90-102.5	076-01	P	09/09/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	**0.490 J**	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-04	10-15	034-01	P	08/12/2005	µg/L	<0.054 UJ	<0.042 UJ	<0.075 UJ	<0.120 UJ	<0.120 UJ	<0.110 UJ	<4.50 R	<0.100 UJ	<0.210 UJ	<0.170 UJ	<0.110 UJ	<0.082 UJ	<0.081 UJ	<0.076 UJ
ARK-04	33-36	035-01	P	08/15/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50 R	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-04	44-47	033-01	P	08/12/2005	µg/L	<0.054 UJ	<0.042 UJ	<0.075 UJ	<0.120 UJ	<0.120 UJ	<0.110 UJ	<4.50 R	<0.100 UJ	<0.210 UJ	<0.170 UJ	<0.110 UJ	<0.082 UJ	<0.081 UJ	<0.076 UJ
ARK-05	18-22	050-01	P	08/17/2005	µg/L	<0.054 UJ	<0.042 UJ	<0.075 UJ	<0.120 UJ	<0.120 UJ	<0.110 UJ	<4.50 R	<0.100 UJ	<0.210 UJ	<0.170 UJ	<0.110 UJ	<0.082 UJ	<0.081 UJ	<0.076 UJ
ARK-05	37-41	051-01	P	08/17/2005	µg/L	<0.054 UJ	<0.042 UJ	<0.075 UJ	<0.120 UJ	<0.120 UJ	<0.110 UJ	<4.50 R	<0.100 UJ	<0.210 UJ	<0.170 UJ	<0.110 UJ	<0.082 UJ	<0.081 UJ	<0.076 UJ
ARK-05	62-67.5	075-01	P	09/08/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50 R	<0.100	<0.210	<0.170	**0.210 J**	<0.082	<0.081	<0.076
ARK-06	23-27	058-01	P	08/18/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50 R	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-06	23-27	058-02	D	08/18/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50 R	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-06	54-58	059-01	P	08/19/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50 R	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-06	76-80	057-01	P	08/18/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50 R	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-06	88-97.5	074-01	P	09/07/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-07	10-14	007-01	P	08/09/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120 U	<0.110	<4.50	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-07	22-26	008-01	P	08/09/2005	µg/L	<0.519	<0.404	<0.721	<1.15	<1.15	<1.06	<43.2 UJ	<0.961	<2.02	<1.63	<1.06	<0.788	<0.778	<0.730
ARK-07	41-45	006-01	P	08/09/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-08	10-15	016-01	P	08/10/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-08	38.5-43.5	015-01	P	08/10/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-08	38.5-43.5	015-02	D	08/10/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-09	11-16	023-01	P	08/11/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076
ARK-09	30-35	025-01	P	08/12/2005	µg/L	<0.054 UJ	<0.042 UJ	<0.075 UJ	<0.120 UJ	<0.120 UJ	<0.110 UJ	<4.50 R	<0.100 UJ	<0.210 UJ	<0.170 UJ	<0.110 UJ	<0.082 UJ	<0.081 UJ	<0.076 UJ
ARK-09	52-56	026-01	P	08/12/2005	µg/L	<0.054 UJ	<0.042 UJ	<0.075 UJ	<0.120 UJ	<0.120 R	<0.110 UJ	<4.50 R	<0.100 UJ	<0.210 UJ	<0.170 UJ	<0.110 UJ	<0.082 UJ	<0.081 UJ	<0.076 UJ
ARK-09	88-97.5	073-01	P	09/06/2005	µg/L	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.110	<0.082	<0.081	<0.076

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
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NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3A
Volatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	sec-Butylbenzene	Styrene	tertButylbenzene	Tetrachloroethene	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene	Trichlorofluoromethane	Vinyl chloride
ARK-01	10-15	042-01	P	08/15/2005	µg/L	<0.035 UJ	<0.045 UJ	<0.083 UJ	<0.130 UJ	**0.300 J**	<0.100 UJ	<0.170 UJ	<0.064 UJ	<0.046 UJ	<0.100 UJ
ARK-01	28.5-31.5	044-01	P	08/16/2005	µg/L	<0.035	<0.045	<0.083	<0.130 UJ	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
ARK-01	50-54	043-01	P	08/16/2005	µg/L	<1.14	<1.46	<2.70	<4.22 UJ	<1.59	<3.25	<5.52	**1.40 J**	<1.49	**9.40**
ARK-02	36-40	066-01	P	08/22/2005	µg/L	<0.035	<0.045	<0.083	<0.130 UJ	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
ARK-02	76-80	065-01	P	08/19/2005	µg/L	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
ARK-03	22-26	071-01	P	08/23/2005	µg/L	<0.035	<0.045	<0.083	<0.130 UJ	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
ARK-03	54-58	072-01	P	08/23/2005	µg/L	<0.035	<0.045	<0.083	<0.130 UJ	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
ARK-03	76-80	067-01	P	08/22/2005	µg/L	<0.035	<0.045	<0.083	<0.130 UJ	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
ARK-03	90-102.5	076-01	P	09/09/2005	µg/L	<0.035	**0.390 J**	<0.083	<0.130	**0.470 J**	**1.00**	<0.170	**5.80**	<0.046	**16.0**
ARK-04	10-15	034-01	P	08/12/2005	µg/L	<0.035 UJ	<0.045 UJ	<0.083 UJ	<0.130 UJ	<0.049 UJ	<0.100 UJ	<0.170 UJ	<0.064 UJ	<0.046 UJ	<0.100 UJ
ARK-04	33-36	035-01	P	08/15/2005	µg/L	<0.035	<0.045	<0.083	<0.130 UJ	<0.049	<0.100	<0.170	<0.064	**0.520 J**	<0.100
ARK-04	44-47	033-01	P	08/12/2005	µg/L	<0.035 UJ	<0.045 UJ	<0.083 UJ	<0.130 UJ	<0.049 UJ	<0.100 UJ	<0.170 UJ	**0.280 J**	<0.046 UJ	<0.100 UJ
ARK-05	18-22	050-01	P	08/17/2005	µg/L	<0.035 UJ	<0.045 UJ	<0.083 UJ	<0.130 UJ	<0.049 UJ	<0.100 UJ	<0.170 UJ	<0.064 UJ	<0.046 UJ	<0.100 UJ
ARK-05	37-41	051-01	P	08/17/2005	µg/L	<0.035 UJ	<0.045 UJ	<0.083 UJ	<0.130 UJ	<0.049 UJ	<0.100 UJ	<0.170 UJ	<0.064 UJ	<0.046 UJ	<0.100 UJ
ARK-05	62-67.5	075-01	P	09/08/2005	µg/L	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	**0.580 J**	**0.250 J**	**1.00**
ARK-06	23-27	058-01	P	08/18/2005	µg/L	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
ARK-06	23-27	058-02	D	08/18/2005	µg/L	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
ARK-06	54-58	059-01	P	08/19/2005	µg/L	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
ARK-06	76-80	057-01	P	08/18/2005	µg/L	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
ARK-06	88-97.5	074-01	P	09/07/2005	µg/L	<0.035	<0.045	<0.083	<0.130	**0.220 J**	**0.230 J**	<0.170	**1.20**	<0.046	**3.60**
ARK-07	10-14	007-01	P	08/09/2005	µg/L	<0.035	<0.045	<0.083	**3.50**	<0.049	<0.100	<0.170	**0.360 J**	<0.046	<0.100
ARK-07	22-26	008-01	P	08/09/2005	µg/L	<0.336	<0.432	<0.798	<1.25	**0.920 J**	<0.961	<1.63	<0.615	<0.442	<0.961
ARK-07	41-45	006-01	P	08/09/2005	µg/L	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
ARK-08	10-15	016-01	P	08/10/2005	µg/L	<0.035	<0.045	<0.083	**4.10 J**	<0.049	**0.350 J**	<0.170	**3.90**	<0.046	<0.100
ARK-08	38.5-43.5	015-01	P	08/10/2005	µg/L	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
ARK-08	38.5-43.5	015-02	D	08/10/2005	µg/L	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
ARK-09	11-16	023-01	P	08/11/2005	µg/L	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
ARK-09	30-35	025-01	P	08/12/2005	µg/L	<0.035 UJ	<0.045 UJ	<0.083 UJ	<0.130 UJ	<0.049 UJ	<0.100 UJ	<0.170 UJ	<0.064 UJ	<0.046 UJ	<0.100 UJ
ARK-09	52-56	026-01	P	08/12/2005	µg/L	<0.035 UJ	<0.045 UJ	<0.083 UJ	<0.130 UJ	<0.049 UJ	<0.100 UJ	<0.170 UJ	<0.064 UJ	<0.046 UJ	<0.100 UJ
ARK-09	88-97.5	073-01	P	09/06/2005	µg/L	<0.035	<0.045	<0.083	<0.130	**0.210 J**	<0.100	<0.170	<0.064	<0.046	<0.100

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3B
Semivolatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	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-Dichlorophenol	2,6-Dinitrotoluene	2-Chloronaphthalene	2-Chlorophenol	2-Methyl 4,6-dinitrophenol
				Date	Units																
ARK-01	10-15	042-01	P	08/15/2005	µg/L	<1.60 UJ	<1.10 UJ	<1.40 UJ	<1.70 UJ	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80 UJ	<0.850 UJ	<1.50 UJ	<1.50 UJ	<0.770 UJ	<2.60 UJ
ARK-01	28.5-31.5	044-01	P	08/16/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ
ARK-01	50-54	043-01	P	08/16/2005	µg/L	<1.60	**180 J**	**7.30 J**	**61.0**	<1.80	<1.40	<1.10	<0.890	<1.60 UJ	<8.00	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60
ARK-02	36-40	066-01	P	08/22/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80	<1.40	<1.10	<0.890	<1.60	<8.00 UJ	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60
ARK-02	76-80	065-01	P	08/19/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80	<1.40	<1.10	<0.890	<1.60	<8.00	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60
ARK-03	22-26	071-01	P	08/23/2005	µg/L	<1.60	**1.10 J**	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ
ARK-03	54-58	072-01	P	08/23/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80	<1.40	<1.10	<0.890	<1.60	<8.00	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60
ARK-03	76-80	067-01	P	08/22/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ
ARK-03	90-102.5	076-01	P	09/09/2005	µg/L	<1.60	**510 J**	**18.0 J**	**200 J**	<1.80	<1.40	<1.10	<0.890	<1.60	<8.00	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60
ARK-04	10-15	034-01	P	08/12/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ
ARK-04	33-36	035-01	P	08/15/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ
ARK-04	44-47	033-01	P	08/12/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80	<1.40 UJ	<1.10	<0.890	<1.60	<8.00 UJ	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60
ARK-05	18-22	050-01	P	08/17/2005	µg/L	<1.60 UJ	<1.10 UJ	<1.40 UJ	<1.70 UJ	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80 UJ	<0.850 UJ	<1.50 UJ	<1.50 UJ	<0.770 UJ	<2.60 UJ
ARK-05	37-41	051-01	P	08/17/2005	µg/L	<1.60 UJ	<1.10 UJ	<1.40 UJ	<1.70 UJ	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80 UJ	<0.850 UJ	<1.50 UJ	<1.50 UJ	<0.770 UJ	<2.60 UJ
ARK-05	62-67.5	075-01	P	09/08/2005	µg/L	<1.60	**11.0 J**	<1.40 UJ	**2.90 J**	<1.80	<1.40	<1.10	<0.890	<1.60	<8.00	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60
ARK-06	23-27	058-01	P	08/18/2005	µg/L	<1.60	**1.10 J**	<1.40	<1.70	<1.80	<1.40	<1.10	<0.890	<1.60	<8.00 UJ	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60
ARK-06	23-27	058-02	D	08/18/2005	µg/L	<1.60	**1.50 J**	<1.40	<1.70	<1.80	<1.40	<1.10	<0.890	<1.60	<8.00 UJ	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60
ARK-06	54-58	059-01	P	08/19/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ
ARK-06	76-80	057-01	P	08/18/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80	<1.40	<1.10	<0.890	<1.60	<8.00 UJ	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60
ARK-06	88-97.5	074-01	P	09/07/2005	µg/L	<1.60	**89.0 J**	**3.10 J**	**32.0 J**	<1.80	<1.40	<1.10	<0.890	<1.60	<8.00	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60
ARK-07	10-14	007-01	P	08/09/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ
ARK-07	22-26	008-01	P	08/09/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ
ARK-07	41-45	006-01	P	08/09/2005	µg/L	<1.60 UJ	<1.10 UJ	<1.40 UJ	<1.70 UJ	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80 UJ	<0.850 UJ	<1.50 UJ	<1.50 UJ	<0.770 UJ	<2.60 UJ
ARK-08	10-15	016-01	P	08/10/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ
ARK-08	38.5-43.5	015-01	P	08/10/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ
ARK-08	38.5-43.5	015-02	D	08/10/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ
ARK-09	11-16	023-01	P	08/11/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ
ARK-09	30-35	025-01	P	08/12/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80	<1.40 UJ	<1.10	<0.890	<1.60	<8.00 UJ	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60
ARK-09	52-56	026-01	P	08/12/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80	<1.40 UJ	<1.10	<0.890	<1.60	<8.00 UJ	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60
ARK-09	88-97.5	073-01	P	09/06/2005	µg/L	<1.60	<1.10 UJ	<1.40 UJ	<1.70 UJ	<1.80	<1.40	<1.10	<0.890	<1.60	<8.00	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3B
Semivolatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	2-Methylnaphthalene	2-Methylphenol	2-Nitroaniline	2-Nitrophenol	3,3'-Dichlorobenzidine	3-Nitroaniline	4-Bromophenylphenyl ether	4-Chloro 3-methylphenol	4-Chloroaniline	4-Chlorophenylphenyl ether	4-Methylphenol (p-cresol)	4-Nitroaniline	4-Nitrophenol	Acenaphthene
ARK-01	10-15	042-01	P	08/15/2005	µg/L	<2.20 UJ	<1.10 UJ	<2.10 UJ	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90 UJ	<2.00 UJ	<4.00 UJ	<2.30 UJ	<3.40 UJ	<2.50 UJ	<8.00 UJ	**3.30 J**
ARK-01	28.5-31.5	044-01	P	08/16/2005	µg/L	<2.20	<1.10 UJ	<2.10	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90	<2.00 UJ	<4.00 UJ	<2.30	<3.40	<2.50	<8.00 UJ	<2.20
ARK-01	50-54	043-01	P	08/16/2005	µg/L	<2.20	<1.10	<2.10	<0.860	<2.00 UJ	<2.10 UJ	<1.90	<2.00	<4.00 UJ	<2.30	<3.40	<2.50	<8.00 UJ	<2.20
ARK-02	36-40	066-01	P	08/22/2005	µg/L	<2.20	<1.10	<2.10	<0.860	<2.00 UJ	<2.10 UJ	<1.90	<2.00	<4.00 UJ	<2.30	<3.40	<2.50	<8.00 UJ	<2.20
ARK-02	76-80	065-01	P	08/19/2005	µg/L	<2.20	<1.10	<2.10	<0.860	<2.00	<2.10	<1.90	<2.00	<4.00	<2.30	<3.40	<2.50	<8.00	<2.20
ARK-03	22-26	071-01	P	08/23/2005	µg/L	<2.20	<1.10 UJ	<2.10	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90	<2.00 UJ	<4.00 UJ	<2.30	<3.40	<2.50	<8.00 UJ	<2.20
ARK-03	54-58	072-01	P	08/23/2005	µg/L	<2.20	<1.10	<2.10	<0.860	<2.00	<2.10	<1.90	<2.00	<4.00	<2.30	<3.40	<2.50	<8.00	<2.20
ARK-03	76-80	067-01	P	08/22/2005	µg/L	<2.20	<1.10 UJ	<2.10	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90	<2.00 UJ	<4.00 UJ	<2.30	<3.40	<2.50	<8.00 UJ	<2.20
ARK-03	90-102.5	076-01	P	09/09/2005	µg/L	<2.20	<1.10	<2.10	<0.860	<2.00	<2.10 UJ	<1.90 UJ	<2.00	<4.00 UJ	<2.30 UJ	<3.40	<2.50	<8.00	<2.20
ARK-04	10-15	034-01	P	08/12/2005	µg/L	<2.20	<1.10 UJ	<2.10	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90	<2.00 UJ	<4.00 UJ	<2.30	<3.40	<2.50	<8.00 UJ	<2.20
ARK-04	33-36	035-01	P	08/15/2005	µg/L	<2.20	<1.10 UJ	<2.10	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90	<2.00 UJ	<4.00 UJ	<2.30	<3.40	<2.50	<8.00 UJ	<2.20
ARK-04	44-47	033-01	P	08/12/2005	µg/L	<2.20	<1.10	<2.10	<0.860	<2.00 UJ	<2.10 UJ	<1.90	<2.00	<4.00 UJ	<2.30	<3.40	<2.50	<8.00 UJ	<2.20
ARK-05	18-22	050-01	P	08/17/2005	µg/L	<2.20 UJ	<1.10 UJ	<2.10 UJ	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90 UJ	<2.00 UJ	<4.00 UJ	<2.30 UJ	<3.40	<2.50 UJ	<8.00 UJ	<2.20 UJ
ARK-05	37-41	051-01	P	08/17/2005	µg/L	<2.20 UJ	<1.10 UJ	<2.10 UJ	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90 UJ	<2.00 UJ	<4.00 UJ	<2.30 UJ	<3.40 UJ	<2.50 UJ	<8.00 UJ	<2.20 UJ
ARK-05	62-67.5	075-01	P	09/08/2005	µg/L	<2.20	<1.10	<2.10	<0.860	<2.00	<2.10 UJ	<1.90 UJ	<2.00	<4.00 UJ	<2.30 UJ	**2.30 J**	<2.50	<8.00	<2.20
ARK-06	23-27	058-01	P	08/18/2005	µg/L	<2.20	<1.10	<2.10	<0.860	<2.00 UJ	<2.10 UJ	<1.90	<2.00	<4.00 UJ	<2.30	<3.40	<2.50	<8.00 UJ	<2.20
ARK-06	23-27	058-02	D	08/18/2005	µg/L	<2.20	<1.10	<2.10	<0.860	<2.00 UJ	<2.10 UJ	<1.90	<2.00	<4.00 UJ	<2.30	<3.40	<2.50	<8.00 UJ	<2.20
ARK-06	54-58	059-01	P	08/19/2005	µg/L	<2.20	<1.10 UJ	<2.10	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90	<2.00 UJ	<4.00 UJ	<2.30	<3.40	<2.50	<8.00 UJ	<2.20
ARK-06	76-80	057-01	P	08/18/2005	µg/L	<2.20	<1.10	<2.10	<0.860	<2.00 UJ	<2.10 UJ	<1.90	<2.00	<4.00 UJ	<2.30	<3.40	<2.50	<8.00 UJ	<2.20
ARK-06	88-97.5	074-01	P	09/07/2005	µg/L	<2.20	<1.10	<2.10	<0.860	<2.00	<2.10 UJ	<1.90 UJ	<2.00	<4.00 UJ	<2.30 UJ	<3.40	<2.50	<8.00	<2.20
ARK-07	10-14	007-01	P	08/09/2005	µg/L	<2.20	<1.10 UJ	<2.10	<0.860 UJ	<2.00	<2.10	<1.90	<2.00 UJ	<4.00	<2.30	<3.40 UJ	<2.50	<8.00 UJ	<2.20
ARK-07	22-26	008-01	P	08/09/2005	µg/L	<2.20	<1.10 UJ	<2.10	<0.860 UJ	<2.00	<2.10	<1.90	<2.00 UJ	<4.00	<2.30	<3.40 UJ	<2.50	<8.00 UJ	<2.20
ARK-07	41-45	006-01	P	08/09/2005	µg/L	<2.20 UJ	<1.10 UJ	<2.10 UJ	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90 UJ	<2.00 UJ	<4.00 UJ	<2.30 UJ	<3.40 UJ	<2.50 UJ	<8.00 UJ	<2.20 UJ
ARK-08	10-15	016-01	P	08/10/2005	µg/L	<2.20	<1.10 UJ	<2.10	<0.860 UJ	<2.00	<2.10	<1.90	<2.00 UJ	<4.00	<2.30	<3.40 UJ	<2.50	<8.00 UJ	<2.20
ARK-08	38.5-43.5	015-01	P	08/10/2005	µg/L	<2.20	<1.10 UJ	<2.10	<0.860 UJ	<2.00	<2.10	<1.90	<2.00 UJ	<4.00	<2.30	<3.40 UJ	<2.50	<8.00 UJ	<2.20
ARK-08	38.5-43.5	015-02	D	08/10/2005	µg/L	<2.20	<1.10 UJ	<2.10	<0.860 UJ	<2.00	<2.10	<1.90	<2.00 UJ	<4.00	<2.30	<3.40 UJ	<2.50	<8.00 UJ	<2.20
ARK-09	11-16	023-01	P	08/11/2005	µg/L	<2.20	<1.10 UJ	<2.10	<0.860 UJ	<2.00	<2.10	<1.90	<2.00 UJ	<4.00	<2.30	<3.40 UJ	<2.50	<8.00 UJ	<2.20
ARK-09	30-35	025-01	P	08/12/2005	µg/L	<2.20	<1.10	<2.10	<0.860	<2.00 UJ	<2.10 UJ	<1.90	<2.00	<4.00 UJ	<2.30	<3.40	<2.50	<8.00 UJ	<2.20
ARK-09	52-56	026-01	P	08/12/2005	µg/L	<2.20	<1.10	<2.10	<0.860	<2.00 UJ	<2.10 UJ	<1.90	<2.00	<4.00 UJ	<2.30	<3.40	<2.50	<8.00 UJ	<2.20
ARK-09	88-97.5	073-01	P	09/06/2005	µg/L	<2.20	<1.10	<2.10	<0.860	<2.00	<2.10 UJ	<1.90 UJ	<2.00	<4.00 UJ	<2.30 UJ	<3.40	<2.50	<8.00	<2.20

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3B
Semivolatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	Acenaphthylene	Anthracene	Benzo-(a)anthracene	Benzo(a)pyrene	Benzo(b)-fluoranthene	Benzo(ghi)-perylene	Benzo(k)-fluoranthene	Benzoic acid	Benzyl alcohol	Bis-(2-Chloro-ethoxy) methane	Bis(2-Chloroethyl) ether	Bis(2-Chloroisopropyl) ether	Bis(2-Ethyl-hexyl) pthalate
ARK-01	10-15	042-01	P	08/15/2005	µg/L	<2.10 UJ	<2.00 UJ	<1.90 UJ	<1.80 UJ	<3.90 UJ	<2.10 UJ	<2.40 UJ	<1.90 UJ	<4.80 UJ	<2.00 UJ	<1.70 UJ	<1.70 UJ	<2.60 UJ
ARK-01	28.5-31.5	044-01	P	08/16/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90 UJ	<4.80	<2.00	<1.70	<1.70	**5.50 J**
ARK-01	50-54	043-01	P	08/16/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90 UJ	<4.80	<2.00	<1.70	<1.70	<2.60
ARK-02	36-40	066-01	P	08/22/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90 UJ	<4.80	<2.00	<1.70	<1.70	<2.60
ARK-02	76-80	065-01	P	08/19/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90	<4.80	<2.00	<1.70	<1.70	<2.60
ARK-03	22-26	071-01	P	08/23/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90 UJ	<4.80	<2.00	<1.70	<1.70	<2.60
ARK-03	54-58	072-01	P	08/23/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90	<4.80	<2.00	<1.70	<1.70	<2.60
ARK-03	76-80	067-01	P	08/22/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90 UJ	<4.80	<2.00	<1.70	<1.70	**1.00 J**
ARK-03	90-102.5	076-01	P	09/09/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	**0.560 J**	<4.80	<2.00 UJ	<1.70 UJ	<1.70	<2.60
ARK-04	10-15	034-01	P	08/12/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90 R	<4.80	<2.00	<1.70	<1.70	<2.60
ARK-04	33-36	035-01	P	08/15/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90 UJ	<4.80 UJ	<2.00	<1.70	<1.70	<2.60
ARK-04	44-47	033-01	P	08/12/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90 R	<4.80	<2.00	<1.70	<1.70	<2.60
ARK-05	18-22	050-01	P	08/17/2005	µg/L	<2.10 UJ	<2.00 UJ	<1.90 UJ	<1.80 UJ	<3.90 UJ	<2.10 UJ	<2.40 UJ	<1.90 UJ	<4.80 UJ	<2.00 UJ	<1.70 UJ	<1.70 UJ	<2.60 UJ
ARK-05	37-41	051-01	P	08/17/2005	µg/L	<2.10 UJ	<2.00 UJ	<1.90 UJ	<1.80 UJ	<3.90 UJ	<2.10 UJ	<2.40 UJ	<1.90 UJ	<4.80 UJ	<2.00 UJ	<1.70 UJ	<1.70 UJ	**0.910 J**
ARK-05	62-67.5	075-01	P	09/08/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	**1.10 J**	<4.80	<2.00 UJ	<1.70 UJ	<1.70	**4.50 J**
ARK-06	23-27	058-01	P	08/18/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90 UJ	<4.80	<2.00	<1.70	<1.70	**0.700 J**
ARK-06	23-27	058-02	D	08/18/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90 UJ	<4.80	<2.00	<1.70	<1.70	**1.90 J**
ARK-06	54-58	059-01	P	08/19/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90 UJ	<4.80	<2.00	<1.70	<1.70	<2.60
ARK-06	76-80	057-01	P	08/18/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90 UJ	<4.80	<2.00	<1.70	<1.70	**5.10 J**
ARK-06	88-97.5	074-01	P	09/07/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90 UJ	<4.80	<2.00 UJ	<1.70 UJ	<1.70	<2.60
ARK-07	10-14	007-01	P	08/09/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40	<1.90 R	<4.80	<2.00	<1.70 UJ	<1.70	<2.60
ARK-07	22-26	008-01	P	08/09/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40	<1.90 R	<4.80	<2.00	<1.70 UJ	<1.70	<2.60
ARK-07	41-45	006-01	P	08/09/2005	µg/L	<2.10 UJ	<2.00 UJ	<1.90 UJ	<1.80 UJ	<3.90 UJ	<2.10 UJ	<2.40 UJ	<1.90 R	<4.80 UJ	<2.00 UJ	<1.70 UJ	<1.70 UJ	**3.10 J**
ARK-08	10-15	016-01	P	08/10/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40	<1.90 R	<4.80	<2.00	<1.70 UJ	<1.70	<2.60
ARK-08	38.5-43.5	015-01	P	08/10/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40	<1.90 R	<4.80	<2.00	<1.70 UJ	<1.70	<2.60
ARK-08	38.5-43.5	015-02	D	08/10/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40	<1.90 R	<4.80	<2.00	<1.70 UJ	<1.70	**0.810 J**
ARK-09	11-16	023-01	P	08/11/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40	<1.90 R	<4.80	<2.00	<1.70 UJ	<1.70	<2.60
ARK-09	30-35	025-01	P	08/12/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90 R	<4.80	<2.00	<1.70	<1.70	<2.60
ARK-09	52-56	026-01	P	08/12/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90 R	<4.80	<2.00	<1.70	<1.70	<2.60
ARK-09	88-97.5	073-01	P	09/06/2005	µg/L	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ	<1.90 UJ	<4.80	<2.00 UJ	<1.70 UJ	<1.70	<2.60

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3B
Semivolatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	Butylbenzylphthalate	Chrysene	Dibenzo-(a,h)anthracene	Dibenzofuran	Diethylphthalate	Dimethylphthalate	Di-n-butylphthalate	Di-n-octyl phthalate	Fluoranthene	Fluorene	Hexachlorobenzene	Hexachlorobutadiene	Hexachloro-cyclopentadiene	Hexachloroethane
ARK-01	10-15	042-01	P	08/15/2005	µg/L	<1.60 UJ	<1.50 UJ	<2.10 UJ	<2.30 UJ	**0.890 J**	<2.00 UJ	<2.30 UJ	<2.60 UJ	**1.70 J**	**0.830 J**	<1.30 UJ	<1.90 UJ	<2.20 UJ	<2.00 UJ
ARK-01	28.5-31.5	044-01	P	08/16/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30 UJ	<1.90	<2.20	<2.00
ARK-01	50-54	043-01	P	08/16/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30 UJ	<1.90	<2.20	<2.00
ARK-02	36-40	066-01	P	08/22/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30 UJ	<1.90	<2.20	<2.00
ARK-02	76-80	065-01	P	08/19/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30 UJ	<1.90	<2.20	<2.00
ARK-03	22-26	071-01	P	08/23/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30 UJ	<1.90	<2.20	<2.00
ARK-03	54-58	072-01	P	08/23/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30 UJ	<1.90	<2.20	<2.00
ARK-03	76-80	067-01	P	08/22/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30 UJ	<1.90	<2.20	<2.00
ARK-03	90-102.5	076-01	P	09/09/2005	µg/L	<1.60 UJ	<1.50	<2.10	<2.30	<2.30 UJ	<2.00 UJ	<2.30	<2.60 UJ	<2.10	<2.40	<1.30	<1.90 UJ	<2.20 UJ	<2.00 UJ
ARK-04	10-15	034-01	P	08/12/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30 UJ	<1.90	<2.20 R	<2.00
ARK-04	33-36	035-01	P	08/15/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30 UJ	<1.90	<2.20	<2.00
ARK-04	44-47	033-01	P	08/12/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30 UJ	<1.90	<2.20 R	<2.00
ARK-05	18-22	050-01	P	08/17/2005	µg/L	<1.60 UJ	<1.50 UJ	<2.10 UJ	<2.30 UJ	<2.30 UJ	<2.00 UJ	<2.30 UJ	<2.60 UJ	<2.10 UJ	<2.40 UJ	<1.30 UJ	<1.90 UJ	<2.20 UJ	<2.00 UJ
ARK-05	37-41	051-01	P	08/17/2005	µg/L	<1.60 UJ	<1.50 UJ	<2.10 UJ	<2.30 UJ	<2.30 UJ	<2.00 UJ	<2.30 UJ	<2.60 UJ	<2.10 UJ	<2.40 UJ	<1.30 UJ	<1.90 UJ	<2.20 UJ	<2.00 UJ
ARK-05	62-67.5	075-01	P	09/08/2005	µg/L	<1.60 UJ	<1.50	<2.10	<2.30	<2.30 UJ	<2.00 UJ	<2.30	<2.60 UJ	<2.10	<2.40	<1.30	<1.90 UJ	<2.20 UJ	<2.00 UJ
ARK-06	23-27	058-01	P	08/18/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30 UJ	<1.90	<2.20	<2.00
ARK-06	23-27	058-02	D	08/18/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30 UJ	<1.90	<2.20	<2.00
ARK-06	54-58	059-01	P	08/19/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30 UJ	<1.90	<2.20	<2.00
ARK-06	76-80	057-01	P	08/18/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30 UJ	<1.90	<2.20	<2.00
ARK-06	88-97.5	074-01	P	09/07/2005	µg/L	<1.60 UJ	<1.50	<2.10	<2.30	<2.30 UJ	<2.00 UJ	<2.30	<2.60 UJ	<2.10	<2.40	<1.30	<1.90 UJ	<2.20 UJ	<2.00 UJ
ARK-07	10-14	007-01	P	08/09/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90	<2.20 UJ	<2.00
ARK-07	22-26	008-01	P	08/09/2005	µg/L	<1.60	<1.50	<2.10	<2.30	**0.540 J**	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90	<2.20 UJ	<2.00
ARK-07	41-45	006-01	P	08/09/2005	µg/L	<1.60 UJ	<1.50 UJ	<2.10 UJ	<2.30 UJ	<2.30 UJ	<2.00 UJ	<2.30 UJ	<2.60 UJ	<2.10 UJ	<2.40 UJ	<1.30 UJ	<1.90 UJ	<2.20 UJ	<2.00 UJ
ARK-08	10-15	016-01	P	08/10/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90	<2.20 UJ	<2.00
ARK-08	38.5-43.5	015-01	P	08/10/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90	<2.20 UJ	<2.00
ARK-08	38.5-43.5	015-02	D	08/10/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90	<2.20 UJ	<2.00
ARK-09	11-16	023-01	P	08/11/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90	<2.20 UJ	<2.00
ARK-09	30-35	025-01	P	08/12/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30 UJ	<1.90	<2.20 R	<2.00
ARK-09	52-56	026-01	P	08/12/2005	µg/L	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30 UJ	<1.90	<2.20 R	<2.00
ARK-09	88-97.5	073-01	P	09/06/2005	µg/L	<1.60 UJ	<1.50	<2.10	<2.30	<2.30 UJ	<2.00 UJ	<2.30	<2.60 UJ	<2.10	<2.40	<1.30	<1.90 UJ	<2.20 UJ	<2.00 UJ

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3B
Semivolatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	Indeno (1,2,3-cd)-pyrene	Isophorone	Naphthalene	N-Nitrosodimethylamine	N-Nitrosodinpropyl amine	N-Nitrosodiphenylamine	Pentachlorophenol	Phenanthrene	Phenol	Pyrene
ARK-01	10-15	042-01	P	08/15/2005	µg/L	<2.20 UJ	<1.10 UJ	**0.710 J**	<0.630 UJ	<1.30 UJ	<1.20 UJ	<2.10 UJ	**2.20 J**	<0.870 UJ	**1.60 J**
ARK-01	28.5-31.5	044-01	P	08/16/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90
ARK-01	50-54	043-01	P	08/16/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10	<1.90	<0.870 UJ	<1.90
ARK-02	36-40	066-01	P	08/22/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10	<1.90	<0.870 UJ	<1.90
ARK-02	76-80	065-01	P	08/19/2005	µg/L	<2.20	<1.10	<2.30	<0.630	<1.30	<1.20	<2.10	<1.90	<0.870	<1.90
ARK-03	22-26	071-01	P	08/23/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90
ARK-03	54-58	072-01	P	08/23/2005	µg/L	<2.20	<1.10	<2.30	<0.630	<1.30	<1.20	<2.10	<1.90	<0.870	<1.90
ARK-03	76-80	067-01	P	08/22/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90
ARK-03	90-102.5	076-01	P	09/09/2005	µg/L	<2.20	<1.10 UJ	<2.30	<0.630 UJ	<1.30 UJ	<1.20	<2.10	<1.90	<0.870 UJ	<1.90
ARK-04	10-15	034-01	P	08/12/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90
ARK-04	33-36	035-01	P	08/15/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90
ARK-04	44-47	033-01	P	08/12/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10	<1.90	<0.870 UJ	<1.90
ARK-05	18-22	050-01	P	08/17/2005	µg/L	<2.20 UJ	<1.10 UJ	<2.30 UJ	<0.630 UJ	<1.30 UJ	<1.20 UJ	<2.10 UJ	<1.90 UJ	<0.870 UJ	<1.90 UJ
ARK-05	37-41	051-01	P	08/17/2005	µg/L	<2.20 UJ	<1.10 UJ	<2.30 UJ	<0.630 UJ	<1.30 UJ	<1.20 UJ	<2.10 UJ	<1.90 UJ	<0.870 UJ	<1.90 UJ
ARK-05	62-67.5	075-01	P	09/08/2005	µg/L	<2.20	<1.10 UJ	<2.30	<0.630 UJ	<1.30 UJ	<1.20	<2.10	<1.90	<0.870 UJ	<1.90
ARK-06	23-27	058-01	P	08/18/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10	<1.90	<0.870 UJ	<1.90
ARK-06	23-27	058-02	D	08/18/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10	<1.90	<0.870 UJ	<1.90
ARK-06	54-58	059-01	P	08/19/2005	µg/L	<2.20	<1.10	<2.30	<0.630 R	<1.30	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90
ARK-06	76-80	057-01	P	08/18/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10	<1.90	<0.870 UJ	<1.90
ARK-06	88-97.5	074-01	P	09/07/2005	µg/L	<2.20	<1.10 UJ	<2.30	<0.630 UJ	<1.30 UJ	<1.20	<2.10	<1.90	<0.870 UJ	<1.90
ARK-07	10-14	007-01	P	08/09/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90
ARK-07	22-26	008-01	P	08/09/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90
ARK-07	41-45	006-01	P	08/09/2005	µg/L	<2.20 UJ	<1.10 UJ	<2.30 UJ	<0.630 UJ	<1.30 UJ	<1.20 UJ	<2.10 UJ	<1.90 UJ	<0.870 UJ	<1.90 UJ
ARK-08	10-15	016-01	P	08/10/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90
ARK-08	38.5-43.5	015-01	P	08/10/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90
ARK-08	38.5-43.5	015-02	D	08/10/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90
ARK-09	11-16	023-01	P	08/11/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90
ARK-09	30-35	025-01	P	08/12/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10	<1.90	<0.870 UJ	<1.90
ARK-09	52-56	026-01	P	08/12/2005	µg/L	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10	<1.90	<0.870 UJ	<1.90
ARK-09	88-97.5	073-01	P	09/06/2005	µg/L	<2.20	<1.10 UJ	<2.30	<0.630 UJ	<1.30 UJ	<1.20	<2.10	<1.90	<0.870 UJ	<1.90

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
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µg/L = micrograms per liter
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J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3C
Chlorinated Herbicide Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		2,4,5-T	2,4,5-TP (Silvex)	2,4-D	2,4-DB	Bromoxynil	Dalapon	Dicamba	Dichlorprop	Dinoseb	MCPA	MCPP
				Date	Units											
ARK-01	10-15	042-01	P	08/15/2005	µg/L	<0.020 UJ	<0.039 UJ	<0.280 UJ	<0.696 UJ	<0.012 UJ	<1.08 UJ	<0.052 UJ	<0.837 UJ	<0.288 UJ	<83.5 UJ	<56.7 UJ
ARK-01	28.5-31.5	044-01	P	08/16/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-01	50-54	043-01	P	08/16/2005	µg/L	<6.48	**12.0**	<90.7	<226	<3.89	<350	<17.0	<271	<93.3	<27,100	<18,400
ARK-02	36-40	066-01	P	08/22/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288 UJ	<83.5	<56.7
ARK-02	76-80	065-01	P	08/19/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-03	22-26	071-01	P	08/23/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288 UJ	<83.5	<56.7
ARK-03	54-58	072-01	P	08/23/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288 UJ	<83.5	<56.7
ARK-03	76-80	067-01	P	08/22/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288 UJ	<83.5	<56.7
ARK-03	90-102.5	076-01	P	09/09/2005	µg/L	<32.0	**22.0**	<448	<1,110	<19.2	<1,730 UJ	<83.8	<1,340	<461	<134,000	<90,700
ARK-04	10-15	034-01	P	08/12/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-04	33-36	035-01	P	08/15/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-04	44-47	033-01	P	08/12/2005	µg/L	<0.180	**1.60**	<2.52	<6.26	<0.108	<9.72	<0.472	<7.53	<2.59	<752	<510
ARK-05	18-22	050-01	P	08/17/2005	µg/L	<0.020 UJ	<0.039 UJ	<0.280 UJ	<0.696 UJ	<0.012 UJ	<1.08 UJ	<0.052 UJ	<0.837 UJ	<0.288 UJ	<83.5 UJ	<56.7 UJ
ARK-05	37-41	051-01	P	08/17/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-05	62-67.5	075-01	P	09/08/2005	µg/L	<0.500	**2.00**	<7.00	<17.4	<0.300	<27.0 UJ	<1.31	<20.9	<7.20	<2,090	<1,420
ARK-06	23-27	058-01	P	08/18/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-06	23-27	058-02	D	08/18/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-06	54-58	059-01	P	08/19/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012 UJ	<1.08 UJ	<0.052	<0.837	<0.288 UJ	<83.5	<56.7
ARK-06	76-80	057-01	P	08/18/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-06	88-97.5	074-01	P	09/07/2005	µg/L	<4.50	**5.50**	<63.0	<157	<2.70	<243 UJ	<11.8	<188	<64.8	<18,800	<12,800
ARK-07	10-14	007-01	P	08/09/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-07	22-26	008-01	P	08/09/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-07	41-45	006-01	P	08/09/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-08	10-15	016-01	P	08/10/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-08	38.5-43.5	015-01	P	08/10/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-08	38.5-43.5	015-02	D	08/10/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-09	11-16	023-01	P	08/11/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-09	30-35	025-01	P	08/12/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-09	52-56	026-01	P	08/12/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08	<0.052	<0.837	<0.288	<83.5	<56.7
ARK-09	88-97.5	073-01	P	09/06/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288	<83.5	<56.7

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3D
Organochlorine Insecticide Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate
				Date	Units													
ARK-01	10-15	042-01	P	08/15/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ
ARK-01	28.5-31.5	044-01	P	08/16/2005	µg/L	<0.020	<0.020	<0.020	<0.005	<0.010	<0.010	<0.008	<0.056	<0.010	<0.020	<0.010	<0.020	<0.020
ARK-01	50-54	043-01	P	08/16/2005	µg/L	<0.020	<0.020	<0.020	<0.005	<0.010	<0.010	<0.008	<0.056	<0.010	<0.020	<0.010	<0.020	<0.020
ARK-02	36-40	066-01	P	08/22/2005	µg/L	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.003	<0.056	<0.002	<0.004	<0.002	<0.003	<0.004
ARK-02	76-80	065-01	P	08/19/2005	µg/L	<0.020	<0.020	<0.020	<0.005	<0.010	<0.010	<0.008	<0.056	<0.010	<0.020	<0.010	<0.020	<0.020
ARK-03	22-26	071-01	P	08/23/2005	µg/L	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.003	<0.056	<0.002	<0.004	<0.002	<0.003	<0.004
ARK-03	54-58	072-01	P	08/23/2005	µg/L	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.003	<0.056	<0.002	<0.004	<0.002	<0.003	<0.004
ARK-03	76-80	067-01	P	08/22/2005	µg/L	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.003	<0.056	<0.002	<0.004	<0.002	<0.003	<0.004
ARK-03	90-102.5	076-01	P	09/09/2005	µg/L	<0.020	<0.020	<0.020	<0.005	<0.010	<0.010	<0.008	<0.056	<0.010	<0.020	<0.010	<0.020	<0.020
ARK-04	10-15	034-01	P	08/12/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ
ARK-04	33-36	035-01	P	08/15/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ
ARK-04	44-47	033-01	P	08/12/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ
ARK-05	18-22	050-01	P	08/17/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ
ARK-05	37-41	051-01	P	08/17/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ
ARK-05	62-67.5	075-01	P	09/08/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ
ARK-06	23-27	058-01	P	08/18/2005	µg/L	<0.020	<0.020	<0.020	<0.005	<0.010	<0.010	<0.008	<0.056	<0.010	<0.020	<0.010	<0.020	<0.020
ARK-06	23-27	058-02	D	08/18/2005	µg/L	<0.020	<0.020	<0.020	<0.005	<0.010	<0.010	<0.008	<0.056	<0.010	<0.020	<0.010	<0.020	<0.020
ARK-06	54-58	059-01	P	08/19/2005	µg/L	<0.020	<0.020	<0.020	<0.005	<0.010	<0.010	<0.008	<0.056	<0.010	<0.020	<0.010	<0.020	<0.020
ARK-06	76-80	057-01	P	08/18/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ
ARK-06	88-97.5	074-01	P	09/07/2005	µg/L	<0.020	<0.020	<0.020	<0.005	<0.010	<0.010	<0.008	<0.056	<0.010	<0.020	<0.010	<0.020	<0.020
ARK-07	10-14	007-01	P	08/09/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ
ARK-07	22-26	008-01	P	08/09/2005	µg/L	**0.320 J**	**0.170 J**	**1.30 J**	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ
ARK-07	41-45	006-01	P	08/09/2005	µg/L	**0.210 J**	**0.150 J**	**1.20 J**	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ
ARK-08	10-15	016-01	P	08/10/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ
ARK-08	38.5-43.5	015-01	P	08/10/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ
ARK-08	38.5-43.5	015-02	D	08/10/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ
ARK-09	11-16	023-01	P	08/11/2005	µg/L	<0.020	<0.020	<0.020	<0.005	<0.010	<0.010	<0.008	<0.056	<0.010	<0.020	<0.010	<0.020	<0.020
ARK-09	30-35	025-01	P	08/12/2005	µg/L	<0.020	<0.020	<0.020	<0.005	<0.010	<0.010	<0.008	<0.056	<0.010	<0.020	<0.010	<0.020	<0.020
ARK-09	52-56	026-01	P	08/12/2005	µg/L	<0.020	<0.020	<0.020	<0.005	<0.010	<0.010	<0.008	<0.056	<0.010	<0.020	<0.010	<0.020	<0.020
ARK-09	88-97.5	073-01	P	09/06/2005	µg/L	<0.020	<0.020	<0.020	<0.005	<0.010	<0.010	<0.008	<0.056	<0.010	<0.020	<0.010	<0.020	<0.020

Notes:
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TABLE 3D
Organochlorine Insecticide Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Endrin	Endrin aldehyde	Endrin Ketone	gamma-BHC (Lindane)	gamma-Chlordane	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene
				Date	Units									
ARK-01	10-15	042-01	P	08/15/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
ARK-01	28.5-31.5	044-01	P	08/16/2005	µg/L	<0.020	<0.020	<0.020	<0.010	<0.010	<0.004	<0.010	<0.035	<1.00
ARK-01	50-54	043-01	P	08/16/2005	µg/L	<0.020	<0.020	<0.020	<0.010	<0.010	<0.004	<0.010	<0.035	<1.00
ARK-02	36-40	066-01	P	08/22/2005	µg/L	<0.004	<0.003	<0.004	<0.002	<0.001	<0.003	<0.002	<0.020	<1.00
ARK-02	76-80	065-01	P	08/19/2005	µg/L	<0.020	<0.020	<0.020	<0.010	<0.010	<0.004	<0.010	<0.035	<1.00
ARK-03	22-26	071-01	P	08/23/2005	µg/L	<0.004	<0.003	<0.004	<0.002	<0.001	<0.003	<0.002	<0.020	<1.00
ARK-03	54-58	072-01	P	08/23/2005	µg/L	<0.004	<0.003	<0.004	<0.002	<0.001	<0.003	<0.002	<0.020	<1.00
ARK-03	76-80	067-01	P	08/22/2005	µg/L	<0.004	<0.003	<0.004	<0.002	<0.001	<0.003	<0.002	<0.020	<1.00
ARK-03	90-102.5	076-01	P	09/09/2005	µg/L	<0.020	<0.020	<0.020	<0.010	**0.061 N**	<0.004	<0.010	<0.035	<1.00
ARK-04	10-15	034-01	P	08/12/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
ARK-04	33-36	035-01	P	08/15/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
ARK-04	44-47	033-01	P	08/12/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
ARK-05	18-22	050-01	P	08/17/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
ARK-05	37-41	051-01	P	08/17/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
ARK-05	62-67.5	075-01	P	09/08/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
ARK-06	23-27	058-01	P	08/18/2005	µg/L	<0.020	<0.020	<0.020 UJ	<0.010	<0.010	<0.004	<0.010	<0.035	<1.00
ARK-06	23-27	058-02	D	08/18/2005	µg/L	<0.020	<0.020	<0.020	<0.010	<0.010	<0.004	<0.010	<0.035	<1.00
ARK-06	54-58	059-01	P	08/19/2005	µg/L	<0.020	<0.020	<0.020	<0.010	<0.010	<0.004	<0.010	<0.035	<1.00
ARK-06	76-80	057-01	P	08/18/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
ARK-06	88-97.5	074-01	P	09/07/2005	µg/L	<0.020	<0.020	<0.020	<0.010	<0.010	<0.004	<0.010	<0.035	<1.00
ARK-07	10-14	007-01	P	08/09/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
ARK-07	22-26	008-01	P	08/09/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
ARK-07	41-45	006-01	P	08/09/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
ARK-08	10-15	016-01	P	08/10/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
ARK-08	38.5-43.5	015-01	P	08/10/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
ARK-08	38.5-43.5	015-02	D	08/10/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
ARK-09	11-16	023-01	P	08/11/2005	µg/L	<0.020	<0.020	<0.020	<0.010	<0.010	<0.004	<0.010	<0.035	<1.00
ARK-09	30-35	025-01	P	08/12/2005	µg/L	<0.020	<0.020	<0.020	<0.010	<0.010	<0.004	<0.010	<0.035	<1.00
ARK-09	52-56	026-01	P	08/12/2005	µg/L	<0.020	<0.020	<0.020	<0.010	<0.010	<0.004	<0.010	<0.035	<1.00
ARK-09	88-97.5	073-01	P	09/06/2005	µg/L	<0.020	<0.020	<0.020	<0.010	<0.010	<0.004	<0.010	<0.035	<1.00

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3E
Dioxin-Furan Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	1,2,3,4,6,7,8,9-OCDD	1,2,3,4,6,7,8,9-OCDF	1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-HxCDF	1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-HxCDF	1,2,3,7,8-PeCDD	1,2,3,7,8-PeCDF	2,3,4,6,7,8-HxCDF	2,3,4,7,8-PeCDF
ARK-01	10-15	042-01	P	08/15/2005	pg/L	**127,000 J**	**6,140 J**	**10,600 J**	**2,870 J**	**236 J**	**49.6 J**	**777 J**	**345 J**	**267 J**	**152 J**	**17.5 J**	**30.1 J**	**349 J**	**72.7 J**	**158 J**
ARK-01	28.5-31.5	044-01	P	08/16/2005	pg/L	**211 J**	**1.40 J**	**26.0 J**	**0.949 J**	<1.06 UJ	**0.647 J**	<1.48 UJ	**1.23 J**	<1.38 UJ	**2.75 J**	<1.10 UJ	**0.541 NJ**	<1.45 UJ	<1.33 UJ	<1.37 UJ
ARK-01	50-54	043-01	P	08/16/2005	pg/L	**1,760 J**	**1.79 J**	**252 J**	**1.82 J**	<0.972 UJ	**6.68 J**	**0.690 NJ**	**11.6 J**	**0.521 J**	**27.0 J**	<1.01 UJ	**2.56 J**	**0.627 J**	<1.22 UJ	**0.691 NJ**
ARK-02	36-40	066-01	P	08/22/2005	pg/L	**2,240 J**	**16.5 J**	**282 J**	**8.80 J**	**1.41 NJ**	**5.72 J**	**9.68 J**	**13.4 J**	**2.88 J**	**33.6 J**	<1.01 UJ	**3.33 J**	**5.71 J**	**0.920 J**	**2.49 J**
ARK-02	76-80	065-01	P	08/19/2005	pg/L	**4,370 J**	**129 J**	**493 J**	**64.9 J**	**10.0 J**	**9.26 J**	**47.7 J**	**22.3 J**	**14.5 J**	**40.7 J**	**1.21 J**	**4.58 J**	**27.7 J**	**3.99 J**	**13.6 J**
ARK-03	22-26	071-01	P	08/23/2005	pg/L	**88.0 J**	**4.80 J**	**8.49 J**	**2.14 J**	<1.02 UJ	<0.865 UJ	**1.64 J**	**0.530 J**	**0.535 J**	**0.781 J**	<1.06 UJ	<0.769 UJ	**0.906 J**	<1.28 UJ	**0.844 J**
ARK-03	54-58	072-01	P	08/23/2005	pg/L	**5,050 J**	**3.00 J**	**724 J**	**2.40 J**	<0.848 UJ	**20.1 J**	**1.12 J**	**36.6 J**	**1.03 NJ**	**98.9 J**	<0.880 UJ	**8.72 J**	**0.756 J**	<1.06 UJ	**0.662 J**
ARK-03	76-80	067-01	P	08/22/2005	pg/L	**8,240 J**	**528 J**	**773 J**	**280 J**	**52.9 J**	**13.0 J**	**316 J**	**35.7 J**	**89.6 J**	**59.3 J**	**5.77 J**	**7.29 J**	**211 J**	**19.2 J**	**84.7 J**
ARK-03	90-102.5	076-01	P	09/09/2005	pg/L	**1,060**	**23.5 J**	**110**	**17.6 J**	**3.58 J**	**2.14 J**	**13.5 J**	**5.34 J**	**4.30 J**	**9.94 J**	<1.10	<0.800	**7.46 J**	**1.44 NJ**	**4.23 J**
ARK-04	10-15	034-01	P	08/12/2005	pg/L	**3,710 J**	**184 J**	**164 J**	**101 J**	**3.94 J**	**1.07 NJ**	**6.05 J**	**5.44 J**	**4.88 J**	**2.93 J**	<1.15 UJ	**0.619 NJ**	**2.41 J**	**2.24 J**	<1.43 UJ
ARK-04	33-36	035-01	P	08/15/2005	pg/L	**1,120 J**	**6.47 J**	**146 J**	**6.46 J**	**1.05 J**	**3.43 J**	**7.28 J**	**6.85 J**	**2.01 J**	**17.8 J**	<1.06 UJ	**1.80 J**	**4.00 J**	**0.657 J**	**2.79 J**
ARK-04	44-47	033-01	P	08/12/2005	pg/L	**305 J**	**14.5 J**	**21.7 J**	**8.79 J**	**0.788 J**	<0.899 UJ	**3.32 J**	**1.08 J**	**1.17 J**	**0.853 J**	<1.10 UJ	<0.800 UJ	<1.45 UJ	<1.33 UJ	**1.25 J**
ARK-05	18-22	050-01	P	08/17/2005	pg/L	**215 J**	**16.2 J**	**14.8 J**	**13.6 J**	**3.35 J**	**3.05 J**	**5.09 J**	**3.02 J**	**4.32 J**	**3.43 J**	**3.73 J**	**3.28 J**	**4.54 J**	**1.93 J**	<1.33 UJ
ARK-05	37-41	051-01	P	08/17/2005	pg/L	**1,180 J**	**28.9 J**	**153 J**	**21.5 J**	**7.22 J**	**3.00 J**	**29.2 J**	**7.68 J**	**8.92 J**	**11.6 J**	**0.773 J**	**1.97 J**	**10.7 J**	**2.69 J**	**7.64 J**
ARK-05	62-67.5	075-01	P	09/08/2005	pg/L	**13,100**	**413**	**1,370**	**249**	**38.3 J**	**25.9 J**	**136**	**64.7**	**48.6**	**122**	**4.12 J**	**19.9 J**	**65.2**	**17.0 J**	**39.4 J**
ARK-06	23-27	058-01	P	08/18/2005	pg/L	<1.80	<2.58	<1.35	<1.53	<1.04	<0.882	<1.45	<1.75	<1.35	<2.02	<1.08	<0.784	<1.42	<1.30	<1.34
ARK-06	23-27	058-02	D	08/18/2005	pg/L	<1.80	**0.524 N**	<1.35	<1.53	<1.04	<0.882	<1.45	<1.75	<1.35	<2.02	<1.08	<0.784	<1.42	<1.30	<1.34
ARK-06	54-58	059-01	P	08/19/2005	pg/L	<1.82 UJ	<2.60 UJ	<1.37 UJ	<1.54 UJ	**1.04 NJ**	<0.891 UJ	**6.08 J**	**0.808 J**	**1.54 J**	<2.04 UJ	**0.533 NJ**	**0.677 J**	**8.14 J**	**0.883 J**	**6.80 J**
ARK-06	76-80	057-01	P	08/18/2005	pg/L	**1,920**	**241**	**210**	**241**	**67.1**	**3.74 J**	**606**	**12.5 J**	**151**	**15.0 J**	**8.58 J**	**3.05 J**	**354**	**30.3 J**	**186**
ARK-06	88-97.5	074-01	P	09/07/2005	pg/L	**3,690**	**79.6 J**	**465**	**76.7**	**25.3 J**	**9.12 J**	**147**	**24.4 J**	**43.7 J**	**45.5 J**	**2.69 J**	**4.99 J**	**95.8**	**8.17 J**	**38.4 J**
ARK-07	10-14	007-01	P	08/09/2005	pg/L	**325**	**62.4 J**	**25.5 J**	**32.2 J**	**8.14 J**	**0.565 J**	**41.5 J**	**1.18 J**	**12.1 J**	<2.02	<1.08	<0.784	**24.1 J**	**2.21 J**	**10.0 J**
ARK-07	22-26	008-01	P	08/09/2005	pg/L	**1,610**	**103 J**	**177**	**43.8 J**	**18.2 J**	**3.82 J**	**43.2 J**	**7.88 J**	**15.2 J**	**12.8 J**	**1.55 J**	<0.830 U	**26.1 J**	**3.16 J**	**12.4 J**
ARK-07	41-45	006-01	P	08/09/2005	pg/L	**5,610 J**	**737 J**	**593 J**	**358 J**	**100 J**	**10.6 J**	**593 J**	**26.0 J**	**169 J**	**29.8 J**	**10.9 J**	**6.36 J**	**346 J**	**27.2 J**	**133 J**
ARK-08	10-15	016-01	P	08/10/2005	pg/L	**126**	**8.70 J**	**11.6 J**	**5.08 J**	<1.02	<0.865	**2.57 J**	**0.663 J**	<1.33	<1.98	<1.06	<0.769	<1.39	**0.699 J**	<1.32
ARK-08	38.5-43.5	015-01	P	08/10/2005	pg/L	**151**	<2.58 U	**20.4 J**	<1.53	<1.04	**0.588 NJ**	**0.903 J**	<1.75	<1.35	<2.02	<1.08	<0.784	<1.42	<1.30	<1.34
ARK-08	38.5-43.5	015-02	D	08/10/2005	pg/L	**141**	<2.63 U	**15.7 J**	<1.56	<1.06	**0.625 NJ**	**1.32 J**	**0.844 J**	<1.38	<2.06	<1.10	<0.800	<1.45	**0.514 J**	<1.37
ARK-09	11-16	023-01	P	08/11/2005	pg/L	<1.84 UJ	<2.63 UJ	<1.38 UJ	<1.56 UJ	<1.06 UJ	**0.568 J**	**0.552 J**	<1.78 UJ	<1.38 UJ	<2.06 UJ	<1.10 UJ	<0.800 UJ	<1.45 UJ	**0.597 J**	<1.37 UJ
ARK-09	30-35	025-01	P	08/12/2005	pg/L	**509 J**	**27.5 J**	**61.8 J**	**12.7 J**	<1.00 UJ	**1.52 NJ**	**5.51 J**	**3.69 J**	<1.30 UJ	<1.94 UJ	<1.04 UJ	<0.754 UJ	<1.37 UJ	**1.33 J**	<1.29 UJ
ARK-09	52-56	026-01	P	08/12/2005	pg/L	**1,090 J**	<2.77 UJ	**141 J**	<1.64 UJ	<1.11 UJ	**3.63 J**	**1.95 J**	**6.72 J**	<1.45 UJ	**19.0 J**	<1.16 UJ	<0.841 UJ	<1.52 UJ	<1.40 UJ	<1.44 UJ
ARK-09	88-97.5	073-01	P	09/06/2005	pg/L	**5,250**	**69.2 J**	**696**	**58.2**	**5.98 J**	**12.9 J**	**18.7 J**	**34.8 J**	**5.66 J**	**47.5**	<0.948	**6.79 J**	**5.41 J**	**2.68 J**	**4.56 J**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
pg/L = picograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3E
Dioxin-Furan Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	2,3,7,8-TCDD	2,3,7,8-TCDF	Total HpCDD	Total HpCDF	Total HxCDD	Total HxCDF	Total PeCDD	Total PeCDF	Total TCDD	Total TCDF
ARK-01	10-15	042-01	P	08/15/2005	pg/L	**17.8 J**	**1,170**	**26,000 J**	**8,940 J**	**2,690 J**	**4,480 J**	**324 J**	**2,060 J**	**200 J**	**2,250 J**
ARK-01	28.5-31.5	044-01	P	08/16/2005	pg/L	**2.21 J**	<0.450 UJ	**62.7 J**	**2.11 J**	**22.1 J**	<1.48 UJ	**2.46 J**	<1.45 UJ	**4.84 J**	<0.450 UJ
ARK-01	50-54	043-01	P	08/16/2005	pg/L	**2.30 NJ**	**1.60 J**	**625 J**	**1.82 J**	**256 J**	**1.97 J**	**31.3 J**	<1.33 UJ	**19.5 J**	**18.7 J**
ARK-02	36-40	066-01	P	08/22/2005	pg/L	<0.440 UJ	**2.33 J**	**710 J**	**19.5 J**	**258 J**	**24.6 J**	**31.0 J**	**23.5 J**	**12.2 J**	**20.0 J**
ARK-02	76-80	065-01	P	08/19/2005	pg/L	<0.444 UJ	**17.4 J**	**1,220 J**	**176 J**	**369 J**	**144 J**	**55.2 J**	**109 J**	**38.8 J**	**69.3 J**
ARK-03	22-26	071-01	P	08/23/2005	pg/L	<0.461 UJ	<0.432 UJ	**18.8 J**	**4.69 J**	**5.66 J**	**2.84 J**	<0.769 UJ	**2.37 J**	<0.461 UJ	**0.557 J**
ARK-03	54-58	072-01	P	08/23/2005	pg/L	**1.73 J**	**0.479 J**	**1,820 J**	**3.71 J**	**791 J**	**2.19 J**	**125 J**	**3.29 J**	**95.1 J**	**4.28 J**
ARK-03	76-80	067-01	P	08/22/2005	pg/L	**2.43 J**	**84.1 J**	**1,910 J**	**692 J**	**547 J**	**699 J**	**105 J**	**633 J**	**126 J**	**253 J**
ARK-03	90-102.5	076-01	P	09/09/2005	pg/L	**3.47 J**	**5.75 NJ**	**265**	**41.6**	**81.5**	**40.5**	**16.7**	**50.3**	**61.7**	**788**
ARK-04	10-15	034-01	P	08/12/2005	pg/L	**0.899 NJ**	**2.25 J**	**428 J**	**234 J**	**52.0 J**	**97.0 J**	**6.09 J**	**57.0 J**	**4.53 J**	**17.4 J**
ARK-04	33-36	035-01	P	08/15/2005	pg/L	<0.461 UJ	**4.57 J**	**359 J**	**12.1 J**	**138 J**	**14.6 J**	**18.1 J**	**14.2 J**	**9.31 J**	**10.9 J**
ARK-04	44-47	033-01	P	08/12/2005	pg/L	<0.480 UJ	**1.94 J**	**54.2 J**	**21.5 J**	**8.71 J**	**13.5 J**	**0.545 J**	**10.1 J**	**0.605 J**	**4.93 J**
ARK-05	18-22	050-01	P	08/17/2005	pg/L	**0.984 NJ**	**1.34 NJ**	**34.8 J**	**27.1 J**	**16.0 J**	**23.1 J**	**6.58 J**	**15.6 J**	**0.846 J**	**4.44 J**
ARK-05	37-41	051-01	P	08/17/2005	pg/L	**1.00 NJ**	**12.7 J**	**328 J**	**51.2 J**	**95.6 J**	**80.2 J**	**11.7 J**	**60.6 J**	**6.78 J**	**36.9 J**
ARK-05	62-67.5	075-01	P	09/08/2005	pg/L	**7.74 J**	**68.1**	**3,310**	**646**	**1,070**	**719**	**183**	**836**	**88.6**	**391**
ARK-06	23-27	058-01	P	08/18/2005	pg/L	<0.470	**0.799**	<1.35	<1.53	<2.02	<1.45	<0.784	<1.42	<0.470	**0.638**
ARK-06	23-27	058-02	D	08/18/2005	pg/L	<0.470	<0.441	<1.35	<1.53	<2.02	<1.45	<0.784	<1.42	<0.470	**1.46**
ARK-06	54-58	059-01	P	08/19/2005	pg/L	<0.475 UJ	**10.4 J**	<1.37 UJ	<1.54 UJ	<2.04 UJ	**10.3 J**	**0.677 J**	**27.8 J**	**0.907 J**	**29.3 J**
ARK-06	76-80	057-01	P	08/18/2005	pg/L	**6.39 J**	**190**	**482**	**457**	**139**	**1,030**	**36.6**	**1,100**	**50.0**	**859**
ARK-06	88-97.5	074-01	P	09/07/2005	pg/L	**1.60 NJ**	**35.9**	**1,090**	**176**	**371**	**298**	**55.0**	**258**	**35.8**	**106**
ARK-07	10-14	007-01	P	08/09/2005	pg/L	**0.590 NJ**	**20.6**	**57.9**	**76.4**	**8.84**	**87.0**	<0.784	**72.5**	**1.57**	**57.5**
ARK-07	22-26	008-01	P	08/09/2005	pg/L	**1.78 NJ**	**30.9**	**392**	**143**	**117**	**123**	**28.3**	**100**	**45.4**	**140**
ARK-07	41-45	006-01	P	08/09/2005	pg/L	**2.07 J**	**248 J**	**1,260 J**	**859 J**	**246 J**	**1,120 J**	**47.7 J**	**929 J**	**35.3 J**	**588 J**
ARK-08	10-15	016-01	P	08/10/2005	pg/L	**0.538 NJ**	**1.02 J**	**26.9**	**10.8**	**7.69**	**12.2**	<0.769	**12.9**	**2.14**	**11.1**
ARK-08	38.5-43.5	015-01	P	08/10/2005	pg/L	<0.470	<0.441 J	**45.6**	<1.53	**15.8**	<1.45 U	<0.784	<1.42	**0.975**	**1.09**
ARK-08	38.5-43.5	015-02	D	08/10/2005	pg/L	<0.480	<0.449	**35.1**	<1.56	**9.22**	**10.3**	<0.800	**10.3**	<0.480	**1.94**
ARK-09	11-16	023-01	P	08/11/2005	pg/L	**0.507 NJ**	<0.449 UJ	<1.38 UJ	<1.56 UJ	<2.06 UJ	<1.48 UJ	<0.800 UJ	<1.45 UJ	<0.480 UJ	<0.449 UJ
ARK-09	30-35	025-01	P	08/12/2005	pg/L	**1.01 NJ**	**3.90 J**	**125 J**	**32.5 J**	**29.2 J**	**32.7 J**	**5.65 J**	**35.7 J**	**5.89 J**	**25.5 J**
ARK-09	52-56	026-01	P	08/12/2005	pg/L	**0.799 NJ**	**1.20 J**	**353 J**	<1.64 UJ	**142 J**	<1.56 UJ	**18.2 J**	<1.52 UJ	**6.30 J**	**7.60 J**
ARK-09	88-97.5	073-01	P	09/06/2005	pg/L	**1.73 NJ**	**7.11 J**	**1,500**	**165**	**406**	**151**	**65.4**	**64.8**	**49.4**	**39.8**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
pg/L = picograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3F
Total Petroleum Hydrocarbon Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP-Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Diesel Range Organics	Residual Range Organics
				Date	Units		
ARK-01	10-15	042-01	P	08/15/05	µg/L	**510**	**1,300**
ARK-01	28.5-31.5	044-01	P	08/16/05	µg/L	**560 J**	**720 J**
ARK-01	50-54	043-01	P	08/16/05	µg/L	<19.0 UJ	<28.0 UJ
ARK-02	36-40	066-01	P	08/22/05	µg/L	**290 J**	<28.0 UJ
ARK-02	76-80	065-01	P	08/19/05	µg/L	<19.0 UJ	<28.0 UJ
ARK-03	22-26	071-01	P	08/23/05	µg/L	<19.0 UJ	<28.0 UJ
ARK-03	54-58	072-01	P	08/23/05	µg/L	<19.0 UJ	<28.0 UJ
ARK-03	76-80	067-01	P	08/22/05	µg/L	<19.0 UJ	<28.0 UJ
ARK-03	90-102.5	076-01	P	09/09/05	µg/L	**0.952 R**	**1.61 R**
ARK-04	10-15	034-01	P	08/12/05	µg/L	**370**	**510**
ARK-04	33-36	035-01	P	08/15/05	µg/L	**850 J**	**2,900 J**
ARK-04	44-47	033-01	P	08/12/05	µg/L	<21.0	<30.0
ARK-05	18-22	050-01	P	08/17/05	µg/L	<19.0	<28.0
ARK-05	37-41	051-01	P	08/17/05	µg/L	<22.0 UJ	<32.0 UJ
ARK-05	62-67.5	075-01	P	09/08/05	µg/L	<19.0	<28.0
ARK-06	23-27	058-01	P	08/18/05	µg/L	**250**	<28.0
ARK-06	23-27	058-02	D	08/18/05	µg/L	**280**	**520**
ARK-06	54-58	059-01	P	08/19/05	µg/L	<19.0 UJ	<28.0 UJ
ARK-06	76-80	057-01	P	08/18/05	µg/L	<19.0	<28.0
ARK-06	88-97.5	074-01	P	09/07/05	µg/L	<19.0	<28.0
ARK-07	10-14	007-01	P	08/09/05	µg/L	<19.0	<28.0
ARK-07	41-45	006-01	P	08/09/05	µg/L	<19.0	**880**
ARK-08	10-15	016-01	P	08/10/05	µg/L	<19.0 UJ	<28.0 UJ
ARK-08	38.5-43.5	015-01	P	08/10/05	µg/L	<19.0	<28.0
ARK-08	38.5-43.5	015-02	D	08/10/05	µg/L	<19.0	<28.0
ARK-09	11-16	023-01	P	08/11/05	µg/L	<19.0	<28.0
ARK-09	30-35	025-01	P	08/12/05	µg/L	**300**	<28.0
ARK-09	52-56	026-01	P	08/12/05	µg/L	<19.0	<28.0
ARK-09	88-97.5	073-01	P	09/06/05	µg/L	<19.0	<28.0

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3G
Carbon 12/13 Isotopic Ratio Analyses of Volatile Organic Compound Groundwater Analytical Results
Stage 1 SCE - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		cis-1,2-Dichloroethene	Chloroform	Trichloroethene	Tetrachloroethene	Chlorobenzene	1,2-Dichlorobenzene	1,4-Dichlorobenzene
				Date	Units							
ARK-01	50-54	043-01	P	08/16/05	δ^{13}C ‰	**-17.7**	bql	coe	bql	**-28.2**	**-27.05**	**-27.1**
ARK-01	28.5-31.5	044-01	P	08/16/05	δ^{13}C ‰	bql	bql	bql	bql	bql	bql	bql
ARK-02	36-40	066-01	P	08/22/05	δ^{13}C ‰	bql	bql	bql	bql	**-24.75**	bql	bql
ARK-03	22-26	071-01	P	08/23/05	δ^{13}C ‰	bql	bql	bql	bql	**-25.6**	**-25.4**	bql
ARK-03	90-102.5	076-01	P	09/09/05	δ^{13}C ‰	**-17.3**	bql	coe	**-28.7**	**-28.1**	**-27**	**-27.6**
ARK-04	44-47	033-01	P	08/12/05	δ^{13}C ‰	bql	bql	bql	bql	bql	**-25**	bql
ARK-04	33-36	035-01	P	08/15/05	δ^{13}C ‰	bql	bql	bql	bql	bql	bql	bql
ARK-05	62-67.5	075-01	P	09/08/05	δ^{13}C ‰	bql	bql	bql	bql	**-26.65**	**-26.1**	**-27.1**
ARK-06	23-27	058-01	P	08/18/05	δ^{13}C ‰	bql	bql	bql	bql	bql	**-25.5**	bql
ARK-06	23-27	058-02	D	08/18/05	δ^{13}C ‰	bql	bql	bql	bql	bql	**-25.25**	bql
ARK-06	88-97.5	074-01	P	09/07/05	δ^{13}C ‰	**-18.6**	bql	bql	bql	**-28.08**	**-27**	**-27.65**
ARK-07	10-14	007-01	P	08/09/05	δ^{13}C ‰	bql	**-10.1**	bql	**-22.8**	bql	bql	bql
ARK-07	22-26	008-01	P	08/09/05	δ^{13}C ‰	bql	**-4.7**	bql	bql	bql	bql	bql
ARK-07	41-45	006-01	P	08/09/05	δ^{13}C ‰	bql	**-19.7**	bql	bql	bql	bql	bql
ARK-08	10-15	016-01	P	08/10/05	δ^{13}C ‰	bql	bql	**-24.1**	**-23**	bql	bql	bql
ARK-09	52-56	026-01	P	08/12/05	δ^{13}C ‰	bql	bql	bql	bql	bql	bql	bql
ARK-09	88-97.5	073-01	P	09/06/05	δ^{13}C ‰	bql	bql	bql	bql	bql	bql	bql

Notes:
Sample Type: P = primary sample; D = field duplicate
δ^{13}C ‰ = deviation of Carbon-13 concentration in parts per mil from the Peedee Belemnite (PDB) standard
bgs = below qround surface
bql = below quantitation limits
coe = peak coelution

TABLE 3H
Total Metals Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP- Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Aluminum	Arsenic	Cadmium	Calcium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Sodium	Vanadium	Zinc
				Date	Units																
ARK-01	10-15	042-01	P	08/15/05	µg/L	**6,870 J**	**13.6**	<0.616	**6,430**	**20.1**	**48.1**	**19,200 J**	**18.4**	**3,040 J**	**883**	<0.200	**18.1 J**	**6,730**	**1,550,000**	**184**	**75.7**
ARK-01	28.5-31.5	044-01	P	08/16/05	µg/L	**94,400 J**	**45.6**	<6,160 UJ	**113,000**	**122**	**706**	**224,000**	**99.2**	**56,800**	**21,400**	<0.200	**126**	**20,200**	**2,350,000**	**570**	**747**
ARK-01	50-54	043-01	P	08/16/05	µg/L	**494,000 J**	**160 J**	<0.616 UJ	**473,000 J**	**599 J**	<3.01 UJ	**2,860,000 J**	**343**	**335,000 J**	**121,000**	<0.200	**737 J**	**78,400 J**	**3,960,000**	**2,110 J**	**3,720 J**
ARK-02	36-40	066-01	P	08/22/05	µg/L	**463,000 J**	**266**	<0.616 UJ	**232,000**	**558 J**	**1,900**	**966,000 J**	**305**	**204,000**	**43,100**	**0.360**	**456**	**49,000**	**1,200,000**	**1,860**	**2,530**
ARK-02	76-80	065-01	P	08/19/05	µg/L	**47,300 J**	**22.5**	<0.616 U	**212,000**	**128**	**332**	**46,200 J**	<1.74	**95,300**	**9,530**	<0.200	**209**	**11,200**	**25,400**	**149**	**9,920**
ARK-03	22-26	071-01	P	08/23/05	µg/L	**1,420 J**	<5.59	<0.616	**16,100**	<2.30	<3.01	**9,230 J**	<1.74	**4,110 J**	**714**	<0.200	<12.5	**3,240 J**	**65,500**	<2.36	<2.60
ARK-03	54-58	072-01	P	08/23/05	µg/L	**256,000 J**	**147**	<0.616 UJ	**460,000**	**245 J**	**700**	**631,000**	**152**	**284,000**	**53,500**	<0.200	**301**	**44,400**	**18,700**	**1,200**	**1,460**
ARK-03	76-80	067-01	P	08/22/05	µg/L	**250,000 J**	**140**	<0.616 UJ	**300,000**	**396 J**	**677**	**612,000 J**	**149**	**186,000**	**42,300**	<0.200	**356**	**39,300**	**185,000**	**1,190**	**2,240**
ARK-03	90-102.5	076-01	P	09/09/05	µg/L	**214,000 J**	**92.9**	<0.616 U	**257,000**	**239**	**408**	**482,000 J**	**149**	**181,000**	**21,000**	<0.200	**227**	**38,700**	**228,000**	**1,060**	**918**
ARK-04	10-15	034-01	P	08/12/05	µg/L	**30,400 J**	<5.59	<0.616 UJ	**9,920**	**34.4**	**269**	**44,200 J**	**128**	**5,110**	**548**	**0.610**	**26.3 J**	**2,630 J**	**471,000**	**93.6**	**114**
ARK-04	33-36	035-01	P	08/15/05	µg/L	**72,800 J**	**27.8**	<0.616 UJ	**55,000**	**72.4**	**128**	**168,000 J**	**44.5**	**34,500**	**5,990**	<0.200	**99.3**	**17,400**	**1,480,000**	**377**	**319**
ARK-04	44-47	033-01	P	08/12/05	µg/L	**1,600 J**	<5.59	<0.616 UJ	**20,200**	**17.4**	<3.01	**9,640 J**	<1.74	**6,370**	**1,940**	<0.200	**43.1**	**7,480**	**1,150,000**	**19.7 J**	**56.2**
ARK-05	18-22	050-01	P	08/17/05	µg/L	**20,300 J**	**29.0**	<6,160 UJ	**4,460 J**	**39.6**	**117**	**23,900**	**26.5**	**2,280 J**	**314**	<0.200	125,000	**1,870 J**	**244,000 J**	**156**	**54.3**
ARK-05	37-41	051-01	P	08/17/05	µg/L	**546,000 J**	**194**	<6,160 UJ	**236,000**	**519**	**1,240**	**3,200,000 J**	**462**	**253,000**	**56,600**	<0.200	**559**	**50,600**	**471,000 J**	**1,950**	**2,390**
ARK-05	62-67.5	075-01	P	09/08/05	µg/L	**544,000 J**	**199**	**22.0 J**	**208,000**	**683**	**1,530**	**4,820,000 J**	**583**	**276,000**	**21,000**	<0.200	**563**	**59,100**	**849,000**	**1,950**	**2,360**
ARK-06	23-27	058-01	P	08/18/05	µg/L	<54.3 U	<5.59	<0.616	**24,600**	<2.30	<3.01	**3,630**	<1.74	**2,450 J**	**581**	<0.200	<12.5	**11,200**	**66,700**	<2.36	**3.50 J**
ARK-06	23-27	058-02	D	08/18/05	µg/L	<54.3 U	<5.59	<0.616	**23,000**	<2.30	<3.01	**3,480**	<1.74	**1,860 J**	**527**	<0.200	<12.5	**10,700**	**62,200**	<2.36	<2.60
ARK-06	54-58	059-01	P	08/19/05	µg/L	**42,200 J**	**27.9 J**	<0.616 UJ	**805,000 J**	**31.8 J**	**68.0 J**	**58,900 J**	<1.74 UJ	**280,000 J**	**74,400 J**	<0.200	**71.8 J**	**20,000 J**	**31,400**	**226 J**	**324 J**
ARK-06	76-80	057-01	P	08/18/05	µg/L	**10,800 J**	<5.59	<0.616 UJ	**684,000**	**203**	**134**	**40,800 J**	<1.74 UJ	**311,000**	**43,200**	<0.200	<12.5	**16,400**	**33,300**	**38.9 J**	**1,520**
ARK-06	88-97.5	074-01	P	09/07/05	µg/L	**408,000 J**	**176**	**9.00 J**	**314,000**	**440**	**870**	**935,000 J**	**300**	**278,000**	**30,800**	<0.200	**460**	**52,700**	**69,700**	**1,590**	**1,710**
ARK-07	10-14	007-01	P	08/09/05	µg/L	**21,900**	**36.7**	<0.616	**4,780 J**	**49.0**	**59.8**	**47,500**	**23.6**	**5,010**	**525**	**1.10**	**27.6 J**	**1,150 J**	**442,000**	**129**	**74.1**
ARK-07	41-45	006-01	P	08/09/05	µg/L	**246,000 J**	**68.5**	<0.616 UJ	**83,400 J**	**325 J**	**1,990 J**	**476,000 J**	**229 J**	**79,200 J**	**7,610 J**	**0.840**	**275 J**	**21,600**	**1,150,000**	**776 J**	**1,910 J**
ARK-08	10-15	016-01	P	08/10/05	µg/L	**45,700**	**35.4**	<0.616	**2,810 J**	**338**	**136**	**102,000**	**27.3**	**7,190**	**1,310**	**0.940**	**59.7**	**7,770**	**240,000**	**222**	**118**
ARK-08	38.5-43.5	015-01	P	08/10/05	µg/L	**108,000**	**45.5**	<0.616 UJ	**63,500**	**114**	**165**	**266,000**	**67.5**	**61,400**	**4,220**	<0.200	**110**	**13,400**	**179,000**	**582**	**467**
ARK-08	38.5-43.5	015-02	D	08/10/05	µg/L	**45,600**	**19.8**	<0.616	**36,000**	**46.4**	**63.2**	**87,600**	**23.6**	**25,700**	**1,470**	<0.200	**39.5 J**	**7,210**	**198,000**	**207**	**161**
ARK-09	11-16	023-01	P	08/11/05	µg/L	**1,020**	**45.0**	<0.616	**45,200**	<2.30	**6.00 J**	**26,700**	<1.74	**14,500**	**4,620**	<0.200	<12.5	**4,640 J**	**99,900**	**19.2 J**	<2.60
ARK-09	30-35	025-01	P	08/12/05	µg/L	**7,620 J**	<5.59	<0.616 UJ	**1,140,000**	**14.7**	<3.01	**320,000 J**	**33.8**	**484,000**	**87,100**	<0.200	**97.8**	**8,800**	**2,440,000**	**45.2 J**	**111**
ARK-09	52-56	026-01	P	08/12/05	µg/L	**1,120 J**	<5.59	<0.616 UJ	**388,000**	<2.30	<3.01	**7,460 J**	<1.74	**235,000**	**11,200**	<0.200	**17.3 J**	**13,500**	**25,600**	**19.0 J**	**966**
ARK-09	88-97.5	073-01	P	09/06/05	µg/L	**485,000 J**	**158**	<0.616 UJ	**288,000 J**	**556 J**	**1,290 J**	**3,300,000 J**	**508 J**	**325,000 J**	**30,700 J**	<0.200	**670 J**	**56,100 J**	**45,400 J**	**1,470 J**	**2,080 J**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3I
Dissolved Metals Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Aluminum	Arsenic	Cadmium	Calcium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Sodium	Vanadium	Zinc
				Date	Units																
ARK-01	28.5-31.5	044-01	P	08/16/05	µg/L	<543,000	<55,900	<6,160 UJ	**92,400**	<23,000	<30,100	**4,670**	<17,400	**23,500**	**18,400**	<0.200	**30.1 J**	**9,680**	**2,370,000**	<23,600	**84.8**
ARK-01	50-54	043-01	P	08/16/05	µg/L	**587 J**	<5.59	<0.616 UJ	**679,000**	<2.30	<3.01	**14,100 J**	<1.74 UJ	**204,000 J**	**45,800**	<0.200	**98.9**	**34,100**	**3,880,000**	**8.90 J**	**794 J**
ARK-02	36-40	066-01	P	08/22/05	µg/L	**1,250 J**	<5.59	<0.616	**171,000**	<2.30	<3.01	**2,820**	<1.74	**52,900**	**14,400**	<0.200	**35.2 J**	**10,100**	**1,580,000**	<2.36	**50.0**
ARK-02	76-80	065-01	P	08/19/05	µg/L	<54.3	<5.59	<0.616	**127,000**	<2.30	<3.01	**3,260 J**	<1.74	**68,300**	**2,540**	<0.200	**25.7 J**	**7,110**	**30,100**	<2.36	**668**
ARK-03	22-26	071-01	P	08/23/05	µg/L	<54.3	<5.59	<0.616	**15,600**	<2.30	<3.01	**6,190 J**	<1.74	**3,730 J**	**678**	<0.200	<12.5	**3,740 J**	**68,800**	<2.36	<2.60
ARK-03	54-58	072-01	P	08/23/05	µg/L	<54.3	<5.59	<0.616	**269,000**	<2.30	<3.01	**3,170 J**	<1.74 UJ	**148,000**	**17,400**	<0.200	<12.5	**13,000**	**20,300**	<2.36	**39.2**
ARK-03	76-80	067-01	P	08/22/05	µg/L	<54.3	<5.59	<0.616	**56,800**	<2.30	<3.01	**10,700 J**	<1.74	**27,500**	**4,120**	<0.200	**19.6 J**	**7,820**	**248,000**	<2.36	**101**
ARK-03	90-102.5	076-01	P	09/09/05	µg/L	<54.3	<5.59	<0.616	**226,000**	<2.30	<3.01	**1,400 J**	<1.74	**106,000**	**13,600**	**0.140 J**	**14.4 J**	**16,800**	**229,000**	**11.8 J**	**19.7 J**
ARK-04	10-15	034-01	P	08/12/05	µg/L	**1,260 J**	<5.59	<0.616 UJ	**2,770 J**	<2.30	<3.01	**2,890 J**	**17.6**	**374 J**	**63.3**	<0.200	**4.00 J**	**1,310 J**	**449,000**	**18.4 J**	**13.6 J**
ARK-04	33-36	035-01	P	08/15/05	µg/L	**498 J**	<5.59	<0.616 UJ	**36,700**	<2.30	<3.01	**1,850 J**	<1.74	**11,200**	**3,810**	<0.200	**32.7 J**	**8,150**	**1,250,000**	**13.0 J**	**16.3 J**
ARK-04	44-47	033-01	P	08/12/05	µg/L	**336 J**	<5.59	<0.616 UJ	**18,300**	**2.50 J**	<3.01	**6,580 J**	<1.74	**5,490**	**1,770**	<0.200	**33.3 J**	**7,440**	**1,080,000**	**12.7 J**	**13.2 J**
ARK-05	18-22	050-01	P	08/17/05	µg/L	**1,070 J**	**24.7**	<6,160 UJ	**2,010 J**	**20.5**	<30,100 U	**3,940**	<17,400 U	<3,940,000	**158**	<0.200	<125,000	**1,000 J**	**239,000 J**	**89.5**	**11.9 J**
ARK-05	37-41	051-01	P	08/17/05	µg/L	**2,090 J**	<55,900	<6,160 UJ	**15,900**	<23,000 U	<30,100 U	**10,900**	<17,400 U	**9,090**	**220**	<0.200	<125,000	**4,760 J**	**284,000 J**	**19.3 J**	**29.2**
ARK-05	62-67.5	075-01	P	09/08/05	µg/L	**941 J**	<5.59	<0.616	**136,000**	**11.3**	**4.20 J**	**2,250 J**	<1.74	**67,700**	**3,910**	<0.200	**20.3 J**	**19,600**	**822,000**	**37.1 J**	**12.6 J**
ARK-06	23-27	058-01	P	08/18/05	µg/L	<54.3 U	<5.59	<0.616	**24,800**	<2.30	<3.01	**2,780**	<1.74	**2,100 J**	**597**	<0.200	<12.5	**12,000**	**66,900**	<2.36	<2.60
ARK-06	23-27	058-02	D	08/18/05	µg/L	<54.3 U	<5.59	<0.616	**23,700**	<2.30	<3.01	**2,970 J**	<1.74	**2,240 J**	**612**	<0.200	<12.5	**11,500**	**65,900**	<2.36	**4.80 J**
ARK-06	54-58	059-01	P	08/19/05	µg/L	<54.3 U	<5.59 UJ	<0.616 UJ	**663,000 J**	<2.30	<3.01	**1,590 J**	<1.74 UJ	**279,000**	**53,600 J**	<0.200	<12.5 UJ	**13,600**	**34,500**	<2.36	**80.6**
ARK-06	76-80	057-01	P	08/18/05	µg/L	<54.3 U	<5.59	<0.616 UJ	**680,000**	<2.30 UJ	<3.01	<70.9 U	<1.74 UJ	**298,000**	**42,500**	<0.200	**9.40**	**16,200**	**30,000**	<2.36	**57.1**
ARK-06	88-97.5	074-01	P	09/07/05	µg/L	**2,380 J**	<5.59	<0.616	**230,000**	<2.30	**6.80 J**	**5,560 J**	<1.74	**120,000**	**14,300**	<0.200	**13.2 J**	**11,800**	**84,600**	**19.6 J**	**22.1**
ARK-07	10-14	007-01	P	08/09/05	µg/L	**3,660**	<5.59	<0.616	**1,690 J**	**26.6**	**20.3 J**	**9,170**	**3.80 J**	**1,070 J**	**137**	**0.180 J**	**9.70 J**	<584	**390,000**	**66.4**	**31.8**
ARK-07	41-45	006-01	P	08/09/05	µg/L	**3,000**	<5.59	<0.616	**3,590 J**	<2.30	**10.9 J**	**8,130**	**2.20 J**	**1,090 J**	**81.2**	<0.200	**6.00 J**	**2,600 J**	**966,000**	**31.9 J**	**31.9**
ARK-08	10-15	016-01	P	08/10/05	µg/L	**5,000**	**9.00 J**	<0.616	**920 J**	**163**	**66.9**	**13,700**	**3.50 J**	**925 J**	**197**	**0.270**	**24.1 J**	**4,690 J**	**247,000**	**42.8 J**	**28.9**
ARK-08	38.5-43.5	015-01	P	08/10/05	µg/L	**616**	<5.59	<0.616	**26,400**	<2.30	**4.60 J**	**1,540**	<1.74	**12,000**	**212**	<0.200	**4.10 J**	**3,580 J**	**176,000**	**23.8 J**	**15.0 J**
ARK-08	38.5-43.5	015-02	D	08/10/05	µg/L	<54.3	**4.80 J**	<0.616	**35,400**	<2.30	**4.10 J**	**922**	<1.74	**16,000**	**338**	<0.200	**5.50 J**	**3,710 J**	**192,000**	**24.0 J**	**18.7 J**
ARK-09	11-16	023-01	P	08/11/05	µg/L	<54.3	**9.80 J**	<0.616	**43,300**	<2.30	**3.30 J**	<70.9	<1.74	**13,100**	**4,210**	<0.200	<12.5	**4,520 J**	**101,000**	<2.36	**12.2 J**
ARK-09	30-35	025-01	P	08/12/05	µg/L	<54.3	<5.59	<0.616 UJ	**1,140,000**	<2.30	<3.01	**321,000 J**	**28.8**	**505,000**	**87,000**	<0.200	**81.2**	**8,410**	**2,450,000**	**7.70 J**	**81.9**
ARK-09	52-56	026-01	P	08/12/05	µg/L	<54.3	<5.59	<0.616 UJ	**381,000**	<2.30	<3.01	**3,240 J**	<1.74	**229,000**	**10,900**	<0.200	**12.9 J**	**13,200**	**23,100**	**12.6 J**	**632**
ARK-09	88-97.5	073-01	P	09/06/05	µg/L	<54.3	<5.59	<0.616	**115,000**	<2.30	<3.01	<70.9	<1.74	**58,600**	**4,550**	<0.200	**6.10 J**	**7,710**	**38,700**	**9.00 J**	<2.60

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 3J
Chloride and Ammonia Nitrogen Groundwater Analytical Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Chloride	Ammonia-Nitrogen
				Date	Units		
ARK-01	10-15	042-01	P	08/15/05	mg/L	**1,430**	**2.40**
ARK-01	28.5-31.5	044-01	P	08/16/05	mg/L	**3,960**	**1.30**
ARK-01	50-54	043-01	P	08/16/05	mg/L	**8,270**	**0.460 J**
ARK-02	36-40	066-01	P	08/22/05	mg/L	**2,460**	**0.520**
ARK-02	76-80	065-01	P	08/19/05	mg/L	**128**	**0.290**
ARK-03	22-26	071-01	P	08/23/05	mg/L	**19.4**	**4.30**
ARK-03	54-58	072-01	P	08/23/05	mg/L	**653**	**1.40**
ARK-03	76-80	067-01	P	08/22/05	mg/L	**96.7**	**2.00**
ARK-03	90-102.5	076-01	P	09/09/05	mg/L	**691**	**0.340**
ARK-04	10-15	034-01	P	08/12/05	mg/L	**92.7**	**0.330**
ARK-04	33-36	035-01	P	08/15/05	mg/L	**1,480**	**0.570**
ARK-04	44-47	033-01	P	08/12/05	mg/L	**1,670**	**0.280**
ARK-05	18-22	050-01	P	08/17/05	mg/L	**17.8**	**0.520**
ARK-05	37-41	051-01	P	08/17/05	mg/L	**63.1**	**0.110**
ARK-05	62-67.5	075-01	P	09/08/05	mg/L	**1,470**	**1.70**
ARK-06	23-27	058-01	P	08/18/05	mg/L	**21.3**	**3.20**
ARK-06	23-27	058-02	D	08/18/05	mg/L	**21.0**	**3.00**
ARK-06	54-58	059-01	P	08/19/05	mg/L	**1,510 J**	**0.490 J**
ARK-06	76-80	057-01	P	08/18/05	mg/L	**1,860**	**0.210**
ARK-06	88-97.5	074-01	P	09/07/05	mg/L	**567**	**0.350**
ARK-07	10-14	007-01	P	08/09/05	mg/L	**181**	**0.190**
ARK-07	22-26	008-01	P	08/09/05	mg/L	**106**	NT
ARK-07	41-45	006-01	P	08/09/05	mg/L	**734**	**0.110**
ARK-08	10-15	016-01	P	08/10/05	mg/L	**66.5**	**0.220**
ARK-08	38.5-43.5	015-01	P	08/10/05	mg/L	**122**	**0.140**
ARK-08	38.5-43.5	015-02	D	08/10/05	mg/L	**160**	**0.100**
ARK-09	11-16	023-01	P	08/11/05	mg/L	**31.0**	**1.10**
ARK-09	30-35	025-01	P	08/12/05	mg/L	**8,170**	NT
ARK-09	52-56	026-01	P	08/12/05	mg/L	**1,260**	**0.290**
ARK-09	88-97.5	073-01	P	09/06/05	mg/L	**96.4 J**	**0.770**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
mg/L= milligrams per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 4A
Volatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene
				Date	Units																	
RP-11	7.5-8	128-01	P	11/17/2005	µg/kg	<6,050	<6,050	<2,300	<2,660	<6,050	<6,050	<6,050	<4,720	<2,900	<3,630	**25,000**	<4,840	<2,180	<6,050	<2,300	<6,050	**8,200**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/kg = micrograms per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 4A
Volatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone (MEK)	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-methyl-2-pentanone (MIBK)	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane
				Date	Units																	
RP-11	7.5-8	128-01	P	11/17/2005	µg/kg	<2,180	<2,540	<3,750	<6,050	<14,500 UJ	<3,030	<8,590 UJ	<2,660	**2,900 J**	<6,410 UJ	<56,900 UJ	<2,180	<2,180	<6,050	<6,050	<2,660	<9,800 UJ

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/kg = micrograms per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 4A
Volatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Iodomethane	Isobutyl alcohol	Isopropylbenzene	m,p Xylenes
				Date	Units																	
RP-11	7.5-8	128-01	P	11/17/2005	µg/kg	<2,180	<6,050	<2,060	<2,900	<6,050	<3,630	<2,060	<2,060	<2,300	<6,050	<6,050	**4,000 J**	<6,170	<6,050 UJ	<254,000 R	**1,900 J**	**6,400**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/kg = micrograms per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 4A
Volatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Methylene chloride	Methyl-t-Butyl Ether	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene	sec-Butylbenzene	Styrene	tertButylbenzene	Tetrachloroethene	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene	Trichlorofluoromethane	Vinyl chloride
				Date	Units																
RP-11	7.5-8	128-01	P	11/17/2005	µg/kg	<6,290	<6,000	<3,870 J	<3,510	<2,180	**5,400 J**	<6,050	<6,050	<6,050	<6,290 UJ	<2,180	<2,780	<6,050	<2,660	<6,050	<2,180

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/kg = micrograms per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 4B
Semivolatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	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-Dichlorophenol	2,6-Dinitrotoluene	2-Chloronaphthalene	2-Chlorophenol	2-Methyl 4,6-dinitrophenol	2-Methylnaphthalene	2-Methylphenol
				Date	Units																		
RP-11	7.5-8	128-01	P	11/17/2005	µg/kg	<8,300	<8,000	<8,100	<7,800	<7,600	<6,100	<7,700	<7,000	<17,000	<33,000 UJ	<7,900	<6,100	<7,700	<8,900	<7,400	<8,900 UJ	**360,000**	<6,200

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/kg = micrograms per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 4B
Semivolatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		2-Nitroaniline	2-Nitrophenol	3,3'-Dichlorobenzidine	3-Nitroaniline	4-Bromophenylphenyl ether	4-Chloro 3-methylphenol	4-Chloroaniline	4-Chlorophenylphenyl ether	4-Methylphenol (p-cresol)	4-Nitroaniline	4-Nitrophenol	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene
				Date	Units																	
RP-11	7.5-8	128-01	P	11/17/2005	µg/kg	<7,300	<6,900	<14,000 UJ	<10,000	<9,900	<6,000	<18,000 UJ	<10,000	<16,000 UJ	<7,500	<11,000	**240,000**	**10,000**	**160,000**	**91,000**	**99,000**	**58,000**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/kg = micrograms per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 4B
Semivolatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Benzo(ghi)perylene	Benzo(k)fluoranthene	Benzoic acid	Benzyl alcohol	Bis(2-Chloro-ethoxy) methane	Bis(2-Chloroethyl) ether	Bis(2-Chloroisopropyl) ether	Bis(2-Ethyl-hexyl) pthalate	Butylbenzylphthalate	Chrysene	Dibenzo(a,h)anthracene	Dibenzofuran	Diethylphthalate	Dimethylphthalate	Di-n-butylphthalate	Di-n-octyl phthalate
				Date	Units																
RP-11	7.5-8	128-01	P	11/17/2005	µg/kg	**81,000 J**	**65,000 J**	<33,000 UJ	<8,100	<8,400	<7,700	<7,500	<10,000	<9,200	**100,000**	**9,600 J**	**13,000**	<8,900	<8,600	<8,300	<10,000

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/kg = micrograms per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 4B
Semivolatile Organic Compound Soil Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Fluoranthene	Fluorene	Hexachlorobenzene	Hexachlorobutadiene	Hexachloro-cyclopentadiene	Hexachloroethane	Indeno(1,2,3-cd)pyrene	Isophorone	Naphthalene	N-Nitrosodimethylamine	N-Nitrosodinpropyl amine	N-Nitrosodiphenylamine	Pentachlorophenol	Phenanthrene	Phenol	Pyrene
				Date	Units																
RP-11	7.5-8	128-01	P	11/17/2005	µg/kg	**300,000**	**140,000 J**	<8,100	<9,000	<7,000 UJ	<8,500 UJ	**29,000 J**	<6,400	**700,000**	<6,400	<7,400 UJ	<6,200	<8,900 UJ	**630,000**	<7,600	**460,000 J**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/kg = micrograms per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 4C
Dioxin-Furan Soil Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		1,2,3,4,6,7,8,9-OCDD	1,2,3,4,6,7,8,9-OCDF	1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-HxCDF	1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-HxCDF	1,2,3,7,8-PeCDD	1,2,3,7,8-PeCDF	2,3,4,6,7,8-HxCDF	2,3,4,7,8-PeCDF
				Date	Units															
RP-11	7.5-8	128-01	P	11/17/2005	pg/g	**7,400 J**	**290 J**	**1,300 J**	**35.0 J**	<2.40 UJ	<2.30 UJ	<2.80 UJ	**17.0 J**	<1.00 UJ	<11.0 UJ	<1.20 UJ	<1.70	<0.980	<1.10 UJ	<0.960

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
pg/g = picograms per gram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 4C
Dioxin-Furan Soil Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		2,3,7,8-TCDD	2,3,7,8-TCDF	Total HpCDD	Total HpCDF	Total HxCDD	Total HxCDF	Total PeCDD	Total PeCDF	Total TCDD	Total TCDF
				Date	Units										
RP-11	7.5-8	128-01	P	11/17/2005	pg/g	<2.70	<5.00	**3,200 J**	**180 J**	**220 J**	**19.0 J**	<1.70	<2.00	<2.70	<5.00

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
pg/g = picograms per gram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 4D
Total Petroleum Hydrocarbon Soil Analytical Results
Stage 1 Source Control Evaluation- Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Diesel Range Organics	Residual Range Organics
				Date	Units		
RP-11	7.5-8	128-01	P	11/17/2005	mg/kg	**23,000**	**11,000**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
mg/kg= milligrams per kilogram
< = Not detected at or above method detection limit
J = estimated result

TABLE 4E
Total Metal Soil Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Aluminum	Arsenic	Cadmium	Calcium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Sodium	Vanadium	Zinc
				Date	Units																
RP-11	7.5-8	128-01	P	11/17/2005	mg/kg	**8,780**	**3.00 J**	<0.080 UJ	**3,630**	**11.0**	**14.0**	**20,800**	**13.0 J**	**2,590 J**	**180 J**	<0.015	**15.1**	**525**	**327 J**	**60.3**	**45.1 J**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
mg/kg= milligrams per kilogram
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 4F
Total Organic Carbon Soil Analytical Results
Stage 1 Source Control Evaluation- Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Total Organic Carbon
				Date	Units	
RP-11	28-29	141-01	P	12/01/2005	mg/kg	**12,900**
RP-11	154-155	140-01	P	12/01/2005	mg/kg	**5,720**
RP-11	208-210	138-01	P	11/28/2005	mg/kg	**1,060**
SIL-02	216-218	121-01	P	11/15/2005	mg/kg	**638**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
mg/kg = milligrams per kilogram
< = Not detected at or above method detection limit

TABLE 5A
Volatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene
				Date	Units														
RP-11	27-31	120-01	P	11/15/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	**0.230 J**	<0.051	<0.085	<0.065
RP-11	96-100	122-01	P	11/15/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
RP-11	96-100	122-02	D	11/15/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
RP-11	126-130	123-01	P	11/15/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
RP-11	148-152	124-01	P	11/15/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	<0.065
RP-11	190-190	135-01	P	11/18/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051 UJ	<0.085	**19.0**
RP-11	210-216	139-01	P	11/28/2005	µg/L	<1.75	<1.39	<1.42	<2.24	<3.33	<3.63	<5.14	<2.72	<1.45	<2.06	<1.33	<1.54 UJ	<2.57	**210**
SIL-01	26.5-31.5	101-01	P	11/01/2005	µg/L	<92.8	<73.6	<75.2	<118	<176	<192	<272	<144	<76.8	<109	**20.0**	<81.6 UJ	<136	<104
SIL-01	96-100	115-01	P	11/11/2005	µg/L	<0.058 UJ	<0.046 UJ	<0.047 UJ	<0.074 UJ	<0.110 UJ	<0.120 UJ	<0.170 UJ	<0.090 UJ	<0.048 UJ	<0.068 UJ	**0.300 J**	<0.051 UJ	<0.085 UJ	<0.065 UJ
SIL-01	126-130	116-01	P	11/11/2005	µg/L	<0.058 UJ	<0.046 UJ	<0.047 UJ	<0.074 UJ	<0.110 UJ	<0.120 UJ	<0.170 UJ	<0.090 UJ	<0.048 UJ	<0.068 UJ	<0.044 UJ	<0.051 UJ	<0.085 UJ	<0.065 UJ
SIL-01	156-160	117-01	P	11/11/2005	µg/L	<0.058 UJ	<0.046 UJ	<0.047 UJ	<0.074 UJ	<0.110 UJ	<0.120 UJ	<0.170 UJ	<0.090 UJ	<0.048 UJ	<0.068 UJ	<0.044 UJ	<0.051 UJ	<0.085 UJ	**0.940 J**
SIL-01	184-188	118-01	P	11/14/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	**0.810 J**
SIL-01	207-208	109-01	P	11/07/2005	µg/L	<0.362	<0.288	<0.294	<0.463	<0.688	<0.750	<1.06	<0.563	<0.300	<0.425	<0.275	<0.319	<0.531	**110**
SIL-01	212-217	114-01	P	11/08/2005	µg/L	<0.488	<0.387	<0.395	<0.622	<0.925	<1.01	<1.43	<0.757	<0.404	<0.572	<0.370	<0.429	<0.715	**130**
SIL-02	28-32	127-01	P	11/17/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051 UJ	<0.085	<0.065
SIL-02	96-100	131-01	P	11/17/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051 UJ	<0.085	<0.065
SIL-02	126-130	132-01	P	11/17/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051 UJ	<0.085	<0.065
SIL-02	156-160	133-01	P	11/18/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051 UJ	<0.085	<0.065
SIL-02	156-160	133-02	D	11/18/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051 UJ	<0.085	<0.065
SIL-02	186-190	134-01	P	11/18/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051 UJ	<0.085	<0.065
SIL-02	214-216	119-01	P	11/14/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051	<0.085	**31.0**
SIL-03	31-35	125-01	P	11/16/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051 UJ	<0.085	<0.065
SIL-03	95-99	126-01	P	11/16/2005	µg/L	<3.71	<2.94	<3.01	<4.74	<7.04	<7.68	<10.9	<5.76	<3.07	<4.35	<2.82	<3.26 UJ	<5.44	**240**
SIL-03	110-130	142-01	P	12/06/2005	µg/L	<8.21	<6.51	<6.66	<10.5	<15.6	<17.0	<24.1	<12.7	<6.80	<9.63	<6.23	<7.22 UJ	<12.0	**300**
SIL-04	26-30	136-01	P	11/18/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051 UJ	<0.085	<0.065
SIL-04	70-74	137-01	P	11/21/2005	µg/L	<0.058	<0.046	<0.047	<0.074	<0.110	<0.120	<0.170	<0.090	<0.048	<0.068	<0.044	<0.051 UJ	<0.085	**0.430 J**
SIL-04	80-89	144-01	P	12/09/2005	µg/L	<3.09	<2.45	<2.50	<3.94	<5.86	<6.39	<9.06	<4.80	<2.56	<3.62	<2.34	<2.72	<4.53	**230**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 5A
Volatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone (MEK)	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-methyl-2-pentanone (MIBK)
				Date	Units													
RP-11	27-31	120-01	P	11/15/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570
RP-11	96-100	122-01	P	11/15/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570
RP-11	96-100	122-02	D	11/15/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570
RP-11	126-130	123-01	P	11/15/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570
RP-11	148-152	124-01	P	11/15/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	**8.00**	<0.049	<0.590	<0.077	<0.045	<0.570
RP-11	190-190	135-01	P	11/18/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	**3.50**	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570
RP-11	210-216	139-01	P	11/28/2005	µg/L	<2.87	<1.78	<1.21	<1.09	<2.90	**58.0**	<5.45	<24.8	<1.48	<17.8	<2.33	<1.36	<17.2
SIL-01	26.5-31.5	101-01	P	11/01/2005	µg/L	<152	<94.4	<64.0	<57.6	<154	<115	<288	<1,310	<78.4	<944	<123	<72.0	<912
SIL-01	96-100	115-01	P	11/11/2005	µg/L	<0.095 UJ	<0.059 UJ	<0.040 UJ	<0.036 UJ	<0.096 UJ	<0.072 UJ	<0.180 UJ	<0.820 UJ	<0.049 UJ	<0.590 UJ	<0.077 UJ	<0.045 UJ	<0.570 UJ
SIL-01	126-130	116-01	P	11/11/2005	µg/L	<0.095 UJ	<0.059 UJ	<0.040 UJ	<0.036 UJ	<0.096 UJ	<0.072 UJ	<0.180 UJ	**8.60 J**	<0.049 UJ	<0.590 UJ	<0.077 UJ	<0.045 UJ	<0.570 UJ
SIL-01	156-160	117-01	P	11/11/2005	µg/L	**0.340 J**	<0.059 UJ	<0.040 UJ	<0.036 UJ	<0.096 UJ	<0.072 UJ	<0.180 UJ	**6.40 J**	<0.049 UJ	<0.590 UJ	<0.077 UJ	<0.045 UJ	<0.570 UJ
SIL-01	184-188	118-01	P	11/14/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	**0.440 J**	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570
SIL-01	207-208	109-01	P	11/07/2005	µg/L	<0.594	<0.369	<0.250	<0.225	<0.600	**30.0**	<1.13	<5.13	<0.306	<3.69	<0.481	<0.281	<3.56
SIL-01	212-217	114-01	P	11/08/2005	µg/L	<0.799	<0.496	<0.336	<0.303	<0.807	**35.0**	<1.51	<6.90	<0.412	<4.96	<0.648	<0.378	<4.79
SIL-02	28-32	127-01	P	11/17/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570
SIL-02	96-100	131-01	P	11/17/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570
SIL-02	126-130	132-01	P	11/17/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570
SIL-02	156-160	133-01	P	11/18/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570
SIL-02	156-160	133-02	D	11/18/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570
SIL-02	186-190	134-01	P	11/18/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570
SIL-02	214-216	119-01	P	11/14/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	**8.90**	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570
SIL-03	31-35	125-01	P	11/16/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570
SIL-03	95-99	126-01	P	11/16/2005	µg/L	<6.08	<3.78	<2.56	<2.30	<6.14	**65.0**	<11.5	<52.5	<3.14	<37.8	<4.93	<2.88	<36.5
SIL-03	110-130	142-01	P	12/06/2005	µg/L	<13.5 UJ	<8.35	<5.66	<5.10	<13.6	**90.0**	<25.5	<116	<6.94 UJ	<83.5	<10.9	<6.37	<80.7
SIL-04	26-30	136-01	P	11/18/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570
SIL-04	70-74	137-01	P	11/21/2005	µg/L	<0.095	<0.059	<0.040	<0.036	<0.096	<0.072	<0.180	<0.820	<0.049	<0.590	<0.077	<0.045	<0.570
SIL-04	80-89	144-01	P	12/09/2005	µg/L	<5.06	<3.14	<2.13	**6.90 J**	<5.12	**64.0**	<9.59	<43.7	<2.61	<31.4	<4.10	<2.40	<30.4

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 5A
Volatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane
RP-11	27-31	120-01	P	11/15/2005	µg/L	**3.10 J**	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	<0.150	<0.110	<0.046	<0.240 UJ	<0.037	**0.340 J**
RP-11	96-100	122-01	P	11/15/2005	µg/L	**6.60 J**	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	**0.780 J**	<0.110	<0.046	<0.240 UJ	**0.300 J**	<0.240
RP-11	96-100	122-02	D	11/15/2005	µg/L	<1.10 UJ	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	**0.350 J**	<0.110	<0.046	<0.240 UJ	<0.037	<0.240
RP-11	126-130	123-01	P	11/15/2005	µg/L	**7.00 J**	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	**1.80**	<0.110	<0.046	<0.240 UJ	<0.037	<0.240
RP-11	148-152	124-01	P	11/15/2005	µg/L	**29.0 J**	**0.450 J**	<0.055	<0.075	<0.086	<0.044	<0.110	**0.830 J**	<0.110	<0.046	<0.240 UJ	**0.390 J**	<0.240
RP-11	190-190	135-01	P	11/18/2005	µg/L	**6.30 J**	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110 UJ	<0.150	<0.110	**1.60**	<0.240 UJ	<0.037	<0.240 UJ
RP-11	210-216	139-01	P	11/28/2005	µg/L	<33.3 UJ	**1.30 J**	<1.66	<2.27	<2.60	<1.33	<3.33 UJ	<4.54	<3.33	**21.0**	<7.26 UJ	<1.12	<7.26 UJ
SIL-01	26.5-31.5	101-01	P	11/01/2005	µg/L	<1,760	<208	<88.0	<120	<138	<70.4	<176	<240	<176	<73.6	<384 UJ	<59.2	<384
SIL-01	96-100	115-01	P	11/11/2005	µg/L	**4.70 J**	**15.0 J**	<0.055 UJ	<0.075 UJ	<0.086 UJ	<0.044 UJ	<0.110 UJ	**1.40 J**	<0.110 UJ	<0.046 UJ	<0.240 UJ	**1.20 J**	<0.240 UJ
SIL-01	126-130	116-01	P	11/11/2005	µg/L	**21.0 J**	**5.30 J**	<0.055 UJ	<0.075 UJ	<0.086 UJ	<0.044 UJ	<0.110 UJ	**0.890 J**	<0.110 UJ	<0.046 UJ	<0.240 UJ	**3.20 J**	<0.240 UJ
SIL-01	156-160	117-01	P	11/11/2005	µg/L	**22.0 J**	**2.20 J**	<0.055 UJ	<0.075 UJ	<0.086 UJ	<0.044 UJ	<0.110 UJ	**1.10 J**	<0.110 UJ	**1.90 J**	<0.240 UJ	**0.610 J**	<0.240 UJ
SIL-01	184-188	118-01	P	11/14/2005	µg/L	**7.10 J**	**0.350 J**	<0.055	<0.075	<0.086	<0.044	<0.110	**0.520 J**	<0.110	<0.046	<0.240 UJ	**0.630 J**	<0.240
SIL-01	207-208	109-01	P	11/07/2005	µg/L	<6.88	<0.813	<0.344	<0.469	<0.537	<0.275	<0.688	<0.938	<0.688	**8.70**	<1.50 UJ	**1.00 J**	<1.50
SIL-01	212-217	114-01	P	11/08/2005	µg/L	**7.60 J**	<1.09	<0.463	<0.631	<0.723	<0.370	<0.925	<1.26	<0.925	**11.0**	<2.02 UJ	<0.311	<2.02
SIL-02	28-32	127-01	P	11/17/2005	µg/L	**4.40 J**	**1.10**	<0.055	<0.075	<0.086	<0.044	<0.110 UJ	<0.150	<0.110	<0.046	<0.240 UJ	<0.037	<0.240 UJ
SIL-02	96-100	131-01	P	11/17/2005	µg/L	**3.00 J**	**0.320 J**	<0.055	<0.075	<0.086	<0.044	<0.110 UJ	<0.150 U	<0.110	<0.046	<0.240 UJ	<0.037	<0.240 UJ
SIL-02	126-130	132-01	P	11/17/2005	µg/L	**2.20 J**	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110 UJ	<0.150 U	<0.110	<0.046	<0.240 UJ	<0.037	<0.240 UJ
SIL-02	156-160	133-01	P	11/18/2005	µg/L	**7.60 J**	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110 UJ	**0.500 J**	<0.110	<0.046	<0.240 UJ	<0.037	<0.240 UJ
SIL-02	156-160	133-02	D	11/18/2005	µg/L	**8.00 J**	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110 UJ	**0.610 J**	<0.110	<0.046	<0.240 UJ	<0.037	<0.240 UJ
SIL-02	186-190	134-01	P	11/18/2005	µg/L	<1.10 UJ	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110 UJ	<0.150	<0.110	<0.046	<0.240 UJ	<0.037	<0.240 UJ
SIL-02	214-216	119-01	P	11/14/2005	µg/L	<1.10 UJ	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	<0.150	<0.110	**1.10**	<0.240 UJ	<0.037	<0.240
SIL-03	31-35	125-01	P	11/16/2005	µg/L	<1.10 UJ	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110	<0.150	<0.110	<0.046	<0.240 UJ	<0.037	<0.240 UJ
SIL-03	95-99	126-01	P	11/16/2005	µg/L	<70.4 UJ	<8.32	<3.52	<4.80	<5.50	<2.82	<7.04	<9.60	<7.04	**24.0**	<15.4 UJ	<2.37	<15.4 UJ
SIL-03	110-130	142-01	P	12/06/2005	µg/L	<156 UJ	<18.4	<7.79	<10.6	<12.2	<6.23	<15.6	<21.2	<15.6	**22.0**	<34.0 UJ	**4.90 J**	<34.0
SIL-04	26-30	136-01	P	11/18/2005	µg/L	**2.30 J**	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110 UJ	**0.490 J**	<0.110	<0.046	<0.240 UJ	<0.037	<0.240 UJ
SIL-04	70-74	137-01	P	11/21/2005	µg/L	<1.10 UJ	<0.130	<0.055	<0.075	<0.086	<0.044	<0.110 UJ	<0.150	<0.110	<0.046	<0.240 UJ	<0.037	<0.240 UJ
SIL-04	80-89	144-01	P	12/09/2005	µg/L	<58.6	<6.93	<2.93	<4.00	<4.58	<2.34	<5.86 UJ	<7.99	<5.86	**18.0**	<12.8	<1.97	<12.8

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 5A
Volatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Iodomethane	Isobutyl alcohol	Isopropylbenzene	m,p Xylenes	Methylene chloride	Methyl-t-Butyl Ether
RP-11	27-31	120-01	P	11/15/2005	µg/L	<0.082	<0.078	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.047
RP-11	96-100	122-01	P	11/15/2005	µg/L	<0.082	<0.078	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.047
RP-11	96-100	122-02	D	11/15/2005	µg/L	<0.082	<0.078	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.047
RP-11	126-130	123-01	P	11/15/2005	µg/L	<0.082	<0.078	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.047
RP-11	148-152	124-01	P	11/15/2005	µg/L	<0.082	<0.078	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.047
RP-11	190-190	135-01	P	11/18/2005	µg/L	**0.610 J**	<0.078	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	**7.4**
RP-11	210-216	139-01	P	11/28/2005	µg/L	**6.60**	<2.36	<1.63	<1.27	<2.27	<3.63	<3.63	<3.33	<136	<3.03	<6.35	<5.14	**4.1**
SIL-01	26.5-31.5	101-01	P	11/01/2005	µg/L	<131	<125	<86.4	<67.2	<120	<192	<192	<176	<7,200	<160	<336	<272	<0.047
SIL-01	96-100	115-01	P	11/11/2005	µg/L	**3.00 J**	<0.078 UJ	<0.054 UJ	<0.042 UJ	<0.075 UJ	**0.340 J**	<0.120 UJ	<0.110 UJ	<4.50 UJ	**0.670 J**	**0.440 J**	<0.170 UJ	<0.047
SIL-01	126-130	116-01	P	11/11/2005	µg/L	**25.0 J**	<0.078 UJ	<0.054 UJ	<0.042 UJ	<0.075 UJ	**0.230 J**	<0.120 UJ	<0.110 UJ	<4.50 UJ	<0.100 UJ	**0.320 J**	<0.170 UJ	<0.047
SIL-01	156-160	117-01	P	11/11/2005	µg/L	**5.20 J**	<0.078 UJ	<0.054 UJ	<0.042 UJ	<0.075 UJ	<0.120 UJ	<0.120 UJ	<0.110 UJ	<4.50 UJ	<0.100 UJ	**0.230 J**	<0.170 UJ	**14**
SIL-01	184-188	118-01	P	11/14/2005	µg/L	**0.680 J**	<0.078	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	**0.310 J**	<0.170	**22**
SIL-01	207-208	109-01	P	11/07/2005	µg/L	**1.50 J**	<0.488	<0.338	<0.263	<0.469	<0.750	<0.750	<0.688	<28.1	<0.625	<1.31	<1.06	**12**
SIL-01	212-217	114-01	P	11/08/2005	µg/L	**2.00 J**	<0.656	<0.454	<0.353	<0.631	<1.01	<1.01	<0.925	<37.8	<0.841	<1.77	<1.43	**13**
SIL-02	28-32	127-01	P	11/17/2005	µg/L	<0.082	<0.078	<0.054	<0.042	<0.075	**0.350 J**	<0.120	<0.110	<4.50	<0.100	**0.510 J**	<0.170	<0.047
SIL-02	96-100	131-01	P	11/17/2005	µg/L	<0.082	<0.078	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.047
SIL-02	126-130	132-01	P	11/17/2005	µg/L	<0.082	<0.078	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.047
SIL-02	156-160	133-01	P	11/18/2005	µg/L	<0.082	<0.078	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.047
SIL-02	156-160	133-02	D	11/18/2005	µg/L	<0.082	<0.078	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	**0.200 J**	<0.170	<0.047
SIL-02	186-190	134-01	P	11/18/2005	µg/L	<0.082	<0.078	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	**0.72**
SIL-02	214-216	119-01	P	11/14/2005	µg/L	**1.30**	<0.078	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	**22**
SIL-03	31-35	125-01	P	11/16/2005	µg/L	<0.082	<0.078	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.047
SIL-03	95-99	126-01	P	11/16/2005	µg/L	**4.50 J**	<4.99	<3.46	<2.69	<4.80	<7.68	<7.68	<7.04	<288	<6.40	<13.4	<10.9	<0.376
SIL-03	110-130	142-01	P	12/06/2005	µg/L	**3.20 J**	<11.0	<7.65	<5.95 UJ	<10.6	<17.0	<17.0	<15.6	<637	<14.2	<29.7	<24.1 UJ	<0.564
SIL-04	26-30	136-01	P	11/18/2005	µg/L	<0.082	<0.078	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.047
SIL-04	70-74	137-01	P	11/21/2005	µg/L	<0.082	<0.078	<0.054	<0.042	<0.075	<0.120	<0.120	<0.110	<4.50	<0.100	<0.210	<0.170	<0.047
SIL-04	80-89	144-01	P	12/09/2005	µg/L	**2.40 J**	<4.16	<2.88	<2.24	<4.00	<6.39	<6.39	<5.86 UJ	<240 UJ	<5.33	<11.2	<9.06	<0.343

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 5A
Volatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	Naphthalene	n-Butylbenzene	n-Propylbenzene	o-Xylene	sec-Butylbenzene	Styrene	tertButylbenzene	Tetrachloroethene	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene	Trichlorofluoromethane	Vinyl chloride
RP-11	27-31	120-01	P	11/15/2005	µg/L	**0.330 J**	<0.082	<0.081	**0.180 J**	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
RP-11	96-100	122-01	P	11/15/2005	µg/L	**0.320 J**	<0.082	<0.081	<0.076	<0.035	<0.045	<0.083	<0.130	**0.270 J**	<0.100	<0.170	<0.064	<0.046	<0.100
RP-11	96-100	122-02	D	11/15/2005	µg/L	<0.110	<0.082	<0.081	<0.076	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
RP-11	126-130	123-01	P	11/15/2005	µg/L	<0.110	<0.082	<0.081	<0.076	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
RP-11	148-152	124-01	P	11/15/2005	µg/L	**0.250 J**	<0.082	<0.081	<0.076	<0.035	<0.045	<0.083	<0.130	**0.370 J**	<0.100	<0.170	<0.064	<0.046	<0.100
RP-11	190-190	135-01	P	11/18/2005	µg/L	<0.110 U	<0.082	<0.081	<0.076	<0.035	**0.210 J**	<0.083	<0.130	**0.570 J**	<0.100	<0.170	**1.20**	<0.046	<0.100
RP-11	210-216	139-01	P	11/28/2005	µg/L	<3.33	<2.48	<2.45	<2.30	<1.06	<1.36	<2.51	<3.93	<1.48	<3.03	<5.14	**4.50 J**	<1.39	**2.30 J**
SIL-01	26.5-31.5	101-01	P	11/01/2005	µg/L	**1,500**	<131	<130	**11.0**	<56.0	<72.0	<133 UJ	<208	<78.4	<160	<272	<102	<73.6	<160
SIL-01	96-100	115-01	P	11/11/2005	µg/L	**7.20 J**	<0.082 UJ	<0.081 UJ	**0.940 J**	<0.035 UJ	<0.045 UJ	<0.083 UJ	<0.130 UJ	**0.600 J**	<0.100 UJ	<0.170 UJ	**0.950 J**	<0.046 UJ	**3.00 J**
SIL-01	126-130	116-01	P	11/11/2005	µg/L	**3.10 J**	<0.082 UJ	<0.081 UJ	**0.320 J**	<0.035 UJ	<0.045 UJ	<0.083 UJ	<0.130 UJ	**0.610 J**	<0.100 UJ	<0.170 UJ	**1.00 J**	<0.046 UJ	**7.90 J**
SIL-01	156-160	117-01	P	11/11/2005	µg/L	<0.110 UJ	<0.082 UJ	<0.081 UJ	**0.190 J**	<0.035 UJ	<0.045 UJ	<0.083 UJ	<0.130 UJ	**0.450 J**	<0.100 UJ	<0.170 UJ	**0.750 J**	<0.046 UJ	**1.80 J**
SIL-01	184-188	118-01	P	11/14/2005	µg/L	**3.10**	<0.082	<0.081	<0.076	<0.035	<0.045	<0.083	<0.130	**0.320 J**	<0.100	<0.170	**0.230 J**	<0.046	<0.100
SIL-01	207-208	109-01	P	11/07/2005	µg/L	<0.688	<0.512	<0.506	<0.475	<0.219	<0.281	<0.519	<0.813 UJ	<0.306	<0.625	<1.06	**1.90 J**	<0.288	<0.625
SIL-01	212-217	114-01	P	11/08/2005	µg/L	<0.925	<0.690	<0.681	<0.639	<0.294	<0.378	<0.698	<1.09 UJ	<0.412	<0.841	<1.43	**2.90**	<0.387	<0.841
SIL-02	28-32	127-01	P	11/17/2005	µg/L	<0.110 U	<0.082	<0.081	**0.310 J**	<0.035	<0.045	<0.083	<0.130	<0.049 U	<0.100	<0.170	<0.064	<0.046	<0.100
SIL-02	96-100	131-01	P	11/17/2005	µg/L	**4.40**	<0.082	<0.081	<0.076	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
SIL-02	126-130	132-01	P	11/17/2005	µg/L	**4.20**	<0.082	<0.081	<0.076	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
SIL-02	156-160	133-01	P	11/18/2005	µg/L	**1.70**	<0.082	<0.081	<0.076	<0.035	<0.045	<0.083	<0.130	**0.240 J**	<0.100	<0.170	<0.064	<0.046	<0.100
SIL-02	156-160	133-02	D	11/18/2005	µg/L	<0.110 U	<0.082	<0.081	<0.076	<0.035	<0.045	<0.083	<0.130	**0.350 J**	<0.100	<0.170	<0.064	<0.046	<0.100
SIL-02	186-190	134-01	P	11/18/2005	µg/L	<0.110 U	<0.082	<0.081	<0.076	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
SIL-02	214-216	119-01	P	11/14/2005	µg/L	**4.70**	<0.082	<0.081	<0.076	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	**0.540 J**	<0.046	<0.100
SIL-03	31-35	125-01	P	11/16/2005	µg/L	**0.570 J**	<0.082	<0.081	<0.076	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
SIL-03	95-99	126-01	P	11/16/2005	µg/L	<7.04	<5.25	<5.18	<4.86	<2.24	<2.88	<5.31	<8.32	<3.14	<6.40	<10.9	**11.0**	<2.94	<6.40
SIL-03	110-130	142-01	P	12/06/2005	µg/L	<15.6	<11.6	<11.5	<10.8	<4.96	<6.37	<11.8	<18.4	<6.94	<14.2 UJ	<24.1	**12.0**	<6.51	<14.2
SIL-04	26-30	136-01	P	11/18/2005	µg/L	<0.110	<0.082	<0.081	<0.076	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
SIL-04	70-74	137-01	P	11/21/2005	µg/L	<0.110	<0.082	<0.081	<0.076	<0.035	<0.045	<0.083	<0.130	<0.049	<0.100	<0.170	<0.064	<0.046	<0.100
SIL-04	80-89	144-01	P	12/09/2005	µg/L	<5.86	<4.37	<4.32	<4.05	<1.87	<2.40	<4.42	<6.93	<2.61	<5.33	<9.06	**7.70**	<2.45	**2.20 J**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 5B
Semivolatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	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-Dichlorophenol	2,6-Dinitrotoluene	2-Chloronaphthalene	2-Chlorophenol	2-Methyl 4,6-dinitrophenol	2-Methylnaphthalene	2-Methylphenol	2-Nitroaniline
				Date	Units																			
RP-11	27-31	120-01	P	11/15/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ	<2.20	<1.10 UJ	<2.10
RP-11	96-100	122-01	P	11/15/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ	<2.20	<1.10 UJ	<2.10
RP-11	96-100	122-02	D	11/15/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ	<2.20	<1.10 UJ	<2.10
RP-11	210-216	139-01	P	11/28/2005	µg/L	<1.60	**180**	**7.70 J**	**54.0**	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ	<2.20	<1.10 UJ	<2.10
SIL-01	26.5-31.5	101-01	P	11/01/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ	**300**	<1.10 UJ	<2.10
SIL-01	96-100	115-01	P	11/11/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ	**0.580 J**	<1.10 UJ	<2.10
SIL-01	207-208	109-01	P	11/07/2005	µg/L	<1.60	**60.0**	<1.40	**27.0**	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ	<2.20	<1.10 UJ	<2.10
SIL-01	212-217	114-01	P	11/08/2005	µg/L	<1.60	**59.0**	<1.40	**25.0**	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ	<2.20	<1.10 UJ	<2.10
SIL-02	28-32	127-01	P	11/17/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80	<1.40	<1.10	<0.890	<1.60	<8.00	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60	<2.20	<1.10	<2.10
SIL-02	96-100	131-01	P	11/17/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80	<1.40	<1.10	<0.890	<1.60	<8.00	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60	**1.10 J**	<1.10	<2.10
SIL-02	214-216	119-01	P	11/14/2005	µg/L	<1.60	**21.0**	**0.540 J**	**7.20 J**	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ	**1.30 J**	<1.10 UJ	<2.10
SIL-03	31-35	125-01	P	11/16/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80	<1.40	<1.10	<0.890	<1.60	<8.00	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60	<2.20	<1.10	<2.10
SIL-03	95-99	126-01	P	11/16/2005	µg/L	<1.60	**99.0**	**3.90 J**	**35.0**	<1.80	<1.40	<1.10	<0.890	<1.60	<8.00	<1.80	<0.850	<1.50	<1.50	**0.790 J**	<2.60	<2.20	<1.10	<2.10
SIL-03	110-130	142-01	P	12/06/2005	µg/L	<1.60	**170**	**12.0**	**72.0**	<1.80	<1.40	<1.10	<0.890	<1.60	<8.00	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60	<2.20	<1.10	<2.10
SIL-04	26-30	136-01	P	11/18/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80	<1.40	<1.10	<0.890	<1.60	<8.00	<1.80	<0.850	<1.50	<1.50	<0.770	<2.60	<2.20	<1.10	<2.10
SIL-04	70-74	137-01	P	11/21/2005	µg/L	<1.60	<1.10	<1.40	<1.70	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ	<2.20	<1.10 UJ	<2.10
SIL-04	80-89	144-01	P	12/09/2005	µg/L	<1.60	**150**	**7.80 J**	**54.0**	<1.80 UJ	<1.40 UJ	<1.10 UJ	<0.890 UJ	<1.60 UJ	<8.00 UJ	<1.80	<0.850 UJ	<1.50	<1.50	<0.770 UJ	<2.60 UJ	<2.20	<1.10 UJ	<2.10

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
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TABLE 5B
Semivolatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		2-Nitrophenol	3,3'-Dichlorobenzidine	3-Nitroaniline	4-Bromophenylphenyl ether	4-Chloro 3-methylphenol	4-Chloroaniline	4-Chlorophenylphenyl ether	4-Methylphenol (p-cresol)	4-Nitroaniline	4-Nitrophenol	Acenaphthene	Acenaphthylene	Anthracene	Benzo-(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(ghi)perylene	Benzo(k)fluoranthene
				Date	Units																		
RP-11	27-31	120-01	P	11/15/2005	µg/L	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90	<2.00 UJ	<4.00 UJ	<2.30	<3.40 UJ	<2.50	<8.00 UJ	**21.0**	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ
RP-11	96-100	122-01	P	11/15/2005	µg/L	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90	<2.00 UJ	<4.00 UJ	<2.30	<3.40 UJ	<2.50	<8.00 UJ	<2.20	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ
RP-11	96-100	122-02	D	11/15/2005	µg/L	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90	<2.00 UJ	<4.00 UJ	<2.30	<3.40 UJ	<2.50	<8.00 UJ	<2.20	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ
RP-11	210-216	139-01	P	11/28/2005	µg/L	<0.860 UJ	<2.00	<2.10 UJ	<1.90	<2.00 UJ	<4.00 UJ	<2.30	<3.40 UJ	<2.50	<8.00 UJ	<2.20	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ
SIL-01	26.5-31.5	101-01	P	11/01/2005	µg/L	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90	<2.00 UJ	<4.00 UJ	<2.30	<3.40 UJ	<2.50	<8.00 UJ	**210**	**5.50 J**	**51.0**	**36.0**	**39.0**	**25.0 J**	**20.0 J**	**29.0 J**
SIL-01	96-100	115-01	P	11/11/2005	µg/L	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90	<2.00 UJ	<4.00 UJ	<2.30 UJ	<3.40 UJ	<2.50 UJ	<8.00 UJ	**0.620 J**	<2.10 UJ	<2.00	<1.90	<1.80	<3.90 UJ	<2.10	<2.40 UJ
SIL-01	207-208	109-01	P	11/07/2005	µg/L	<0.860 UJ	<2.00	<2.10	<1.90	<2.00 UJ	<4.00 UJ	<2.30 UJ	<3.40 UJ	<2.50 UJ	<8.00 UJ	<2.20 UJ	<2.10 UJ	<2.00	<1.90	<1.80	<3.90 UJ	<2.10	<2.40 UJ
SIL-01	212-217	114-01	P	11/08/2005	µg/L	<0.860 UJ	<2.00	<2.10	<1.90	<2.00 UJ	<4.00 UJ	<2.30 UJ	<3.40 UJ	<2.50 UJ	<8.00 UJ	<2.20 UJ	<2.10 UJ	<2.00	<1.90	<1.80	<3.90 UJ	<2.10	<2.40 UJ
SIL-02	28-32	127-01	P	11/17/2005	µg/L	<0.860	<2.00	<2.10	<1.90	<2.00	<4.00	<2.30	<3.40 UJ	<2.50	<8.00	**3.80 J**	<2.10	**0.470 J**	<1.90	<1.80	<3.90	<2.10	<2.40 UJ
SIL-02	96-100	131-01	P	11/17/2005	µg/L	<0.860	<2.00	<2.10	<1.90	<2.00	<4.00	<2.30	<3.40 UJ	<2.50	<8.00	**0.510 J**	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ
SIL-02	214-216	119-01	P	11/14/2005	µg/L	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90	<2.00 UJ	<4.00 UJ	<2.30	<3.40 UJ	<2.50	<8.00 UJ	**1.10 J**	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ
SIL-03	31-35	125-01	P	11/16/2005	µg/L	<0.860	<2.00 UJ	<2.10 UJ	<1.90	<2.00	<4.00 UJ	<2.30	<3.40 UJ	<2.50	<8.00	<2.20	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ
SIL-03	95-99	126-01	P	11/16/2005	µg/L	<0.860	<2.00 UJ	<2.10 UJ	<1.90	<2.00	<4.00 UJ	<2.30	<3.40 UJ	<2.50	<8.00	<2.20	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ
SIL-03	110-130	142-01	P	12/06/2005	µg/L	<0.860	<2.00	<2.10	<1.90	<2.00	<4.00	<2.30	<3.40 UJ	<2.50	<8.00	<2.20	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ
SIL-04	26-30	136-01	P	11/18/2005	µg/L	<0.860	<2.00	<2.10	<1.90	<2.00	<4.00	<2.30	<3.40 UJ	<2.50	<8.00	**7.60 J**	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ
SIL-04	70-74	137-01	P	11/21/2005	µg/L	<0.860 UJ	<2.00	<2.10	<1.90	<2.00 UJ	<4.00	<2.30	<3.40 UJ	<2.50	<8.00 UJ	<2.20	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ
SIL-04	80-89	144-01	P	12/09/2005	µg/L	<0.860 UJ	<2.00 UJ	<2.10 UJ	<1.90	<2.00 UJ	<4.00 UJ	<2.30	<3.40 UJ	<2.50 UJ	<8.00 UJ	<2.20	<2.10	<2.00	<1.90	<1.80	<3.90	<2.10	<2.40 UJ

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
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NJ = result is for a tentatively identified analyte
R = rejected result
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TABLE 5B
Semivolatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Benzoic acid	Benzyl alcohol	Bis(2-Chloro-ethoxy) methane	Bis(2-Chloroethyl) ether	Bis(2-Chloroisopropyl) ether	Bis(2-Ethyl-hexyl) pthalate	Butylbenzylphthalate	Chrysene	Dibenzo(a,h)anthracene	Dibenzofuran	Diethylphthalate	Dimethylphthalate	Di-n-butylphthalate	Di-n-octyl phthalate	Fluoranthene	Fluorene	Hexachlorobenzene	Hexachlorobutadiene
				Date	Units																		
RP-11	27-31	120-01	P	11/15/2005	µg/L	<1.90 R	<4.80	<2.00	<1.70	<1.70	<2.60 J	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	**1.20 J**	**4.00 J**	<1.30	<1.90
RP-11	96-100	122-01	P	11/15/2005	µg/L	<1.90 R	<4.80	<2.00	<1.70	<1.70	**2.50 J**	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90
RP-11	96-100	122-02	D	11/15/2005	µg/L	<1.90 R	<4.80	<2.00	<1.70	<1.70	**2.20 J**	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90
RP-11	210-216	139-01	P	11/28/2005	µg/L	<1.90 R	<4.80	<2.00	<1.70	<1.70	<2.60 U	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90
SIL-01	26.5-31.5	101-01	P	11/01/2005	µg/L	**11.0 J**	<4.80	<2.00	<1.70 UJ	<1.70	**2.30 J**	<1.60	**43.0**	**4.60 J**	**15.0**	<2.30	<2.00	<2.30	<2.60	**190**	**53.0 J**	<1.30	<1.90
SIL-01	96-100	115-01	P	11/11/2005	µg/L	**1.30 J**	<4.80	<2.00	<1.70	<1.70	<2.60 U	<1.60	<1.50 UJ	<2.10	<2.30	**0.560 J**	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90
SIL-01	207-208	109-01	P	11/07/2005	µg/L	<1.90 R	<4.80	<2.00	<1.70	<1.70	<2.60	<1.60	<1.50 UJ	<2.10	<2.30	<2.30 UJ	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90
SIL-01	212-217	114-01	P	11/08/2005	µg/L	<1.90 R	<4.80	<2.00	<1.70	<1.70	**5.90 J**	<1.60	<1.50 UJ	<2.10	<2.30	<2.30 UJ	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90
SIL-02	28-32	127-01	P	11/17/2005	µg/L	**0.730 J**	<4.80	<2.00	<1.70	<1.70	<2.60 U	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	**4.20 J**	**1.30 J**	**1.30 J**	<1.30	<1.90
SIL-02	96-100	131-01	P	11/17/2005	µg/L	**0.720 J**	<4.80	<2.00	<1.70	<1.70	<2.60 U	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	**0.530 J**	<2.40	<1.30	<1.90
SIL-02	214-216	119-01	P	11/14/2005	µg/L	<1.90 R	<4.80	<2.00	<1.70	<1.70	**0.740 J**	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90
SIL-03	31-35	125-01	P	11/16/2005	µg/L	**4.00 J**	<4.80	<2.00	<1.70	<1.70	**0.620 J**	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90
SIL-03	95-99	126-01	P	11/16/2005	µg/L	**1.90 J**	<4.80	<2.00	<1.70	<1.70	**4.90 J**	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90
SIL-03	110-130	142-01	P	12/06/2005	µg/L	**1.20 J**	<4.80	<2.00	<1.70	<1.70	<2.60 U	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90
SIL-04	26-30	136-01	P	11/18/2005	µg/L	**0.980 J**	<4.80	<2.00	<1.70	<1.70	<2.60 U	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	**0.890 J**	<2.40	<1.30	<1.90
SIL-04	70-74	137-01	P	11/21/2005	µg/L	<1.90 UJ	<4.80	<2.00	<1.70	<1.70	<2.60 U	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40	<1.30	<1.90
SIL-04	80-89	144-01	P	12/09/2005	µg/L	**2.50 J**	<4.80	<2.00	<1.70	<1.70	<2.60 U	<1.60	<1.50	<2.10	<2.30	<2.30	<2.00	<2.30	<2.60	<2.10	<2.40 UJ	<1.30	<1.90

Notes:
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TABLE 5B
Semivolatile Organic Compound Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Hexachloro-cyclopentadiene	Hexachloroethane	Indeno(1,2,3-cd)pyrene	Isophorone	Naphthalene	N-Nitrosodimethylamine	N-Nitrosodinpropyl amine	N-Nitrosodiphenylamine	Pentachlorophenol	Phenanthrene	Phenol	Pyrene
				Date	Units												
RP-11	27-31	120-01	P	11/15/2005	µg/L	<2.20 UJ	<2.00 UJ	<2.20	<1.10	<2.30	<0.630	<1.30 UJ	<1.20	<2.10 UJ	**10.0 J**	<0.870 UJ	**1.10 J**
RP-11	96-100	122-01	P	11/15/2005	µg/L	<2.20 UJ	<2.00 UJ	<2.20	<1.10	<2.30	<0.630	<1.30 UJ	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90
RP-11	96-100	122-02	D	11/15/2005	µg/L	<2.20 UJ	<2.00 UJ	<2.20	<1.10	<2.30	<0.630	<1.30 UJ	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90
RP-11	210-216	139-01	P	11/28/2005	µg/L	<2.20	<2.00 UJ	<2.20	<1.10	<2.30	<0.630 UJ	<1.30 UJ	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90
SIL-01	26.5-31.5	101-01	P	11/01/2005	µg/L	<2.20 UJ	<2.00 UJ	**14.0**	<1.10	**1,800**	<0.630 UJ	<1.30 UJ	<1.20 UJ	<2.10 UJ	**370**	<0.870 UJ	**140 J**
SIL-01	96-100	115-01	P	11/11/2005	µg/L	<2.20 UJ	<2.00	<2.20	<1.10	**3.90 J**	<0.630 UJ	<1.30	<1.20	<2.10 UJ	**0.740 J**	<0.870 UJ	<1.90 UJ
SIL-01	207-208	109-01	P	11/07/2005	µg/L	<2.20 UJ	<2.00	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90 UJ
SIL-01	212-217	114-01	P	11/08/2005	µg/L	<2.20 UJ	<2.00	<2.20	<1.10	<2.30	<0.630 UJ	<1.30	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90 UJ
SIL-02	28-32	127-01	P	11/17/2005	µg/L	<2.20	<2.00 UJ	<2.20	<1.10	**1.30 J**	<0.630	<1.30 UJ	<1.20	<2.10	**4.10 J**	<0.870 UJ	**1.80 J**
SIL-02	96-100	131-01	P	11/17/2005	µg/L	<2.20	<2.00 UJ	<2.20	<1.10	**4.20 J**	<0.630	<1.30 UJ	<1.20	<2.10	**1.50 J**	<0.870 UJ	**0.630 J**
SIL-02	214-216	119-01	P	11/14/2005	µg/L	<2.20 UJ	<2.00 UJ	<2.20	<1.10	**5.30 J**	<0.630	<1.30 UJ	<1.20	<2.10 UJ	**1.50 J**	<0.870 UJ	<1.90
SIL-03	31-35	125-01	P	11/16/2005	µg/L	<2.20 UJ	<2.00 UJ	<2.20	<1.10	**0.760 J**	<0.630	<1.30 UJ	<1.20	<2.10	**0.660 J**	<0.870 UJ	<1.90
SIL-03	95-99	126-01	P	11/16/2005	µg/L	<2.20 UJ	<2.00 UJ	<2.20	<1.10	**0.770 J**	<0.630	<1.30 UJ	<1.20	<2.10	<1.90	<0.870 UJ	<1.90
SIL-03	110-130	142-01	P	12/06/2005	µg/L	<2.20	<2.00 UJ	<2.20	<1.10	<2.30	<0.630	<1.30 UJ	<1.20	<2.10	<1.90	<0.870	<1.90
SIL-04	26-30	136-01	P	11/18/2005	µg/L	<2.20	<2.00 UJ	<2.20	<1.10	<2.30	<0.630	<1.30 UJ	<1.20	<2.10	**3.40 J**	<0.870 UJ	**0.960 J**
SIL-04	70-74	137-01	P	11/21/2005	µg/L	<2.20	<2.00 UJ	<2.20	<1.10	<2.30	<0.630	<1.30 UJ	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90
SIL-04	80-89	144-01	P	12/09/2005	µg/L	<2.20	<2.00 UJ	<2.20	<1.10	<2.30	<0.630 UJ	<1.30 UJ	<1.20	<2.10 UJ	<1.90	<0.870 UJ	<1.90

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TABLE 5C
Chlorinated Herbicide Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		2,4,5-T	2,4,5-TP (Silvex)	2,4-D	2,4-DB	Bromoxynil	Dalapon	Dicamba	Dichlorprop	Dinoseb	MCPA	MCPP
				Date	Units											
RP-11	27-31	120-01	P	11/15/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288 UJ	<83.5	<56.7
RP-11	96-100	122-01	P	11/15/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288 UJ	<83.5	<56.7
RP-11	96-100	122-02	D	11/15/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288 UJ	<83.5	<56.7
RP-11	210-216	139-01	P	11/28/2005	µg/L	<0.020 UJ	**6.60**	<0.280	<0.696 UJ	<0.012 UJ	<1.08	**0.330 J**	<0.837	<0.288 UJ	<83.5 UJ	<56.7
SIL-01	26.5-31.5	101-01	P	11/01/2005	µg/L	<0.020	<0.039 UJ	<0.280	<0.696	<0.012 UJ	<1.08 UJ	<0.052	<0.837	<0.288 R	<83.5	<56.7
SIL-01	96-100	115-01	P	11/11/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012 UJ	<1.08 UJ	<0.052	<0.837	<0.288 UJ	<83.5	<56.7
SIL-01	207-208	109-01	P	11/07/2005	µg/L	<0.020	**3.30**	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288 UJ	<83.5	<56.7
SIL-01	212-217	114-01	P	11/08/2005	µg/L	<0.020	**3.20**	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288 UJ	<83.5	<56.7
SIL-02	28-32	127-01	P	11/17/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08	<0.052	<0.837	<0.288	<83.5	<56.7
SIL-02	96-100	131-01	P	11/17/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08	<0.052	<0.837	<0.288	<83.5	<56.7
SIL-02	214-216	119-01	P	11/14/2005	µg/L	<0.020	**1.10**	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288 UJ	<83.5	<56.7
SIL-03	31-35	125-01	P	11/16/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08 UJ	<0.052	<0.837	<0.288 UJ	<83.5	<56.7
SIL-03	95-99	126-01	P	11/16/2005	µg/L	<0.020	**7.00 J**	<0.280	<0.696	<0.012	<1.08 UJ	**0.430**	<0.837	<0.288 UJ	<83.5	<56.7
SIL-03	110-130	142-01	P	12/06/2005	µg/L	<0.020	**5.20**	<0.280	<0.696	<0.012	<1.08 UJ	**0.340**	<0.837	<0.288 UJ	<83.5	<56.7
SIL-04	26-30	136-01	P	11/18/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08	<0.052	<0.837	<0.288	<83.5	<56.7
SIL-04	70-74	137-01	P	11/21/2005	µg/L	<0.020	<0.039	<0.280	<0.696	<0.012	<1.08	<0.052	<0.837	<0.288	<83.5	<56.7
SIL-04	80-89	144-01	P	12/09/2005	µg/L	<0.020	**9.60**	<0.280	<0.696	<0.012	<1.08 UJ	**0.450**	**2.60**	<0.288 UJ	<83.5	**150**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
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N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 5D
Organochlorine Insecticide Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde
				Date	Units															
RP-11	27-31	120-01	P	11/15/2005	µg/L	<0.002 UJ	<0.002 UJ	<0.002 UJ	<0.005 UJ	<0.002 UJ	<0.002 UJ	<0.003 UJ	<0.056 UJ	<0.002 UJ	<0.004 UJ	<0.002 UJ	<0.003 UJ	<0.004 UJ	<0.004 UJ	<0.003 UJ
RP-11	96-100	122-01	P	11/15/2005	µg/L	<0.002 UJ	<0.002 UJ	<0.002 UJ	<0.005 UJ	<0.002 UJ	<0.002 UJ	<0.003 UJ	<0.056 UJ	<0.002 UJ	<0.004 UJ	<0.002 UJ	<0.003 UJ	<0.004 UJ	<0.004 UJ	<0.003 UJ
RP-11	96-100	122-02	D	11/15/2005	µg/L	<0.002 UJ	<0.002 UJ	<0.002 UJ	<0.005 UJ	<0.002 UJ	<0.002 UJ	<0.003 UJ	<0.056 UJ	<0.002 UJ	<0.004 UJ	<0.002 UJ	<0.003 UJ	<0.004 UJ	<0.004 UJ	<0.003 UJ
RP-11	210-216	139-01	P	11/28/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ
SIL-01	26.5-31.5	101-01	P	11/01/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	**0.065 NJ**	<0.010 UJ	**0.120 NJ**	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ
SIL-01	96-100	115-01	P	11/11/2005	µg/L	<0.002 UJ	<0.002 UJ	<0.002 UJ	<0.005 UJ	<0.002 UJ	<0.002 UJ	<0.003 UJ	<0.056 UJ	<0.002 UJ	<0.004 UJ	<0.002 UJ	<0.003 UJ	<0.004 UJ	<0.004 UJ	<0.003 UJ
SIL-01	207-208	109-01	P	11/07/2005	µg/L	<0.020	<0.020	<0.020 UJ	<0.005	<0.010	<0.010	<0.008	<0.056	<0.010	<0.020	<0.010	<0.020	<0.020	<0.020	<0.020
SIL-01	212-217	114-01	P	11/08/2005	µg/L	<0.020	<0.020	<0.020 UJ	<0.005	<0.010	<0.010	<0.008	<0.056	<0.010	<0.020	<0.010	<0.020	<0.020	<0.020	<0.020
SIL-02	28-32	127-01	P	11/17/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ
SIL-02	96-100	131-01	P	11/17/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ
SIL-02	214-216	119-01	P	11/14/2005	µg/L	<0.002 UJ	<0.002 UJ	<0.002 UJ	<0.005 UJ	<0.002 UJ	<0.002 UJ	<0.003 UJ	<0.056 UJ	<0.002 UJ	<0.004 UJ	<0.002 UJ	<0.003 UJ	<0.004 UJ	<0.004 UJ	<0.003 UJ
SIL-03	31-35	125-01	P	11/16/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ
SIL-03	95-99	126-01	P	11/16/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ
SIL-03	110-130	142-01	P	12/06/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ
SIL-04	26-30	136-01	P	11/18/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ
SIL-04	70-74	137-01	P	11/21/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ
SIL-04	80-89	144-01	P	12/09/2005	µg/L	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.005 UJ	<0.010 UJ	<0.010 UJ	<0.008 UJ	<0.056 UJ	<0.010 UJ	<0.020 UJ	<0.010 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ	<0.020 UJ

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
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NJ = result is for a tentatively identified analyte
R = rejected result
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TABLE 5D
Organochlorine Insecticide Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	Endrin Ketone	gamma-BHC (Lindane)	gamma-Chlordane	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene
RP-11	27-31	120-01	P	11/15/2005	µg/L	<0.004 UJ	<0.002 UJ	<0.001 UJ	<0.003 UJ	<0.002 UJ	<0.020 UJ	<1.00 UJ
RP-11	96-100	122-01	P	11/15/2005	µg/L	<0.004 UJ	<0.002 UJ	<0.001 UJ	<0.003 UJ	<0.002 UJ	<0.020 UJ	<1.00 UJ
RP-11	96-100	122-02	D	11/15/2005	µg/L	<0.004 UJ	<0.002 UJ	<0.001 UJ	<0.003 UJ	<0.002 UJ	<0.020 UJ	<1.00 UJ
RP-11	210-216	139-01	P	11/28/2005	µg/L	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
SIL-01	26.5-31.5	101-01	P	11/01/2005	µg/L	<0.020 UJ	**0.069 J**	**0.065 NJ**	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
SIL-01	96-100	115-01	P	11/11/2005	µg/L	<0.004 UJ	<0.002 UJ	<0.001 UJ	<0.003 UJ	<0.002 UJ	<0.020 UJ	<1.00 UJ
SIL-01	207-208	109-01	P	11/07/2005	µg/L	<0.020	<0.010	<0.010	<0.004	<0.010	<0.035	<1.00
SIL-01	212-217	114-01	P	11/08/2005	µg/L	<0.020	<0.010	<0.010	<0.004	<0.010	<0.035	<1.00
SIL-02	28-32	127-01	P	11/17/2005	µg/L	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
SIL-02	96-100	131-01	P	11/17/2005	µg/L	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
SIL-02	214-216	119-01	P	11/14/2005	µg/L	<0.004 UJ	<0.002 UJ	<0.001 UJ	<0.003 UJ	<0.002 UJ	<0.020 UJ	<1.00 UJ
SIL-03	31-35	125-01	P	11/16/2005	µg/L	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
SIL-03	95-99	126-01	P	11/16/2005	µg/L	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
SIL-03	110-130	142-01	P	12/06/2005	µg/L	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
SIL-04	26-30	136-01	P	11/18/2005	µg/L	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
SIL-04	70-74	137-01	P	11/21/2005	µg/L	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ
SIL-04	80-89	144-01	P	12/09/2005	µg/L	<0.020 UJ	<0.010 UJ	<0.010 UJ	<0.004 UJ	<0.010 UJ	<0.035 UJ	<1.00 UJ

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
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TABLE 5E
Dioxin-Furan Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		1,2,3,4,6,7,8,9-OCDD	1,2,3,4,6,7,8,9-OCDF	1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-HxCDF	1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-HxCDF	1,2,3,7,8-PeCDD	1,2,3,7,8-PeCDF	2,3,4,6,7,8-HxCDF
				Date	Units														
RP-11	27-31	120-01	P	11/15/2005	pg/L	<1.79	<2.50	<1.34	<1.51	<1.03	<0.873	<1.44	<1.73	<1.34	<2.00	<1.07	<0.776	**0.527 J**	<1.29
RP-11	96-100	122-01	P	11/15/2005	pg/L	**27.0 J**	<2.50	**3.48 J**	**0.614 J**	<1.01	<0.857	<1.41	<1.70	<1.31	<1.96	<1.05	<0.761	<1.38	<1.27
RP-11	96-100	122-02	D	11/15/2005	pg/L	**62.1 J**	<2.50	**7.47 J**	**0.690 J**	<1.01	<0.857	<1.41	**0.628 NJ**	<1.31	<1.96	<1.05	<0.761	<1.38	<1.27
RP-11	210-216	139-01	P	11/28/2005	pg/L	**90.5 J**	<2.50	**8.87 J**	**0.495 NJ**	<1.01	<0.857	<1.41	**0.506 NJ**	<1.31	**1.05 J**	<1.05	<0.761	<1.38	<1.27
SIL-01	26.5-31.5	101-01	P	11/01/2005	pg/L	**2,480**	**89.5 J**	**421**	**21.0 J**	**2.87 J**	**1.18 J**	**8.10 J**	**6.72 J**	<1.31	**4.46 J**	<1.05	<0.761	**4.19 J**	**0.932**
SIL-01	96-100	115-01	P	11/11/2005	pg/L	**143**	<2.53	**14.1 J**	<1.50	<1.02	<0.865	**0.653 J**	**0.702 J**	<1.33	<1.98	<1.06	<0.769	<1.39	<1.28
SIL-01	207-208	109-01	P	11/07/2005	pg/L	<1.77	<2.53	<1.33	<1.50	<1.02	<0.865	<1.42	<1.71	<1.33	<1.98	<1.06	<0.769	<1.39	<1.28
SIL-01	212-217	114-01	P	11/08/2005	pg/L	**257**	<2.48	**36.8 J**	<1.47	<1.00	**0.549 J**	<1.40	**1.77 J**	<1.30	<1.94	<1.04	<0.754	<1.37	<1.25
SIL-02	28-32	127-01	P	11/17/2005	pg/L	**2,280**	**337**	**277**	**158**	**56.2**	**3.31 J**	**278**	**10.8 J**	**66.7**	**7.90 J**	**4.77 J**	<0.824	**195**	**13.8 J**
SIL-02	96-100	131-01	P	11/17/2005	pg/L	**173**	<2.50	**23.5 J**	<1.49	**0.705 J**	<0.857	**1.83 J**	**1.10 J**	<1.31	<1.96	<1.05	**0.528 J**	<1.38	<1.27
SIL-02	214-216	119-01	P	11/14/2005	pg/L	**143**	<2.50	**17.8 J**	**1.88 J**	**0.763 J**	<0.857	**1.69 J**	**0.937 NJ**	<1.31	<1.96	<1.05	<0.761	**1.24 NJ**	<1.27
SIL-03	31-35	125-01	P	11/16/2005	pg/L	<1.75	<2.50	**1.56 J**	<1.49	<1.01	<0.857	**0.554 J**	<1.70	<1.31	<1.96	<1.05	<0.761	**0.500 J**	<1.27
SIL-03	95-99	126-01	P	11/16/2005	pg/L	**836**	<2.50	**105**	**3.90 J**	**0.780 J**	<0.857	**3.22 J**	**5.48 J**	<1.31	**13.3 J**	<1.05	**2.40 NJ**	**1.34 J**	<1.27
SIL-03	110-130	142-01	P	12/06/2005	pg/L	**75.1 J**	<2.50	**7.01 J**	**1.51 J**	<1.01	<0.857	**0.751 J**	**0.698**	<1.31	<1.96	<1.05	<0.761	**0.789 NJ**	<1.27
SIL-04	26-30	136-01	P	11/18/2005	pg/L	**7,430**	**451**	**582**	**169**	**16.8 J**	**3.82 J**	**45.1 J**	**22.6 J**	**15.3 J**	**11.1 J**	<1.05	**2.78 NJ**	**17.3 J**	**4.57 J**
SIL-04	70-74	137-01	P	11/21/2005	pg/L	**222**	**9.55 J**	**19.3 J**	**4.19 J**	**0.700 J**	<0.865	**1.34 J**	**0.950 J**	<1.33	<1.98	<1.06	<0.769	**0.909 NJ**	<1.28
SIL-04	80-89	144-01	P	12/09/2005	pg/L	**6.00 J**	<2.50	<1.31	<1.49	<1.01	<0.857	<1.41	<1.70	<1.31	<1.96	<1.05	<0.761	<1.38	<1.27

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
pg/L = picograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 5E
Dioxin-Furan Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	2,3,4,7,8-PeCDF	2,3,7,8-TCDD	2,3,7,8-TCDF	Total HpCDD	Total HpCDF	Total HxCDD	Total HxCDF	Total PeCDD	Total PeCDF	Total TCDD	Total TCDF
RP-11	27-31	120-01	P	11/15/2005	pg/L	**0.547 J**	<0.466	<0.436	<1.34	**0.876**	<2.00	<1.44	<0.776	**1.07**	<0.466	<0.436
RP-11	96-100	122-01	P	11/15/2005	pg/L	**0.515 J**	<0.457	<0.428	**8.13**	**0.614**	<1.96	<1.41	<0.761	**0.515**	<0.457	<0.428
RP-11	96-100	122-02	D	11/15/2005	pg/L	<1.30	**0.732 NJ**	<0.428	**7.47**	**0.690**	<1.96	<1.41	<0.761	<1.38	<0.457	<0.428
RP-11	210-216	139-01	P	11/28/2005	pg/L	<1.30	**0.712 NJ**	<0.428	**24.4**	<1.49	**10.0**	<1.41	**3.36**	**35.8**	**6.29**	**76.8**
SIL-01	26.5-31.5	101-01	P	11/01/2005	pg/L	<1.30	<0.457 U	**4.23 J**	**1,000**	**81.2**	**90.8**	**35.3**	**7.55**	**22.0**	**3.04**	**12.4**
SIL-01	96-100	115-01	P	11/11/2005	pg/L	**0.575 J**	**0.615 NJ**	<0.432	**37.5**	**1.23**	**10.4**	<1.42	**0.985**	**1.43**	**0.948**	<0.432
SIL-01	207-208	109-01	P	11/07/2005	pg/L	<1.32	<0.461	<0.432	<1.33	<1.50	<1.98	<1.42	<0.769	<1.39	**1.45**	**12.0**
SIL-01	212-217	114-01	P	11/08/2005	pg/L	<1.29	**4.65 J**	**0.720**	**70.0**	**5.41**	**23.8**	<1.40	**13.6**	**57.8**	**20.3**	**70.8**
SIL-02	28-32	127-01	P	11/17/2005	pg/L	**81.7**	<0.494	**173**	**582**	**411**	**84.7**	**575**	**10.3**	**562**	**14.0**	**506**
SIL-02	96-100	131-01	P	11/17/2005	pg/L	**1.06 J**	<0.457	<0.428	**66.5**	**6.32**	**7.04**	<1.41	**0.528**	<1.38	<0.457	**0.872**
SIL-02	214-216	119-01	P	11/14/2005	pg/L	<1.30	**0.949 NJ**	**0.622**	**41.3**	**3.68**	**9.02**	<1.41	<0.761	**2.54**	**8.21**	**10.3 NJ**
SIL-03	31-35	125-01	P	11/16/2005	pg/L	<1.30	**0.544 NJ**	<0.428	**1.56**	<1.49	<1.96	<1.41	<0.761	**0.500**	<0.457	<0.428
SIL-03	95-99	126-01	P	11/16/2005	pg/L	<1.30	**5.55 J**	<0.428	**281**	**7.82**	**99.2**	<1.41	**10.5**	**5.89**	**17.4**	**14.5**
SIL-03	110-130	142-01	P	12/06/2005	pg/L	<1.30	**0.630 NJ**	**0.676 NJ**	**17.3**	**3.36**	<1.96	**1.97**	<0.761	**4.59**	<0.457	**8.28**
SIL-04	26-30	136-01	P	11/18/2005	pg/L	**10.5 J**	**2.08 NJ**	**14.4**	**1,390**	**564**	**173**	**296**	**14.7**	**135**	**10.2**	**74.5**
SIL-04	70-74	137-01	P	11/21/2005	pg/L	**0.575 J**	**0.780 NJ**	<0.432	**46.7**	**12.6**	<1.98	<1.42	<0.769	**0.575**	<0.461	**2.95**
SIL-04	80-89	144-01	P	12/09/2005	pg/L	<1.30	<0.457	<0.428	<1.31	<1.49	<1.96	<1.41	<0.761	<1.38	<0.457	**0.644**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
pg/L = picograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 5F
Total Petroleum Hydrocarbon Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Diesel Range Organics	Residual Range Organics
				Date	Units		
RP-11	27-31	120-01	P	11/15/2005	µg/L	**440**	<28.0
RP-11	96-100	122-01	P	11/15/2005	µg/L	<19.0	<28.0
RP-11	96-100	122-02	D	11/15/2005	µg/L	<19.0	<28.0
RP-11	210-216	139-01	P	11/28/2005	µg/L	<19.0	<28.0
SIL-01	26.5-31.5	101-01	P	11/01/2005	µg/L	**4,400 J**	**1,300 J**
SIL-01	96-100	115-01	P	11/11/2005	µg/L	**630**	<28.0
SIL-01	207-208	109-01	P	11/07/2005	µg/L	<19.0 UJ	<28.0 UJ
SIL-01	212-217	114-01	P	11/08/2005	µg/L	**120 J**	**650 J**
SIL-02	28-32	127-01	P	11/17/2005	µg/L	**850**	**990**
SIL-02	96-100	131-01	P	11/17/2005	µg/L	**580**	<28.0
SIL-02	214-216	119-01	P	11/14/2005	µg/L	<19.0	<28.0
SIL-03	31-35	125-01	P	11/16/2005	µg/L	**330**	<28.0
SIL-03	95-99	126-01	P	11/16/2005	µg/L	<19.0	<28.0
SIL-03	110-130	142-01	P	12/06/2005	µg/L	<19.0	<28.0
SIL-04	26-30	136-01	P	11/18/2005	µg/L	**760**	**610**
SIL-04	70-74	137-01	P	11/21/2005	µg/L	<19.0	<28.0
SIL-04	80-89	144-01	P	12/09/2005	µg/L	<19.0	<28.0

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 5G
Carbon 12/13 Isotopic Ratio Groundwater Analytical Results for Volatile Organic Compounds
Stage 1 SCE - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		cis-1,2-Dichloroethene	Chloroform	Trichloroethene	Tetrachloroethene	Chlorobenzene	1,2-Dichlorobenzene	1,4-Dichlorobenzene
				Date	Units							
RP-11	96-100	122-01	P	11/08/05	δ^{13}C ‰	bql	bql	bql	bql	bql	bql	bql
RP-11	27-31	120-01	P	11/14/05	δ^{13}C ‰	bql	bql	bql	bql	bql	bql	bql
RP-11	210-216	139-01	P	11/21/05	δ^{13}C ‰	**-18.1**	bql	coe	bql	**-28.9**	**-27.6**	**-27.1**
SIL-01	26.5-31.5	101-01	P	11/01/05	δ^{13}C ‰	bql	bql	bql	bql	bql	bql	bql
SIL-01	96-100	115-01	P	11/08/05	δ^{13}C ‰	coe	bql	bql	bql	bql	bql	bql
SIL-01	207-208	109-01	P	11/07/05	δ^{13}C ‰	**-19.6**	bql	bql	bql	**-27.9**	**-28**	**-27**
SIL-01	212-217	114-01	P	11/08/05	δ^{13}C ‰	coe	bql	bql	bql	bql	bql	bql
SIL-02	28-32	127-01	P	11/16/05	δ^{13}C ‰	bql	bql	bql	bql	bql	bql	bql
SIL-02	214-216	119-01	P	11/14/05	δ^{13}C ‰	bql	bql	bql	bql	**-26.2**	**-27.1**	**-26.5**
SIL-02	96-100	131-01	P	11/17/05	δ^{13}C ‰	bql	bql	bql	bql	bql	bql	bql
SIL-03	31-35	125-01	P	11/16/05	δ^{13}C ‰	bql	bql	bql	bql	bql	bql	bql
SIL-03	95-99	126-01	P	11/16/05	δ^{13}C ‰	coe	bql	coe	bql	**-28.2**	**-27.4**	**-27.1**
SIL-03	110-130	142-01	P	12/06/05	δ^{13}C ‰	**-22.8**	**-23.9**	coe	bql	**-28.2**	**-27.6**	**-27**
SIL-04	26-30	136-01	P	11/18/05	δ^{13}C ‰	bql	bql	bql	bql	bql	bql	bql
SIL-04	70-74	137-01	P	11/21/05	δ^{13}C ‰	bql	bql	bql	bql	bql	bql	bql
SIL-04	80-89	144-01	P	12/09/05	δ^{13}C ‰	**-23.8**	bql	coe	bql	**-28.1**	**-27.9**	**-27.1**

Notes:

BOLD = Detection

Sample Type: P = primary sample; D = field duplicate

δ^{13}C ‰ = deviation of carbon-13 concentration in parts per mil from the Peedee Belemnite (PDB) standard

bgs = below ground surface

bql = below quantitation limits

coe = peak coelution

TABLE 5H
Total Metals Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte		Aluminum	Arsenic	Cadmium	Calcium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Sodium	Vanadium	Zinc
				Date	Units																
RP-11	27-31	120-01	P	11/15/2005	µg/L	**910**	**6.20 J**	<0.616	**91,700**	<2.30	<3.01	**90,700**	<1.74	**47,300**	**3,200**	<0.200	**13.2 J**	<584 U	**22,900**	<2.36	<2.60
RP-11	96-100	122-01	P	11/15/2005	µg/L	**110,000**	**20.6**	<0.616	**322,000**	**159**	**163**	**325,000**	<1.74	**159,000**	**18,200**	<0.200	**145**	**11,000**	**25,200**	**387**	**337**
RP-11	96-100	122-02	D	11/15/2005	µg/L	**142,000**	**22.1**	<0.616	**313,000**	**191**	**198**	**361,000**	<1.74	**160,000**	**17,500**	<0.200	**172**	**11,600**	**24,100**	**496**	**408**
RP-11	210-216	139-01	P	11/28/2005	µg/L	**13,900**	<5.59	<0.616	**224,000**	**18.3**	**16.9 J**	**19,900**	<1.74	**61,600**	**503**	<0.200	**17.9 J**	**11,000**	**38,100**	**49.4 J**	**99.4**
SIL-01	26.5-31.5	101-01	P	11/01/2005	µg/L	**25,100**	**18.7**	<0.616	**77,400**	**25.8**	**104**	**88,300**	**24.0**	**20,900**	**3,450**	<0.200	**24.8 J**	**7,500**	**23,600**	**84.5**	**115**
SIL-01	96-100	115-01	P	11/11/2005	µg/L	**98,500**	**15.3**	<0.616	**88,900 J**	**158 J**	**147 J**	**164,000**	<1.74	**76,700**	**2,380**	<0.200	**105**	**6,970**	**29,400**	**317**	**280 J**
SIL-01	207-208	109-01	P	11/07/2005	µg/L	**2,260**	**5.70 J**	<0.616	**98,800**	**16.7**	**4.10 J**	**5,310**	<1.74	**32,500**	**328**	<0.200	**9.30 J**	**5,410**	**26,000**	**11.2 J**	**18.6 J**
SIL-01	212-217	114-01	P	11/08/2005	µg/L	**268,000**	**30.0**	<0.616	**236,000**	**584**	**545**	**746,000**	**61.0**	**85,000**	**9,270**	<0.200	**268**	**19,200**	**57,500**	**2,480**	**2,030**
SIL-02	28-32	127-01	P	11/17/2005	µg/L	**53,800**	**25.6**	<0.616	**141,000**	**206**	**80.9**	**177,000**	**58.1**	**73,300**	**4,260**	<0.200	**167**	**5,900**	**30,000**	**180**	**190**
SIL-02	96-100	131-01	P	11/17/2005	µg/L	**36,200**	**9.00 J**	<0.616	**90,100**	**113**	**42.5**	**103,000**	<1.74	**58,800**	**2,090**	<0.200	**45.2**	**5,590**	**27,000**	**96.5**	**123**
SIL-02	214-216	119-01	P	11/14/2005	µg/L	**50,600**	**8.20 J**	<0.616	**80,600**	**77.7**	**81.5**	**114,000**	<1.74	**42,000**	**4,410**	<0.200	**97.8**	**6,750**	**24,600**	**265**	**211**
SIL-03	31-35	125-01	P	11/16/2005	µg/L	**992**	<5.59	<0.616	**141,000**	<2.30	<3.01	**1,810**	<1.74	**78,200**	**1,680**	<0.200 UJ	**34.4 J**	<584	**29,100**	<2.36	**84.0**
SIL-03	95-99	126-01	P	11/16/2005	µg/L	**190,000**	**69.5**	<0.616	**282,000**	**356**	**416**	**393,000**	**71.2**	**146,000**	**5,720**	<0.200 UJ	**210**	**30,300**	**42,600**	**782**	**779**
SIL-03	110-130	142-01	P	12/06/2005	µg/L	**42,400**	<5.59	<0.616	**225,000**	**55.0**	**75.7**	**66,500**	**7.50 J**	**82,100**	**2,760**	<0.200 UJ	**31.6 J**	**10,100**	**37,500**	**153**	**116**
SIL-04	26-30	136-01	P	11/18/2005	µg/L	**22,200**	**7.60 J**	<0.616	**106,000**	**32.5**	**42.1**	**94,900**	**282**	**40,400**	**2,810**	<0.200	**21.8 J**	**10,400**	**27,400**	**69.0**	**364**
SIL-04	70-74	137-01	P	11/21/2005	µg/L	**29,800**	**19.2**	<0.616	**89,800**	**73.0**	**68.7**	**49,400**	**19.5**	**39,900**	**10,900**	<0.200	**47.5**	**12,600**	**55,800**	**182**	**139**
SIL-04	80-89	144-01	P	12/09/2005	µg/L	**3,260**	<5.59	<0.616	**281,000**	<2.30 UJ	<3.01 UJ	**4,660**	<1.74	**75,500**	**240**	<0.200 UJ	<12.5	**9,820**	**22,200**	**15.8 J**	**74.5**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 5I
Dissolved Metals Groundwater Analytical Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Depth Interval (feet bgs)	Sample Code	Sample Type	Analyte Date	Analyte Units	Aluminum	Arsenic	Cadmium	Calcium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Sodium	Vanadium	Zinc
RP-11	27-31	120-01	P	11/15/2005	µg/L	<54.3	<5.59	<0.616	**87,400**	<2.30	<3.01	**86,200**	<1.74	**45,000**	**3,090**	<0.200	**11.2 J**	<584	**21,900**	<2.36	<2.60
RP-11	96-100	122-01	P	11/15/2005	µg/L	**66.7 J**	<5.59	<0.616	**301,000**	<2.30	<3.01	**176,000**	<1.74	**136,000**	**13,900**	<0.200	**4.50 J**	**6,840**	**23,100**	<2.36	<2.60
RP-11	96-100	122-02	D	11/15/2005	µg/L	<54.3	<5.59	<0.616	**290,000**	**6.20 J**	<3.01	**170,000**	<1.74	**131,000**	**13,800**	<0.200	**4.00 J**	**6,470**	**21,900**	<2.36	<2.60
RP-11	210-216	139-01	P	11/28/2005	µg/L	<54.3	<5.59	<0.616	**214,000**	<2.30	<3.01 UJ	**5,050**	<1.74	**57,300**	**350**	<0.200	<12.5	**9,720**	**35,700**	<2.36	**41.4**
SIL-01	26.5-31.5	101-01	P	11/01/2005	µg/L	**163 J**	**14.4**	<0.616	**70,400**	<2.30	**4.30 J**	**54,900**	**3.00 J**	**16,600**	**3,120**	<0.200	**3.30 J**	**6,000**	**21,300**	**3.30 J**	<2.60
SIL-01	96-100	115-01	P	11/11/2005	µg/L	<54.3	<5.59	<0.616	**68,600**	<2.30	<3.01	**43,100 J**	<1.74	**56,200**	**584 J**	<0.200	**13.2**	<584	**26,500**	<2.36	<2.60
SIL-01	207-208	109-01	P	11/07/2005	µg/L	<54.3	<5.59	<0.616	**98,800**	<2.30	**3.30 J**	**1,920**	<1.74	**32,300**	**297**	<0.200	<12.5	**5,270**	**26,200**	**5.00 J**	<2.60
SIL-01	212-217	114-01	P	11/08/2005	µg/L	**506 J**	<5.59	<0.616	**112,000**	<2.30	<3.01	**3,320**	<1.74	**35,200**	**1,820**	<0.200	**15.7 J**	**7,020**	**30,000**	**5.20 J**	**86.4**
SIL-02	28-32	127-01	P	11/17/2005	µg/L	<54.3	**10.4**	<0.616	**128,000**	**1.10 J**	**4.10 J**	**86,800**	<1.74	**63,900**	**3,130**	<0.200	**18.5 J**	**3,620 J**	**28,000**	**4.80 J**	<2.60
SIL-02	96-100	131-01	P	11/17/2005	µg/L	<54.3	**5.20 J**	<0.616	**76,000**	**1.20 J**	**3.50 J**	**59,000**	<1.74	**53,300**	**1,390**	<0.200	**4.70 J**	**3,050 J**	**23,200**	<2.36	<2.60
SIL-02	214-216	119-01	P	11/14/2005	µg/L	<54.3	<5.59	<0.616	**56,500**	<2.30	<3.01	**12,400**	<1.74	**25,400**	**2,730**	<0.200	**12.2 J**	**5,030**	**24,800**	<2.36	<2.60
SIL-03	31-35	125-01	P	11/16/2005	µg/L	<54.3	<5.59	<0.616	**146,000**	<2.30	<3.01	**717**	<1.74	**81,700**	**1,730**	<0.200 UJ	**35.9 J**	<584	**31,200**	<2.36	**112**
SIL-03	95-99	126-01	P	11/16/2005	µg/L	**149 J**	<5.59	<0.616	**248,000**	<2.30	<3.01	**3,400**	<1.74	**93,500**	**1,660**	<0.200 UJ	**11.0 J**	**11,600**	**38,600**	**3.30 J**	<2.60
SIL-03	110-130	142-01	P	12/06/2005	µg/L	<54.3	<5.59	<0.616	**208,000**	<2.30	<3.01	**921**	<1.74	**75,300**	**1,320**	<0.200 UJ	**6.60 J**	**8,380**	**32,500**	**5.50 J**	**19.2 J**
SIL-04	26-30	136-01	P	11/18/2005	µg/L	<54.3	<5.59	<0.616	**99,700**	<2.30	**4.60 J**	**71,800**	<1.74	**36,600**	**2,560**	<0.200	<12.5	**9,340**	**25,200**	<2.36	**6.10 J**
SIL-04	70-74	137-01	P	11/21/2005	µg/L	<54.3	<5.59	<0.616	**77,100**	<2.30	**2.80 J**	**760**	<1.74	**33,700**	**3,140**	<0.200	**12.7 J**	**10,700**	**56,000**	**5.90 J**	**20.4**
SIL-04	80-89	144-01	P	12/09/2005	µg/L	<54.3	<5.59	<0.616	**274,000 J**	<2.30 UJ	<3.01 UJ	**416**	<1.74	**73,200 J**	**140 J**	<0.200 UJ	<12.5	**9,460**	**22,000**	**5.50 J**	**66.8**

Notes:
BOLD = Detection
Sample Type: P = primary sample; D = field duplicate
bgs = below ground surface
µg/L = micrograms per liter
< = Not detected at or above method detection limit
J = estimated result
N = presumptively identified result
NJ = result is for a tentatively identified analyte
R = rejected result
UJ = not detected above the method reporting limit; the limit is an approximate value

TABLE 6
Stage 1 Source Control Evaluation Reconnaissance Borings and Selected Monitoring Wells
Results Exceeding Water Quality Screening Values
RP - Portland Site

					Screening Values[1,2] (µg/L)					Exceedance Ratio[3]				
					Ecological Receptors		Human Health			Ecological Receptors		Human Health		
Sample Location	Depth Interval (feet bgs)	Sample Date	Analyte	Concentration (µg/L)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)
ARK-01-15	10-15	08/15/05	2,3,7,8-TCDD	0.0000178	~	~	5.1E-09	5.1E-10	0.00003			3,490	34,902	
ARK-01-15	10-15	08/15/05	Aluminum	6,870	750	87	~	~	~	9.2	79			
ARK-01-15	10-15	08/15/05	Arsenic	13.6	340	150	0.14	0.014	10			97	971	1.4
ARK-01-15	10-15	08/15/05	Chloride	1,430,000	860,000	230,000	~	~	~	1.7	6.2			
ARK-01-15	10-15	08/15/05	Copper	48.1	13	9.0	~	~	1,300	3.7	5.3			
ARK-01-15	10-15	08/15/05	Iron	19,200	~	1,000	~	~	~		19			
ARK-01-15	10-15	08/15/05	Lead	18.4	65	2.5	~	~	15		7.4			1.2
ARK-01-15	10-15	08/15/05	Manganese	883	~	~	100	10	~			8.8	88	
ARK-01-31.5	28.5-31.5	08/16/05	2,3,7,8-TCDD	0.00000221	~	~	5.1E-09	5.1E-10	0.00003			433	4,333	
ARK-01-31.5	28.5-31.5	08/16/05	Aluminum	94,400	750	87	~	~	~	126	1,085			
ARK-01-31.5	28.5-31.5	08/16/05	Arsenic	45.6	340	150	0.14	0.014	10			326	3,257	4.6
ARK-01-31.5	28.5-31.5	08/16/05	Bis(2-Ethylhexyl) pthalate	5.50	~	~	2.2	0.22	6			2.5	25	
ARK-01-31.5	28.5-31.5	08/16/05	Chloride	3,960,000	860,000	230,000	~	~	~	4.6	17			
ARK-01-31.5	28.5-31.5	08/16/05	Chromium	122	~	~	~	~	100					1.2
ARK-01-31.5	28.5-31.5	08/16/05	Copper	706	13	9.0	~	~	1,300	54	78			
ARK-01-31.5	28.5-31.5	08/16/05	Iron	224,000	~	1,000	~	~	~		224			
ARK-01-31.5	28.5-31.5	08/16/05	Iron (Dissolved)	4,670	~	1,000	~	~	~		4.7			
ARK-01-31.5	28.5-31.5	08/16/05	Lead	99.2	65	2.5	~	~	15	1.5	40			6.6
ARK-01-31.5	28.5-31.5	08/16/05	Manganese	21,400	~	~	100	10	~			214	2,140	
ARK-01-31.5	28.5-31.5	08/16/05	Manganese (Dissolved)	18,400	~	~	100	10	~			184	1,840	
ARK-01-31.5	28.5-31.5	08/16/05	Nickel	126	470	52	4,600	460	~		2.4			
ARK-01-31.5	28.5-31.5	08/16/05	Zinc	747	120	120	26,000	2,600	~	6.2	6.2			
ARK-01-54	50-54	08/16/05	1,2-Dichlorobenzene	190	~	~	1,300	130	600				1.5	
ARK-01-54	50-54	08/16/05	1,4-Dichlorobenzene	46.0	~	~	190	19	75				2.4	
ARK-01-54	50-54	08/16/05	2,3,7,8-TCDD	0.00000230	~	~	5.1E-09	5.1E-10	0.00003			451	4,510	
ARK-01-54	50-54	08/16/05	Aluminum	494,000	750	87	~	~	~	659	5,678			
ARK-01-54	50-54	08/16/05	Aluminum (Dissolved)	587	750	87	~	~	~		6.7			
ARK-01-54	50-54	08/16/05	Arsenic	160	340	150	0.14	0.014	10		1.1	1,143	11,429	16
ARK-01-54	50-54	08/16/05	Chloride	8,270,000	860,000	230,000	~	~	~	9.6	36			
ARK-01-54	50-54	08/16/05	Chromium	599	~	~	~	~	100					6.0
ARK-01-54	50-54	08/16/05	Iron	2,860,000	~	1,000	~	~	~		2,860			
ARK-01-54	50-54	08/16/05	Iron (Dissolved)	14,100	~	1,000	~	~	~		14			
ARK-01-54	50-54	08/16/05	Lead	343	65	2.5	~	~	15	5.3	137			23
ARK-01-54	50-54	08/16/05	Manganese	121,000	~	~	100	10	~			1,210	12,100	
ARK-01-54	50-54	08/16/05	Manganese (Dissolved)	45,800	~	~	100	10	~			458	4,580	
ARK-01-54	50-54	08/16/05	Nickel	737	470	52	4,600	460	~	1.6	14		1.6	
ARK-01-54	50-54	08/16/05	Nickel (Dissolved)	98.9	470	52	4,600	460	~		1.9			
ARK-01-54	50-54	08/16/05	Vinyl chloride	9.40	~	~	2.4	0.24	2			3.9	39	4.7
ARK-01-54	50-54	08/16/05	Zinc	3,720	120	120	26,000	2,600	~	31	31		1.4	

TABLE 6
Stage 1 Source Control Evaluation Reconnaissance Borings and Selected Monitoring Wells
Results Exceeding Water Quality Screening Values
RP - Portland Site

					Screening Values[1,2] (µg/L)					Exceedance Ratio[3]				
					Ecological Receptors		Human Health			Ecological Receptors		Human Health		
Sample Location	Depth Interval (feet bgs)	Sample Date	Analyte	Concentration (µg/L)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)
ARK-01-54	50-54	08/16/05	Zinc (Dissolved)	794	120	120	26,000	2,600	~	6.6	6.6			
ARK-02-40	36-40	08/22/05	Aluminum	463,000	750	87	~	~	~	617	5,322			
ARK-02-40	36-40	08/22/05	Aluminum (Dissolved)	1,250	750	87	~	~	~	1.7	14			
ARK-02-40	36-40	08/22/05	Arsenic	266	340	150	0.14	0.014	10		1.8	1,900	19,000	27
ARK-02-40	36-40	08/22/05	Chloride	2,460,000	860,000	230,000	~	~	~	2.9	11			
ARK-02-40	36-40	08/22/05	Chromium	558	~	~	~	~	100					5.6
ARK-02-40	36-40	08/22/05	Copper	1,900	13	9.0	~	~	1,300	146	211			1.5
ARK-02-40	36-40	08/22/05	Iron	966,000	~	1,000	~	~	~		966			
ARK-02-40	36-40	08/22/05	Iron (Dissolved)	2,820	~	1,000	~	~	~		2.8			
ARK-02-40	36-40	08/22/05	Lead	305	65	2.5	~	~	15	4.7	122			20
ARK-02-40	36-40	08/22/05	Manganese	43,100	~	~	100	10	~			431	4,310	
ARK-02-40	36-40	08/22/05	Manganese (Dissolved)	14,400	~	~	100	10	~			144	1,440	
ARK-02-40	36-40	08/22/05	Mercury	0.360	1.4	0.77	0.3	0.03	2			1.2	12	
ARK-02-40	36-40	08/22/05	Nickel	456	470	52	4,600	460	~		8.8			
ARK-02-40	36-40	08/22/05	Zinc	2,530	120	120	26,000	2,600	~	21	21			
ARK-02-80	76-80	08/19/05	Aluminum	47,300	750	87	~	~	~	63	544			
ARK-02-80	76-80	08/19/05	Arsenic	22.5	340	150	0.14	0.014	10			161	1,607	2.3
ARK-02-80	76-80	08/19/05	Chromium	128	~	~	~	~	100					1.3
ARK-02-80	76-80	08/19/05	Copper	332	13	9.0	~	~	1,300	26	37			
ARK-02-80	76-80	08/19/05	Iron	46,200	~	1,000	~	~	~		46			
ARK-02-80	76-80	08/19/05	Iron (Dissolved)	3,260	~	1,000	~	~	~		3.3			
ARK-02-80	76-80	08/19/05	Manganese	9,530	~	~	100	10	~			95	953	
ARK-02-80	76-80	08/19/05	Manganese (Dissolved)	2,540	~	~	100	10	~			25	254	
ARK-02-80	76-80	08/19/05	Nickel	209	470	52	4,600	460	~		4.0			
ARK-02-80	76-80	08/19/05	Zinc	9,920	120	120	26,000	2,600	~	83	83		3.8	
ARK-02-80	76-80	08/19/05	Zinc (Dissolved)	668	120	120	26,000	2,600	~	5.6	5.6			
ARK-03-26	22-26	08/23/05	Aluminum	1,420	750	87	~	~	~	1.9	16			
ARK-03-26	22-26	08/23/05	Iron	9,230	~	1,000	~	~	~		9.2			
ARK-03-26	22-26	08/23/05	Iron (Dissolved)	6,190	~	1,000	~	~	~		6.2			
ARK-03-26	22-26	08/23/05	Manganese	714	~	~	100	10	~			7.1	71	
ARK-03-26	22-26	08/23/05	Manganese (Dissolved)	678	~	~	100	10	~			6.8	68	
ARK-03-58	54-58	08/23/05	2,3,7,8-TCDD	0.00000173	~	~	5.1E-09	5.1E-10	0.00003			339	3,392	
ARK-03-58	54-58	08/23/05	Aluminum	256,000	750	87	~	~	~	341	2,943			
ARK-03-58	54-58	08/23/05	Arsenic	147	340	150	0.14	0.014	10			1,050	10,500	15
ARK-03-58	54-58	08/23/05	Chloride	653,000	860,000	230,000	~	~	~		2.8			
ARK-03-58	54-58	08/23/05	Chromium	245	~	~	~	~	100					2.5
ARK-03-58	54-58	08/23/05	Copper	700	13	9.0	~	~	1,300	54	78			
ARK-03-58	54-58	08/23/05	Iron	631,000	~	1,000	~	~	~		631			
ARK-03-58	54-58	08/23/05	Iron (Dissolved)	3,170	~	1,000	~	~	~		3.2			

TABLE 6
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					Screening Values[1,2] (µg/L)					Exceedance Ratio[3]				
					Ecological Receptors		Human Health			Ecological Receptors		Human Health		
Sample Location	Depth Interval (feet bgs)	Sample Date	Analyte	Concentration (µg/L)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)
ARK-03-58	54-58	08/23/05	Lead	152	65	2.5	~	~	15	2.3	61			10
ARK-03-58	54-58	08/23/05	Manganese	53,500	~	~	100	10	~			535	5,350	
ARK-03-58	54-58	08/23/05	Manganese (Dissolved)	17,400	~	~	100	10	~			174	1,740	
ARK-03-58	54-58	08/23/05	Nickel	301	470	52	4,600	460	~		5.8			
ARK-03-58	54-58	08/23/05	Zinc	1,460	120	120	26,000	2,600	~	12	12			
ARK-03-80	76-80	08/22/05	2,3,7,8-TCDD	0.00000243	~	~	5.1E-09	5.1E-10	0.00003			476	4,765	
ARK-03-80	76-80	08/22/05	Aluminum	250,000	750	87	~	~	~	333	2,874			
ARK-03-80	76-80	08/22/05	Arsenic	140	340	150	0.14	0.014	10			1,000	10,000	14
ARK-03-80	76-80	08/22/05	Bis(2-Ethylhexyl) pthalate	1.00	~	~	2.2	0.22	6				4.5	
ARK-03-80	76-80	08/22/05	Chromium	396	~	~	~	~	100					4.0
ARK-03-80	76-80	08/22/05	Copper	677	13	9.0	~	~	1,300	52	75			
ARK-03-80	76-80	08/22/05	Iron	612,000	~	1,000	~	~	~		612			
ARK-03-80	76-80	08/22/05	Iron (Dissolved)	10,700	~	1,000	~	~	~		11			
ARK-03-80	76-80	08/22/05	Lead	149	65	2.5	~	~	15	2.3	60			9.9
ARK-03-80	76-80	08/22/05	Manganese	42,300	~	~	100	10	~			423	4,230	
ARK-03-80	76-80	08/22/05	Manganese (Dissolved)	4,120	~	~	100	10	~			41	412	
ARK-03-80	76-80	08/22/05	Nickel	356	470	52	4,600	460	~		6.8			
ARK-03-80	76-80	08/22/05	Zinc	2,240	120	120	26,000	2,600	~	19	19			
ARK-03-102.5	90-102.5	09/09/05	1,2-Dichlorobenzene	660	~	~	1,300	130	600				5.1	1.1
ARK-03-102.5	90-102.5	09/09/05	1,4-Dichlorobenzene	210	~	~	190	19	75			1.1	11	2.8
ARK-03-102.5	90-102.5	09/09/05	2,3,7,8-TCDD	0.00000347	~	~	5.1E-09	5.1E-10	0.00003			680	6,804	
ARK-03-102.5	90-102.5	09/09/05	Aluminum	214,000	750	87	~	~	~	285	2,460			
ARK-03-102.5	90-102.5	09/09/05	Arsenic	92.9	340	150	0.14	0.014	10			664	6,636	9.3
ARK-03-102.5	90-102.5	09/09/05	Chloride	691,000	860,000	230,000	~	~	~		3.0			
ARK-03-102.5	90-102.5	09/09/05	Chlorobenzene	270	~	~	1,600	160	100				1.7	2.7
ARK-03-102.5	90-102.5	09/09/05	Chromium	239	~	~	~	~	100					2.4
ARK-03-102.5	90-102.5	09/09/05	Copper	408	13	9.0	~	~	1,300	31	45			
ARK-03-102.5	90-102.5	09/09/05	Iron	482,000	~	1,000	~	~	~		482			
ARK-03-102.5	90-102.5	09/09/05	Iron (Dissolved)	1,400	~	1,000	~	~	~		1.4			
ARK-03-102.5	90-102.5	09/09/05	Lead	149	65	2.5	~	~	15	2.3	60			9.9
ARK-03-102.5	90-102.5	09/09/05	Manganese	21,000	~	~	100	10	~			210	2,100	
ARK-03-102.5	90-102.5	09/09/05	Manganese (Dissolved)	13,600	~	~	100	10	~			136	1,360	
ARK-03-102.5	90-102.5	09/09/05	Mercury (Dissolved)	0.140	1.4	0.77	0.3	0.03	2				4.7	
ARK-03-102.5	90-102.5	09/09/05	Nickel	227	470	52	4,600	460	~		4.4			
ARK-03-102.5	90-102.5	09/09/05	Trichloroethene	5.80	~	~	30	3	5				1.9	1.2
ARK-03-102.5	90-102.5	09/09/05	Vinyl chloride	16.0	~	~	2.4	0.24	2			6.7	67	8.0
ARK-03-102.5	90-102.5	09/09/05	Zinc	918	120	120	26,000	2,600	~	7.7	7.7			
ARK-04-15	10-15	08/12/05	2,3,7,8-TCDD	0.000000899	~	~	5.1E-09	5.1E-10	0.00003			176	1,763	
ARK-04-15	10-15	08/12/05	Aluminum	30,400	750	87	~	~	~	41	349			

TABLE 6
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Results Exceeding Water Quality Screening Values
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					Screening Values[1,2] (µg/L)					Exceedance Ratio[3]				
					Ecological Receptors		Human Health			Ecological Receptors		Human Health		
Sample Location	Depth Interval (feet bgs)	Sample Date	Analyte	Concentration (µg/L)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)
ARK-04-15	10-15	08/12/05	Aluminum (Dissolved)	1,260	750	87	~	~	~	1.7	14			
ARK-04-15	10-15	08/12/05	Copper	269	13	9.0	~	~	1,300	21	30			
ARK-04-15	10-15	08/12/05	Iron	44,200	~	1,000	~	~	~		44			
ARK-04-15	10-15	08/12/05	Iron (Dissolved)	2,890	~	1,000	~	~	~		2.9			
ARK-04-15	10-15	08/12/05	Lead	128	65	2.5	~	~	15	2.0	51			8.5
ARK-04-15	10-15	08/12/05	Lead (Dissolved)	17.6	65	2.5	~	~	15		7.0			1.2
ARK-04-15	10-15	08/12/05	Manganese	548	~	~	100	10	~			5.5	55	
ARK-04-15	10-15	08/12/05	Manganese (Dissolved)	63.3	~	~	100	10	~				6.3	
ARK-04-15	10-15	08/12/05	Mercury	0.610	1.4	0.77	0.3	0.03	2			2.0	20	
ARK-04-36	33-36	08/15/05	Aluminum	72,800	750	87	~	~	~	97	837			
ARK-04-36	33-36	08/15/05	Aluminum (Dissolved)	498	750	87	~	~	~		5.7			
ARK-04-36	33-36	08/15/05	Arsenic	27.8	340	150	0.14	0.014	10			199	1,986	2.8
ARK-04-36	33-36	08/15/05	Chloride	1,480,000	860,000	230,000	~	~	~	1.7	6.4			
ARK-04-36	33-36	08/15/05	Copper	128	13	9.0	~	~	1,300	9.8	14			
ARK-04-36	33-36	08/15/05	Iron	168,000	~	1,000	~	~	~		168			
ARK-04-36	33-36	08/15/05	Iron (Dissolved)	1,850	~	1,000	~	~	~		1.9			
ARK-04-36	33-36	08/15/05	Lead	44.5	65	2.5	~	~	15		18			3.0
ARK-04-36	33-36	08/15/05	Manganese	5,990	~	~	100	10	~			60	599	
ARK-04-36	33-36	08/15/05	Manganese (Dissolved)	3,810	~	~	100	10	~			38	381	
ARK-04-36	33-36	08/15/05	Nickel	99.3	470	52	4,600	460	~		1.9			
ARK-04-36	33-36	08/15/05	Zinc	319	120	120	26,000	2,600	~	2.7	2.7			
ARK-04-47	44-47	08/12/05	Aluminum	1,600	750	87	~	~	~	2.1	18			
ARK-04-47	44-47	08/12/05	Aluminum (Dissolved)	336	750	87	~	~	~		3.9			
ARK-04-47	44-47	08/12/05	Chloride	1,670,000	860,000	230,000	~	~	~	1.9	7.3			
ARK-04-47	44-47	08/12/05	Iron	9,640	~	1,000	~	~	~		9.6			
ARK-04-47	44-47	08/12/05	Iron (Dissolved)	6,580	~	1,000	~	~	~		6.6			
ARK-04-47	44-47	08/12/05	Manganese	1,940	~	~	100	10	~			19	194	
ARK-04-47	44-47	08/12/05	Manganese (Dissolved)	1,770	~	~	100	10	~			18	177	
ARK-05-22	18-22	08/17/05	2,3,7,8-TCDD	0.000000984	~	~	5.1E-09	5.1E-10	0.00003			193	1,929	
ARK-05-22	18-22	08/17/05	Aluminum	20,300	750	87	~	~	~	27	233			
ARK-05-22	18-22	08/17/05	Aluminum (Dissolved)	1,070	750	87	~	~	~	1.4	12			
ARK-05-22	18-22	08/17/05	Arsenic	29.0	340	150	0.14	0.014	10			207	2,071	2.9
ARK-05-22	18-22	08/17/05	Arsenic (Dissolved)	24.7	340	150	0.14	0.014	10			176	1,764	2.5
ARK-05-22	18-22	08/17/05	Copper	117	13	9.0	~	~	1,300	9.0	13			
ARK-05-22	18-22	08/17/05	Iron	23,900	~	1,000	~	~	~		24			
ARK-05-22	18-22	08/17/05	Iron (Dissolved)	3,940	~	1,000	~	~	~		3.9			
ARK-05-22	18-22	08/17/05	Lead	26.5	65	2.5	~	~	15		11			1.8
ARK-05-22	18-22	08/17/05	Manganese	314	~	~	100	10	~			3.1	31	
ARK-05-22	18-22	08/17/05	Manganese (Dissolved)	158	~	~	100	10	~			1.6	16	

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					Ecological Receptors		Human Health			Ecological Receptors		Human Health		
Sample Location	Depth Interval (feet bgs)	Sample Date	Analyte	Concentration (µg/L)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)
ARK-05-41	37-41	08/17/05	2,3,7,8-TCDD	0.00000100	~	~	5.1E-09	5.1E-10	0.00003			196	1,961	
ARK-05-41	37-41	08/17/05	Aluminum	546,000	750	87	~	~	~	728	6,276			
ARK-05-41	37-41	08/17/05	Aluminum (Dissolved)	2,090	750	87	~	~	~	2.8	24			
ARK-05-41	37-41	08/17/05	Arsenic	194	340	150	0.14	0.014	10		1.3	1,386	13,857	19
ARK-05-41	37-41	08/17/05	Bis(2-Ethylhexyl) pthalate	0.910	~	~	2.2	0.22	6				4.1	
ARK-05-41	37-41	08/17/05	Chromium	519	~	~	~	~	100					5.2
ARK-05-41	37-41	08/17/05	Copper	1,240	13	9.0	~	~	1,300	95	138			
ARK-05-41	37-41	08/17/05	Iron	3,200,000	~	1,000	~	~	~		3,200			
ARK-05-41	37-41	08/17/05	Iron (Dissolved)	10,900	~	1,000	~	~	~		11			
ARK-05-41	37-41	08/17/05	Lead	462	65	2.5	~	~	15	7.1	185			31
ARK-05-41	37-41	08/17/05	Manganese	56,600	~	~	100	10	~			566	5,660	
ARK-05-41	37-41	08/17/05	Manganese (Dissolved)	220	~	~	100	10	~			2.2	22	
ARK-05-41	37-41	08/17/05	Nickel	559	470	52	4,600	460	~	1.2	11		1.2	
ARK-05-41	37-41	08/17/05	Zinc	2,390	120	120	26,000	2,600	~	20	20			
ARK-05-67.5	62-67.5	09/08/05	2,3,7,8-TCDD	0.00000774	~	~	5.1E-09	5.1E-10	0.00003			1,518	15,176	
ARK-05-67.5	62-67.5	09/08/05	Aluminum	544,000	750	87	~	~	~	725	6,253			
ARK-05-67.5	62-67.5	09/08/05	Aluminum (Dissolved)	941	750	87	~	~	~	1.3	11			
ARK-05-67.5	62-67.5	09/08/05	Arsenic	199	340	150	0.14	0.014	10		1.3	1,421	14,214	20
ARK-05-67.5	62-67.5	09/08/05	Bis(2-Ethylhexyl) pthalate	4.50	~	~	2.2	0.22	6			2.0	20	
ARK-05-67.5	62-67.5	09/08/05	Cadmium	22.0	2.0	0.25	~	~	5	11	88			4.4
ARK-05-67.5	62-67.5	09/08/05	Chloride	1,470,000	860,000	230,000	~	~	~	1.7	6.4			
ARK-05-67.5	62-67.5	09/08/05	Chromium	683	~	~	~	~	100					6.8
ARK-05-67.5	62-67.5	09/08/05	Copper	1,530	13	9.0	~	~	1,300	118	170			1.2
ARK-05-67.5	62-67.5	09/08/05	Iron	4,820,000	~	1,000	~	~	~		4,820			
ARK-05-67.5	62-67.5	09/08/05	Iron (Dissolved)	2,250	~	1,000	~	~	~		2.3			
ARK-05-67.5	62-67.5	09/08/05	Lead	583	65	2.5	~	~	15	9.0	233			39
ARK-05-67.5	62-67.5	09/08/05	Manganese	21,000	~	~	100	10	~			210	2,100	
ARK-05-67.5	62-67.5	09/08/05	Manganese (Dissolved)	3,910	~	~	100	10	~			39	391	
ARK-05-67.5	62-67.5	09/08/05	Nickel	563	470	52	4,600	460	~	1.2	11		1.2	
ARK-05-67.5	62-67.5	09/08/05	Vinyl chloride	1.00	~	~	2.4	0.24	2				4.2	
ARK-05-67.5	62-67.5	09/08/05	Zinc	2,360	120	120	26,000	2,600	~	20	20			
ARK-06-27	23-27	08/18/05	Bis(2-Ethylhexyl) pthalate	0.700	~	~	2.2	0.22	6				3.2	
ARK-06-27	23-27	08/18/05	Iron	3,630	~	1,000	~	~	~		3.6			
ARK-06-27	23-27	08/18/05	Iron (Dissolved)	2,780	~	1,000	~	~	~		2.8			
ARK-06-27	23-27	08/18/05	Manganese	581	~	~	100	10	~			5.8	58	
ARK-06-27	23-27	08/18/05	Manganese (Dissolved)	597	~	~	100	10	~			6.0	60	
ARK-06-58	54-58	08/19/05	Aluminum	42,200	750	87	~	~	~	56	485			
ARK-06-58	54-58	08/19/05	Arsenic	27.9	340	150	0.14	0.014	10			199	1,993	2.8
ARK-06-58	54-58	08/19/05	Chloride	1,510,000	860,000	230,000	~	~	~	1.8	6.6			

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RP - Portland Site

					Screening Values[1,2] (µg/L)					Exceedance Ratio[3]				
					Ecological Receptors		Human Health			Ecological Receptors		Human Health		
Sample Location	Depth Interval (feet bgs)	Sample Date	Analyte	Concentration (µg/L)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)
ARK-06-58	54-58	08/19/05	Copper	68.0	13	9.0	~	~	1,300	5.2	7.6			
ARK-06-58	54-58	08/19/05	Iron	58,900	~	1,000	~	~	~		59			
ARK-06-58	54-58	08/19/05	Iron (Dissolved)	1,590	~	1,000	~	~	~		1.6			
ARK-06-58	54-58	08/19/05	Manganese	74,400	~	~	100	10	~			744	7,440	
ARK-06-58	54-58	08/19/05	Manganese (Dissolved)	53,600	~	~	100	10	~			536	5,360	
ARK-06-58	54-58	08/19/05	Nickel	71.8	470	52	4,600	460	~		1.4			
ARK-06-58	54-58	08/19/05	Zinc	324	120	120	26,000	2,600	~	2.7	2.7			
ARK-06-80	76-80	08/18/05	2,3,7,8-TCDD	0.00000639	~	~	5.1E-09	5.1E-10	0.00003			1,253	12,529	
ARK-06-80	76-80	08/18/05	Aluminum	10,800	750	87	~	~	~	14	124			
ARK-06-80	76-80	08/18/05	Bis(2-Ethylhexyl) pthalate	5.10	~	~	2.2	0.22	6			2.3	23	
ARK-06-80	76-80	08/18/05	Chloride	1,860,000	860,000	230,000	~	~	~	2.2	8.1			
ARK-06-80	76-80	08/18/05	Chromium	203	~	~	~	~	100					2.0
ARK-06-80	76-80	08/18/05	Copper	134	13	9.0	~	~	1,300	10	15			
ARK-06-80	76-80	08/18/05	Iron	40,800	~	1,000	~	~	~		41			
ARK-06-80	76-80	08/18/05	Manganese	43,200	~	~	100	10	~			432	4,320	
ARK-06-80	76-80	08/18/05	Manganese (Dissolved)	42,500	~	~	100	10	~			425	4,250	
ARK-06-80	76-80	08/18/05	Zinc	1,520	120	120	26,000	2,600	~	13	13			
ARK-06-97.5	88-97.5	09/07/05	1,2-Dichlorobenzene	180	~	~	1,300	130	600				1.4	
ARK-06-97.5	88-97.5	09/07/05	1,4-Dichlorobenzene	55.0	~	~	190	19	75				2.9	
ARK-06-97.5	88-97.5	09/07/05	2,3,7,8-TCDD	0.00000160	~	~	5.1E-09	5.1E-10	0.00003			314	3,137	
ARK-06-97.5	88-97.5	09/07/05	Aluminum	408,000	750	87	~	~	~	544	4,690			
ARK-06-97.5	88-97.5	09/07/05	Aluminum (Dissolved)	2,380	750	87	~	~	~	3.2	27			
ARK-06-97.5	88-97.5	09/07/05	Arsenic	176	340	150	0.14	0.014	10		1.2	1,257	12,571	18
ARK-06-97.5	88-97.5	09/07/05	Cadmium	9.00	2.0	0.25	~	~	5	4.5	36			1.8
ARK-06-97.5	88-97.5	09/07/05	Chloride	567,000	860,000	230,000	~	~	~		2.5			
ARK-06-97.5	88-97.5	09/07/05	Chromium	440	~	~	~	~	100					4.4
ARK-06-97.5	88-97.5	09/07/05	Copper	870	13	9.0	~	~	1,300	67	97			
ARK-06-97.5	88-97.5	09/07/05	Iron	935,000	~	1,000	~	~	~		935			
ARK-06-97.5	88-97.5	09/07/05	Iron (Dissolved)	5,560	~	1,000	~	~	~		5.6			
ARK-06-97.5	88-97.5	09/07/05	Lead	300	65	2.5	~	~	15	4.6	120			20
ARK-06-97.5	88-97.5	09/07/05	Manganese	30,800	~	~	100	10	~			308	3,080	
ARK-06-97.5	88-97.5	09/07/05	Manganese (Dissolved)	14,300	~	~	100	10	~			143	1,430	
ARK-06-97.5	88-97.5	09/07/05	Nickel	460	470	52	4,600	460	~		8.8			
ARK-06-97.5	88-97.5	09/07/05	Vinyl chloride	3.60	~	~	2.4	0.24	2			1.5	15	1.8
ARK-06-97.5	88-97.5	09/07/05	Zinc	1,710	120	120	26,000	2,600	~	14	14			
ARK-07-14	10-14	08/09/05	2,3,7,8-TCDD	0.000000590	~	~	5.1E-09	5.1E-10	0.00003			116	1,157	
ARK-07-14	10-14	08/09/05	Aluminum	21,900	750	87	~	~	~	29	252			
ARK-07-14	10-14	08/09/05	Aluminum (Dissolved)	3,660	750	87	~	~	~	4.9	42			
ARK-07-14	10-14	08/09/05	Arsenic	36.7	340	150	0.14	0.014	10			262	2,621	3.7

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					Screening Values[1,2] (µg/L)					Exceedance Ratio[3]				
					Ecological Receptors		Human Health			Ecological Receptors		Human Health		
Sample Location	Depth Interval (feet bgs)	Sample Date	Analyte	Concentration (µg/L)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)
ARK-07-14	10-14	08/09/05	Copper	59.8	13	9.0	~	~	1,300	4.6	6.6			
ARK-07-14	10-14	08/09/05	Copper (Dissolved)	20.3	13	9.0	~	~	1,300	1.6	2.3			
ARK-07-14	10-14	08/09/05	Iron	47,500	~	1,000	~	~	~		48			
ARK-07-14	10-14	08/09/05	Iron (Dissolved)	9,170	~	1,000	~	~	~		9.2			
ARK-07-14	10-14	08/09/05	Lead	23.6	65	2.5	~	~	15		9.4			1.6
ARK-07-14	10-14	08/09/05	Lead (Dissolved)	3.80	65	2.5	~	~	15		1.5			
ARK-07-14	10-14	08/09/05	Manganese	525	~	~	100	10	~			5.3	53	
ARK-07-14	10-14	08/09/05	Manganese (Dissolved)	137	~	~	100	10	~			1.4	14	
ARK-07-14	10-14	08/09/05	Mercury	1.10	1.4	0.77	0.3	0.03	2		1.4	3.7	37	
ARK-07-14	10-14	08/09/05	Mercury (Dissolved)	0.180	1.4	0.77	0.3	0.03	2				6.0	
ARK-07-14	10-14	08/09/05	Tetrachloroethene	3.50	~	~	3.3	0.33	5			1.1	11	
ARK-07-26	22-26	08/09/05	2,3,7,8-TCDD	0.00000178	~	~	5.1E-09	5.1E-10	0.00003			349	3,490	
ARK-07-26	22-26	08/09/05	4,4'-DDD	0.320	~	~	0.00031	0.000031	~			1,032	10,323	
ARK-07-26	22-26	08/09/05	4,4'-DDE	0.170	~	~	0.00022	0.000022	~			773	7,727	
ARK-07-26	22-26	08/09/05	4,4'-DDT	1.30	1.1	0.001	0.00022	0.000022	~	1.2	1,300	5,909	59,091	
ARK-07-26	22-26	08/09/05	Chloroform	100	~	~	470	47	~				2.1	
ARK-07-45	41-45	08/09/05	2,3,7,8-TCDD	0.00000207	~	~	5.1E-09	5.1E-10	0.00003			406	4,059	
ARK-07-45	41-45	08/09/05	4,4'-DDD	0.210	~	~	0.00031	0.000031	~			677	6,774	
ARK-07-45	41-45	08/09/05	4,4'-DDE	0.150	~	~	0.00022	0.000022	~			682	6,818	
ARK-07-45	41-45	08/09/05	4,4'-DDT	1.20	1.1	0.001	0.00022	0.000022	~	1.1	1,200	5,455	54,545	
ARK-07-45	41-45	08/09/05	Aluminum	246,000	750	87	~	~	~	328	2,828			
ARK-07-45	41-45	08/09/05	Aluminum (Dissolved)	3,000	750	87	~	~	~	4.0	34			
ARK-07-45	41-45	08/09/05	Arsenic	68.5	340	150	0.14	0.014	10			489	4,893	6.9
ARK-07-45	41-45	08/09/05	Bis(2-Ethylhexyl) pthalate	3.10	~	~	2.2	0.22	6			1.4	14	
ARK-07-45	41-45	08/09/05	Chloride	734,000	860,000	230,000	~	~	~		3.2			
ARK-07-45	41-45	08/09/05	Chromium	325	~	~	~	~	100					3.3
ARK-07-45	41-45	08/09/05	Copper	1,990	13	9.0	~	~	1,300	153	221			1.5
ARK-07-45	41-45	08/09/05	Copper (Dissolved)	10.9	13	9.0	~	~	1,300		1.2			
ARK-07-45	41-45	08/09/05	Iron	476,000	~	1,000	~	~	~		476			
ARK-07-45	41-45	08/09/05	Iron (Dissolved)	8,130	~	1,000	~	~	~		8.1			
ARK-07-45	41-45	08/09/05	Lead	229	65	2.5	~	~	15	3.5	92			15
ARK-07-45	41-45	08/09/05	Manganese	7,610	~	~	100	10	~			76	761	
ARK-07-45	41-45	08/09/05	Manganese (Dissolved)	81.2	~	~	100	10	~				8.1	
ARK-07-45	41-45	08/09/05	Mercury	0.840	1.4	0.77	0.3	0.03	2		1.1	2.8	28	
ARK-07-45	41-45	08/09/05	Nickel	275	470	52	4,600	460	~		5.3			
ARK-07-45	41-45	08/09/05	Zinc	1,910	120	120	26,000	2,600	~	16	16			
ARK-08-15	10-15	08/10/05	2,3,7,8-TCDD	0.000000538	~	~	5.1E-09	5.1E-10	0.00003			105	1,055	
ARK-08-15	10-15	08/10/05	Aluminum	45,700	750	87	~	~	~	61	525			
ARK-08-15	10-15	08/10/05	Aluminum (Dissolved)	5,000	750	87	~	~	~	6.7	57			

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					Screening Values[1,2] (µg/L)					Exceedance Ratio[3]				
					Ecological Receptors		Human Health			Ecological Receptors		Human Health		
Sample Location	Depth Interval (feet bgs)	Sample Date	Analyte	Concentration (µg/L)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)
ARK-08-15	10-15	08/10/05	Arsenic	35.4	340	150	0.14	0.014	10			253	2,529	3.5
ARK-08-15	10-15	08/10/05	Arsenic (Dissolved)	9.00	340	150	0.14	0.014	10			64	643	
ARK-08-15	10-15	08/10/05	Chromium	338	~	~	~	~	100					3.4
ARK-08-15	10-15	08/10/05	Chromium (Dissolved)	163	~	~	~	~	100					1.6
ARK-08-15	10-15	08/10/05	Copper	136	13	9.0	~	~	1,300	10	15			
ARK-08-15	10-15	08/10/05	Copper (Dissolved)	66.9	13	9.0	~	~	1,300	5.1	7.4			
ARK-08-15	10-15	08/10/05	Iron	102,000	~	1,000	~	~	~		102			
ARK-08-15	10-15	08/10/05	Iron (Dissolved)	13,700	~	1,000	~	~	~		14			
ARK-08-15	10-15	08/10/05	Lead	27.3	65	2.5	~	~	15		11			1.8
ARK-08-15	10-15	08/10/05	Lead (Dissolved)	3.50	65	2.5	~	~	15		1.4			
ARK-08-15	10-15	08/10/05	Manganese	1,310	~	~	100	10	~			13	131	
ARK-08-15	10-15	08/10/05	Manganese (Dissolved)	197	~	~	100	10	~			2.0	20	
ARK-08-15	10-15	08/10/05	Mercury	0.940	1.4	0.77	0.3	0.03	2		1.2	3.1	31	
ARK-08-15	10-15	08/10/05	Mercury (Dissolved)	0.270	1.4	0.77	0.3	0.03	2				9.0	
ARK-08-15	10-15	08/10/05	Nickel	59.7	470	52	4,600	460	~		1.1			
ARK-08-15	10-15	08/10/05	Tetrachloroethene	4.10	~	~	3.3	0.33	5			1.2	12	
ARK-08-15	10-15	08/10/05	Trichloroethene	3.90	~	~	30	3	5				1.3	
ARK-08-43.5	38.5-43.5	08/10/05	Aluminum	108,000	750	87	~	~	~	144	1,241			
ARK-08-43.5	38.5-43.5	08/10/05	Aluminum (Dissolved)	616	750	87	~	~	~		7.1			
ARK-08-43.5	38.5-43.5	08/10/05	Arsenic	45.5	340	150	0.14	0.014	10			325	3,250	4.6
ARK-08-43.5	38.5-43.5	08/10/05	Chromium	114	~	~	~	~	100					1.1
ARK-08-43.5	38.5-43.5	08/10/05	Copper	165	13	9.0	~	~	1,300	13	18			
ARK-08-43.5	38.5-43.5	08/10/05	Iron	266,000	~	1,000	~	~	~		266			
ARK-08-43.5	38.5-43.5	08/10/05	Iron (Dissolved)	1,540	~	1,000	~	~	~		1.5			
ARK-08-43.5	38.5-43.5	08/10/05	Lead	67.5	65	2.5	~	~	15	1.0	27			4.5
ARK-08-43.5	38.5-43.5	08/10/05	Manganese	4,220	~	~	100	10	~			42	422	
ARK-08-43.5	38.5-43.5	08/10/05	Manganese (Dissolved)	212	~	~	100	10	~			2.1	21	
ARK-08-43.5	38.5-43.5	08/10/05	Nickel	110	470	52	4,600	460	~		2.1			
ARK-08-43.5	38.5-43.5	08/10/05	Zinc	467	120	120	26,000	2,600	~	3.9	3.9			
ARK-09-16	11-16	08/11/05	2,3,7,8-TCDD	0.000000507	~	~	5.1E-09	5.1E-10	0.00003			99	994	
ARK-09-16	11-16	08/11/05	Aluminum	1,020	750	87	~	~	~	1.4	12			
ARK-09-16	11-16	08/11/05	Arsenic	45.0	340	150	0.14	0.014	10			321	3,214	4.5
ARK-09-16	11-16	08/11/05	Arsenic (Dissolved)	9.80	340	150	0.14	0.014	10			70	700	
ARK-09-16	11-16	08/11/05	Iron	26,700	~	1,000	~	~	~		27			
ARK-09-16	11-16	08/11/05	Manganese	4,620	~	~	100	10	~			46	462	
ARK-09-16	11-16	08/11/05	Manganese (Dissolved)	4,210	~	~	100	10	~			42	421	
ARK-09-35	30-35	08/12/05	2,3,7,8-TCDD	0.00000101	~	~	5.1E-09	5.1E-10	0.00003			198	1,980	
ARK-09-35	30-35	08/12/05	Aluminum	7,620	750	87	~	~	~	10	88			
ARK-09-35	30-35	08/12/05	Chloride	8,170,000	860,000	230,000	~	~	~	9.5	36			

TABLE 6
Stage 1 Source Control Evaluation Reconnaissance Borings and Selected Monitoring Wells
Results Exceeding Water Quality Screening Values
RP - Portland Site

					Screening Values[1,2] (µg/L)					Exceedance Ratio[3]				
					Ecological Receptors		Human Health			Ecological Receptors		Human Health		
Sample Location	Depth Interval (feet bgs)	Sample Date	Analyte	Concentration (µg/L)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)
ARK-09-35	30-35	08/12/05	Iron	320,000	~	1,000	~	~	~		320			
ARK-09-35	30-35	08/12/05	Iron (Dissolved)	321,000	~	1,000	~	~	~		321			
ARK-09-35	30-35	08/12/05	Lead	33.8	65	2.5	~	~	15		14			2.3
ARK-09-35	30-35	08/12/05	Lead (Dissolved)	28.8	65	2.5	~	~	15		12			1.9
ARK-09-35	30-35	08/12/05	Manganese	87,100	~	~	100	10	~			871	8,710	
ARK-09-35	30-35	08/12/05	Manganese (Dissolved)	87,000	~	~	100	10	~			870	8,700	
ARK-09-35	30-35	08/12/05	Nickel	97.8	470	52	4,600	460	~		1.9			
ARK-09-35	30-35	08/12/05	Nickel (Dissolved)	81.2	470	52	4,600	460	~		1.6			
ARK-09-56	52-56	08/12/05	2,3,7,8-TCDD	0.000000799	~	~	5.1E-09	5.1E-10	0.00003			157	1,567	
ARK-09-56	52-56	08/12/05	Aluminum	1,120	750	87	~	~	~	1.5	13			
ARK-09-56	52-56	08/12/05	Chloride	1,260,000	860,000	230,000	~	~	~	1.5	5.5			
ARK-09-56	52-56	08/12/05	Iron	7,460	~	1,000	~	~	~		7.5			
ARK-09-56	52-56	08/12/05	Iron (Dissolved)	3,240	~	1,000	~	~	~		3.2			
ARK-09-56	52-56	08/12/05	Manganese	11,200	~	~	100	10	~			112	1,120	
ARK-09-56	52-56	08/12/05	Manganese (Dissolved)	10,900	~	~	100	10	~			109	1,090	
ARK-09-56	52-56	08/12/05	Zinc	966	120	120	26,000	2,600	~	8.1	8.1			
ARK-09-56	52-56	08/12/05	Zinc (Dissolved)	632	120	120	26,000	2,600	~	5.3	5.3			
ARK-09-97.5	86-94	09/06/05	2,3,7,8-TCDD	0.00000173	~	~	5.1E-09	5.1E-10	0.00003			339	3,392	
ARK-09-97.5	86-94	09/06/05	Aluminum	485,000	750	87	~	~	~	647	5,575			
ARK-09-97.5	86-94	09/06/05	Arsenic	158	340	150	0.14	0.014	10		1.1	1,129	11,286	16
ARK-09-97.5	86-94	09/06/05	Chromium	556	~	~	~	~	100					5.6
ARK-09-97.5	86-94	09/06/05	Copper	1,290	13	9.0	~	~	1,300	99	143			
ARK-09-97.5	86-94	09/06/05	Iron	3,300,000	~	1,000	~	~	~		3,300			
ARK-09-97.5	86-94	09/06/05	Lead	508	65	2.5	~	~	15	7.8	203			34
ARK-09-97.5	86-94	09/06/05	Manganese	30,700	~	~	100	10	~			307	3,070	
ARK-09-97.5	86-94	09/06/05	Manganese (Dissolved)	4,550	~	~	100	10	~			46	455	
ARK-09-97.5	86-94	09/06/05	Nickel	670	470	52	4,600	460	~	1.4	13		1.5	
ARK-09-97.5	86-94	09/06/05	Zinc	2,080	120	120	26,000	2,600	~	17	17			
RP-01-31	25-30	04/18/05	Aluminum	2,620	750	87	~	~	~	3.5	30			
RP-01-31	25-30	04/18/05	Iron	5,740	~	1,000	~	~	~		5.7			
RP-01-31	25-30	04/18/05	Manganese	73.9	~	~	100	10	~				7.4	
RP-01-51	45-50	04/18/05	1,2-Dichlorobenzene	300	~	~	1,300	130	600				2.3	
RP-01-51	45-50	04/18/05	1,4-Dichlorobenzene	77.1	~	~	190	19	75				4.1	1.0
RP-01-51	45-50	04/18/05	Aluminum	670	750	87	~	~	~		7.7			
RP-01-51	45-50	04/18/05	Chloride	853,000	860,000	230,000	~	~	~		3.7			
RP-01-51	45-50	04/18/05	Iron	3,930	~	1,000	~	~	~		3.9			
RP-01-51	45-50	04/18/05	Manganese	3,720	~	~	100	10	~			37	372	
RP-01-51	45-50	04/18/05	Trichloroethene	5.02	~	~	30	3	5				1.7	1.0
RP-01-51	45-50	04/18/05	Vinyl chloride	7.88	~	~	2.4	0.24	2			3.3	33	3.9

TABLE 6
Stage 1 Source Control Evaluation Reconnaissance Borings and Selected Monitoring Wells
Results Exceeding Water Quality Screening Values
RP - Portland Site

					Screening Values[1,2] (µg/L)					Exceedance Ratio[3]				
					Ecological Receptors		Human Health			Ecological Receptors		Human Health		
Sample Location	Depth Interval (feet bgs)	Sample Date	Analyte	Concentration (µg/L)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)
RP-01-65	59-64	04/18/05	1,2-Dichlorobenzene	660	~	~	1,300	130	600				5.1	1.1
RP-01-65	59-64	04/18/05	1,4-Dichlorobenzene	171	~	~	190	19	75				9.0	2.3
RP-01-65	59-64	04/18/05	Benzene	12.2	~	~	51	5.1	5				2.4	2.4
RP-01-65	59-64	04/18/05	Chloride	1,530,000	860,000	230,000	~	~	~	1.8	6.7			
RP-01-65	59-64	04/18/05	Manganese	2,970	~	~	100	10	~			30	297	
RP-01-65	59-64	04/18/05	Trichloroethene	13.2	~	~	30	3	5				4.4	2.6
RP-01-65	59-64	04/18/05	Vinyl chloride	20.4	~	~	2.4	0.24	2			8.5	85	10
RP-02-66	60-65	04/13/05	1,4-Dichlorobenzene	28.5	~	~	190	19	75				1.5	
RP-02-66	60-65	04/13/05	Cadmium	5.05	2.0	0.25	~	~	5	2.5	20			1.0
RP-02-66	60-65	04/13/05	Cadmium (Dissolved)	4.14	2.0	0.25	~	~	5	2.1	17			
RP-02-66	60-65	04/13/05	Chloride	15,500,000	860,000	230,000	~	~	~	18	67			
RP-02-66	60-65	04/13/05	Copper	29.2	13	9.0	~	~	1,300	2.2	3.2			
RP-02-66	60-65	04/13/05	Copper (Dissolved)	25.8	13	9.0	~	~	1,300	2.0	2.9			
RP-02-66	60-65	04/13/05	Manganese	5,850	~	~	100	10	~			59	585	
RP-02-66	60-65	04/13/05	Nickel	125	470	52	4,600	460	~		2.4			
RP-02-66	60-65	04/13/05	Nickel (Dissolved)	123	470	52	4,600	460	~		2.4			
RP-02-66	60-65	04/13/05	Vinyl chloride	4.57	~	~	2.4	0.24	2			1.9	19	2.3
RP-06-87	81-86	04/18/05	1,2-Dichlorobenzene	498	~	~	1,300	130	600				3.8	
RP-06-87	81-86	04/18/05	1,4-Dichlorobenzene	119	~	~	190	19	75				6.3	1.6
RP-06-87	81-86	04/18/05	Aluminum	239	750	87	~	~	~		2.7			
RP-06-87	81-86	04/18/05	Arsenic	23.6	340	150	0.14	0.014	10			169	1,686	2.4
RP-06-87	81-86	04/18/05	Arsenic (Dissolved)	21.4	340	150	0.14	0.014	10			153	1,529	2.1
RP-06-87	81-86	04/18/05	Chloride	1,160,000	860,000	230,000	~	~	~	1.3	5.0			
RP-06-87	81-86	04/18/05	Iron	7,120	~	1,000	~	~	~		7.1			
RP-06-87	81-86	04/18/05	Manganese	31,200	~	~	100	10	~			312	3,120	
RP-06-87	81-86	04/18/05	Nickel	56.8	470	52	4,600	460	~		1.1			
RP-06-87	81-86	04/18/05	Trichloroethene	16.6	~	~	30	3	5				5.5	3.3
RP-06-87	81-86	04/18/05	Vinyl chloride	13.2	~	~	2.4	0.24	2			5.5	55	6.6
RP-07-84	78-83	04/14/05	1,2-Dichlorobenzene	743	~	~	1,300	130	600				5.7	1.2
RP-07-84	78-83	04/14/05	1,4-Dichlorobenzene	188	~	~	190	19	75				9.9	2.5
RP-07-84	78-83	04/14/05	Aluminum	360	750	87	~	~	~		4.1			
RP-07-84	78-83	04/14/05	Arsenic	6.47	340	150	0.14	0.014	10			46	462	
RP-07-84	78-83	04/14/05	Arsenic (Dissolved)	9.60	340	150	0.14	0.014	10			69	686	
RP-07-84	78-83	04/14/05	Chloride	1,030,000	860,000	230,000	~	~	~	1.2	4.5			
RP-07-84	78-83	04/14/05	Chlorobenzene	109	~	~	1,600	160	100					1.1
RP-07-84	78-83	04/14/05	Iron	2,140	~	1,000	~	~	~		2.1			
RP-07-84	78-83	04/14/05	Manganese	405	~	~	100	10	~			4.1	41	
RP-07-84	78-83	04/14/05	Trichloroethene	13.6	~	~	30	3	5				4.5	2.7
RP-07-84	78-83	04/14/05	Vinyl chloride	15.6	~	~	2.4	0.24	2			6.5	65	7.8

TABLE 6
Stage 1 Source Control Evaluation Reconnaissance Borings and Selected Monitoring Wells
Results Exceeding Water Quality Screening Values
RP - Portland Site

					Screening Values[1,2] (µg/L)					Exceedance Ratio[3]				
					Ecological Receptors		Human Health			Ecological Receptors		Human Health		
Sample Location	Depth Interval (feet bgs)	Sample Date	Analyte	Concentration (µg/L)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)
RP-07-119	114-119	04/14/05	1,2-Dichlorobenzene	138	~	~	1,300	130	600				1.1	
RP-07-119	114-119	04/14/05	1,4-Dichlorobenzene	39.0	~	~	190	19	75				2.1	
RP-07-119	114-119	04/14/05	Aluminum	419	750	87	~	~	~		4.8			
RP-07-119	114-119	04/14/05	Arsenic (Dissolved)	0.768	340	150	0.14	0.014	10			5.5	55	
RP-07-119	114-119	04/14/05	Chloride	508,000	860,000	230,000	~	~	~		2.2			
RP-07-119	114-119	04/14/05	Iron	1,970	~	1,000	~	~	~		2.0			
RP-07-119	114-119	04/14/05	Manganese	196	~	~	100	10	~			2.0	20	
RP-07-119	114-119	04/14/05	Mercury	0.0663	1.4	0.77	0.3	0.03	2				2.2	
RP-07-119	114-119	04/14/05	Trichloroethene	6.86	~	~	30	3	5				2.3	1.4
RP-11-31	27-31	11/15/05	Aluminum	910	750	87	~	~	~	1.2	10			
RP-11-31	27-31	11/15/05	Arsenic	6.20	340	150	0.14	0.014	10			44	443	
RP-11-31	27-31	11/15/05	Iron	90,700	~	1,000	~	~	~		91			
RP-11-31	27-31	11/15/05	Iron (Dissolved)	86,200	~	1,000	~	~	~		86			
RP-11-31	27-31	11/15/05	Manganese	3,200	~	~	100	10	~			32	320	
RP-11-31	27-31	11/15/05	Manganese (Dissolved)	3,090	~	~	100	10	~			31	309	
RP-11-100	96-100	11/15/05	Aluminum	110,000	750	87	~	~	~	147	1,264			
RP-11-100	96-100	11/15/05	Arsenic	20.6	340	150	0.14	0.014	10			147	1,471	2.1
RP-11-100	96-100	11/15/05	Bis(2-Ethylhexyl) pthalate	2.50	~	~	2.2	0.22	6			1.1	11	
RP-11-100	96-100	11/15/05	Chromium	159	~	~	~	~	100					1.6
RP-11-100	96-100	11/15/05	Copper	163	13	9.0	~	~	1,300	13	18			
RP-11-100	96-100	11/15/05	Iron	325,000	~	1,000	~	~	~		325			
RP-11-100	96-100	11/15/05	Iron (Dissolved)	176,000	~	1,000	~	~	~		176			
RP-11-100	96-100	11/15/05	Manganese	18,200	~	~	100	10	~			182	1,820	
RP-11-100	96-100	11/15/05	Manganese (Dissolved)	13,900	~	~	100	10	~			139	1,390	
RP-11-100	96-100	11/15/05	Nickel	145	470	52	4,600	460	~		2.8			
RP-11-100	96-100	11/15/05	Zinc	337	120	120	26,000	2,600	~	2.8	2.8			
RP-11-216	210-216	11/28/05	1,2-Dichlorobenzene	210	~	~	1,300	130	600				1.6	
RP-11-216	210-216	11/28/05	1,4-Dichlorobenzene	58.0	~	~	190	19	75				3.1	
RP-11-216	210-216	11/28/05	2,3,7,8-TCDD	0.000000712	~	~	5.1E-09	5.1E-10	0.00003			140	1,396	
RP-11-216	210-216	11/28/05	Aluminum	13,900	750	87	~	~	~	19	160			
RP-11-216	210-216	11/28/05	Copper	16.9	13	9.0	~	~	1,300	1.3	1.9			
RP-11-216	210-216	11/28/05	Iron	19,900	~	1,000	~	~	~		20			
RP-11-216	210-216	11/28/05	Iron (Dissolved)	5,050	~	1,000	~	~	~		5.1			
RP-11-216	210-216	11/28/05	Manganese	503	~	~	100	10	~			5.0	50	
RP-11-216	210-216	11/28/05	Manganese (Dissolved)	350	~	~	100	10	~			3.5	35	
RP-11-216	210-216	11/28/05	Trichloroethene	4.50	~	~	30	3	5				1.5	
RP-11-216	210-216	11/28/05	Vinyl chloride	2.30	~	~	2.4	0.24	2				9.6	1.2
SIL-01-31.5	26.5-31.5	11/01/05	Acenaphthene	210	~	~	990	99	~				2.1	
SIL-01-31.5	26.5-31.5	11/01/05	alpha-BHC	0.0650	~	~	0.0049	0.00049	~			13	133	

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RP - Portland Site

					Screening Values[1,2] (µg/L)					Exceedance Ratio[3]				
					Ecological Receptors		Human Health			Ecological Receptors		Human Health		
Sample Location	Depth Interval (feet bgs)	Sample Date	Analyte	Concentration (µg/L)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)
SIL-01-31.5	26.5-31.5	11/01/05	Aluminum	25,100	750	87	~	~	~	33	289			
SIL-01-31.5	26.5-31.5	11/01/05	Aluminum (Dissolved)	163	750	87	~	~	~		1.9			
SIL-01-31.5	26.5-31.5	11/01/05	Arsenic	18.7	340	150	0.14	0.014	10			134	1,336	1.9
SIL-01-31.5	26.5-31.5	11/01/05	Arsenic (Dissolved)	14.4	340	150	0.14	0.014	10			103	1,029	1.4
SIL-01-31.5	26.5-31.5	11/01/05	Benzo(a)anthracene	36.0	~	~	0.018	0.0018	~			2,000	20,000	
SIL-01-31.5	26.5-31.5	11/01/05	Benzo(a)pyrene	39.0	~	~	0.018	0.0018	0.2			2,167	21,667	195
SIL-01-31.5	26.5-31.5	11/01/05	Benzo(b)fluoranthene	25.0	~	~	0.018	0.0018	~			1,389	13,889	
SIL-01-31.5	26.5-31.5	11/01/05	Benzo(k)fluoranthene	29.0	~	~	0.018	0.0018	~			1,611	16,111	
SIL-01-31.5	26.5-31.5	11/01/05	beta-BHC	0.120	~	~	0.017	0.0017	~			7.1	71	
SIL-01-31.5	26.5-31.5	11/01/05	Bis(2-Ethylhexyl) pthalate	2.30	~	~	2.2	0.22	6			1.0	10	
SIL-01-31.5	26.5-31.5	11/01/05	Chrysene	43.0	~	~	0.018	0.0018	~			2,389	23,889	
SIL-01-31.5	26.5-31.5	11/01/05	Copper	104	13	9.0	~	~	1,300	8.0	12			
SIL-01-31.5	26.5-31.5	11/01/05	Dibenzo(a,h)anthracene	4.60	~	~	0.018	0.0018	~			256	2,556	
SIL-01-31.5	26.5-31.5	11/01/05	Fluoranthene	190	~	~	140	14	~			1.4	14	
SIL-01-31.5	26.5-31.5	11/01/05	Indeno(1,2,3-cd)pyrene	14.0	~	~	0.018	0.0018	~			778	7,778	
SIL-01-31.5	26.5-31.5	11/01/05	Iron	88,300	~	1,000	~	~	~		88			
SIL-01-31.5	26.5-31.5	11/01/05	Iron (Dissolved)	54,900	~	1,000	~	~	~		55			
SIL-01-31.5	26.5-31.5	11/01/05	Lead	24.0	65	2.5	~	~	15		9.6			1.6
SIL-01-31.5	26.5-31.5	11/01/05	Lead (Dissolved)	3.00	65	2.5	~	~	15		1.2			
SIL-01-31.5	26.5-31.5	11/01/05	Manganese	3,450	~	~	100	10	~			35	345	
SIL-01-31.5	26.5-31.5	11/01/05	Manganese (Dissolved)	3,120	~	~	100	10	~			31	312	
SIL-01-100	96-100	11/11/05	2,3,7,8-TCDD	0.000000615	~	~	5.1E-09	5.1E-10	0.00003			121	1,206	
SIL-01-100	96-100	11/11/05	Aluminum	98,500	750	87	~	~	~	131	1,132			
SIL-01-100	96-100	11/11/05	Arsenic	15.3	340	150	0.14	0.014	10			109	1,093	1.5
SIL-01-100	96-100	11/11/05	Benzene	15.0	~	~	51	5.1	5				2.9	3.0
SIL-01-100	96-100	11/11/05	Chromium	158	~	~	~	~	100					1.6
SIL-01-100	96-100	11/11/05	Copper	147	13	9.0	~	~	1,300	11	16			
SIL-01-100	96-100	11/11/05	Iron	164,000	~	1,000	~	~	~		164			
SIL-01-100	96-100	11/11/05	Iron (Dissolved)	43,100	~	1,000	~	~	~		43			
SIL-01-100	96-100	11/11/05	Manganese	2,380	~	~	100	10	~			24	238	
SIL-01-100	96-100	11/11/05	Manganese (Dissolved)	584	~	~	100	10	~			5.8	58	
SIL-01-100	96-100	11/11/05	Nickel	105	470	52	4,600	460	~		2.0			
SIL-01-100	96-100	11/11/05	Vinyl chloride	3.00	~	~	2.4	0.24	2			1.3	13	1.5
SIL-01-100	96-100	11/11/05	Zinc	280	120	120	26,000	2,600	~	2.3	2.3			
SIL-01-130	126-130	11/11/05	Benzene	5.30	~	~	51	5.1	5				1.0	1.1
SIL-01-130	126-130	11/11/05	Vinyl chloride	7.90	~	~	2.4	0.24	2			3.3	33	4.0
SIL-01-160	156-160	11/11/05	Vinyl chloride	1.80	~	~	2.4	0.24	2				7.5	
SIL-01-208	207-208	11/07/05	1,4-Dichlorobenzene	30.0	~	~	190	19	75				1.6	
SIL-01-208	207-208	11/07/05	Aluminum	2,260	750	87	~	~	~	3.0	26			

TABLE 6
Stage 1 Source Control Evaluation Reconnaissance Borings and Selected Monitoring Wells
Results Exceeding Water Quality Screening Values
RP - Portland Site

					Screening Values[1,2] (µg/L)					Exceedance Ratio[3]				
					Ecological Receptors		Human Health			Ecological Receptors		Human Health		
Sample Location	Depth Interval (feet bgs)	Sample Date	Analyte	Concentration (µg/L)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)
SIL-01-208	207-208	11/07/05	Arsenic	5.70	340	150	0.14	0.014	10			41	407	
SIL-01-208	207-208	11/07/05	Iron	5,310	~	1,000	~	~	~		5.3			
SIL-01-208	207-208	11/07/05	Iron (Dissolved)	1,920	~	1,000	~	~	~		1.9			
SIL-01-208	207-208	11/07/05	Manganese	328	~	~	100	10	~			3.3	33	
SIL-01-208	207-208	11/07/05	Manganese (Dissolved)	297	~	~	100	10	~			3.0	30	
SIL-01-217	212-217	11/08/05	1,4-Dichlorobenzene	35.0	~	~	190	19	75				1.8	
SIL-01-217	212-217	11/08/05	2,3,7,8-TCDD	0.00000465	~	~	5.1E-09	5.1E-10	0.00003			912	9,118	
SIL-01-217	212-217	11/08/05	Aluminum	268,000	750	87	~	~	~	357	3,080			
SIL-01-217	212-217	11/08/05	Aluminum (Dissolved)	506	750	87	~	~	~		5.8			
SIL-01-217	212-217	11/08/05	Arsenic	30.0	340	150	0.14	0.014	10			214	2,143	3.0
SIL-01-217	212-217	11/08/05	Bis(2-Ethylhexyl) pthalate	5.90	~	~	2.2	0.22	6			2.7	27	
SIL-01-217	212-217	11/08/05	Chromium	584	~	~	~	~	100					5.8
SIL-01-217	212-217	11/08/05	Copper	545	13	9.0	~	~	1,300	42	61			
SIL-01-217	212-217	11/08/05	Iron	746,000	~	1,000	~	~	~		746			
SIL-01-217	212-217	11/08/05	Iron (Dissolved)	3,320	~	1,000	~	~	~		3.3			
SIL-01-217	212-217	11/08/05	Lead	61.0	65	2.5	~	~	15		24			4.1
SIL-01-217	212-217	11/08/05	Manganese	9,270	~	~	100	10	~			93	927	
SIL-01-217	212-217	11/08/05	Manganese (Dissolved)	1,820	~	~	100	10	~			18	182	
SIL-01-217	212-217	11/08/05	Nickel	268	470	52	4,600	460	~		5.2			
SIL-01-217	212-217	11/08/05	Zinc	2,030	120	120	26,000	2,600	~	17	17			
SIL-02-32	28-32	11/17/05	Aluminum	53,800	750	87	~	~	~	72	618			
SIL-02-32	28-32	11/17/05	Arsenic	25.6	340	150	0.14	0.014	10			183	1,829	2.6
SIL-02-32	28-32	11/17/05	Arsenic (Dissolved)	10.4	340	150	0.14	0.014	10			74	743	1.0
SIL-02-32	28-32	11/17/05	Chromium	206	~	~	~	~	100					2.1
SIL-02-32	28-32	11/17/05	Copper	80.9	13	9.0	~	~	1,300	6.2	9.0			
SIL-02-32	28-32	11/17/05	Iron	177,000	~	1,000	~	~	~		177			
SIL-02-32	28-32	11/17/05	Iron (Dissolved)	86,800	~	1,000	~	~	~		87			
SIL-02-32	28-32	11/17/05	Lead	58.1	65	2.5	~	~	15		23			3.9
SIL-02-32	28-32	11/17/05	Manganese	4,260	~	~	100	10	~			43	426	
SIL-02-32	28-32	11/17/05	Manganese (Dissolved)	3,130	~	~	100	10	~			31	313	
SIL-02-32	28-32	11/17/05	Nickel	167	470	52	4,600	460	~		3.2			
SIL-02-32	28-32	11/17/05	Zinc	190	120	120	26,000	2,600	~	1.6	1.6			
SIL-02-100	96-100	11/17/05	Aluminum	36,200	750	87	~	~	~	48	416			
SIL-02-100	96-100	11/17/05	Arsenic	9.00	340	150	0.14	0.014	10			64	643	
SIL-02-100	96-100	11/17/05	Arsenic (Dissolved)	5.20	340	150	0.14	0.014	10			37	371	
SIL-02-100	96-100	11/17/05	Chromium	113	~	~	~	~	100					1.1
SIL-02-100	96-100	11/17/05	Copper	42.5	13	9.0	~	~	1,300	3.3	4.7			
SIL-02-100	96-100	11/17/05	Iron	103,000	~	1,000	~	~	~		103			
SIL-02-100	96-100	11/17/05	Iron (Dissolved)	59,000	~	1,000	~	~	~		59			

TABLE 6
Stage 1 Source Control Evaluation Reconnaissance Borings and Selected Monitoring Wells
Results Exceeding Water Quality Screening Values
RP - Portland Site

					Screening Values[1,2] (µg/L)					Exceedance Ratio[3]				
					Ecological Receptors		Human Health			Ecological Receptors		Human Health		
Sample Location	Depth Interval (feet bgs)	Sample Date	Analyte	Concentration (µg/L)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)
SIL-02-100	96-100	11/17/05	Manganese	2,090	~	~	100	10	~			21	209	
SIL-02-100	96-100	11/17/05	Manganese (Dissolved)	1,390	~	~	100	10	~			14	139	
SIL-02-100	96-100	11/17/05	Zinc	123	120	120	26,000	2,600	~	1.0	1.0			
SIL-02-216	214-216	11/14/05	2,3,7,8-TCDD	0.000000949	~	~	5.1E-09	5.1E-10	0.00003			186	1,861	
SIL-02-216	214-216	11/14/05	Aluminum	50,600	750	87	~	~	~	67	582			
SIL-02-216	214-216	11/14/05	Arsenic	8.20	340	150	0.14	0.014	10			59	586	
SIL-02-216	214-216	11/14/05	Bis(2-Ethylhexyl) pthalate	0.740	~	~	2.2	0.22	6				3.4	
SIL-02-216	214-216	11/14/05	Copper	81.5	13	9.0	~	~	1,300	6.3	9.1			
SIL-02-216	214-216	11/14/05	Iron	114,000	~	1,000	~	~	~		114			
SIL-02-216	214-216	11/14/05	Iron (Dissolved)	12,400	~	1,000	~	~	~		12			
SIL-02-216	214-216	11/14/05	Manganese	4,410	~	~	100	10	~			44	441	
SIL-02-216	214-216	11/14/05	Manganese (Dissolved)	2,730	~	~	100	10	~			27	273	
SIL-02-216	214-216	11/14/05	Nickel	97.8	470	52	4,600	460	~		1.9			
SIL-02-216	214-216	11/14/05	Zinc	211	120	120	26,000	2,600	~	1.8	1.8			
SIL-03-35	31-35	11/16/05	2,3,7,8-TCDD	0.000000544	~	~	5.1E-09	5.1E-10	0.00003			107	1,067	
SIL-03-35	31-35	11/16/05	Aluminum	992	750	87	~	~	~	1.3	11			
SIL-03-35	31-35	11/16/05	Bis(2-Ethylhexyl) pthalate	0.620	~	~	2.2	0.22	6				2.8	
SIL-03-35	31-35	11/16/05	Iron	1,810	~	1,000	~	~	~		1.8			
SIL-03-35	31-35	11/16/05	Manganese	1,680	~	~	100	10	~			17	168	
SIL-03-35	31-35	11/16/05	Manganese (Dissolved)	1,730	~	~	100	10	~			17	173	
SIL-03-99	95-99	11/16/05	1,2-Dichlorobenzene	240	~	~	1,300	130	600				1.8	
SIL-03-99	95-99	11/16/05	1,4-Dichlorobenzene	65.0	~	~	190	19	75				3.4	
SIL-03-99	95-99	11/16/05	2,3,7,8-TCDD	0.00000555	~	~	5.1E-09	5.1E-10	0.00003			1,088	10,882	
SIL-03-99	95-99	11/16/05	Aluminum	190,000	750	87	~	~	~	253	2,184			
SIL-03-99	95-99	11/16/05	Aluminum (Dissolved)	149	750	87	~	~	~		1.7			
SIL-03-99	95-99	11/16/05	Arsenic	69.5	340	150	0.14	0.014	10			496	4,964	7.0
SIL-03-99	95-99	11/16/05	Bis(2-Ethylhexyl) pthalate	4.90	~	~	2.2	0.22	6			2.2	22	
SIL-03-99	95-99	11/16/05	Chromium	356	~	~	~	~	100					3.6
SIL-03-99	95-99	11/16/05	Copper	416	13	9.0	~	~	1,300	32	46			
SIL-03-99	95-99	11/16/05	Iron	393,000	~	1,000	~	~	~		393			
SIL-03-99	95-99	11/16/05	Iron (Dissolved)	3,400	~	1,000	~	~	~		3.4			
SIL-03-99	95-99	11/16/05	Lead	71.2	65	2.5	~	~	15	1.1	28			4.7
SIL-03-99	95-99	11/16/05	Manganese	5,720	~	~	100	10	~			57	572	
SIL-03-99	95-99	11/16/05	Manganese (Dissolved)	1,660	~	~	100	10	~			17	166	
SIL-03-99	95-99	11/16/05	Nickel	210	470	52	4,600	460	~		4.0			
SIL-03-99	95-99	11/16/05	Trichloroethene	11.0	~	~	30	3	5				3.7	2.2
SIL-03-99	95-99	11/16/05	Zinc	779	120	120	26,000	2,600	~	6.5	6.5			
SIL-03-130	110-130	12/06/05	1,2-Dichlorobenzene	300	~	~	1,300	130	600				2.3	
SIL-03-130	110-130	12/06/05	1,4-Dichlorobenzene	90.0	~	~	190	19	75				4.7	1.2

TABLE 6
Stage 1 Source Control Evaluation Reconnaissance Borings and Selected Monitoring Wells
Results Exceeding Water Quality Screening Values
RP - Portland Site

					Screening Values[1,2] (µg/L)					Exceedance Ratio[3]				
					Ecological Receptors		Human Health			Ecological Receptors		Human Health		
Sample Location	Depth Interval (feet bgs)	Sample Date	Analyte	Concentration (µg/L)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)
SIL-03-130	110-130	12/06/05	2,3,7,8-TCDD	0.000000630	~	~	5.1E-09	5.1E-10	0.00003			124	1,235	
SIL-03-130	110-130	12/06/05	Aluminum	42,400	750	87	~	~	~	57	487			
SIL-03-130	110-130	12/06/05	Copper	75.7	13	9.0	~	~	1,300	5.8	8.4			
SIL-03-130	110-130	12/06/05	Iron	66,500	~	1,000	~	~	~		67			
SIL-03-130	110-130	12/06/05	Lead	7.50	65	2.5	~	~	15		3.0			
SIL-03-130	110-130	12/06/05	Manganese	2,760	~	~	100	10	~			28	276	
SIL-03-130	110-130	12/06/05	Manganese (Dissolved)	1,320	~	~	100	10	~			13	132	
SIL-03-130	110-130	12/06/05	Trichloroethene	12.0	~	~	30	3	5				4.0	2.4
SIL-04-30	26-30	11/18/05	2,3,7,8-TCDD	0.00000208	~	~	5.1E-09	5.1E-10	0.00003			408	4,078	
SIL-04-30	26-30	11/18/05	Aluminum	22,200	750	87	~	~	~	30	255			
SIL-04-30	26-30	11/18/05	Arsenic	7.60	340	150	0.14	0.014	10			54	543	
SIL-04-30	26-30	11/18/05	Copper	42.1	13	9.0	~	~	1,300	3.2	4.7			
SIL-04-30	26-30	11/18/05	Iron	94,900	~	1,000	~	~	~		95			
SIL-04-30	26-30	11/18/05	Iron (Dissolved)	71,800	~	1,000	~	~	~		72			
SIL-04-30	26-30	11/18/05	Lead	282	65	2.5	~	~	15	4.3	113			19
SIL-04-30	26-30	11/18/05	Manganese	2,810	~	~	100	10	~			28	281	
SIL-04-30	26-30	11/18/05	Manganese (Dissolved)	2,560	~	~	100	10	~			26	256	
SIL-04-30	26-30	11/18/05	Zinc	364	120	120	26,000	2,600	~	3.0	3.0			
SIL-04-74	70-74	11/21/05	2,3,7,8-TCDD	0.000000780	~	~	5.1E-09	5.1E-10	0.00003			153	1,529	
SIL-04-74	70-74	11/21/05	Aluminum	29,800	750	87	~	~	~	40	343			
SIL-04-74	70-74	11/21/05	Arsenic	19.2	340	150	0.14	0.014	10			137	1,371	1.9
SIL-04-74	70-74	11/21/05	Copper	68.7	13	9.0	~	~	1,300	5.3	7.6			
SIL-04-74	70-74	11/21/05	Iron	49,400	~	1,000	~	~	~		49			
SIL-04-74	70-74	11/21/05	Lead	19.5	65	2.5	~	~	15		7.8			1.3
SIL-04-74	70-74	11/21/05	Manganese	10,900	~	~	100	10	~			109	1,090	
SIL-04-74	70-74	11/21/05	Manganese (Dissolved)	3,140	~	~	100	10	~			31	314	
SIL-04-74	70-74	11/21/05	Zinc	139	120	120	26,000	2,600	~	1.2	1.2			
SIL-04-89	80-89	12/09/05	1,2-Dichlorobenzene	230	~	~	1,300	130	600				1.8	
SIL-04-89	80-89	12/09/05	1,4-Dichlorobenzene	64.0	~	~	190	19	75				3.4	
SIL-04-89	80-89	12/09/05	Aluminum	3,260	750	87	~	~	~	4.3	37			
SIL-04-89	80-89	12/09/05	Iron	4,660	~	1,000	~	~	~		4.7			
SIL-04-89	80-89	12/09/05	Manganese	240	~	~	100	10	~			2.4	24	
SIL-04-89	80-89	12/09/05	Manganese (Dissolved)	140	~	~	100	10	~			1.4	14	
SIL-04-89	80-89	12/09/05	Trichloroethene	7.70	~	~	30	3	5				2.6	1.5
SIL-04-89	80-89	12/09/05	Vinyl chloride	2.20	~	~	2.4	0.24	2				9.2	1.1
W-19-D	63-68	04/13/05	1,2-Dichlorobenzene	626	~	~	1,300	130	600				4.8	1.0
W-19-D	63-68	04/13/05	1,4-Dichlorobenzene	192	~	~	190	19	75			1.0	10	2.6
W-19-D	63-68	04/13/05	Aluminum	120	750	87	~	~	~		1.4			
W-19-D	63-68	04/13/05	Chloride	1,250,000	860,000	230,000	~	~	~	1.5	5.4			

TABLE 6
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Results Exceeding Water Quality Screening Values
RP - Portland Site

					Screening Values[1,2] (µg/L)					Exceedance Ratio[3]				
					Ecological Receptors		Human Health			Ecological Receptors		Human Health		
Sample Location	Depth Interval (feet bgs)	Sample Date	Analyte	Concentration (µg/L)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)	Freshwater Criteria Maximum Concentration (CMC)	Freshwater Criterion Continuous Concentration (CCC)	Human Health for Consumption of Organism Only	Human Health for Consumption of Organism Only (/10)	Maximum Contanminant Level (MCL)
W-19-D	63-68	04/13/05	Chlorobenzene	188	~	~	1,600	160	100				1.2	1.9
W-19-D	63-68	04/13/05	Manganese	589	~	~	100	10	~			5.9	59	
W-19-D	63-68	04/13/05	Trichloroethene	6.70	~	~	30	3	5				2.2	1.3
W-19-D	63-68	04/13/05	Vinyl chloride	27.4	~	~	2.4	0.24	2			11	114	14
W-19-I	45.5-49.5	04/13/05	1,2-Dichlorobenzene	419	~	~	1,300	130	600				3.2	
W-19-I	45.5-49.5	04/13/05	1,4-Dichlorobenzene	124	~	~	190	19	75				6.5	1.7
W-19-I	45.5-49.5	04/13/05	Chloride	2,040,000	860,000	230,000	~	~	~	2.4	8.9			
W-19-I	45.5-49.5	04/13/05	Chlorobenzene	107	~	~	1,600	160	100					1.1
W-19-I	45.5-49.5	04/13/05	Manganese	19,400	~	~	100	10	~			194	1,940	
W-19-I	45.5-49.5	04/13/05	Trichloroethene	4.45	~	~	30	3	5				1.5	
W-19-I	45.5-49.5	04/13/05	Vinyl chloride	19.7	~	~	2.4	0.24	2			8.2	82	9.9

Notes:
µg/L = micrograms per liter
~ = no screening value available.
bgs = below ground surface
[1] = Screening values were taken from the *Final Portland Harbor Joint Source Control Strategy*, December 2005.
[2] = Dissolved metals screening values are based on total metals and do not include conversion for dissolved constituents
[3] = Exceedance ratios were calculated by dividing the constituent concentration by the screening value

TABLE 7
Chlorinated Benzene Comparison
Stage 1 Source Control Evaluation
RP - Portland Site

Sampling Area and Location	Sample Depth (ft bgs)	Sample Code	Sampling Media	Sample Type	Analyte		Sum of MCB and DCB	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Chlorobenzene
					Date	Units							
Arkema Lots 1 and 2													
ARK-01	10-15	042-01	GW	P	8/15/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-01	**50-54**	**043-01**	**GW**	**P**	**8/16/05**	**µg/L**	**292.00**	ND	ND	**190**	ND	**46**	**56**
ARK-01	**28.5-31.5**	**044-01**	**GW**	**P**	**8/16/05**	**µg/L**	**0.45**	ND	ND	**0.45**	ND	ND	ND
ARK-02	76-80	065-01	GW	P	8/19/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-02	**36-40**	**066-01**	**GW**	**P**	**8/22/05**	**µg/L**	**0.95**	ND	ND	ND	ND	ND	**0.95**
ARK-03	76-80	067-01	GW	P	8/22/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-03	**22-26**	**071-01**	**GW**	**P**	**8/23/05**	**µg/L**	**1.75**	ND	ND	**1.30**	ND	ND	**0.45**
ARK-03	54-58	072-01	GW	P	8/23/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-03	**90-102.5**	**076-01**	**GW**	**P**	**9/9/05**	**µg/L**	**1161.00**	0.28	0.45	**660**	**21**	**210**	**270**
ARK-04	44-47	033-01	GW	P	8/12/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-04	10-15	034-01	GW	P	8/12/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-04	33-36	035-01	GW	P	8/15/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-05	18-22	050-01	GW	P	8/17/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-05	37-41	051-01	GW	P	8/17/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-05	**62-67.5**	**075-01**	**GW**	**P**	**9/8/05**	**µg/L**	**23.07**	ND	ND	**16**	**0.27**	**3.30**	**3.50**
ARK-06	76-80	057-01	GW	P	8/18/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-06	**23-27**	**058-01**	**GW**	**P**	**8/18/05**	**µg/L**	**1.30**	ND	ND	**1.30**	ND	ND	ND
ARK-06	**23-27**	**058-02**	GW	D	8/18/05	µg/L	**1.40**	ND	ND	**1.40**	ND	ND	ND
ARK-06	54-58	059-01	GW	P	8/19/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-06	**88-97.5**	**074-01**	**GW**	**P**	**9/7/05**	**µg/L**	**316.80**	ND	ND	**180**	**5.80**	**55**	**76**
ARK-07	41-45	006-01	GW	P	8/9/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-07	10-14	007-01	GW	P	8/9/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-07	22-26	008-01	GW	P	8/9/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-08	38.5-43.5	015-01	GW	P	8/10/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-08	38.5-43.5	015-02	GW	D	8/10/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-08	10-15	016-01	GW	P	8/10/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-09	11-16	023-01	GW	P	8/11/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-09	30-35	025-01	GW	P	8/12/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
ARK-09	**52-56**	**026-01**	**GW**	**P**	**8/12/05**	**µg/L**	**0.74**	ND	ND	**0.44**	ND	**0.30**	ND
ARK-09	86-94	073-01	GW	P	9/6/05	µg/L	0.00	ND	ND	ND	ND	ND	ND

TABLE 7
Chlorinated Benzene Comparison
Stage 1 Source Control Evaluation
RP - Portland Site

Sampling Area and Location	Sample Depth (ft bgs)	Sample Code	Sampling Media	Sample Type	Analyte		Sum of MCB and DCB	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Chlorobenzene
					Date	Units							
Siltronic Riverbank													
RP-11	27-31	120-01	GW	P	11/15/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
RP-11	96-100	122-01	GW	P	11/15/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
RP-11	96-100	122-02	GW	D	11/15/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
RP-11	126-130	123-01	GW	P	11/15/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
RP-11	148-152	124-01	GW	P	11/15/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
RP-11	**190-190**	**135-01**	**GW**	**P**	**11/18/05**	**µg/L**	**24.10**	ND	ND	**19**	ND	**3.50**	**1.60**
RP-11	**210-216**	**139-01**	**GW**	**P**	**11/28/05**	**µg/L**	**289.00**	ND	ND	**210**	ND	**58**	**21**
SIL-01	26.5-31.5	101-01	GW	P	11/1/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
SIL-01	**207-208**	**109-01**	**GW**	**P**	**11/7/05**	**µg/L**	**148.70**	ND	ND	**110**	ND	**30**	**8.70**
SIL-01	**212-217**	**114-01**	**GW**	**P**	**11/8/05**	**µg/L**	**176.00**	ND	ND	**130**	ND	**35**	**11**
SIL-01	96-100	115-01	GW	P	11/11/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
SIL-01	126-130	116-01	GW	P	11/11/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
SIL-01	**156-160**	**117-01**	**GW**	**P**	**11/11/05**	**µg/L**	**2.84**	ND	ND	**0.94**	ND	ND	**1.90**
SIL-01	**184-188**	**118-01**	**GW**	**P**	**11/14/05**	**µg/L**	**1.25**	ND	ND	**0.81**	ND	**0.44**	ND
SIL-02	**214-216**	**119-01**	**GW**	**P**	**11/14/05**	**µg/L**	**41.00**	ND	ND	**31**	ND	**8.90**	**1.10**
SIL-02	28-32	127-01	GW	P	11/17/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
SIL-02	96-100	131-01	GW	P	11/17/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
SIL-02	126-130	132-01	GW	P	11/17/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
SIL-02	156-160	133-01	GW	P	11/18/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
SIL-02	156-160	133-02	GW	D	11/18/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
SIL-02	186-190	134-01	GW	P	11/18/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
SIL-03	31-35	125-01	GW	P	11/16/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
SIL-03	**95-99**	**126-01**	**GW**	**P**	**11/16/05**	**µg/L**	**329.00**	ND	ND	**240**	ND	**65**	**24**
SIL-03	**110-130**	**142-01**	**GW**	**P**	**12/6/05**	**µg/L**	**412.00**	ND	ND	**300**	ND	**90**	**22**
SIL-04	26-30	136-01	GW	P	11/18/05	µg/L	0.00	ND	ND	ND	ND	ND	ND
SIL-04	**70-74**	**137-01**	**GW**	**P**	**11/21/05**	**µg/L**	**0.43**	ND	ND	**0.43**	ND	ND	ND
SIL-04	**80-89**	**144-01**	**GW**	**P**	**12/9/05**	**µg/L**	**318.90**	ND	ND	**230**	**6.90**	**64**	**18**

Notes:
D = duplicate sample
DCB = dichlorobenzene
ft bgs = feet below ground surface
GW = groundwater
MCB = monochlorobenzene
ND = not detected at or above the method detection limit
µg/L = micrograms per liter
P = Primary Sample
Bold text denotes sample locations with detected concentrations of monochlorinated and/or dichlorinated benzenes.
Concentration exceeds DCB Freshwater Chronic (763µg/L) Criteria from the *Water Quality Guidance Values Summary* (Table 33c).
Concentration exceeds DCB Freshwater Acute (1,120µg/L) Criteria from the *Water Quality Guidance Values Summary* (Table 33c).

TABLE 8
DEQ-Requested Groundwater Screening Values for Figures 44 thru 46
Stage 1 Source Control Evaluation
RP - Portland Site

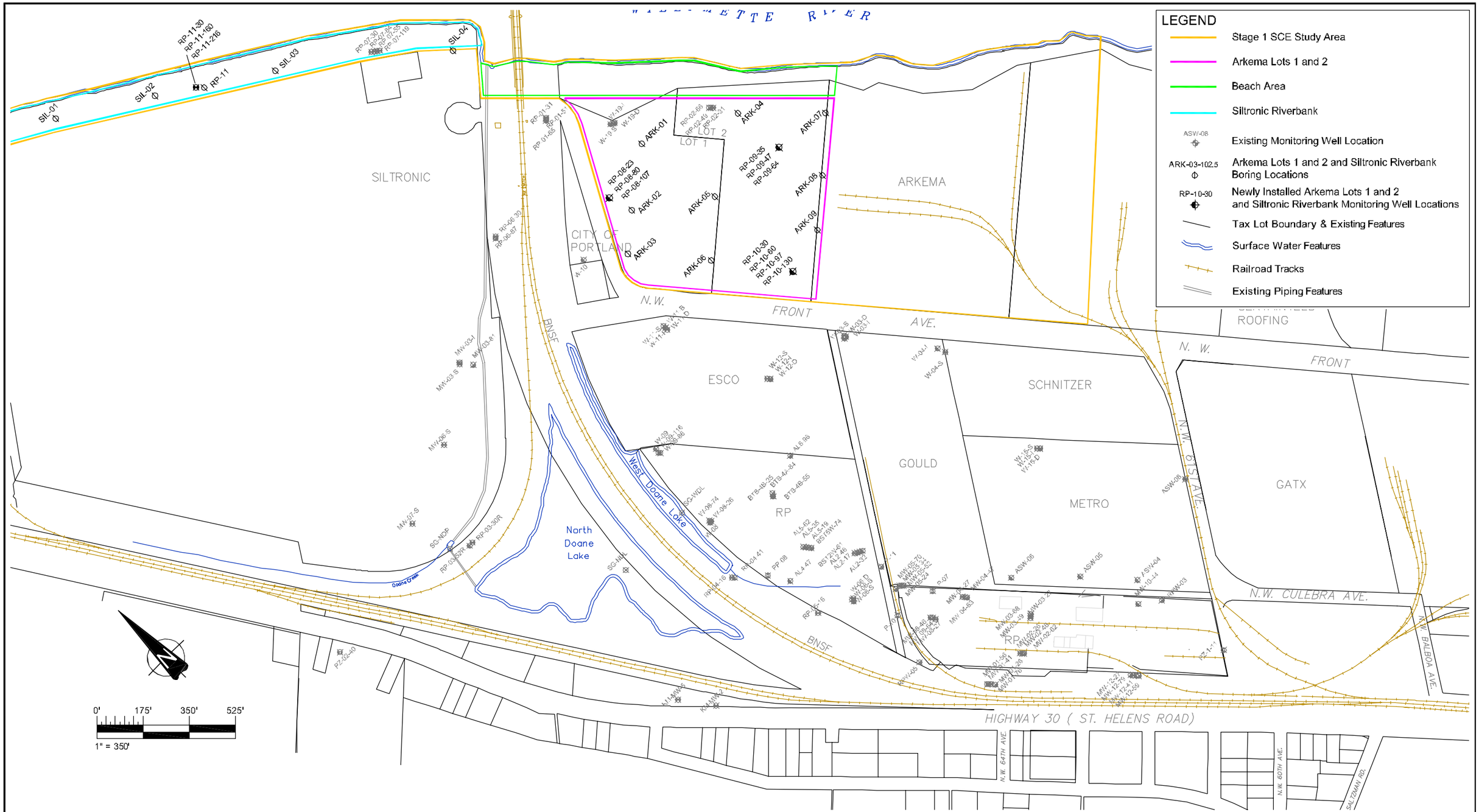
Chemical Class	Representative Constituent	Screening Value	Screening Value Basis and Comments
VOCs	Benzene	5.1 µg/L	OAR 340-041-0033 Table 33A Water Quality Criteria divided by 10 used as screening value; some outliers may have been eliminated from contour.
VOCs	1,2-Dichlorobenzene	130 µg/L	OAR 340-041-0033 Table 33A Water Quality Criteria divided by 10 used as screening value; some outliers may have been eliminated from contour.
Phenols	2,4-Dichlorophenol	29 µg/L	OAR 340-041-0033 Table 33A Water Quality Criteria divided by 10 used as screening value; some outliers may have been eliminated from contour.
Pesticides	Dieldrin	MDL	Screening values are less than the analytical detection limit, so MDL was used to draw groundwater plume; some outliers may have been eliminated from contour.
Dioxins/Furans	2,3,7,8-TCDD	MDL	Screening values are less than the analytical detection limit, so MDL was used to draw groundwater plume; some outliers may have been eliminated from contour.
Herbicides	2,4-D	360 µg/L	EPA Region IX tap water PRG used to contour; no Table 33A Water Quality Criteria available; some outliers may have been eliminated from contour.

Notes:

EPA	United States Environmental Protection Agency
MDL	method detection limit
µg/L	micrograms per liter
OAR	Oregon Administrative Rule
PRG	Preliminary Remediation Goals
VOCs	volatile organic compounds

Screening value criteria were those requested by Oregon Department of Environmental Quality in its letter dated August 1, 2005.
The criteria are not intended to represent appropriate regulatory levels for risk or cleanup, or to trigger any other action.

FIGURES



NOTE: THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SCE TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT:	SLLI
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'
PROJECT:	RP - PORTLAND SITE
TITLE:	INVESTIGATION LOCATIONS
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	3
FIGURE No.	1

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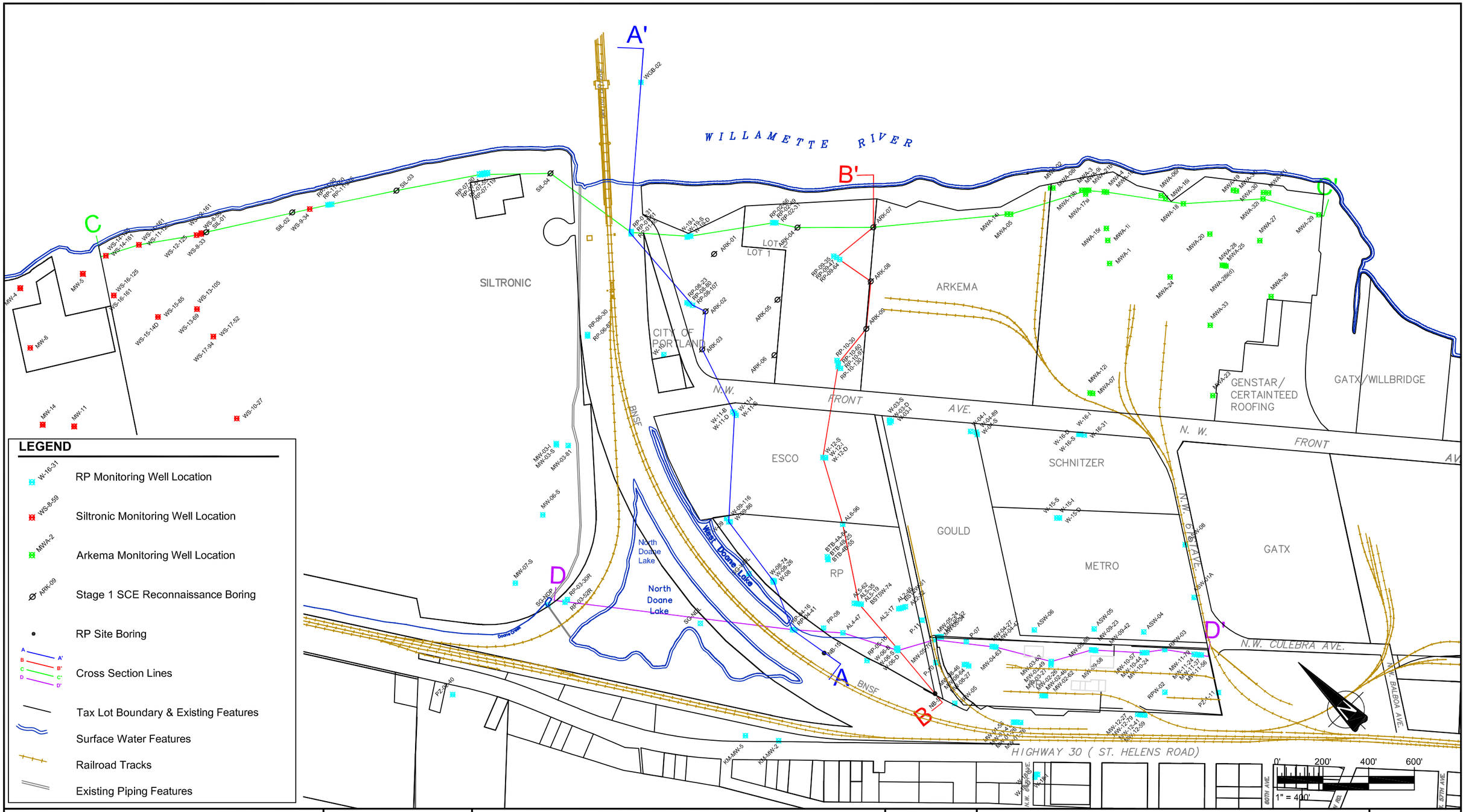
K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 01 Investigation Locations.dwg – Layout1 – May. 16, 2006 1:57pm – laura.mccoy



NOTE: THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SCE TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT:	SLLI
DWN BY:	DD/JH
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 400'
PROJECT:	RP - PORTLAND SITE
TITLE:	LITHOLOGIC CROSS SECTION LOCATIONS
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	4
FIGURE No.	2

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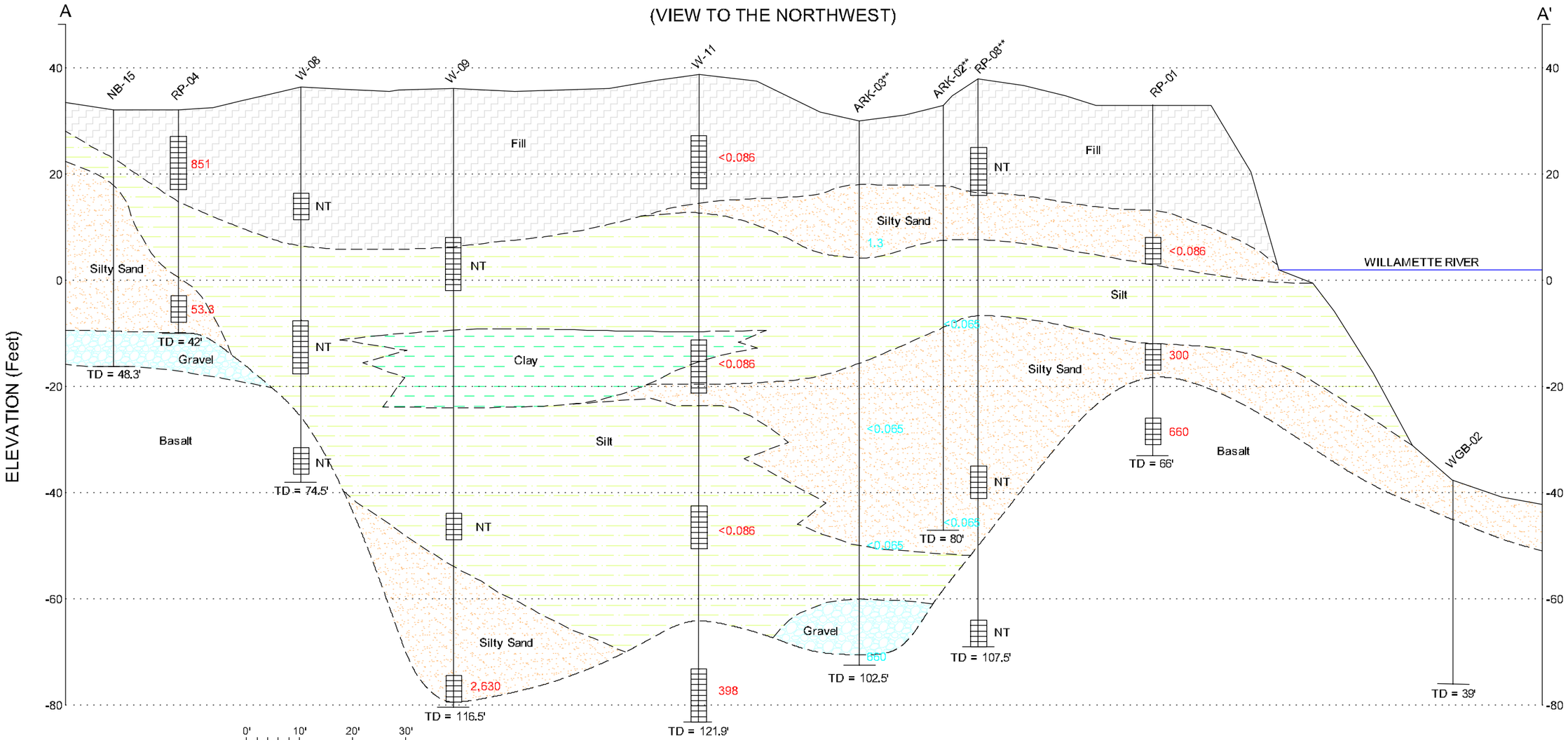
K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 02 Geologic X-Sections.dwg – Layout1 – May. 17, 2006 9:16am – doug.davis



VERTICAL SCALE: 1" = 20'

0' 10' 20' 30'

1" = 20'

HORIZONTAL SCALE: 1" = 200'

0' 100' 200' 300'

1" = 200'

LEGEND

NB-15 — TD = 48.3' — Exploratory Boring and Identifier (TD=Total Boring Depth Below Ground Surface)

RP-08 — TD = 107.5' — Monitoring Well Cluster, Identifier, and Screen Interval (TD=Total Boring Depth Below Ground Surface)

INFERRED LITHOLOGIC CONTACT

**DENOTES APPROXIMATED ELEVATION

NT = NOT TESTED

398 1,2-DICHLOROBENZENE CONCENTRATIONS IN MICROGRAMS PER LITER FROM SPRING 2005 GROUNDWATER MONITORING EVENT

660 1,2-DICHLOROBENZENE CONCENTRATIONS IN MICROGRAMS PER LITER FROM 2005 RECONNAISSANCE GROUNDWATER SAMPLING EVENT

NOTE: STRATIGRAPHY BETWEEN DEPICTED BORINGS MAY HAVE BEEN INTERPRETED FROM ADDITIONAL BORINGS NOT SHOWN ON THIS CROSS SECTION.

NOTE:
THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SOURCE CONTROL EVALUATION TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT:	SLLI
DWN BY:	DD/JH
CHK'D BY:	CJ/DH
DATUM:	City of Portland
PROJECTION:	-
SCALE:	AS NOTED
PROJECT:	RP - PORTLAND SITE
TITLE:	LITHOLOGIC CROSS SECTION FROM A-A' WITH 1,2-DICHLOROBENZENE CONCENTRATIONS FROM 2005
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	4
FIGURE No.	3

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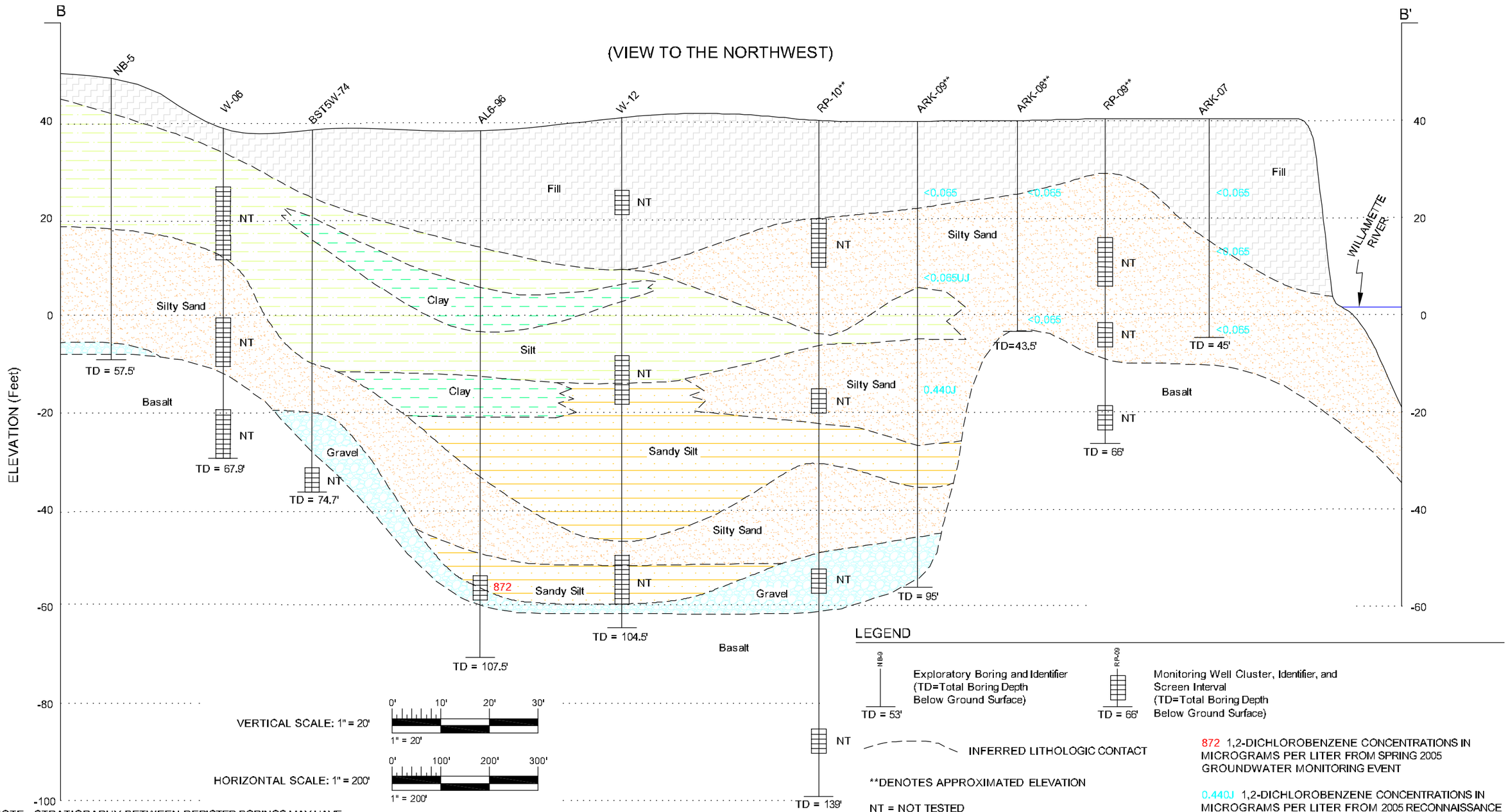
K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 03 Cross Section A-A.dwg – Layout1 – May. 16, 2006 2:00pm – laura.mccoy



NOTE: STRATIGRAPHY BETWEEN DEPICTED BORINGS MAY HAVE BEEN INTERPRETED FROM ADDITIONAL BORINGS NOT SHOWN ON THIS CROSS SECTION.

NOTE:
THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SOURCE CONTROL EVALUATION TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT:	SLLI
DWN BY:	DD/JH
CHK'D BY:	CJ/DH
DATUM:	City of Portland
PROJECTION:	-
SCALE:	AS NOTED
PROJECT:	RP - PORTLAND SITE
TITLE:	LITHOLOGIC CROSS SECTION FROM B-B' WITH 1,2-DICHLOROBENZENE CONCENTRATIONS FROM 2005
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	4
FIGURE No.	4

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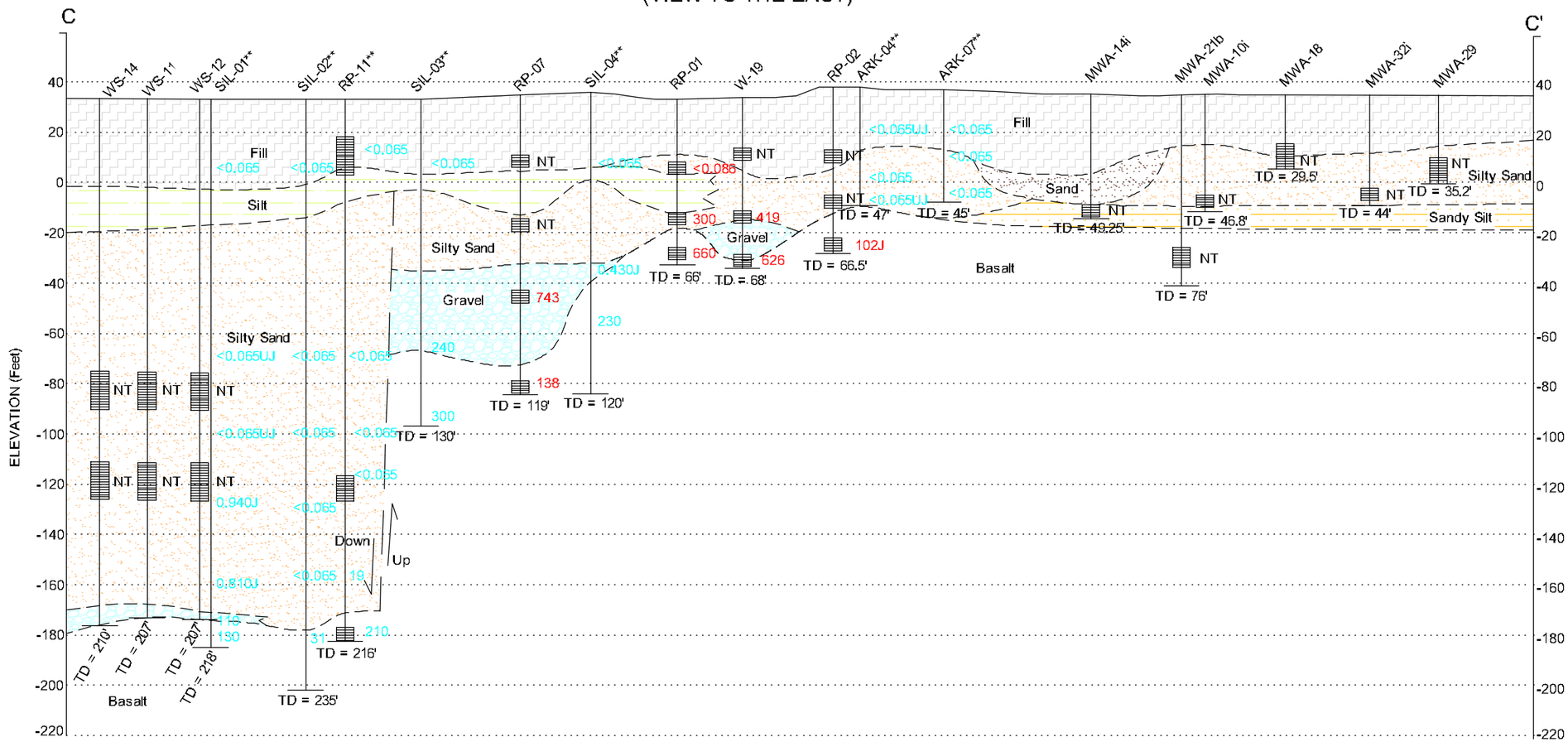
K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 04 Cross Section B-B.dwg – Layout1 – May. 16, 2006 2:01pm – laura.mccoy

(VIEW TO THE EAST)



VERTICAL SCALE: 1" = 50'

HORIZONTAL SCALE: 1" = 500'

LEGEND

Exploratory Boring and Identifier (TD=Total Boring Depth Below Ground Surface)

Monitoring Well Cluster, Identifier, and Screen Interval (TD=Total Boring Depth Below Ground Surface)

INFERRED LITHOLOGIC CONTACT

**DENOTES APPROXIMATED ELEVATION

NT = NOT TESTED

300 1,2-DICHLOROBENZENE CONCENTRATIONS IN MICROGRAMS PER LITER FROM SPRING 2005 GROUNDWATER MONITORING EVENT

230 1,2-DICHLOROBENZENE CONCENTRATIONS IN MICROGRAMS PER LITER FROM 2005 RECONNAISSANCE GROUNDWATER SAMPLING EVENT

NOTE: STRATIGRAPHY BETWEEN DEPICTED BORINGS MAY HAVE BEEN INTERPRETED FROM ADDITIONAL BORINGS NOT SHOWN ON THIS CROSS SECTION.

NOTE:
THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SOURCE CONTROL EVALUATION TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT:	SLLI
DWN BY:	DD/JH/LM
CHK'D BY:	CJ/DH
DATUM:	City of Portland
PROJECTION:	-
SCALE:	AS NOTED
PROJECT:	RP - PORTLAND SITE
TITLE:	LITHOLOGIC CROSS SECTION FROM C-C' WITH 1,2-DICHLOROBENZENE CONCENTRATIONS FROM 2005
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	4
FIGURE No.	5

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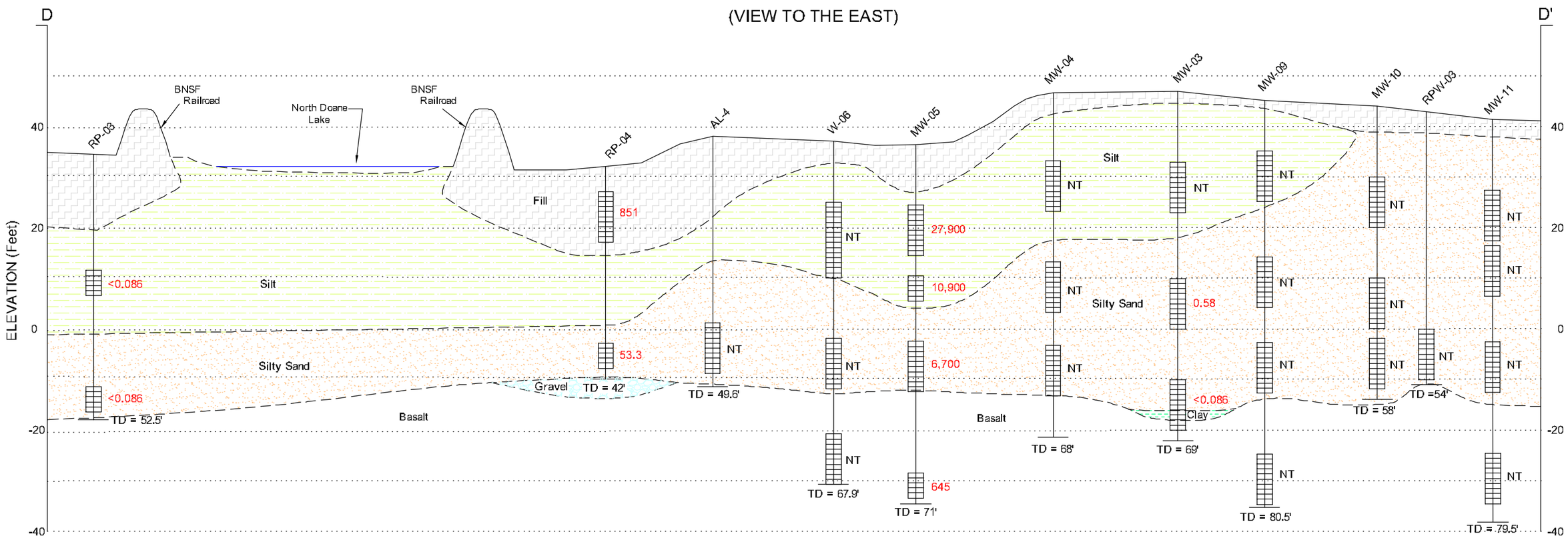
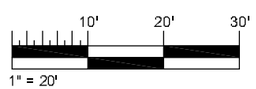
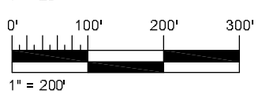
K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 05 Cross Section C-C.dwg – Layout1 – May. 16, 2006 2:01pm – laura.mccoy



VERTICAL SCALE: 1" = 20'



HORIZONTAL SCALE: 1" = 200'



NOTE: STRATIGRAPHY BETWEEN DEPICTED BORINGS MAY HAVE BEEN INTERPRETED FROM ADDITIONAL BORINGS NOT SHOWN ON THIS CROSS SECTION.

LEGEND

RP-03
TD = 52.5'
Monitoring Well Cluster, Identifier, and Screen Interval (TD=Total Boring Depth Below Ground Surface)

INFERRED LITHOLOGIC CONTACT

**DENOTES APPROXIMATED ELEVATION

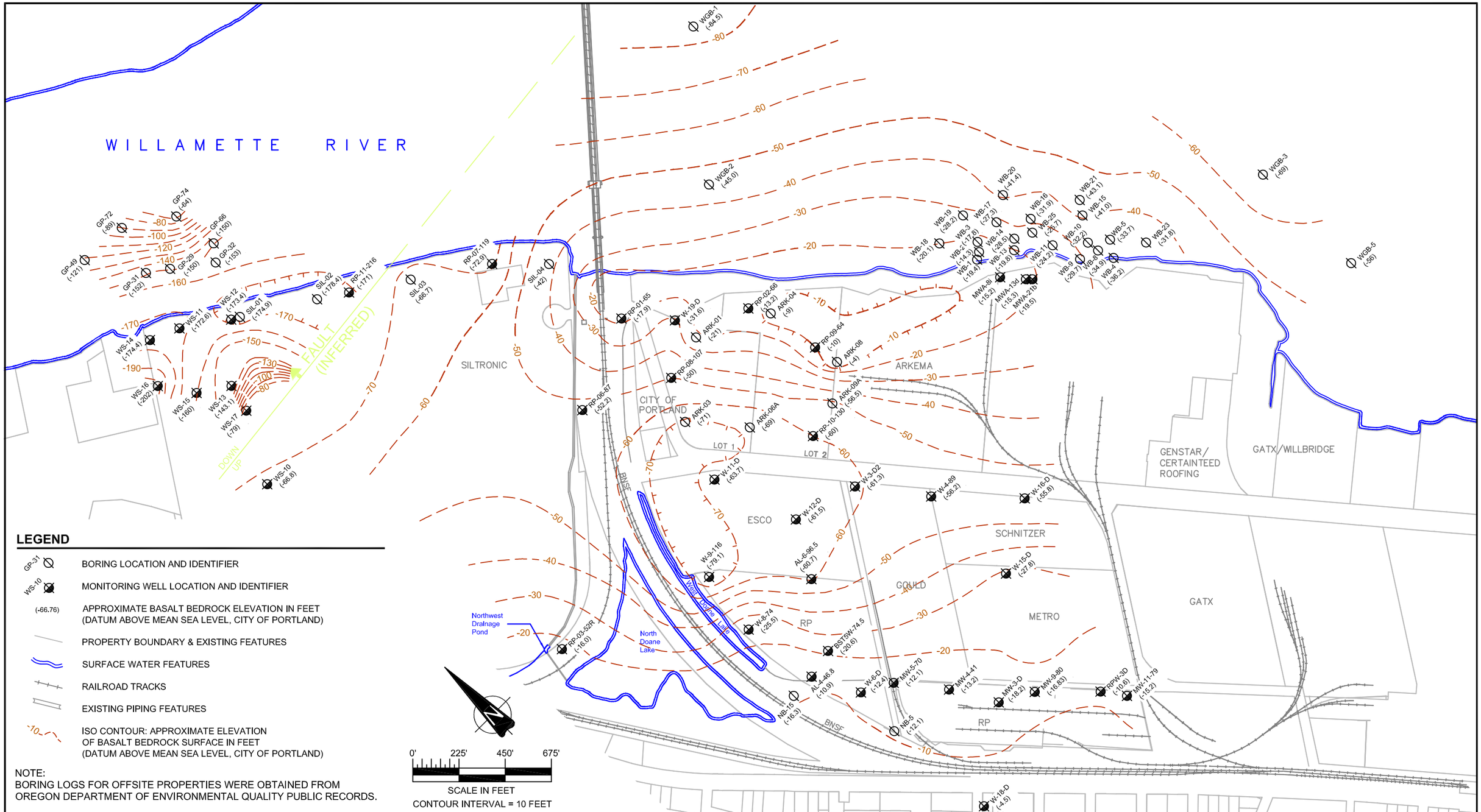
NT = NOT TESTED

645 1,2-DICHLOROBENZENE CONCENTRATIONS IN MICROGRAMS PER LITER FROM SPRING 2005 GROUNDWATER MONITORING EVENT

NOTE:
THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SOURCE CONTROL EVALUATION TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT: SLLI	DWN BY: DD/JH/LM	PROJECT: RP - PORTLAND SITE	DATE: MARCH 2006
	CHK'D BY: CJ/DH		PROJECT NO: 0-61M-10703-0 P-69
AMEC Earth & Environmental, 7376 S.W. Durham Road, Portland, OR. U.S.A. 97224	DATUM: City of Portland	TITLE: LITHOLOGIC CROSS SECTION FROM D-D' WITH 1,2-DICHLOROBENZENE CONCENTRATIONS FROM 2005	REV. NO.: 4
	PROJECTION: -		FIGURE No. 6
	SCALE: AS NOTED		

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 06 Cross Section D-D.dwg - Layout1 - May. 16, 2006 2:02pm - laura.mccoy



NOTE:
BORING LOGS FOR OFFSITE PROPERTIES WERE OBTAINED FROM OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY PUBLIC RECORDS.

NOTE:
THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SOURCE CONTROL EVALUATION TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT:	SLLI
DWN BY:	JH/LM
CHK'D BY:	DH/CJ
DATUM:	City of Portland
PROJECTION:	OR SP North Intl Ft
SCALE:	As Shown
PROJECT:	RP - PORTLAND SITE
TITLE:	BASALT ELEVATION CONTOUR MAP
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	4
FIGURE No.	7

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K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 07 Basalt Elevations 032306.dwg – Layout1 – May. 17, 2006 10:01am – doug.davis

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SCE TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT:	SLLI
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'
PROJECT:	RP - PORTLAND SITE
TITLE:	1,2-DICHLOROBENZENE DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 FILL / SHALLOW ALLUVIUM ZONE
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	8

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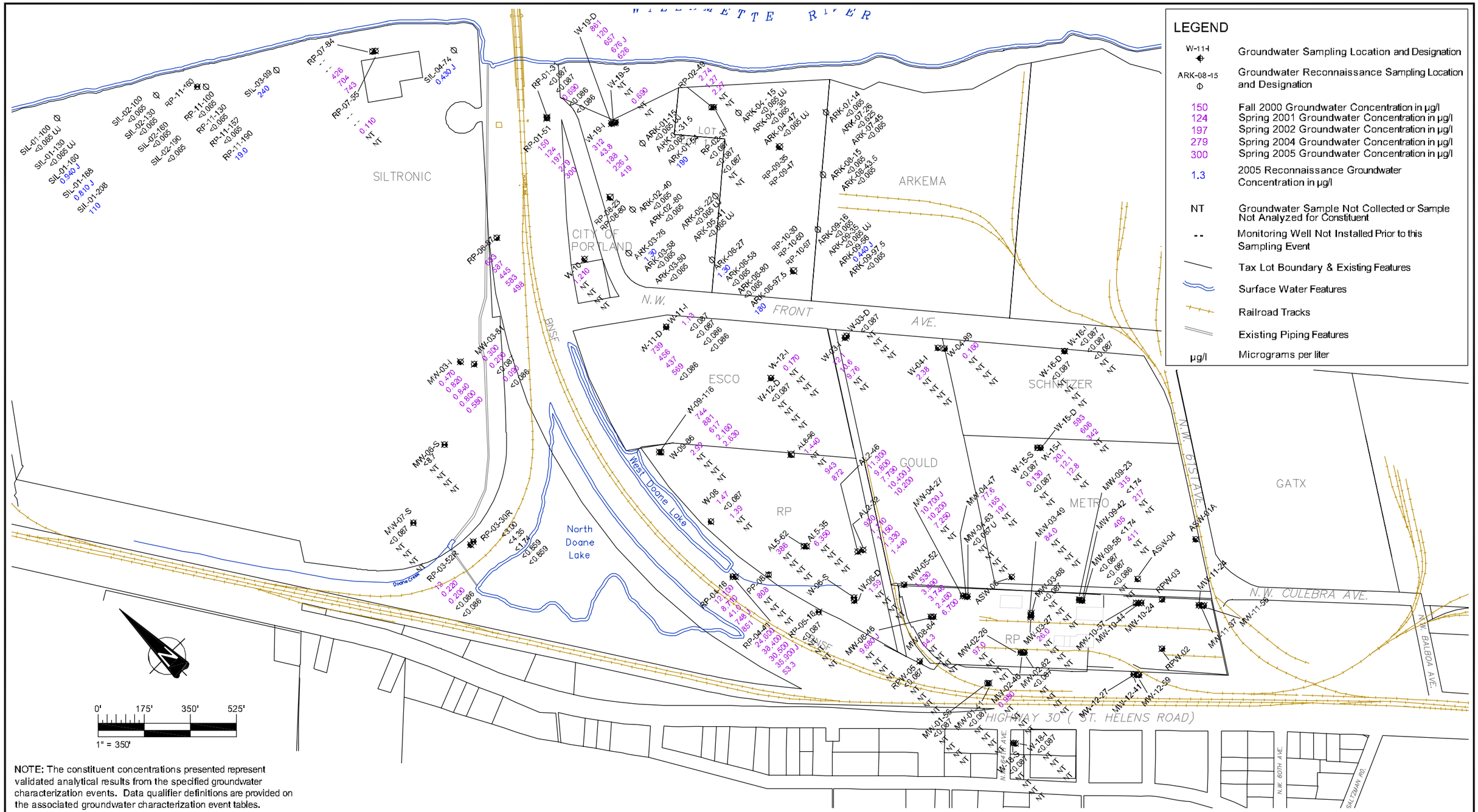
K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 08 12DCB (2000-2005) Fill-Shallow GW.dwg - Layout1 - May. 16, 2006 2:04pm - laura.mccoy



NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SCE TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT:	SLLI
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. IntFt.
SCALE:	1" = 350'
PROJECT:	RP - PORTLAND SITE
TITLE:	1,2-DICHLOROBENZENE DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 ALLUVIUM ZONE
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	9

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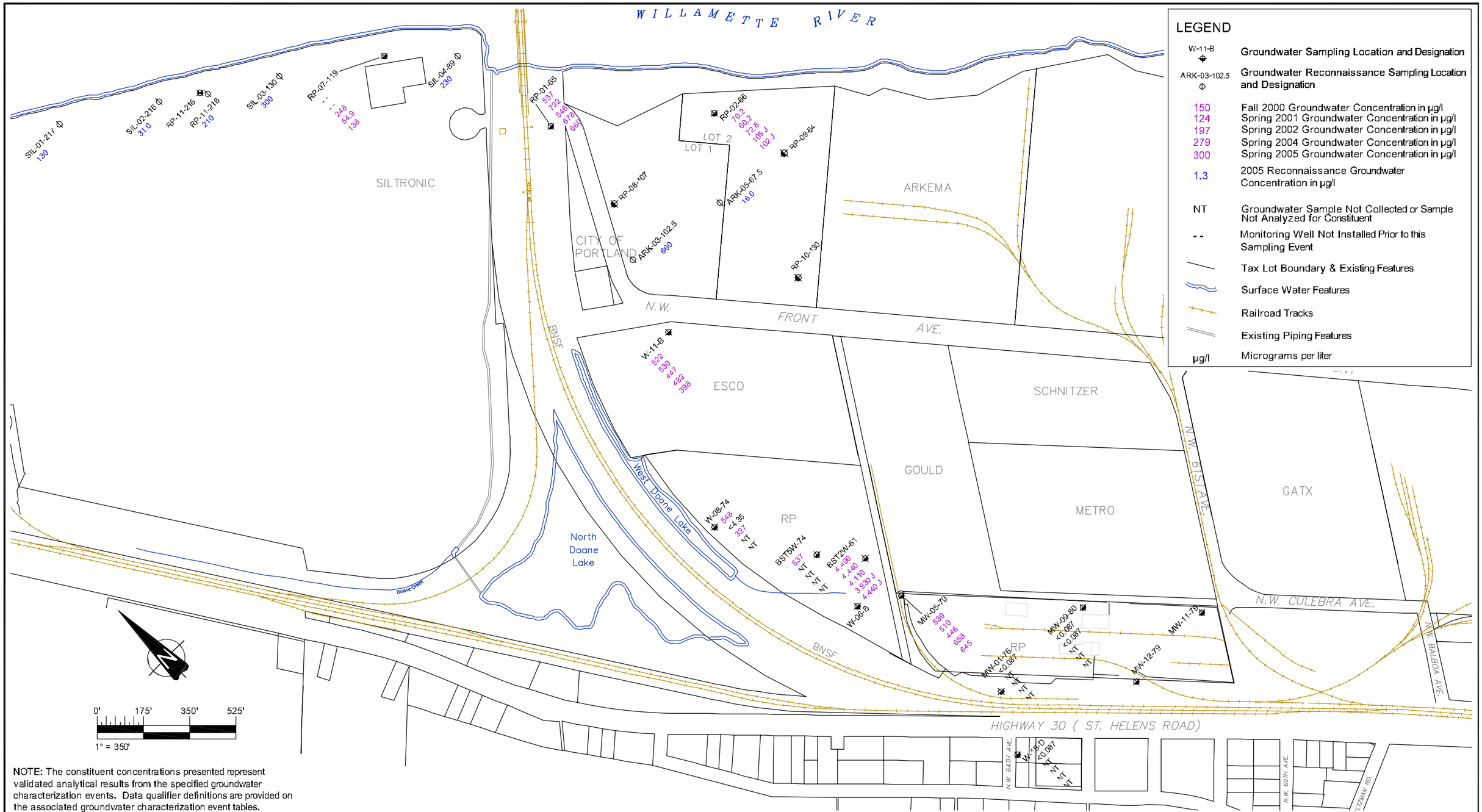
Portland, OR. U.S.A. 97224

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 09 12DCB (2000-2005) Alluvium GW.dwg - Layout1 - May. 16, 2006 2:05pm - laura.mccoy



NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SCE TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT: SLLI

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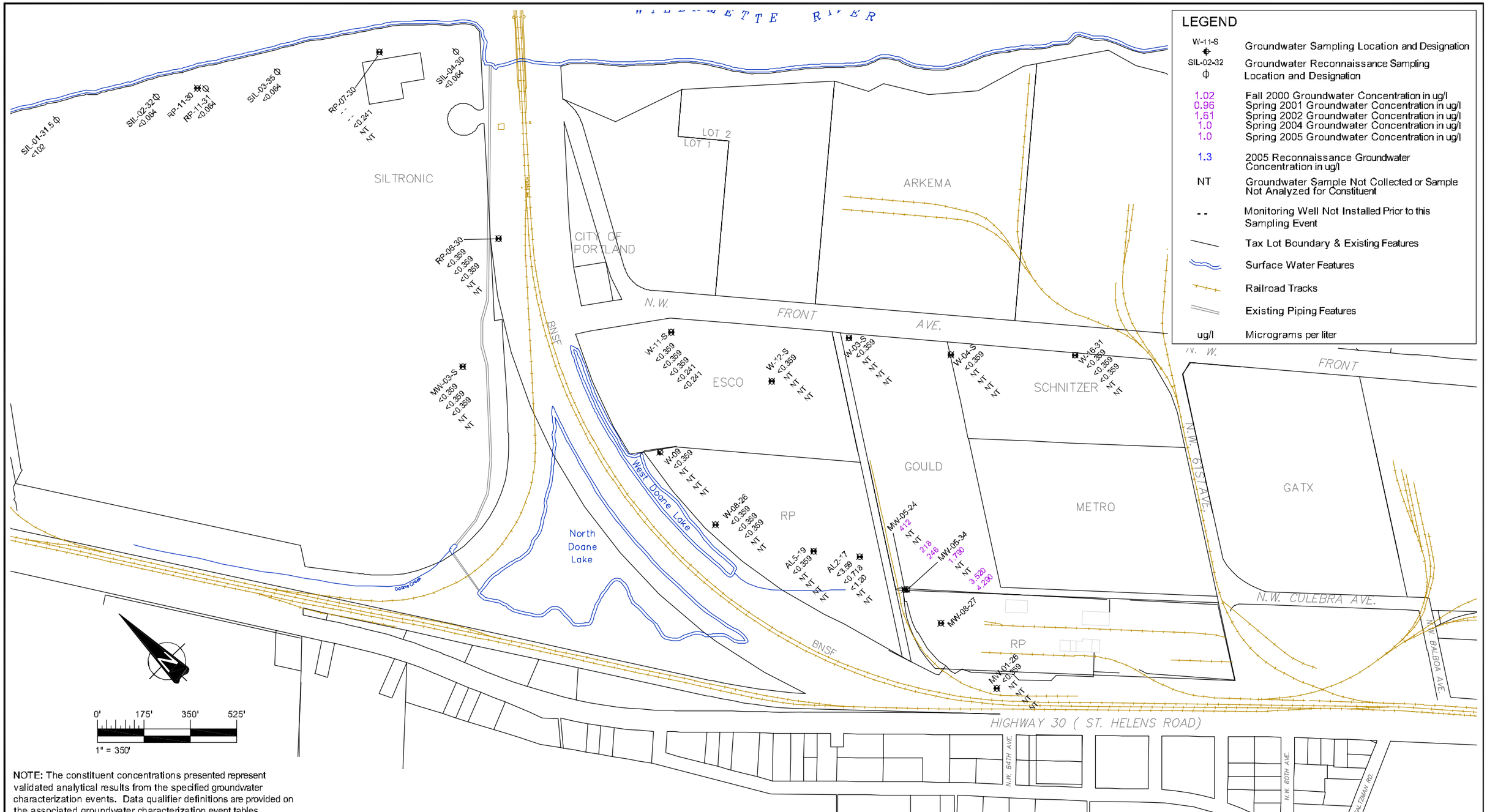
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: 1,2-DICHLOROBENZENE DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 BASALT ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	10

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 10 12DCB (2000-2005) Basalt GW.dwg - Layout1 - May. 16, 2006 2:06pm - laura.mccoy



NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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CLIENT:	SLLI
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'
PROJECT:	RP - PORTLAND SITE
TITLE:	TRICHLOROETHENE DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 FILL / SHALLOW ALLUVIUM ZONE
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	11

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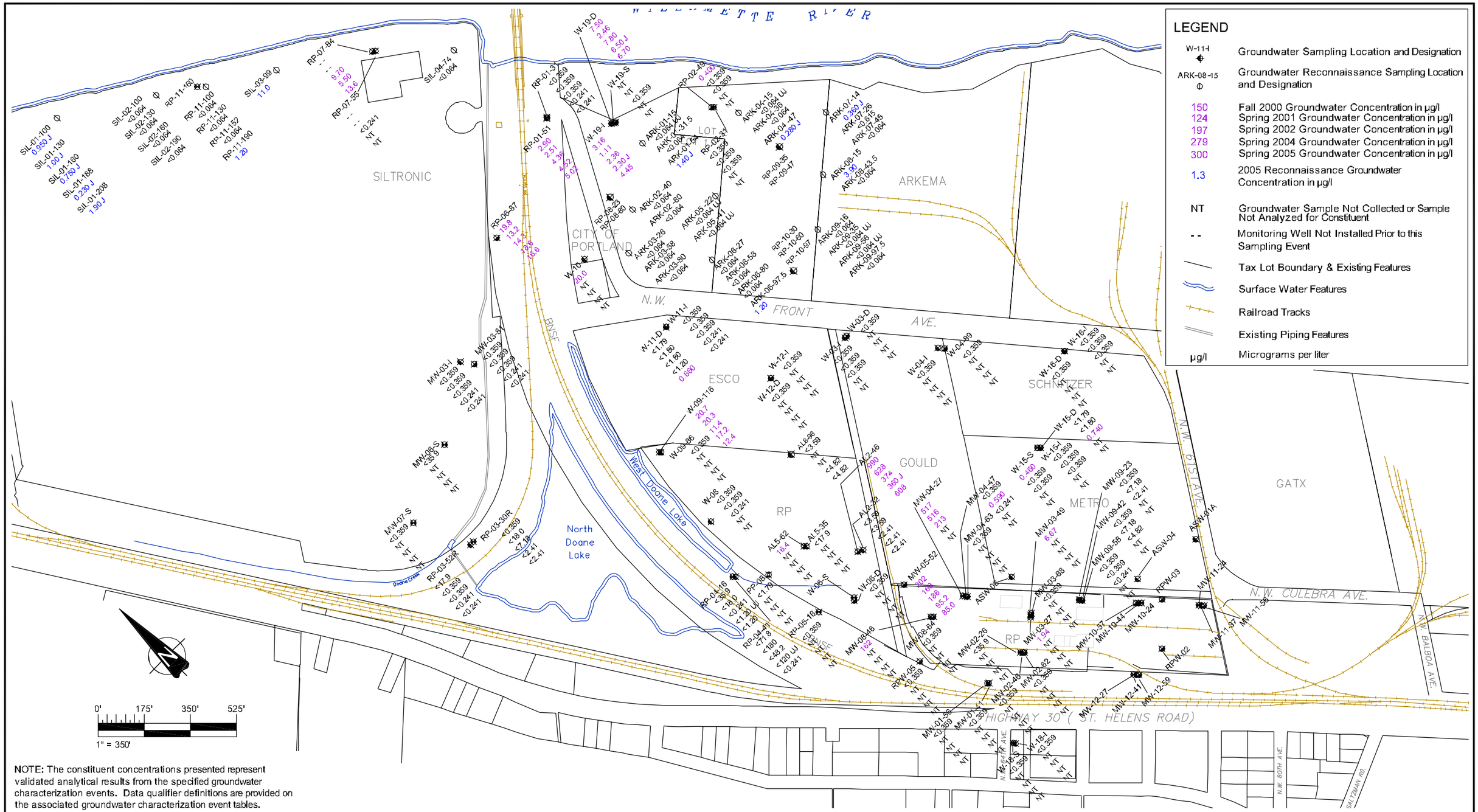
K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 11 TCE (2000-2005) Fill-Shallow GW.dwg - Layout1 - May. 16, 2006 2:07pm - laura.mccoy



LEGEND

W-11-I	Groundwater Sampling Location and Designation
ARK-08-15	Groundwater Reconnaissance Sampling Location and Designation
150	Fall 2000 Groundwater Concentration in µg/l
124	Spring 2001 Groundwater Concentration in µg/l
197	Spring 2002 Groundwater Concentration in µg/l
279	Spring 2004 Groundwater Concentration in µg/l
300	Spring 2005 Groundwater Concentration in µg/l
1.3	2005 Reconnaissance Groundwater Concentration in µg/l
NT	Groundwater Sample Not Collected or Sample Not Analyzed for Constituent
- -	Monitoring Well Not Installed Prior to this Sampling Event
	Tax Lot Boundary & Existing Features
	Surface Water Features
	Railroad Tracks
	Existing Piping Features
µg/l	Micrograms per liter

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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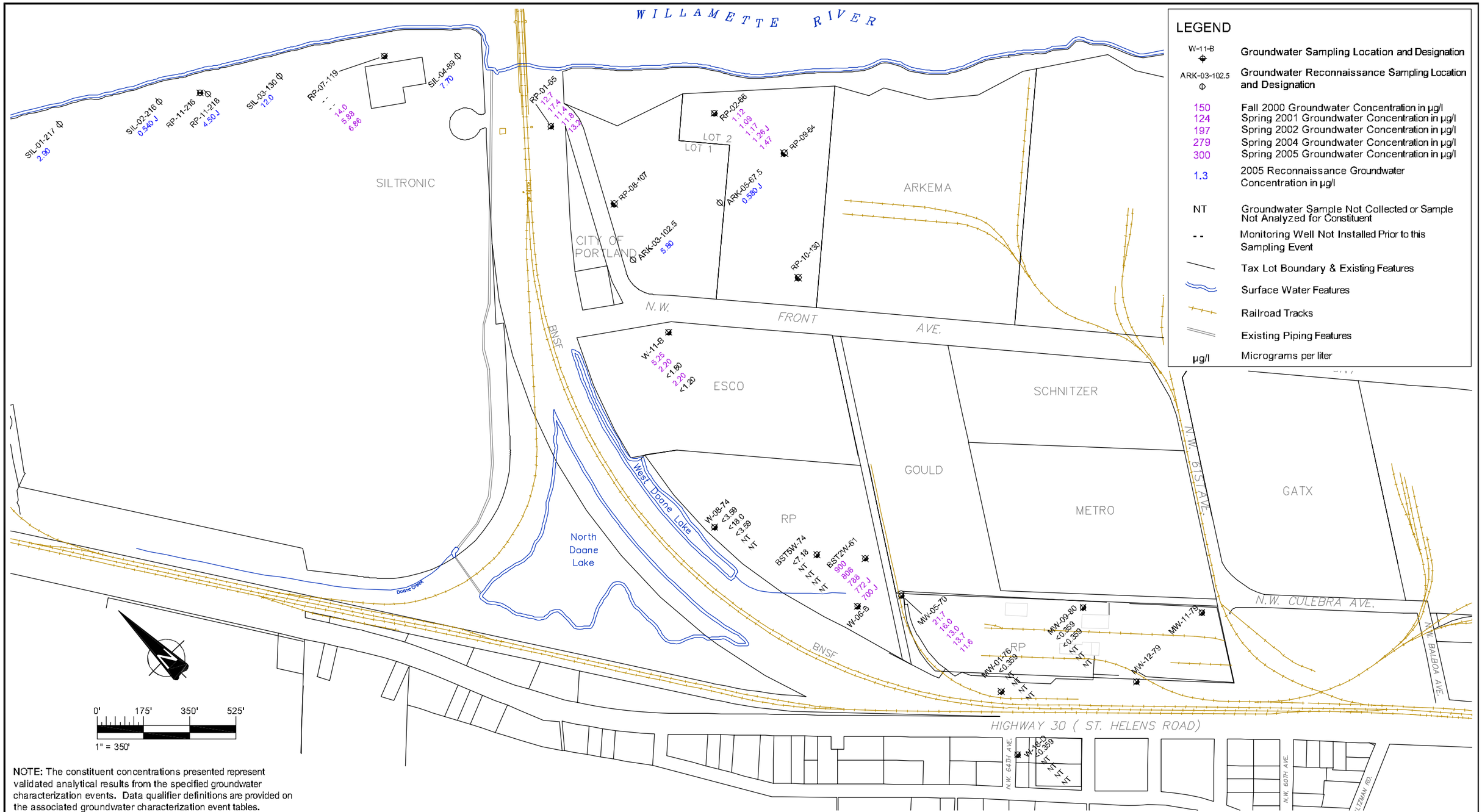
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. IntFt.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: TRICHLOROETHENE DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 ALLUVIUM ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	12

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 12 TCE (2000-2005) Alluvium GW.dwg - Layout1 - May. 16, 2006 2:08pm - laura.mccoy



LEGEND

W-11-B	Groundwater Sampling Location and Designation
ARK-03-102.5	Groundwater Reconnaissance Sampling Location and Designation
150	Fall 2000 Groundwater Concentration in µg/l
124	Spring 2001 Groundwater Concentration in µg/l
197	Spring 2002 Groundwater Concentration in µg/l
279	Spring 2004 Groundwater Concentration in µg/l
300	Spring 2005 Groundwater Concentration in µg/l
1.3	2005 Reconnaissance Groundwater Concentration in µg/l
NT	Groundwater Sample Not Collected or Sample Not Analyzed for Constituent
- -	Monitoring Well Not Installed Prior to this Sampling Event
	Tax Lot Boundary & Existing Features
	Surface Water Features
	Railroad Tracks
	Existing Piping Features
µg/l	Micrograms per liter

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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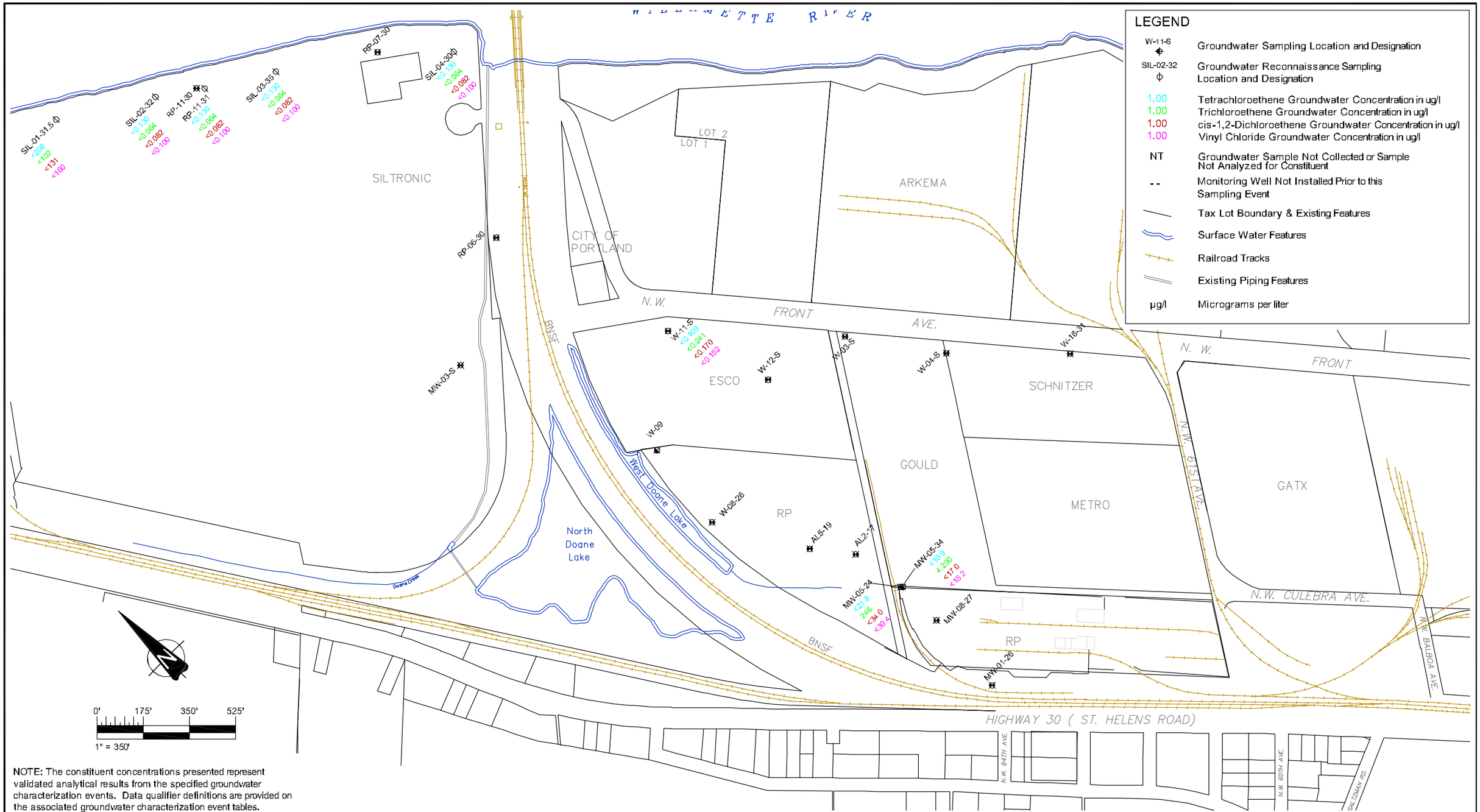
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: TRICHLOROETHENE DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 BASALT ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	13

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 13 TCE (2000-2005) Basalt GW.dwg - Layout1 - May. 16, 2006 2:09pm - laura.mccoy



NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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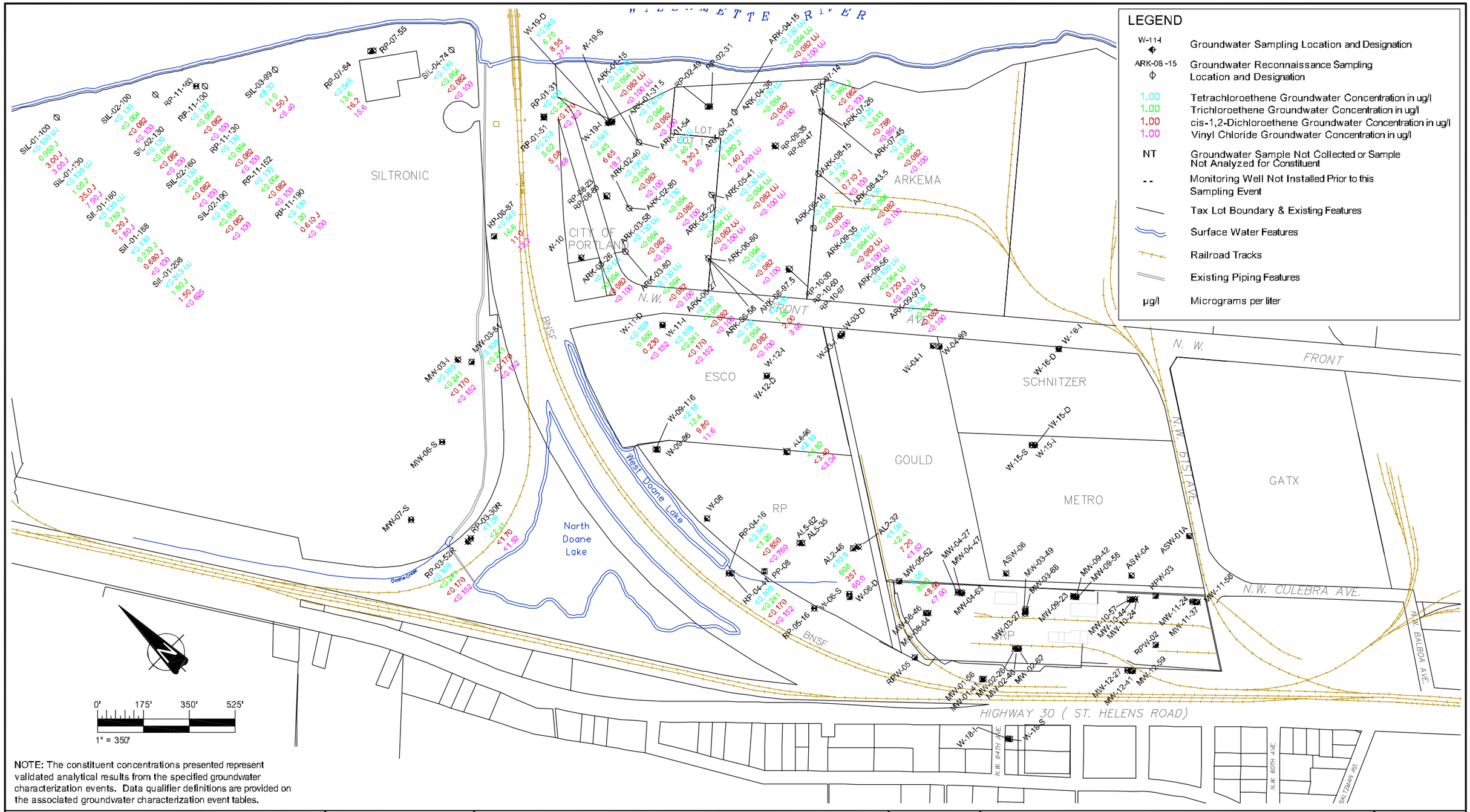
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: TETRACHLOROETHENE, TRICHLOROETHENE, cis-1,2-DICHLOROETHENE, AND VINYL CHLORIDE DISTRIBUTION IN GROUNDWATER 2005 FILL/SHALLOW ALLUVIUM ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	14

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 14 TCE-PCE-cis12DCE-VC (2005) Fill-Shallow GW.dwg - Layout1 - May. 16, 2006 2:10pm - laura.mccoy



NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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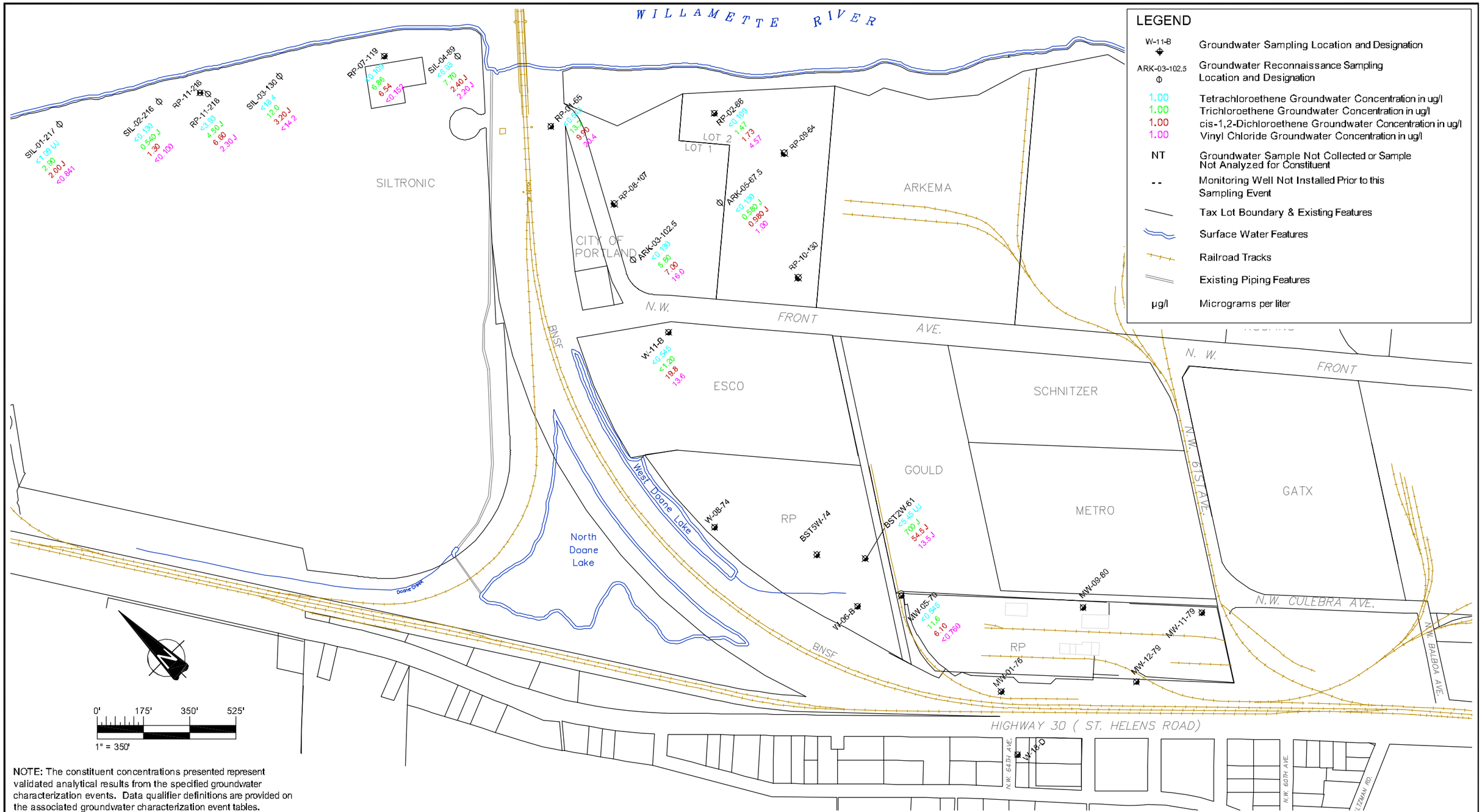
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int'FL
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: TETRACHLOROETHENE, TRICHLOROETHENE, cis-1,2-DICHLOROETHENE, AND VINYL CHLORIDE DISTRIBUTION IN GROUNDWATER 2005 ALLUVIUM ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	15

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 15 TCE-PCE-cis12DCE-VC (2005) Alluvium GW.dwg - Layout1 - May. 16, 2006 2:11pm - laura.mccoy



NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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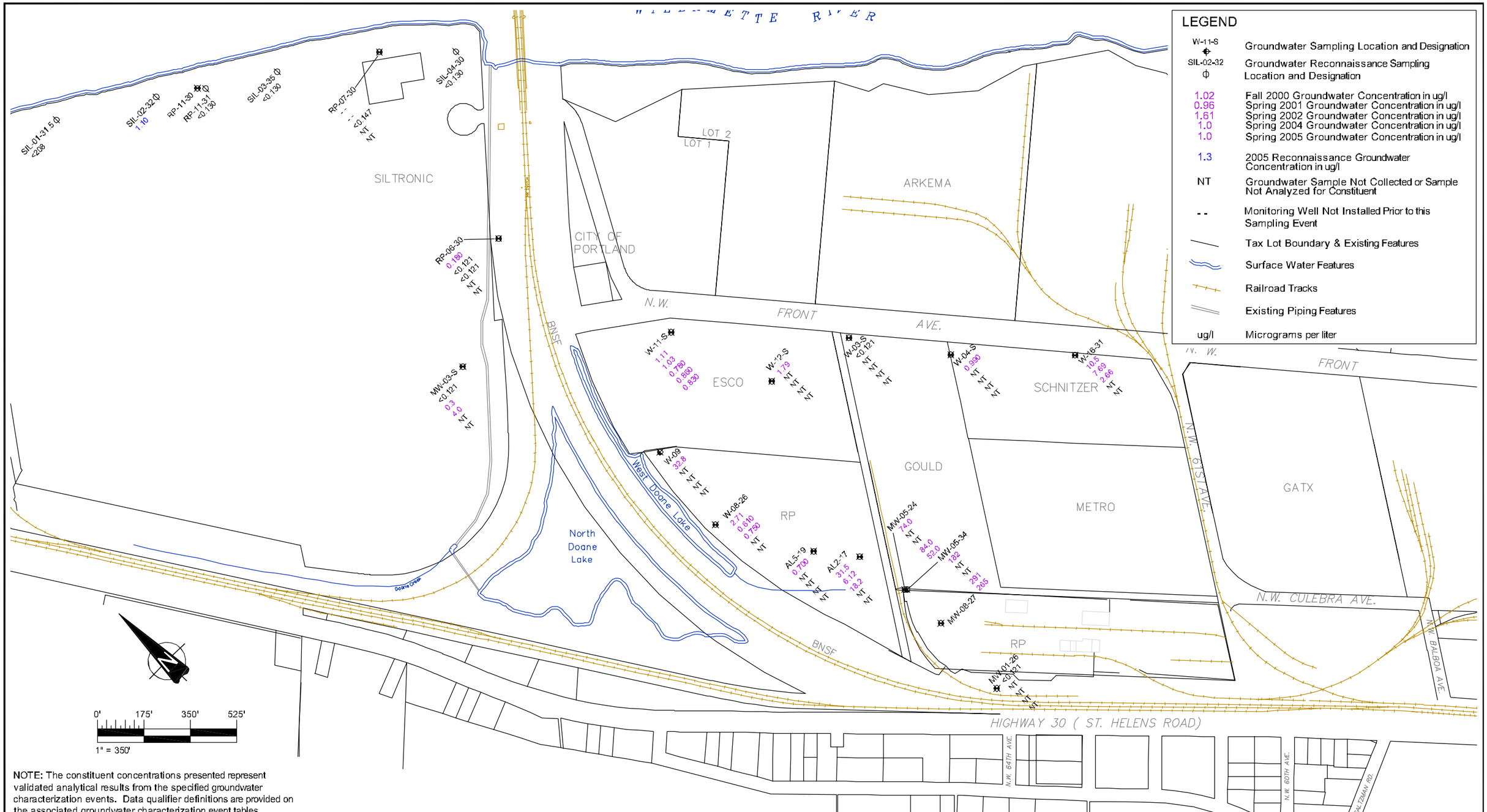
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: TETRACHLOROETHENE, TRICHLOROETHENE, cis-1,2-DICHLOROETHENE, AND VINYL CHLORIDE DISTRIBUTION IN GROUNDWATER 2005 BASALT ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	16

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 16 TCE-PCE-cis12DCE-VC (2005) Basalt GW.dwg - Layout1 - May. 16, 2006 2:12pm - laura.mccoy



NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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CLIENT: SLLI	DWN BY: LM / BRJ	PROJECT: RP - PORTLAND SITE	DATE: MARCH 2006
	CHK'D BY: CJ		PROJECT NO: 0-61M-10703-0 P-69
AMEC Earth & Environmental, 7376 S.W. Durham Road, Portland, OR. U.S.A. 97224	DATUM: NAD83	TITLE: BENZENE DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 FILL / SHALLOW ALLUVIUM ZONE	REV. NO.: 7
	PROJECTION: OR SP N. Int Ft.		FIGURE No. 17
	SCALE: 1" = 350'		

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 17 Benzene (2000-2005) Fill-Shallow GW.dwg - Layout1 - May. 16, 2006 2:15pm - laura.mccoy

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: BENZENE DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 ALLUVIUM ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	18

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 18 Benzene (2000-2005) Alluvium GW.dwg - Layout1 - May. 16, 2006 2:42pm - laura.mccoy

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: BENZENE DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 BASALT ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	19

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 19 Benzene (2000-2005) Basalt GW.dwg - Layout1 - May. 16, 2006 2:41pm - laura.mccoy

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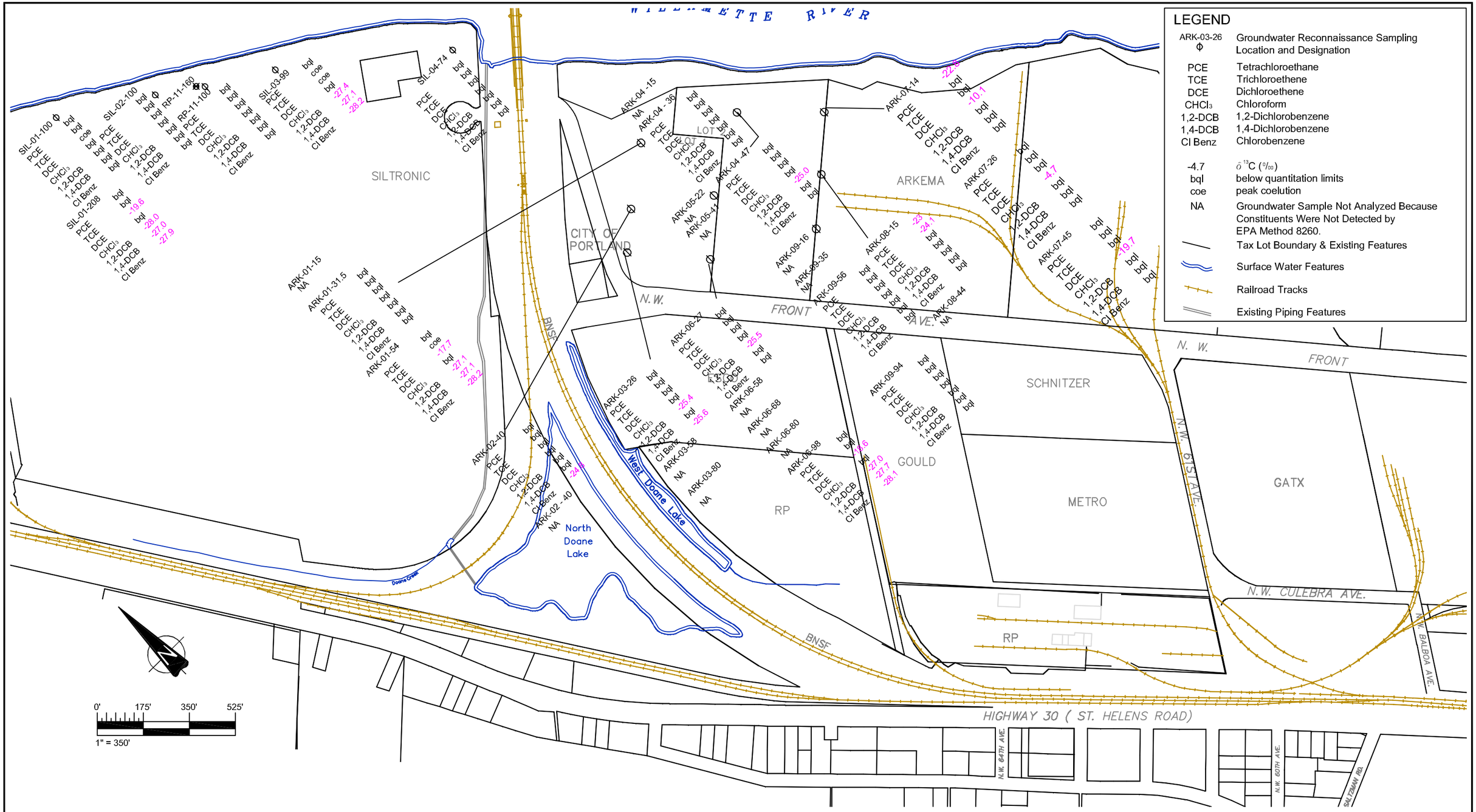
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: COMPOUND SPECIFIC ISOTOPES SUMMER-FALL 2005 FILL/SHALLOW ALLUVIUM ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	20

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 20 Compound Specific Isotopes (Fall 2005) Fill-Shallow.dwg – Layout1 – May. 16, 2006 2:40pm – laura.mccoy



THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SCE TECHNICAL MEMORANDUM DATED MAY 19, 2006.

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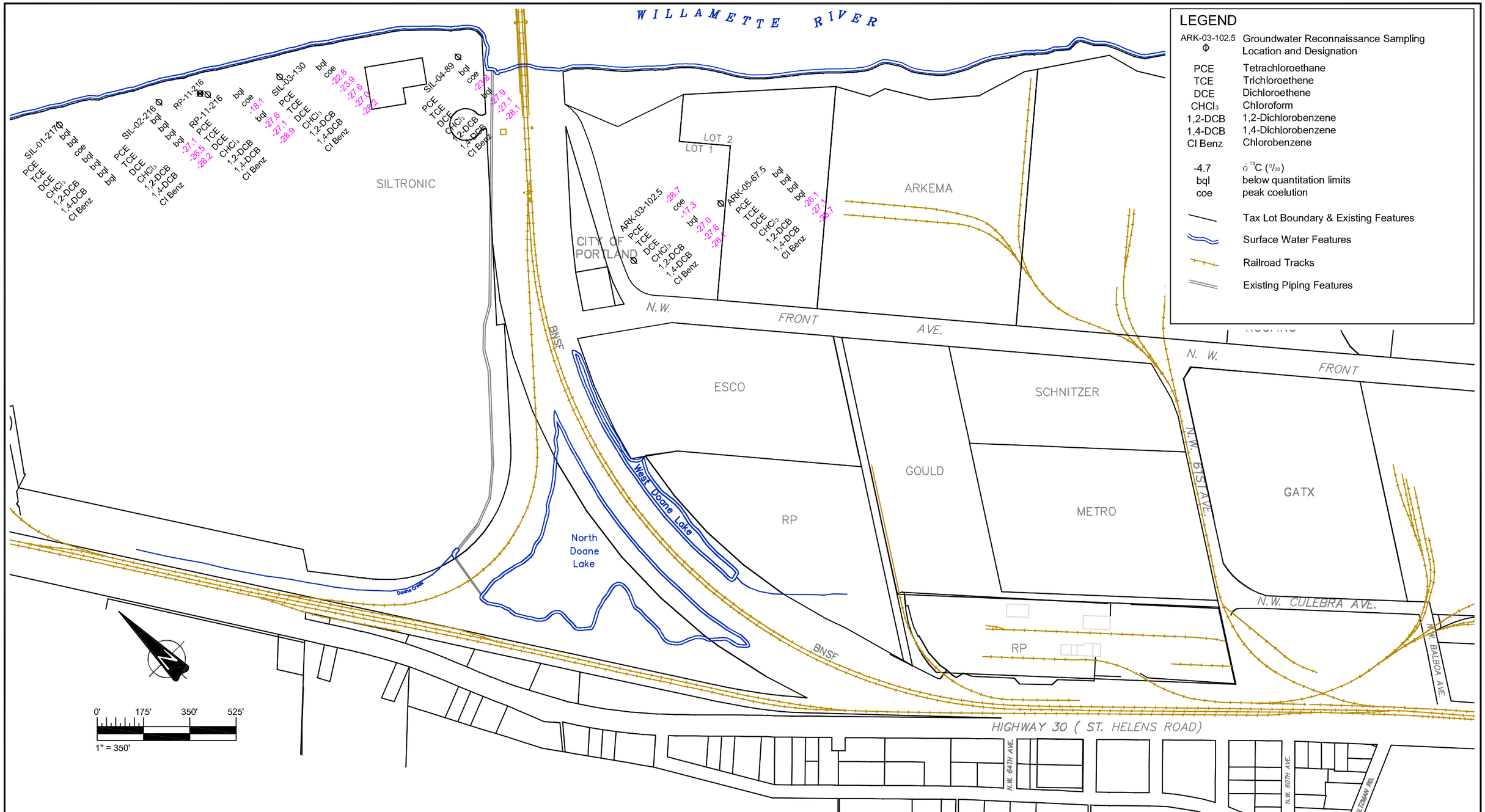
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: COMPOUND SPECIFIC ISOTOPES SUMMER-FALL 2005 ALLUVIUM ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	6
FIGURE No.	21

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 21 Compound Specific Isotopes (Fall 2005) Alluvium.dwg – Layout1 – May. 16, 2006 2:39pm – laura.mccoy



THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SCE TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT: SLLI

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DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: COMPOUND SPECIFIC ISOTOPES SUMMER-FALL 2005 BASALT ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	6
FIGURE No.	22

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 22 Compound Specific Isotopes (Fall 2005) Basalt.dwg – Layout1 – May. 16, 2006 2:39pm – laura.mccoy

LEGEND

W-11-S	Groundwater Sampling Location and Designation
SIL-02-32	Groundwater Reconnaissance Sampling Location and Designation
1.02	Fall 2000 Groundwater Concentration in ug/l
0.96	Spring 2001 Groundwater Concentration in ug/l
1.61	Spring 2002 Groundwater Concentration in ug/l
1.0	Spring 2004 Groundwater Concentration in ug/l
1.0	Spring 2005 Groundwater Concentration in ug/l
1.3	2005 Reconnaissance Groundwater Concentration in ug/l
NT	Groundwater Sample Not Collected or Sample Not Analyzed for Constituent
- -	Monitoring Well Not Installed Prior to this Sampling Event
	Tax Lot Boundary & Existing Features
	Surface Water Features
	Railroad Tracks
	Existing Piping Features
ug/l	Micrograms per liter

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SCE TECHNICAL MEMORANDUM DATED MAY 19, 2006.

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DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: 2,4,5-TP (SILVEX) DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 FILL / SHALLOW ALLUVIUM ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	23

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 23 Silvex (2000-2005) Fill-Shallow GW.dwg - Layout1 - May. 16, 2006 2:38pm - laura.mccoy

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SCE TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT:	SLLI
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'
PROJECT:	RP - PORTLAND SITE
TITLE:	2,4,5-TP (SILVEX) DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 ALLUVIUM ZONE
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	24

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K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 24 Silvex (2000-2005) Alluvium GW.dwg - Layout1 - May. 16, 2006 2:37pm - laura.mccoy

LEGEND

W-11-B	Groundwater Sampling Location and Designation
ARK-03-102.5	Groundwater Reconnaissance Sampling Location and Designation
150	Fall 2000 Groundwater Concentration in µg/l
124	Spring 2001 Groundwater Concentration in µg/l
197	Spring 2002 Groundwater Concentration in µg/l
279	Spring 2004 Groundwater Concentration in µg/l
300	Spring 2005 Groundwater Concentration in µg/l
1.3	2005 Reconnaissance Groundwater Concentration in µg/l
NT	Groundwater Sample Not Collected or Sample Not Analyzed for Constituent
- -	Monitoring Well Not Installed Prior to this Sampling Event
	Tax Lot Boundary & Existing Features
	Surface Water Features
	Railroad Tracks
	Existing Piping Features
µg/l	Micrograms per liter

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SCE TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT: SLLI

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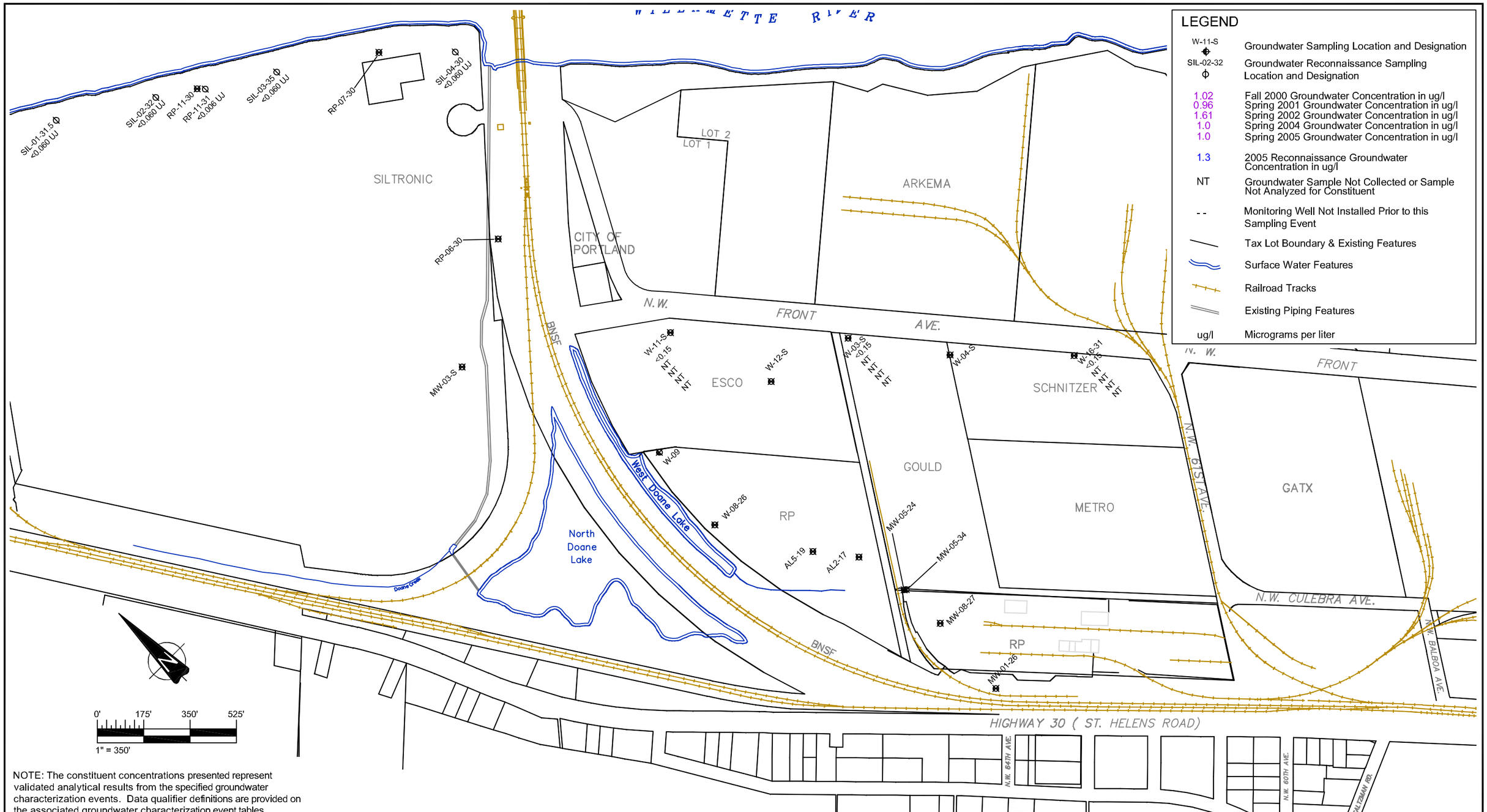
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: 2,4,5-TP (SILVEX) DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 BASALT ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	25

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 25 Silvex (2000-2005) Basalt GW.dwg - Layout1 - May. 16, 2006 2:36pm - laura.mccoy



NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SCE TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT:	SLLI
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'
PROJECT:	RP - PORTLAND SITE
TITLE:	TOTAL 4,4'-DDD, 4,4'-DDE, AND 4,4'-DDT DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 FILL / SHALLOW ALLUVIUM ZONE
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	26

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K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 26 Total DDT (2000-2005) Fill-Shallow GW.dwg - Layout1 - May. 16, 2006 2:35pm - laura.mccoy

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: TOTAL 4,4'-DDD, 4,4'-DDE, AND 4,4'-DDT DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 ALLUVIUM ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	27

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 27 Total DDT (2000-2005) Alluvium GW.dwg - Layout1 - May. 16, 2006 2:34pm - laura.mccoy

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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CLIENT: SLLI

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Portland, OR. U.S.A. 97224

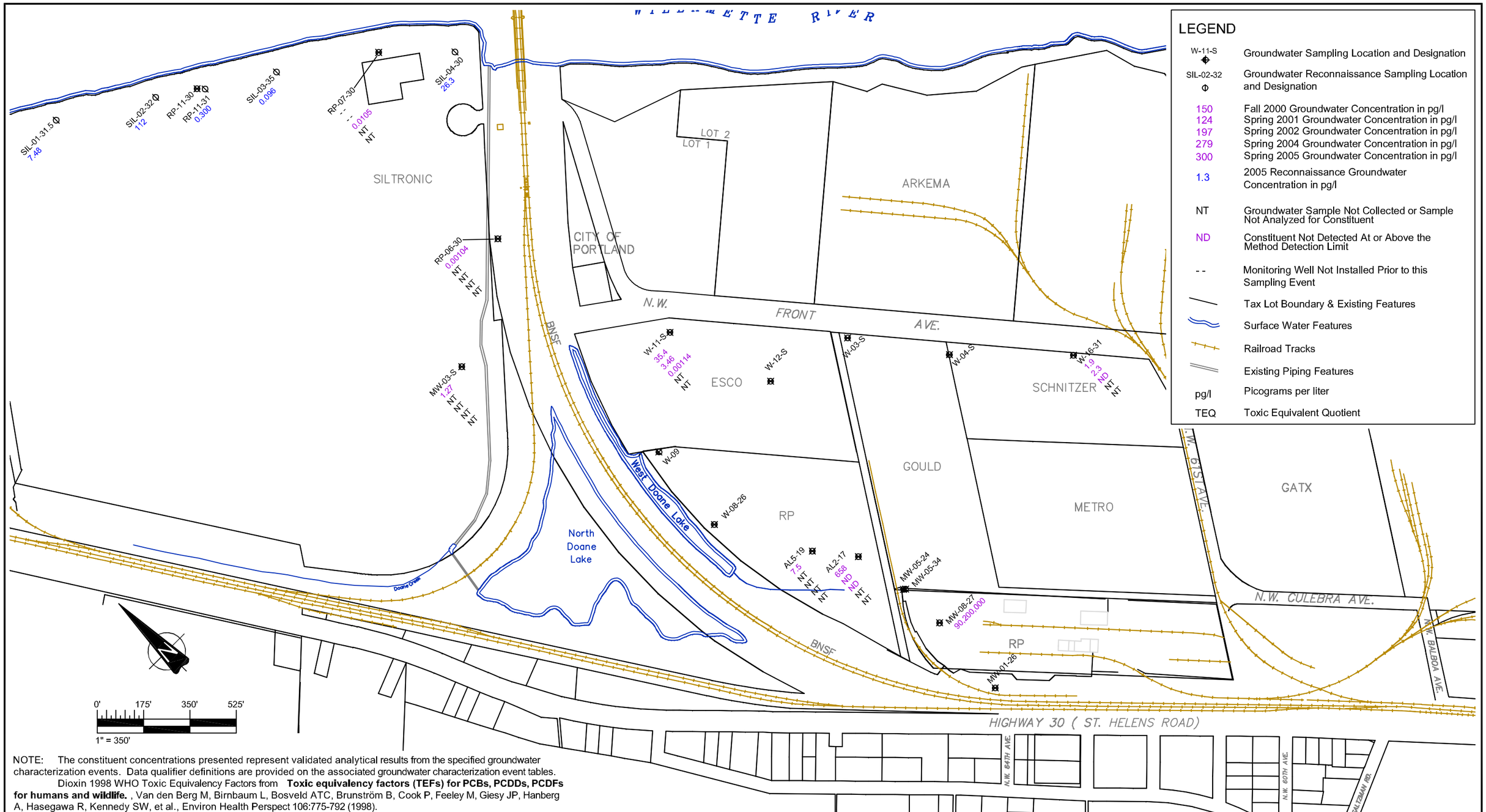
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: TOTAL 4,4'-DDD, 4,4'-DDE, AND 4,4'-DDT DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 BASALT ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	28

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 28 Total DDT (2000-2005) Basalt GW.dwg - Layout1 - May. 16, 2006 2:33pm - laura.mccoy



LEGEND

W-11-S	Groundwater Sampling Location and Designation
SIL-02-32	Groundwater Reconnaissance Sampling Location and Designation
150	Fall 2000 Groundwater Concentration in pg/l
124	Spring 2001 Groundwater Concentration in pg/l
197	Spring 2002 Groundwater Concentration in pg/l
279	Spring 2004 Groundwater Concentration in pg/l
300	Spring 2005 Groundwater Concentration in pg/l
1.3	2005 Reconnaissance Groundwater Concentration in pg/l
NT	Groundwater Sample Not Collected or Sample Not Analyzed for Constituent
ND	Constituent Not Detected At or Above the Method Detection Limit
- -	Monitoring Well Not Installed Prior to this Sampling Event
	Tax Lot Boundary & Existing Features
	Surface Water Features
	Railroad Tracks
	Existing Piping Features
pg/l	Picograms per liter
TEQ	Toxic Equivalent Quotient

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

Dioxin 1998 WHO Toxic Equivalency Factors from **Toxic equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife.** , Van den Berg M, Birnbaum L, Bosveld ATC, Brunström B, Cook P, Feeley M, Giesy JP, Hanberg A, Hasegawa R, Kennedy SW, et al., Environ Health Perspect 106:775-792 (1998).

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SCE TECHNICAL MEMORANDUM DATED MAY 19, 2006.

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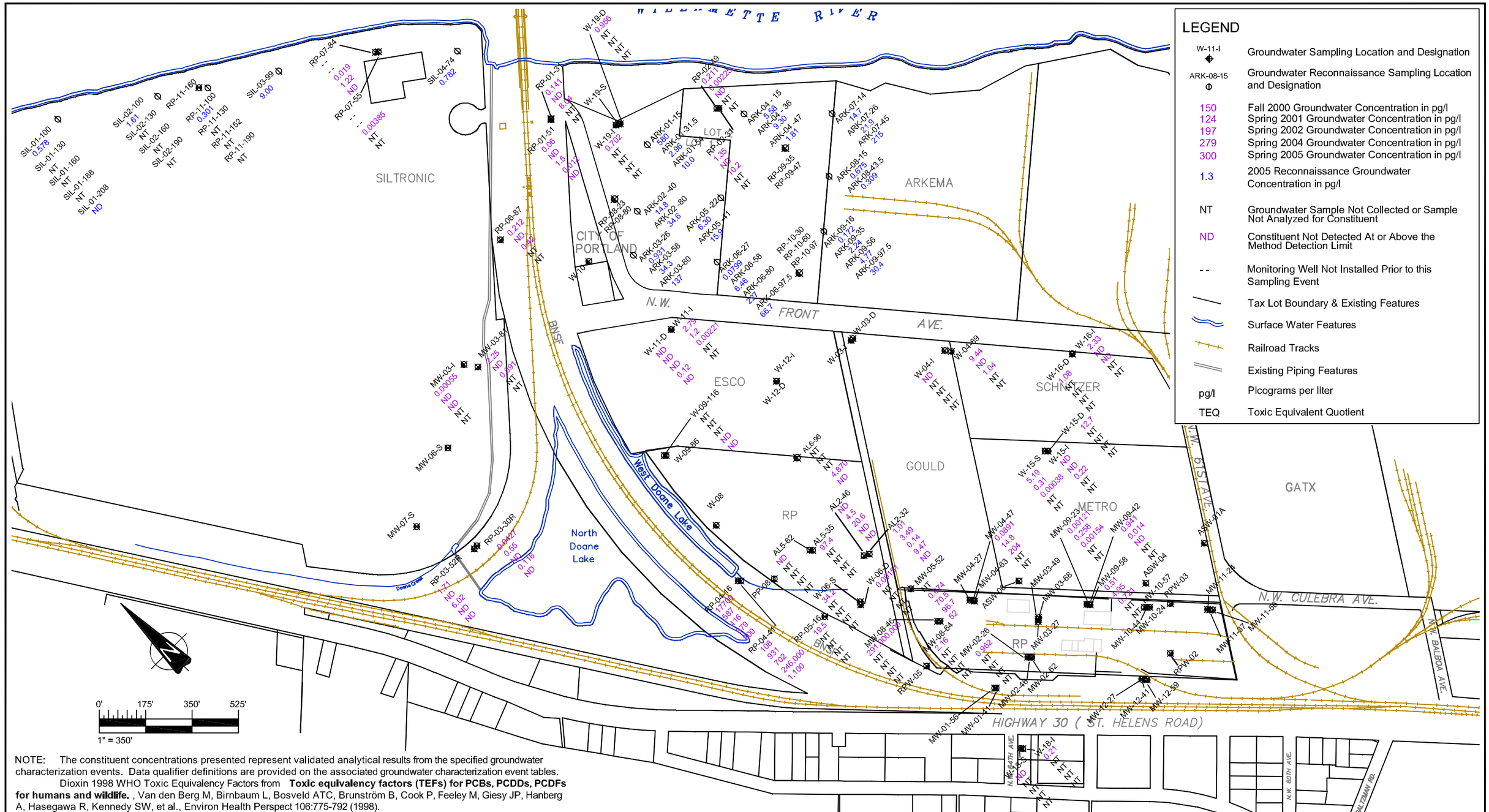
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: TOTAL TEQ DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 FILL / SHALLOW ALLUVIUM ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	29

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 29 Total TEQ (2000-2005) Fill-Shallow GW.dwg - Layout1 - May. 16, 2006 2:33pm - laura.mccoy



LEGEND

W-11-I	Groundwater Sampling Location and Designation
ARK-08-15	Groundwater Reconnaissance Sampling Location and Designation
150	Fall 2000 Groundwater Concentration in pg/l
124	Spring 2001 Groundwater Concentration in pg/l
197	Spring 2002 Groundwater Concentration in pg/l
279	Spring 2004 Groundwater Concentration in pg/l
300	Spring 2005 Groundwater Concentration in pg/l
1.3	2005 Reconnaissance Groundwater Concentration in pg/l
NT	Groundwater Sample Not Collected or Sample Not Analyzed for Constituent
ND	Constituent Not Detected At or Above the Method Detection Limit
- -	Monitoring Well Not Installed Prior to this Sampling Event
	Tax Lot Boundary & Existing Features
	Surface Water Features
	Railroad Tracks
	Existing Piping Features
pg/l	Picograms per liter
TEQ	Toxic Equivalent Quotient

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

Dioxin 1998 WHO Toxic Equivalency Factors from **Toxic equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife.** , Van den Berg M, Birnbaum L, Bosveld ATC, Brunström B, Cook P, Feeley M, Giesy JP, Hanberg A, Hasegawa R, Kennedy SW, et al., Environ Health Perspect 106:775-792 (1998).

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DWN BY:	LM / BRJ
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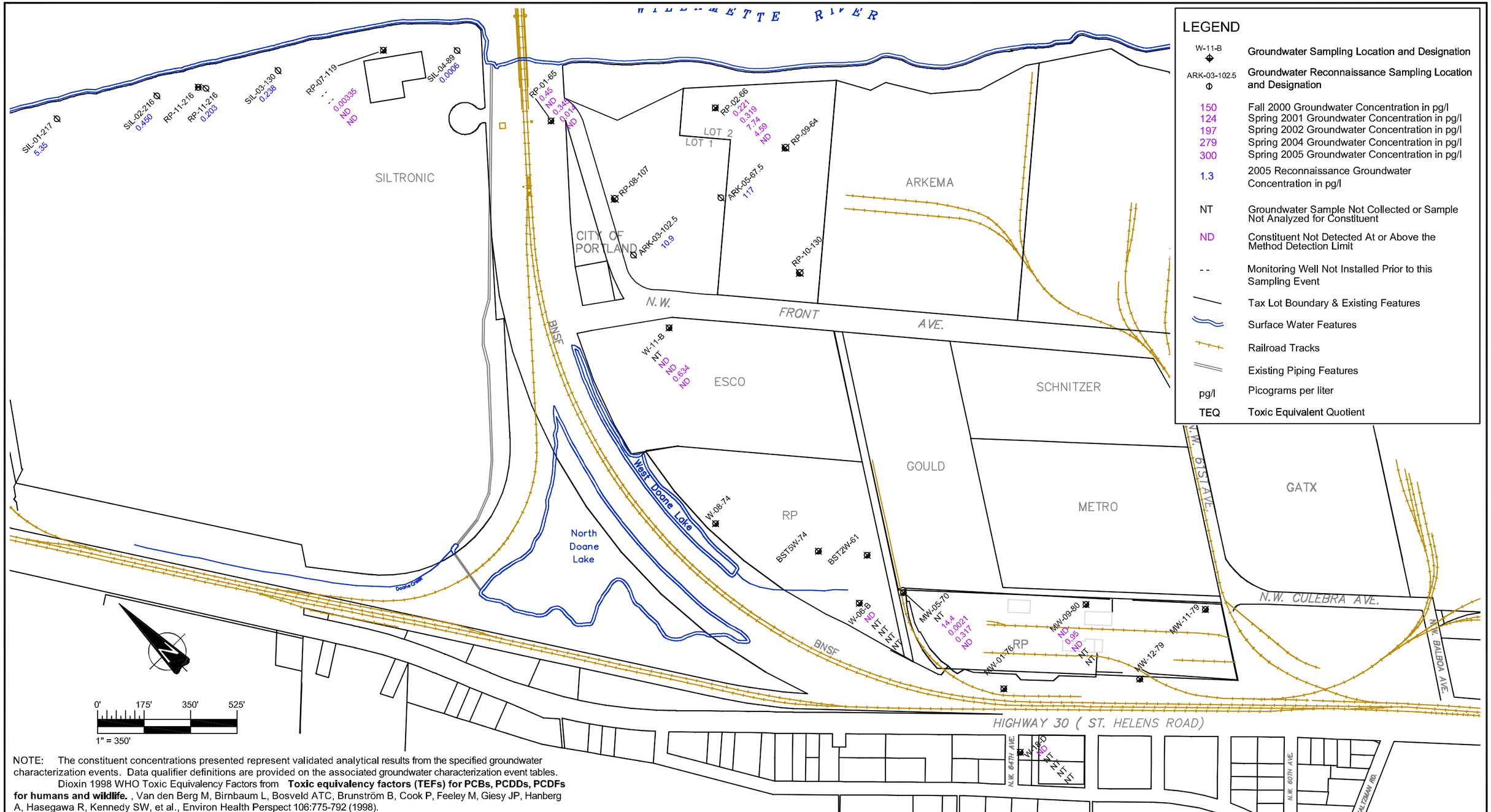
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: TOTAL TEQ DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 ALLUVIUM ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	30

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 30 Total TEQ (2000-2005) Alluvium GW.dwg - Layout1 - May. 16, 2006 2:32pm - laura.mccoy



NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

Dioxin 1998 WHO Toxic Equivalency Factors from **Toxic equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife.** , Van den Berg M, Birnbaum L, Bosveld ATC, Brunström B, Cook P, Feeley M, Giesy JP, Hanberg A, Hasegawa R, Kennedy SW, et al., Environ Health Perspect 106:775-792 (1998).

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DWN BY:	LM / BRJ
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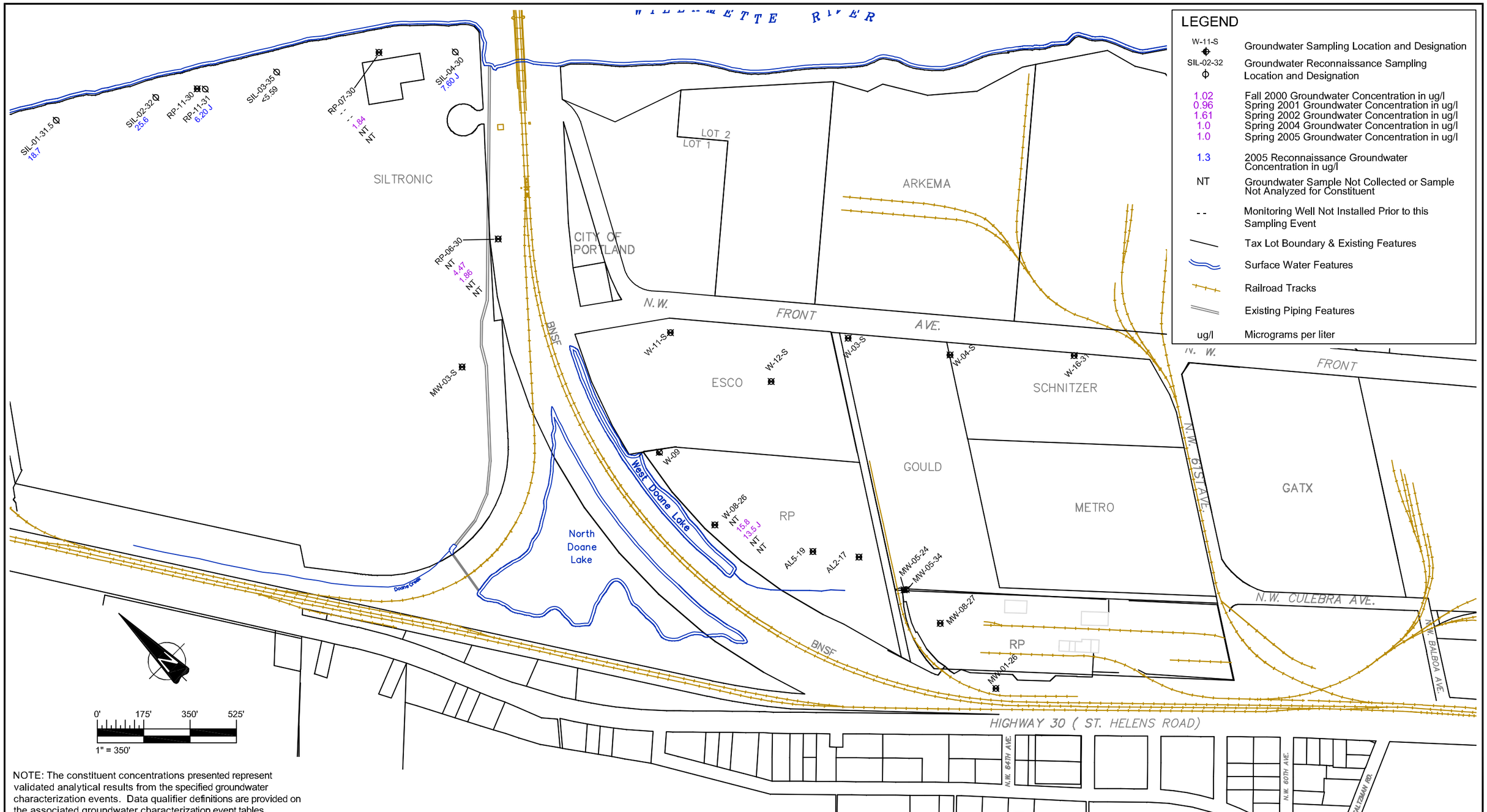
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: TOTAL TEQ DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 BASALT ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	31

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 31 Total TEQ (2000-2005) Basalt GW.dwg - Layout1 - May. 16, 2006 2:31pm - laura.mccoy



NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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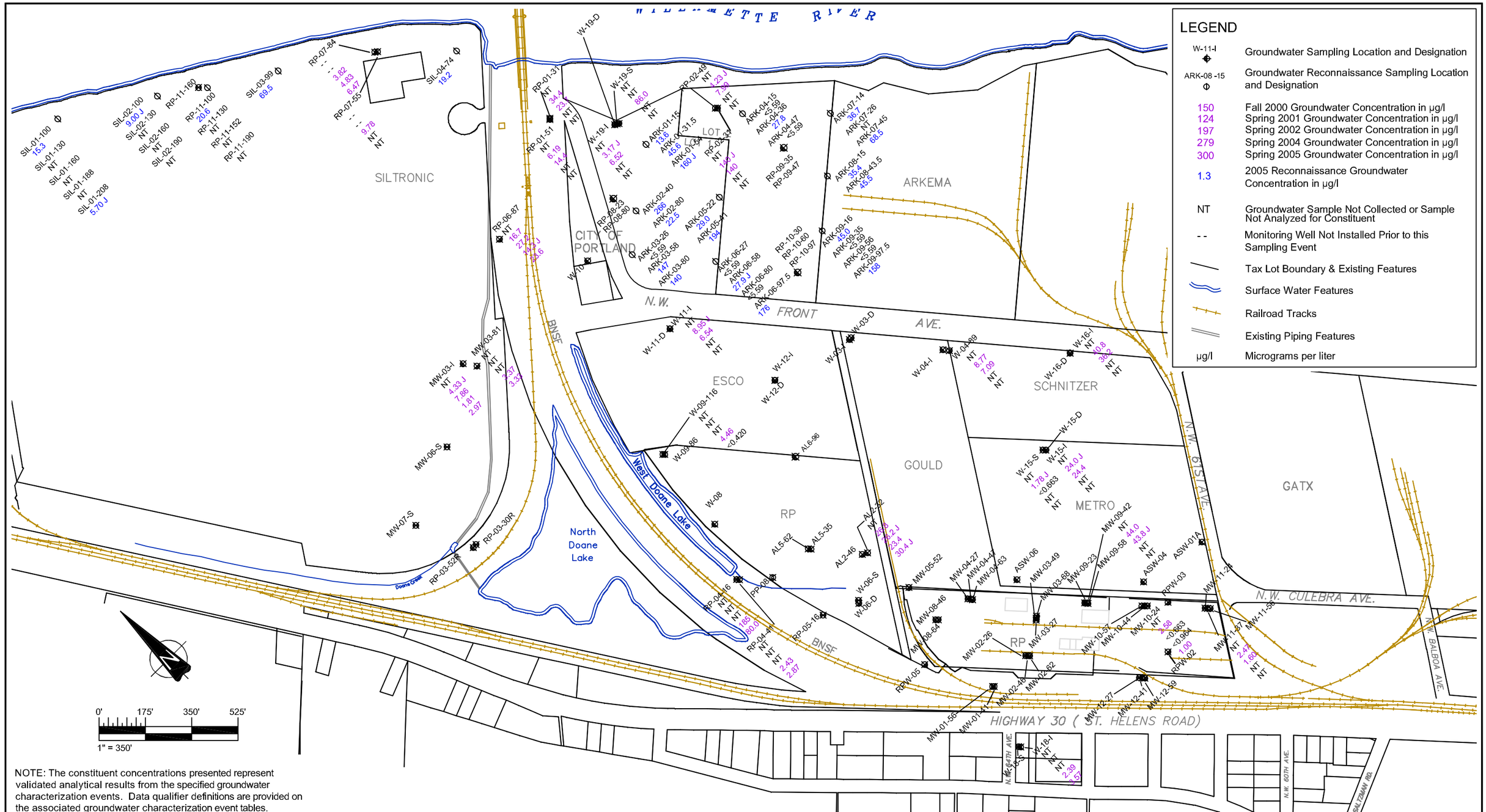
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: TOTAL ARSENIC DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 FILL / SHALLOW ALLUVIUM ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	32

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 32 Total Arsenic (2000-2005) Fill-Shallow GW.dwg - Layout1 - May. 16, 2006 2:30pm - laura.mccoy



LEGEND

W-11-I	Groundwater Sampling Location and Designation
ARK-08 -15	Groundwater Reconnaissance Sampling Location and Designation
150	Fall 2000 Groundwater Concentration in µg/l
124	Spring 2001 Groundwater Concentration in µg/l
197	Spring 2002 Groundwater Concentration in µg/l
279	Spring 2004 Groundwater Concentration in µg/l
300	Spring 2005 Groundwater Concentration in µg/l
1.3	2005 Reconnaissance Groundwater Concentration in µg/l
NT	Groundwater Sample Not Collected or Sample Not Analyzed for Constituent
- -	Monitoring Well Not Installed Prior to this Sampling Event
	Tax Lot Boundary & Existing Features
	Surface Water Features
	Railroad Tracks
	Existing Piping Features
µg/l	Micrograms per liter

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: TOTAL ARSENIC DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 ALLUVIUM ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	33

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 33 Total Arsenic (2000-2005) Alluvium GW.dwg - Layout1 - May. 16, 2006 2:29pm - laura.mccoy

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'
PROJECT:	RP - PORTLAND SITE
TITLE:	TOTAL ARSENIC DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 BASALT ZONE
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	34

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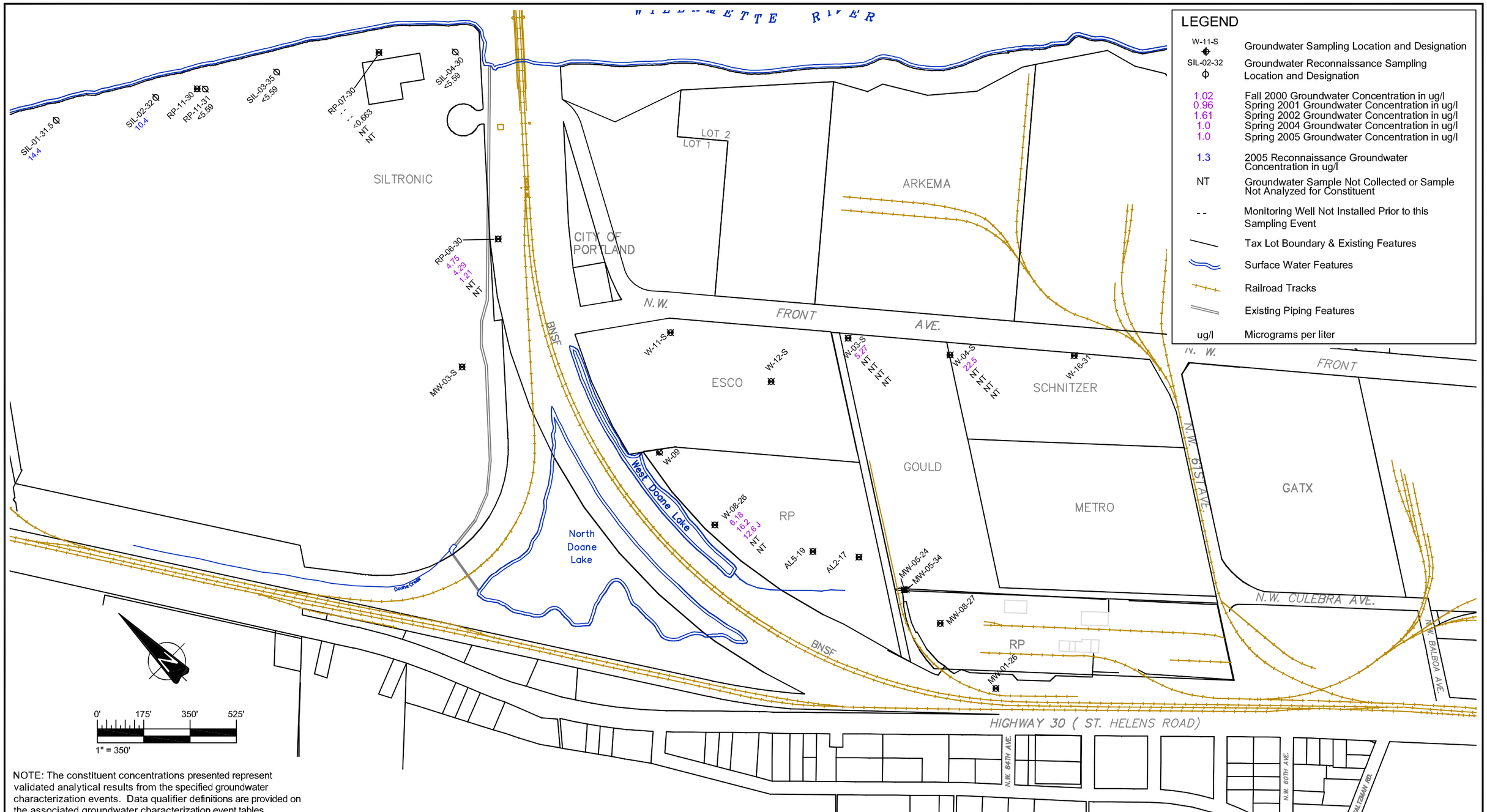
K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 34 Total Arsenic (2000-2005) Basalt GW.dwg - Layout1 - May. 16, 2006 2:28pm - laura.mccoy



NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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CLIENT:	SLLI
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'
PROJECT:	RP - PORTLAND SITE
TITLE:	DISSOLVED ARSENIC DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 FILL / SHALLOW ALLUVIUM ZONE
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	35

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K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 35 Dissolved Arsenic (2000-2005) Fill-Shallow GW.dwg - Layout1 - May. 16, 2006 2:28pm - laura.mccoy

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SCE TECHNICAL MEMORANDUM DATED MAY 19, 2006.

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DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'
PROJECT:	RP - PORTLAND SITE
TITLE:	DISSOLVED ARSENIC DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 ALLUVIUM ZONE
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	36

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K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 36 Dissolved Arsenic (2000-2005) Alluvium GW.dwg - Layout1 - May. 16, 2006 2:27pm - laura.mccoy

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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CLIENT:	SLLI
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'
PROJECT:	RP - PORTLAND SITE
TITLE:	DISSOLVED ARSENIC DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 BASALT ZONE
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	37

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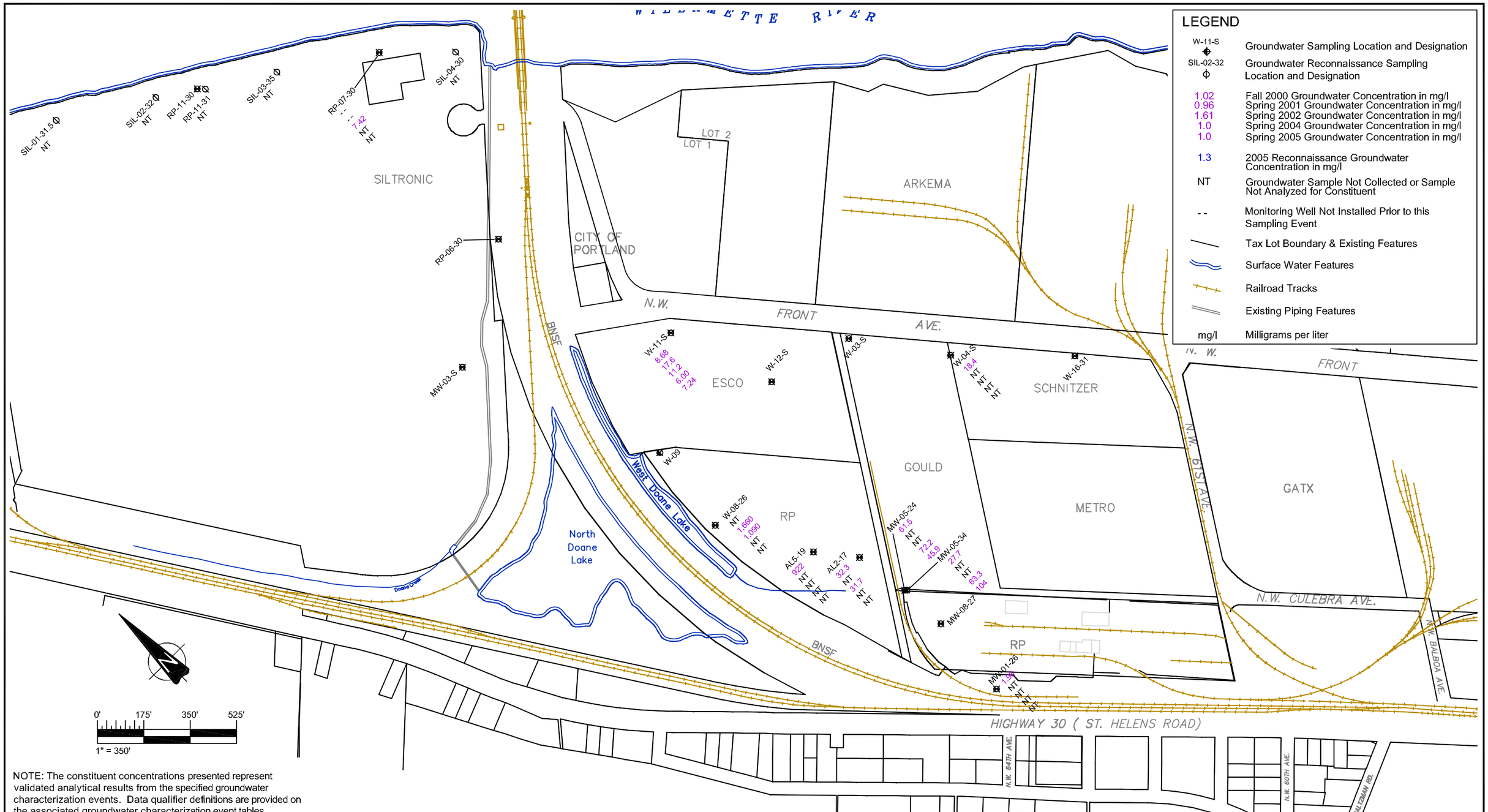
K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 37 Dissolved Arsenic (2000-2005) Basalt GW.dwg - Layout1 - May. 16, 2006 2:26pm - laura.mccoy



NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SCE TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT:	SLLI
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'
PROJECT:	RP - PORTLAND SITE
TITLE:	CHLORIDE DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 FILL / SHALLOW ALLUVIUM ZONE
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	38

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K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 38 Chloride (2000-2005) Fill-Shallow GW.dwg - Layout1 - May. 16, 2006 2:25pm - laura.mccoy

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: CHLORIDE DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 ALLUVIUM ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	39

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 39 Chloride (2000-2005) Alluvium GW.dwg - Layout1 - May. 16, 2006 2:24pm - laura.mccoy

LEGEND

W-11-B	Groundwater Sampling Location and Designation
ARK-03-102.5	Groundwater Reconnaissance Sampling Location and Designation
150	Fall 2000 Groundwater Concentration in mg/l
124	Spring 2001 Groundwater Concentration in mg/l
197	Spring 2002 Groundwater Concentration in mg/l
279	Spring 2004 Groundwater Concentration in mg/l
300	Spring 2005 Groundwater Concentration in mg/l
1.3	2005 Reconnaissance Groundwater Concentration in mg/l
NT	Groundwater Sample Not Collected or Sample Not Analyzed for Constituent
- -	Monitoring Well Not Installed Prior to this Sampling Event
	Tax Lot Boundary & Existing Features
	Surface Water Features
	Railroad Tracks
	Existing Piping Features
mg/l	Milligrams per liter

NOTE: The constituent concentrations presented represent validated analytical results from the specified groundwater characterization events. Data qualifier definitions are provided on the associated groundwater characterization event tables.

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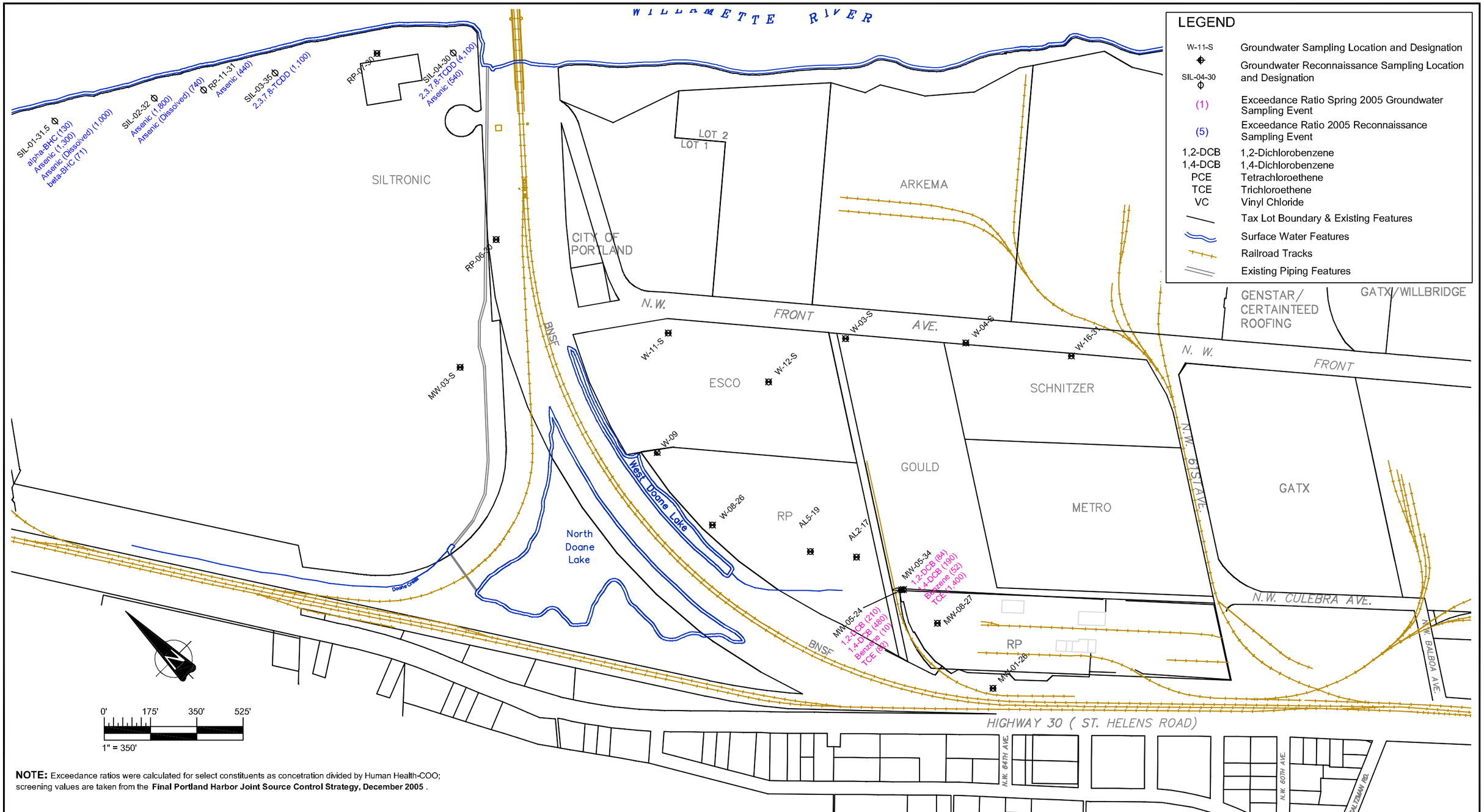
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: CHLORIDE DISTRIBUTION IN GROUNDWATER FALL 2000-FALL 2005 BASALT ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	7
FIGURE No.	40

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 40 Chloride (2000-2005) Basalt GW.dwg - Layout1 - May. 16, 2006 2:23pm - laura.mccoy



NOTE: Exceedance ratios were calculated for select constituents as concetration divided by Human Health-COO; screening values are taken from the **Final Portland Harbor Joint Source Control Strategy, December 2005** .

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DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'
PROJECT	RP - PORTLAND SITE
TITLE	EXCEEDANCE RATIOS FOR SELECTED CONSTITUENTS DISTRIBUTION IN GROUNDWATER 2005 FILL/SHALLOW ALLUVIUM ZONE
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	2
FIGURE No.	41

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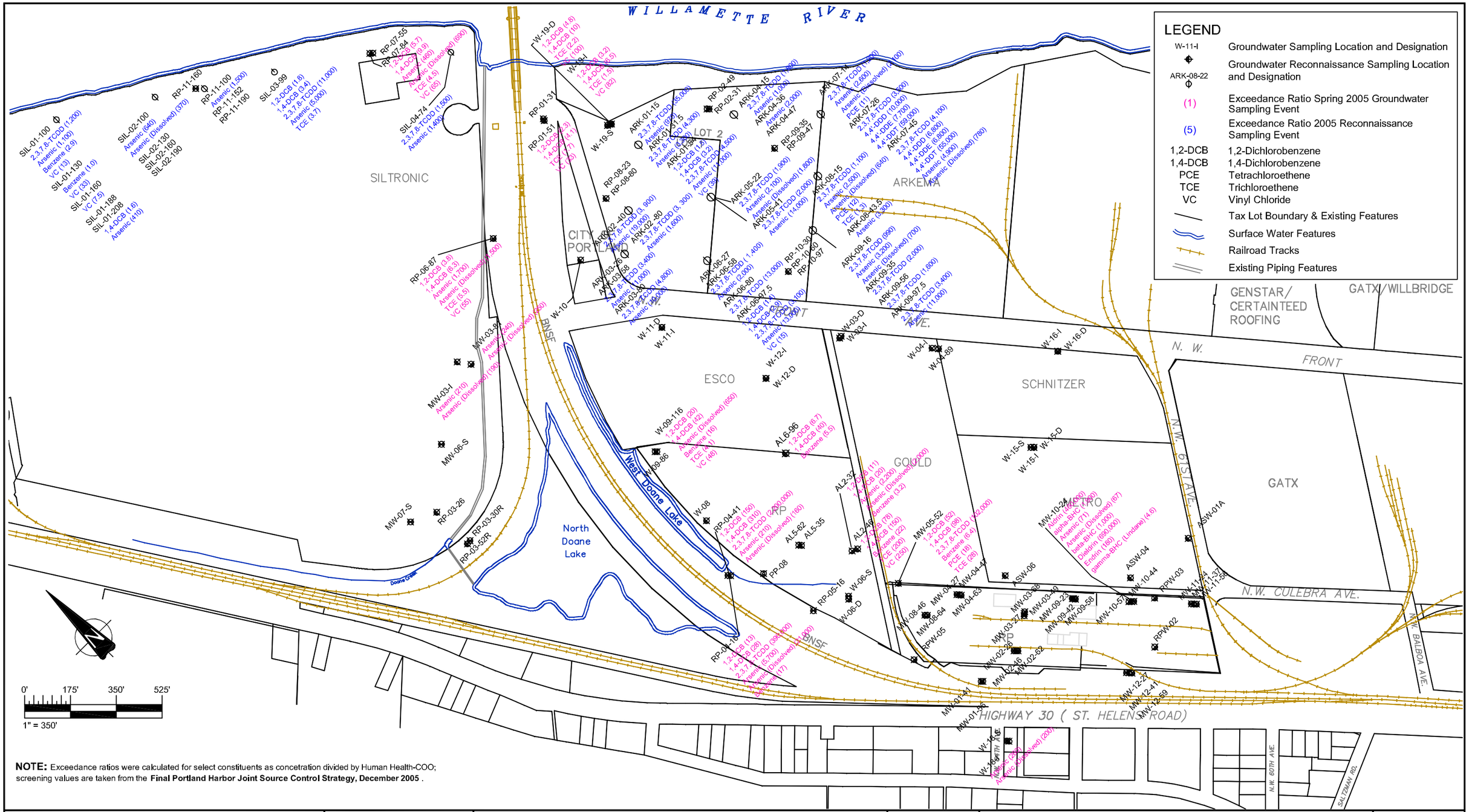
K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 41 Exceedance Ratios (2005) Fill-Shallow GW.dwg - Layout1 - May. 16, 2006 2:22pm - laura.mccoy



NOTE: Exceedance ratios were calculated for select constituents as concetration divided by Human Health-COO; screening values are taken from the **Final Portland Harbor Joint Source Control Strategy, December 2005** .

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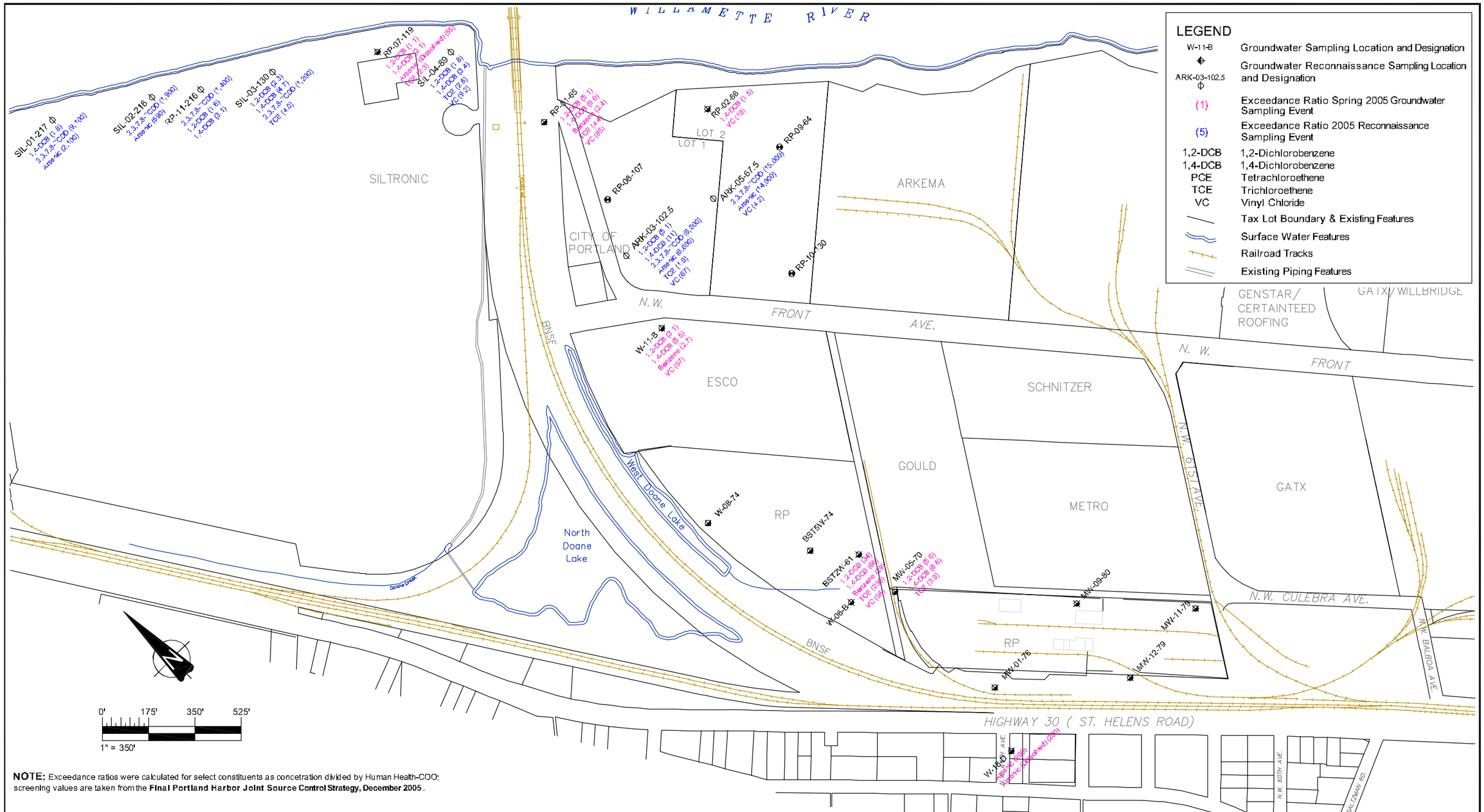
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'

PROJECT: RP - PORTLAND SITE

TITLE: EXCEEDANCE RATIOS FOR SELECTED CONSTITUENTS DISTRIBUTION IN GROUNDWATER 2005 ALLUVIUM ZONE

DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	2
FIGURE No.	42

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 42 Exceedance Ratios (2005) Alluvium GW.dwg – Layout1 – May. 16, 2006 2:21pm – laura.mccoy



NOTE: Exceedance ratios were calculated for select constituents as concetration divided by Human Health-COC screening values are taken from the **Final Portland Harbor Joint Source Control Strategy, December 2005**.

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CLIENT:	SLLI
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. IntFt.
SCALE:	1" = 350'
PROJECT	RP - PORTLAND SITE
TITLE	EXCEEDANCE RATIOS FOR SELECTED CONTITUENTS DISTRIBUTION IN GROUNDWATER 2005 BASALT ZONE
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	2
FIGURE No.	43

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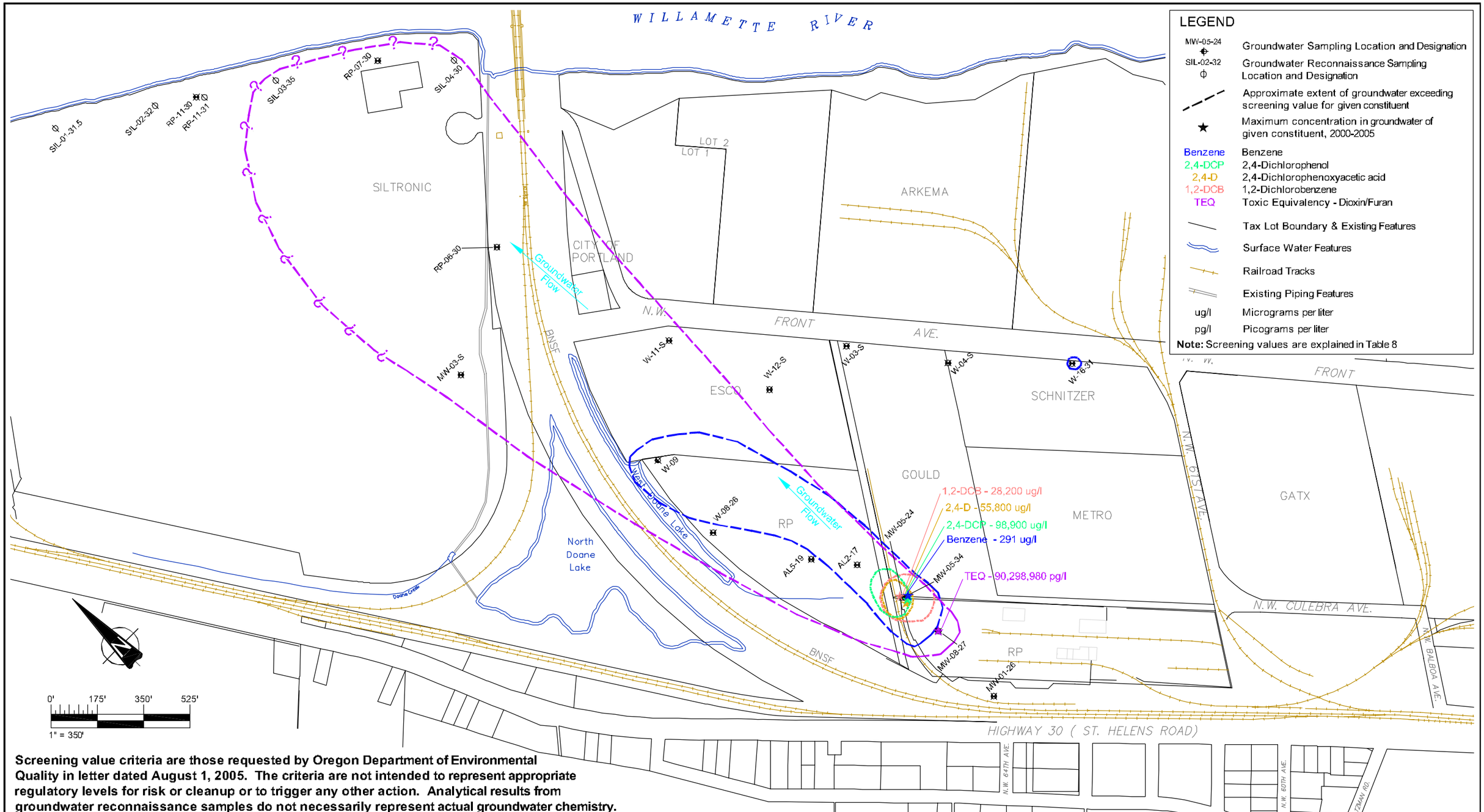
K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 43 Exceedance Ratios (2005) Basalt GW.dwg – Layout1 – May. 16, 2006 2:19pm – laura.mccoy



Screening value criteria are those requested by Oregon Department of Environmental Quality in letter dated August 1, 2005. The criteria are not intended to represent appropriate regulatory levels for risk or cleanup or to trigger any other action. Analytical results from groundwater reconnaissance samples do not necessarily represent actual groundwater chemistry.

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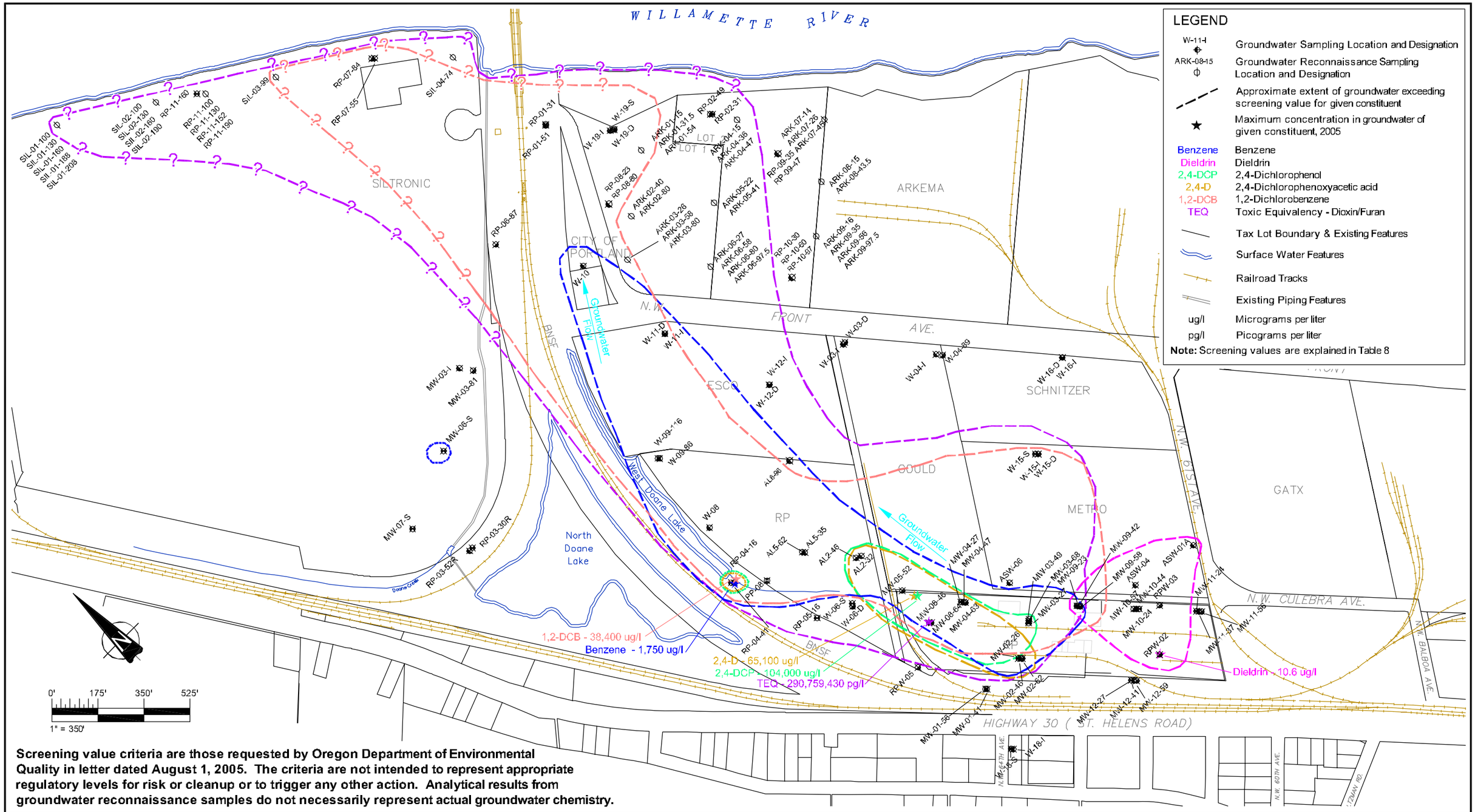
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'
PROJECT:	RP - PORTLAND SITE
TITLE:	GROUNDWATER EXCEEDING DEQ REQUESTED SCREENING VALUES, SELECTED CONSTITUENTS, FALL 2000-FALL 2005, FILL / SHALLOW ALLUVIUM ZONE
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	3
FIGURE No.	44

AMEC Earth & Environmental
7376 S.W. Durham Road
Portland, OR. U.S.A. 97224

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 44 Groundwater Exceeding Screening Values Fill-Shallow Alluvium Zone.dwg – Layout1 – May. 16, 2006 2:18pm – laura.mccoy



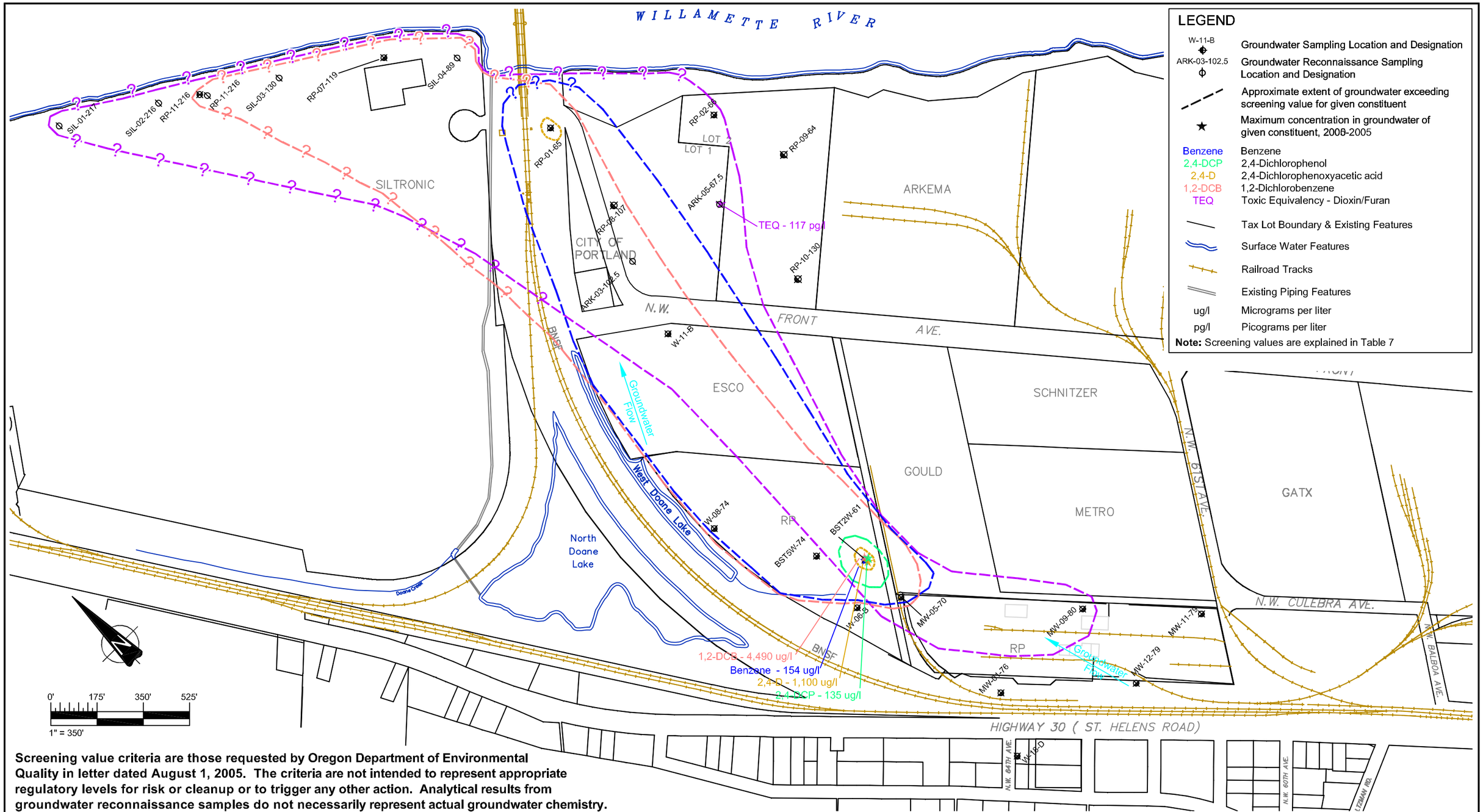
Screening value criteria are those requested by Oregon Department of Environmental Quality in letter dated August 1, 2005. The criteria are not intended to represent appropriate regulatory levels for risk or cleanup or to trigger any other action. Analytical results from groundwater reconnaissance samples do not necessarily represent actual groundwater chemistry.

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SCE TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT:	SLLI
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. IntFt.
SCALE:	1" = 350'
PROJECT:	RP - PORTLAND SITE
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	3
FIGURE No.	45
TITLE:	GROUNDWATER EXCEEDING DEQ REQUESTED SCREENING VALUES, SELECTED CONSTITUENTS, FALL 2000-FALL 2005, ALLUVIUM ZONE

AMEC Earth & Environmental
7376 S.W. Durham Road
Portland, OR. U.S.A. 97224

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 45 Groundwater Exceeding Screening Values Alluvium Zone.dwg – Layout1 – May. 16, 2006 2:17pm – laura.mccoy



Screening value criteria are those requested by Oregon Department of Environmental Quality in letter dated August 1, 2005. The criteria are not intended to represent appropriate regulatory levels for risk or cleanup or to trigger any other action. Analytical results from groundwater reconnaissance samples do not necessarily represent actual groundwater chemistry.

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL STAGE 1 SCE TECHNICAL MEMORANDUM DATED MAY 19, 2006.

CLIENT:	SLLI
DWN BY:	LM / BRJ
CHK'D BY:	CJ
DATUM:	NAD83
PROJECTION:	OR SP N. Int Ft.
SCALE:	1" = 350'
PROJECT:	RP - PORTLAND SITE
TITLE:	GROUNDWATER EXCEEDING DEQ REQUESTED SCREENING VALUES, SELECTED CONSTITUENTS, FALL 2000-2005, BASALT ZONE
DATE:	MARCH 2006
PROJECT NO:	0-61M-10703-0 P-69
REV. NO.:	2
FIGURE No.	46

AMEC Earth & Environmental
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Portland, OR. U.S.A. 97224

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\DWG\Figure 46 Groundwater Exceeding Screening Values Basalt Zone.dwg – Layout1 – May. 16, 2006 2:43pm – laura.mccoy

APPENDIX A

Field Forms

A-1

APPENDIX A-1

Soil Sampling Field Forms

ARK-01	0-1; 4-5; 14-15; 59-60; 61-62
ARK-02	0-1; 5-6; 10-11; 14-15; 79-80
ARK-03	0-1; 5-6; 79-80
ARK-04	0-1; 5-6; 15-16; 16-17; 46-47
ARK-05	0-1; 5-6; 16-17; 21-22; 59-60
ARK-06	0-1; 2-3; 5-6; 9-10; 75-76
ARK-07	0-1; 5-6; 8-9; 31-32; 44-45
ARK-08	0-1; 5-6; 12-13; 13.5-14.5; 15-16; 42.5-43.5
ARK-09	0-1; 5-6; 11-12; 14-16; 39-40; 83-84
SIL-02	216-218
RP-08	86-88; 92-93
RP-11	7.5-8; 28-29; 154-155; 208-210

0-61M-107030 - RP SOIL SAMPLING FORM

MPLE LOCATION: ARK-01
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/15/05
WEATHER: Sunny

START TIME: 800

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	75°		
SOIL GRAIN SIZE DESCRIPTION	ML		
SAMPLE DEPTH (FT)	1		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	Sandy silt		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 030-01 QA/QC NUMBER (S): TIME: 812

DESCRIPTION:

LABORATORY (1) COC #
LABORATORY (2) COC #
LABORATORY (3) COC #
LABORATORY (4) COC #

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	(DCD)
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO **DESCRIBE:**
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP Site

SAMPLING METHOD USED Direct-Push
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.) GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/15/05 630
INSTRUMENT CALIBRATION STANDARD: 1ppm/50

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

MPLE LOCATION: ARK-01
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/15/05
WEATHER: Sunny

START TIME: 820

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	25°		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	4-5		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	Fine SAND		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 037-01 QA/QC NUMBER (S): TIME: 820

DESCRIPTION:

LABORATORY (1) COC #
LABORATORY (2) COC #
LABORATORY (3) COC #
LABORATORY (4) COC #

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	Hold
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP - VLON

SAMPLING METHOD USED: DIRECT PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/15/05 820
INSTRUMENT CALIBRATION STANDARD: 1000/1150

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

MPLE LOCATION: ARK-01
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/15/05
WEATHER: Sunny

START TIME: 830

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	27.5°		
SOIL GRAIN SIZE DESCRIPTION	M		
SAMPLE DEPTH (FT)	5-6		
SOIL COLOR	GRAY		
SOIL TYPE DESCRIPTION	SILT		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 038-01 QA/QC NUMBER (S): TIME: 825

DESCRIPTION:

LABORATORY (1) COC #
LABORATORY (2) COC #
LABORATORY (3) COC #
LABORATORY (4) COC #

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	(Vol)
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: K-Dzell

SAMPLING METHOD USED: DIRECT - PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/15/05 1030
INSTRUMENT CALIBRATION STANDARD: 100 PPM ISOB

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-01 DATE: 8/15/05 START TIME: 800
PERSONNEL: C. Johnson, L. Glonek WEATHER: Sunny

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	27.8°		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	14-15		
SOIL COLOR	GRAY/SH-BROWN		
SOIL TYPE DESCRIPTION	FINE SAND		
MOISTURE CONTENT (%)	1.20		
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 039-01 QA/QC NUMBER (S): TIME: 830

DESCRIPTION:

LABORATORY (1) COC #
LABORATORY (2) COC #
LABORATORY (3) COC #
LABORATORY (4) COC #

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: REDROM

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/15/05 600
INSTRUMENT CALIBRATION STANDARD: 100ppm isob

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-01
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/15/05 START TIME: 800
WEATHER: 280, sunny

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	280		
SOIL GRAIN SIZE DESCRIPTION	Lp		
SAMPLE DEPTH (FT)	5-7-10		
SOIL COLOR	GRAY		
SOIL TYPE DESCRIPTION	SANDY GRAVEL		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING			
UVLIGHT READING			
OBSERVATION OF CONTAMINATION			

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 040-01 QA/QC NUMBER (S): TIME: 1230

DESCRIPTION:

LABORATORY (1) COC #
LABORATORY (2) COC #
LABORATORY (3) COC #
LABORATORY (4) COC #

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
~~Dioxins/Furans (PCDD/PCDF) by EPA Method 8290~~ Micro Seive	Refrigerate to 4°C/ 4 oz Glass Jar	~~1-4oz jar~~ 2-8oz	~~Axys~~ STL	Y	ANALYZE

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL:

SAMPLING METHOD USED: Direct Push
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/15/05 1200
INSTRUMENT CALIBRATION STANDARD: [illegible]

ADDITIONAL COMMENTS:

SIGNATURE [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-01
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/15/05
WEATHER: ~80, sunny
START TIME: 800

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	~80		
SOIL GRAIN SIZE DESCRIPTION			
SAMPLE DEPTH (FT)	61-62		
SOIL COLOR	2.5Y		
SOIL TYPE DESCRIPTION	Sandy GRAVEL		
MOISTURE CONTENT (%)	~30%		
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: ~~040~~ 041-01
QA/QC NUMBER (S):
TIME: 1235

DESCRIPTION:

LABORATORY (1)
LABORATORY (2)
LABORATORY (3)
LABORATORY (4)

COC #
COC #
COC #
COC #

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP-DRUM

SAMPLING METHOD USED: DIRECT-VOA
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/15/05 1300
INSTRUMENT CALIBRATION STANDARD: 100ppm isob

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-02
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/19/05
WEATHER: Sunny

START TIME: 800

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	65		
SOIL GRAIN SIZE DESCRIPTION	GP		
SAMPLE DEPTH (FT)	0-1		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	fine sandy GRAVEL		
MOISTURE CONTENT (%)	2.05%		
ANIMALS/PLANTS IN MEDIA	none		
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: OLED-01
QA/QC NUMBER (S): —
TIME: 805

DESCRIPTION: SOIL

LABORATORY (1)	STL-B	COC #	ELECTRONIC
LABORATORY (2)	CAS	COC #	↓
LABORATORY (3)	AXYS	COC #	↓
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	↓

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES / NO
WASTE DISPOSAL: RP SITE DRUM

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/19/05
INSTRUMENT CALIBRATION STANDARD: 100ppm isob

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-02
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/19/05
WEATHER: Sunny

START TIME: 8:20

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	65		
SOIL GRAIN SIZE DESCRIPTION	ML		
SAMPLE DEPTH (FT)	5-6		
SOIL COLOR	Brown w/gray		
SOIL TYPE DESCRIPTION	fine sandy silt		
MOISTURE CONTENT (%)	<10%		
ANIMALS/PLANTS IN MEDIA	none		
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 001-01
QA/QC NUMBER (S): —
TIME: 815

DESCRIPTION: SOIL

LABORATORY (1): STL-B
LABORATORY (2): CAS
LABORATORY (3): AXYS
LABORATORY (4):

COC #: ELECTRONIC
COC #: ↓
COC #:
COC #:

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES / NO
WASTE DISPOSAL: RP SITE DRUM

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/19/05
INSTRUMENT CALIBRATION STANDARD: 100ppm isob

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-02
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/19/05
WEATHER: Sunny

START TIME: 800

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	65		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	10-11		
SOIL COLOR	GRAY		
SOIL TYPE DESCRIPTION	(fine SAND)		
MOISTURE CONTENT (%)	~15%		
ANIMALS/PLANTS IN MEDIA	none		
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 0602-01
QA/QC NUMBER (S): —
TIME: 820

DESCRIPTION: SOIL

LABORATORY (1)	STL-B	COC #	ELECTRONIC
LABORATORY (2)	CAS	COC #	↓
LABORATORY (3)	AXYS	COC #	↓
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	↓

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES / NO
WASTE DISPOSAL: RP SITE DRUM

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/19/05
INSTRUMENT CALIBRATION STANDARD: 100ppm ISOB

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-02 DATE: 8/19/05 START TIME: 800
PERSONNEL: C. Johnson, L. Glonek WEATHER: Sunny

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	68		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	14-15		
SOIL COLOR	GRAY		
SOIL TYPE DESCRIPTION	Fine Sand		
MOISTURE CONTENT (%)	15%		
ANIMALS/PLANTS IN MEDIA	none		
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 0103-D1 QA/QC NUMBER (S): — TIME: 830

DESCRIPTION: SOIL

LABORATORY (1)	STL-B	COC #	ELECTRONIC
LABORATORY (2)	CAS	COC #	↓
LABORATORY (3)	AXYS	COC #	↓
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	↓

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES / NO
WASTE DISPOSAL: RP SITE DRUM

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/19/05
INSTRUMENT CALIBRATION STANDARD: 100ppm Isob.

ADDITIONAL COMMENTS:

SIGNATURE: Cherry Johnson

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-02
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/19/05
WEATHER: Sunny

START TIME: 800

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	85		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	59-60		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	fine sand		
MOISTURE CONTENT (%)	100%		
ANIMALS/PLANTS IN MEDIA	none		
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: ARK-01
QA/QC NUMBER (S): —
TIME: 1200

DESCRIPTION: SOIL

LABORATORY (1)	STL-B	COC #	ELECTRONIC
LABORATORY (2)	CAS	COC #	
LABORATORY (3)	AXYS	COC #	↓
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP SITE DRUM

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/19/05
INSTRUMENT CALIBRATION STANDARD: 100ppm isob.

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-03
PERSONNEL: C. Johnson, L. Gionek

DATE: 8/22/05
WEATHER: ~~Sunny~~ cloudy

START TIME: 800

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	60s		
SOIL GRAIN SIZE DESCRIPTION	GP		
SAMPLE DEPTH (FT)	0-1		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	fine sandy GRAVEL		
MOISTURE CONTENT (%)	<10%		
ANIMALS/PLANTS IN MEDIA	none to trace		
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 0608-01
QA/QC NUMBER (S): —
TIME: 810

DESCRIPTION: SOIL

LABORATORY (1)	STL-B	COC #	ELECTRONIC
LABORATORY (2)	CAS	COC #	↓
LABORATORY (3)	AXYS	COC #	↓
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	↓

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP SITE DRUM

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/22/05
INSTRUMENT CALIBRATION STANDARD: 100ppm Isob.

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-03
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/22/05
WEATHER: ~~Sunny~~ cloudy
START TIME: 800

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	66		
SOIL GRAIN SIZE DESCRIPTION	SD		
SAMPLE DEPTH (FT)	5-6		
SOIL COLOR	GRAY		
SOIL TYPE DESCRIPTION	Fine SAND		
MOISTURE CONTENT (%)	<10%		
ANIMALS/PLANTS IN MEDIA	none		
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: OL09-01
QA/QC NUMBER (S): —
TIME: 815

DESCRIPTION: SOIL

LABORATORY (1)	STL-B	COC #	ELECTRONIC
LABORATORY (2)	CAS	COC #	
LABORATORY (3)	AXYS	COC #	↓
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	↓

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP SITE DRUM

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/22/05
INSTRUMENT CALIBRATION STANDARD: 100ppm ISOB

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-03 DATE: 8/22/05 START TIME: 800

PERSONNEL: C. Johnson, L. Glonek WEATHER: Sunny

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	~75°		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	39-40		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	Fine sand		
MOISTURE CONTENT (%)	100%		
ANIMALS/PLANTS IN MEDIA	none		
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 070-01 QA/QC NUMBER (S): — TIME: 1245

DESCRIPTION: SOIL

LABORATORY (1)	STL-B	COC #	ELECTRONIC
LABORATORY (2)	CAS	COC #	
LABORATORY (3)	AXYS	COC #	↓
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	↓

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO

QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:

CHAIN OF CUSTODY COMPLETED? YES / NO

WASTE DISPOSAL: RP SITE DRUM

SAMPLING METHOD USED: DIRECT-PUSH

SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB

INSTRUMENT CALIBRATION: (Date/Time) 8/22/05

INSTRUMENT CALIBRATION STANDARD: 100ppm ISOB

ADDITIONAL COMMENTS:

SIGNATURE: Cherry Johnson

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-04
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/12/05
WEATHER: sunny

START TIME: 900

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	21.8°		
SOIL GRAIN SIZE DESCRIPTION	GW		
SAMPLE DEPTH (FT)	0.1		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	Sandy Gravel		
MOISTURE CONTENT (%)	10%		
ANIMALS/PLANTS IN MEDIA	Roots		
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 0280-01
QA/QC NUMBER (S):
TIME: 900

DESCRIPTION:

LABORATORY (1)
LABORATORY (2)
LABORATORY (3)
LABORATORY (4)

COC #
COC #
COC #
COC #

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	Aloid
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP-Drum

SAMPLING METHOD USED: Direct Push
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): Grab
INSTRUMENT CALIBRATION: (Date/Time) 8/12/05 1630
INSTRUMENT CALIBRATION STANDARD: 100 mV KCl

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-04
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/12/05
WEATHER: sunny

START TIME: 900

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	70		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	5-6		
SOIL COLOR	GRAY		
SOIL TYPE DESCRIPTION	fine sand		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	4.8 ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 329-01 QA/QC NUMBER (S): TIME: 915

DESCRIPTION:

LABORATORY (1) COC #
LABORATORY (2) COC #
LABORATORY (3) COC #
LABORATORY (4) COC #

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	ANALYZE
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: KV-Bron

SAMPLING METHOD USED: Direct Push
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/12/05 [illegible]
INSTRUMENT CALIBRATION STANDARD: 100ppm Isob

ADDITIONAL COMMENTS:

SIGNATURE [illegible]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-04
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/12/05
WEATHER: Sunny

START TIME: 9:50

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	20		
SOIL GRAIN SIZE DESCRIPTION	50		
SAMPLE DEPTH (FT)	15-16		
SOIL COLOR	GRAY		
SOIL TYPE DESCRIPTION	FINE SAND		
MOISTURE CONTENT (%)	100		
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	NONE		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 030-01
QA/QC NUMBER (S):
TIME: 9:50

DESCRIPTION:

LABORATORY (1)
LABORATORY (2)
LABORATORY (3)
LABORATORY (4)

COC #
COC #
COC #
COC #

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	Glass
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP-Drum

SAMPLING METHOD USED: DRIFT-PROBE
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/12/05 1630
INSTRUMENT CALIBRATION STANDARD: 120ppm isobu

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-04
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/12/05
WEATHER: Sunny

START TIME: 900

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	72		
SOIL GRAIN SIZE DESCRIPTION	~~FINE~~ SP		
SAMPLE DEPTH (FT)	16-17		
SOIL COLOR	GRAY		
SOIL TYPE DESCRIPTION	FINE SAND		
MOISTURE CONTENT (%)	100		
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 03-01 QA/QC NUMBER (S): TIME: 1005

DESCRIPTION:

LABORATORY (1) COC #
LABORATORY (2) COC #
LABORATORY (3) COC #
LABORATORY (4) COC #

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	4/04
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP - Site

SAMPLING METHOD USED: Direct - Push
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/12/05 1030
INSTRUMENT CALIBRATION STANDARD: 100ppm Std

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-DH
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/12/05
WEATHER: Sunny

START TIME: 9:00

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	27.5		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	4.6-4.7		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	Fine Sand		
MOISTURE CONTENT (%)	100		
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 032-01
QA/QC NUMBER (S):
TIME: 11:50

DESCRIPTION:

LABORATORY (1)
LABORATORY (2)
LABORATORY (3)
LABORATORY (4)

COC #
COC #
COC #
COC #

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	Hold
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP-DRUM

SAMPLING METHOD USED: Direct-Push
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): Grab
INSTRUMENT CALIBRATION: (Date/Time) 8/12/05 1030
INSTRUMENT CALIBRATION STANDARD: 100ppm 150B

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARM-05 DATE: 8/17/05 START TIME: 730

PERSONNEL: C. Johnson, L. Glonek WEATHER: Cloudy

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	26.0°		
SOIL GRAIN SIZE DESCRIPTION	[illegible]		
SAMPLE DEPTH (FT)	0-1		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	Fine Sandy Gravel		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	None		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 045-01 QA/QC NUMBER (S): TIME: 725

DESCRIPTION:

LABORATORY (1)	STL	COC #	
LABORATORY (2)	"	COC #	
LABORATORY (3)	Axys	COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	Flow
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	✓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO

QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:

CHAIN OF CUSTODY COMPLETED? YES/NO

WASTE DISPOSAL: RP-ARM

SAMPLING METHOD USED: Direct Push

SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): Grab

INSTRUMENT CALIBRATION: (Date/Time) 8/17/05

INSTRUMENT CALIBRATION STANDARD: 100 ppm Isob

ADDITIONAL COMMENTS:

SIGNATURE [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-05 DATE: 8/17/05 START TIME: 730
PERSONNEL: C. Johnson, L. Glonek WEATHER: Overcast

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	260		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	5.5-6		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	fine sand		
MOISTURE CONTENT (%)	12%		
ANIMALS/PLANTS IN MEDIA	0		
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	None		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: CH6-01 QA/QC NUMBER (S): TIME: 730

DESCRIPTION:

LABORATORY (1) COC #
LABORATORY (2) COC #
LABORATORY (3) COC #
LABORATORY (4) COC #

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	4000
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: KY-DRUM

SAMPLING METHOD USED: DIRECT PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 1230 8/17/05
INSTRUMENT CALIBRATION STANDARD: 100ppm IBUT

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-05
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/17/05
WEATHER: Cloudy

START TIME: 730

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	21.00°		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	16-17		
SOIL COLOR	BROWN		
SOIL TYPE DESCRIPTION	FILL SAND		
MOISTURE CONTENT (%)	100%		
ANIMALS/PLANTS IN MEDIA	0		
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 017-01 QA/QC NUMBER (S): TIME: 739

DESCRIPTION:

LABORATORY (1)	STL	COC #	
LABORATORY (2)	CAS	COC #	
LABORATORY (3)	Axys	COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	Hold
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: U-DRUM

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/17/05 1630
INSTRUMENT CALIBRATION STANDARD: 100ppm isobu

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-05
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/17/05
WEATHER: CLOUDY

START TIME: 730

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	21.00		
SOIL GRAIN SIZE DESCRIPTION	SD		
SAMPLE DEPTH (FT)	21-22		
SOIL COLOR	BROWN		
SOIL TYPE DESCRIPTION	FINE SAND		
MOISTURE CONTENT (%)	100%		
ANIMALS/PLANTS IN MEDIA	0		
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	NONE		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 048-01 QA/QC NUMBER (S): TIME: 744

DESCRIPTION: SOIL

LABORATORY (1)	STL	COC #	
LABORATORY (2)	CAS	COC #	
LABORATORY (3)	Axys	COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP-DRUM

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/17/05 1030
INSTRUMENT CALIBRATION STANDARD: 100 ppm isbt

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-05 DATE: 8/17/05 START TIME: 730

PERSONNEL: C. Johnson, L. Glonek WEATHER: Cloudy

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	24.50		
SOIL GRAIN SIZE DESCRIPTION	SM		
SAMPLE DEPTH (FT)	5.1-6.0		
SOIL COLOR	BROWN		
SOIL TYPE DESCRIPTION	SILTY FINE SAND		
MOISTURE CONTENT (%)	14.9%		
ANIMALS/PLANTS IN MEDIA	0		
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	NONE		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 049-01 QA/QC NUMBER (S): TIME: 1100

DESCRIPTION:

LABORATORY (1)	STL	COC #	
LABORATORY (2)	CAS	COC #	
LABORATORY (3)	Axys	COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO

QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:

CHAIN OF CUSTODY COMPLETED? YES/NO

WASTE DISPOSAL: Kitsap

SAMPLING METHOD USED: Direct Push

SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): Grab

INSTRUMENT CALIBRATION: (Date/Time) 8/17/05 6:30

INSTRUMENT CALIBRATION STANDARD: 100 ppm isobut

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-DLQ
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/18/05
WEATHER: Sunny Cloudy

START TIME: 7/5

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	68		
SOIL GRAIN SIZE DESCRIPTION	GP		
SAMPLE DEPTH (FT)	0-1		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	fine sandy GRAVEL		
MOISTURE CONTENT (%)	4/0		
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 552-01
QA/QC NUMBER (S): —
TIME: 7:05

DESCRIPTION: SOIL

LABORATORY (1)	STL-B	COC #	ELECTRONIC
LABORATORY (2)	CAS	COC #	
LABORATORY (3)	AXYS	COC #	↓
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	↓

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES / NO
WASTE DISPOSAL: RP SITE DRUM

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/18/05
INSTRUMENT CALIBRATION STANDARD: 100ppm isob

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-DLE
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/18/05
START TIME: 715
WEATHER: ~~Sunny~~ CLOUDY

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	68		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	2-3		
SOIL COLOR	BROWN w/ BLACK		
SOIL TYPE DESCRIPTION	F-M SAND w/ gravel		
MOISTURE CONTENT (%)	<10%		
ANIMALS/PLANTS IN MEDIA	none		
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 053-D1
QA/QC NUMBER (S): —
TIME: 728

DESCRIPTION: SOIL

LABORATORY (1): STL-B
LABORATORY (2): CAS
LABORATORY (3): AXYS
LABORATORY (4):

COC #: ELECTRONIC
COC #: ↓
COC #: ↓
COC #:

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	↓

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES / NO
WASTE DISPOSAL: RP SITE DRUM

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/18/05
INSTRUMENT CALIBRATION STANDARD: 100ppm isob.

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-06 DATE: 8/18/05 START TIME: 735
PERSONNEL: C. Johnson, L. Glonek WEATHER: Sunny

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	60		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	5-6		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	F-M sand		
MOISTURE CONTENT (%)	4/10%		
ANIMALS/PLANTS IN MEDIA	none		
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 054-01 QA/QC NUMBER (S): — TIME: 735

DESCRIPTION: SOIL

LABORATORY (1)	STL-B	COC #	ELECTRONIC
LABORATORY (2)	CAS	COC #	
LABORATORY (3)	AXYS	COC #	↓
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	↓

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP SITE DRUM

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/18/05
INSTRUMENT CALIBRATION STANDARD: 100ppm ISOB

ADDITIONAL COMMENTS:

SIGNATURE: Cheryl Johnson

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-06 DATE: 8/18/05 START TIME: 715
PERSONNEL: C. Johnson, L. Glonek WEATHER: Sunny

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	60		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	9-10		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	F-M Sand		
MOISTURE CONTENT (%)	~15%		
ANIMALS/PLANTS IN MEDIA	none		
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 055-01 QA/QC NUMBER (S): — TIME: 740

DESCRIPTION: SOIL

LABORATORY (1)	STL-B	COC #	ELECTRONIC
LABORATORY (2)	CAS	COC #	↓
LABORATORY (3)	AXYS	COC #	↓
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	↓

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES / NO
WASTE DISPOSAL: RP SITE DRUM

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/18/05
INSTRUMENT CALIBRATION STANDARD: 100ppm ISOB

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-06 DATE: 8/18/05 START TIME: 715
PERSONNEL: C. Johnson, L. Glonek WEATHER: Sunny

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	80		
SOIL GRAIN SIZE DESCRIPTION	ML		
SAMPLE DEPTH (FT)	75-76		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	Fine Sandy Silt		
MOISTURE CONTENT (%)	20%		
ANIMALS/PLANTS IN MEDIA	none		
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: GS6-01 QA/QC NUMBER (S): — TIME: 1155

DESCRIPTION: SOIL

LABORATORY (1): STL-B COC #: ELECTRONIC
LABORATORY (2): CAS COC #: ↓
LABORATORY (3): AXYS COC #: ↓
LABORATORY (4): COC #:

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	↓

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES / NO
WASTE DISPOSAL: RP SITE DRUM

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/18/05
INSTRUMENT CALIBRATION STANDARD: 100ppm ISOB

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

.MPLE LOCATION: ARK-07 DATE: 8/9/05 START TIME: 735
PERSONNEL: ✓ C. Johnson, L. Glonek ✓ WEATHER: SUNNY

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)			
SOIL GRAIN SIZE DESCRIPTION	SP/GP		
SAMPLE DEPTH (FT)	0-1 ft		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	fine-med sand w/gravel		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 001-01 QA/QC NUMBER (S): TIME: 0744

DESCRIPTION: Soil

LABORATORY (1)	STL-Burl	COC #	
LABORATORY (2)	CAS	COC #	
LABORATORY (3)	Axys	COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	✓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES NO
WASTE DISPOSAL: RP SITE

SAMPLING METHOD USED: PUSH-PROBE
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.) GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/9/05 0645
INSTRUMENT CALIBRATION STANDARD: 100ppm ISOB.

ADDITIONAL COMMENTS:

SIGNATURE 8/9/05

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-07 DATE: 8/9/05 START TIME: 735
PERSONNEL: ✓ C. Johnson, L. Glonek ✓ WEATHER: SUNNY

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)			
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	5-6ft		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	Fine sand w/ trace silt		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 007-01 QA/QC NUMBER (S): TIME: 0750

DESCRIPTION: Soil

LABORATORY (1)	STL-Bur	COC #	
LABORATORY (2)	CAS	COC #	
LABORATORY (3)	Axys	COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	↓
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP SITE

SAMPLING METHOD USED: PUSH-PODS
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/9/05 0745
INSTRUMENT CALIBRATION STANDARD: 100 ppm ISOB.

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-07
PERSONNEL: ✓ C. Johnson, L. Glonek ✓

DATE: 8/9/05
WEATHER: SUNNY

START TIME: 735

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)			
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	8-9		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	fine SAND		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 003-01 QA/QC NUMBER (S): TIME:

DESCRIPTION: Soil

LABORATORY (1)	STL-Bur	COC #	
LABORATORY (2)	CAS	COC #	
LABORATORY (3)	Axys	COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	↓
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	↓

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP SITE

SAMPLING METHOD USED: PUSH-PROBE
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/9/05 0645
INSTRUMENT CALIBRATION STANDARD: 100ppm ISOB.

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

MPLE LOCATION: AEK-07 DATE: 8/9/05 START TIME: 735
PERSONNEL: ✓ C. Johnson, L. Glonek ✓ WEATHER: SUNNY

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)			
SOIL GRAIN SIZE DESCRIPTION	SP ML/SM		
SAMPLE DEPTH (FT)	31-32		
SOIL COLOR	GRAY		
SOIL TYPE DESCRIPTION	Fine sandy SILT		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 004-01 QA/QC NUMBER (S): TIME: 0845

DESCRIPTION: SOIL

LABORATORY (1)	STL-Bur	COC #	
LABORATORY (2)	CAS	COC #	
LABORATORY (3)	Axys	COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	COLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	↓
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES / NO
WASTE DISPOSAL: RP SITE

SAMPLING METHOD USED: PUSH-PROBE
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/9/05 0645
INSTRUMENT CALIBRATION STANDARD: 100ppm ISOB.

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

.MPLE LOCATION: ARK-07
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/9/05
WEATHER: sunny

START TIME: 735

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)			
SOIL GRAIN SIZE DESCRIPTION	m/sn		
SAMPLE DEPTH (FT)	44-45		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	fine sandy silt		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0 ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 0705-01 QA/QC NUMBER (S): TIME: 950

DESCRIPTION: soil

LABORATORY (1)	STL-Bur	COC #	
LABORATORY (2)	CAS	COC #	
LABORATORY (3)	AXYS	COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	✓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	✓
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP Cont

SAMPLING METHOD USED: Direct-Push
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): Grab
INSTRUMENT CALIBRATION: (Date/Time) 8/9/05 1045
INSTRUMENT CALIBRATION STANDARD: 100ppm isobu

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

.MPLE LOCATION: ARK-D8
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/10/05
WEATHER: cloudy

START TIME: 730

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	74.5		
SOIL GRAIN SIZE DESCRIPTION	GD		
SAMPLE DEPTH (FT)	0.1		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	fine sandy GRAVEL		
MOISTURE CONTENT (%)	5		
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 009-01 QA/QC NUMBER (S): TIME: 730

DESCRIPTION: Soil

LABORATORY (1)	STL-Bur	COC #	2135
LABORATORY (2)	CAS	COC #	2126
LABORATORY (3)	AXYS	COC #	2134
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	4(OZ)
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RO SITE

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/10/05 655
INSTRUMENT CALIBRATION STANDARD: 100ppm isob

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-08
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/10/05
WEATHER: Cloudy

START TIME: 730

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	24.05		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	5-6		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	Fine Sand		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.1ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 010-01
QA/QC NUMBER (S):
TIME: 735

DESCRIPTION: SOIL

LABORATORY (1)	STL Bur	COC #	2125
LABORATORY (2)	CAS	COC #	31240
LABORATORY (3)	Axys	COC #	2134
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	✓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	✓
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	✓

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: Regular

SAMPLING METHOD USED: Direct Push
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/10/05 1655
INSTRUMENT CALIBRATION STANDARD: 100ppm 1825

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-08
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/10/05
WEATHER: cloudy

START TIME: 720

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	75		
SOIL GRAIN SIZE DESCRIPTION	sf		
SAMPLE DEPTH (FT)	12-13		
SOIL COLOR	brown		
SOIL TYPE DESCRIPTION	fine sand		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 011-01
QA/QC NUMBER (S):
TIME: ~~1273~~ 740

DESCRIPTION:

LABORATORY (1)	STL-Bur	COC #	3125
LABORATORY (2)	CAS	COC #	3124
LABORATORY (3)	Axys	COC #	3134
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	ANALYZE
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	✓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	✓
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	✓

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? (YES) / NO
QA/QC SAMPLE COLLECTED? YES / (NO) DESCRIBE:
CHAIN OF CUSTODY COMPLETED? (YES)/NO
WASTE DISPOSAL: RP 0172

SAMPLING METHOD USED: Direct-Push
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/10/05 1655
INSTRUMENT CALIBRATION STANDARD: 100ppm isob

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

MPLE LOCATION: ARK-08 DATE: 8/10/05 START TIME: 730
PERSONNEL: C. Johnson, L. Glonek WEATHER: cloudy

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	20.5		
SOIL GRAIN SIZE DESCRIPTION			
SAMPLE DEPTH (FT)	13.5-14.5		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	Fine Sand		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 012-01 QA/QC NUMBER (S): TIME: 745

DESCRIPTION: SOIL

LABORATORY (1)	STL-Bur	COC #	2195
LABORATORY (2)	CAS	COC #	2198
LABORATORY (3)	Axys	COC #	2134
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	dup
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP-Site

SAMPLING METHOD USED: Direct-Push
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): Grab
INSTRUMENT CALIBRATION: (Date/Time) 8/10/05 655
INSTRUMENT CALIBRATION STANDARD: 100ppm isob

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

MPLE LOCATION: ARK-08
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/10/05
WEATHER: cloudy

START TIME: 730

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	20°		
SOIL GRAIN SIZE DESCRIPTION	ML		
SAMPLE DEPTH (FT)	15-16		
SOIL COLOR	DK GRAY		
SOIL TYPE DESCRIPTION	fine sandy silt		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0 PPM		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	VERY DK in color, no odor, no sheen		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 013-01 QA/QC NUMBER (S): TIME: 745

DESCRIPTION: SOIL

LABORATORY (1)	STL	COC #	3125
LABORATORY (2)	CAS	COC #	3124
LABORATORY (3)	AXYS	COC #	3134
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	4oz T
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP Site

SAMPLING METHOD USED: Direct Push
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): Grab
INSTRUMENT CALIBRATION: (Date/Time) 8/10/05 1655
INSTRUMENT CALIBRATION STANDARD: 100ppm 1500

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

MPLE LOCATION: ARK-DD
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/10/05
WEATHER: cloudy

START TIME: 730

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	24.5°		
SOIL GRAIN SIZE DESCRIPTION	SM		
SAMPLE DEPTH (FT)	42.5-43.5		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	SILTY FINE SAND		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 54-01
QA/QC NUMBER (S):
TIME: 910

DESCRIPTION:

LABORATORY (1)	STL	COC #	3125
LABORATORY (2)	CAS	COC #	3126
LABORATORY (3)	AXYS	COC #	3134
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	dlOD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP SITE

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/10/05 1645
INSTRUMENT CALIBRATION STANDARD: 100ppm isobu

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

.MPLE LOCATION: ARK-09
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/11/05
WEATHER: 70's, sunny

START TIME: 815

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	26.5		
SOIL GRAIN SIZE DESCRIPTION	SM		
SAMPLE DEPTH (FT)	0-1		
SOIL COLOR	BROWN		
SOIL TYPE DESCRIPTION	SILTY SAND w/ gravel		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0 ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 017-01 QA/QC NUMBER (S): TIME: 815

DESCRIPTION: SOIL

LABORATORY (1)	CAS	COC #	
LABORATORY (2)	STL	COC #	
LABORATORY (3)	Axys	COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	HOLD
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	↓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	↓

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP SITE - DRUM

SAMPLING METHOD USED: DIRECT PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/11/05
INSTRUMENT CALIBRATION STANDARD: 100ppm ISO

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

MPLE LOCATION: ARK-09
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/11/05
WEATHER: Sunny

START TIME: 815

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	75		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	5-6		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	fine sand		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0 ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 018-01 QA/QC NUMBER (S): TIME: 820

DESCRIPTION: SOIL

LABORATORY (1): STL COC #:
LABORATORY (2): CAS COC #:
LABORATORY (3): Axys COC #:
LABORATORY (4): COC #:

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	Glass
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES NO
QA/QC SAMPLE COLLECTED? YES NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES NO
WASTE DISPOSAL: RESIDUAL

SAMPLING METHOD USED: Direct Push
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 1630 8/11/05
INSTRUMENT CALIBRATION STANDARD: 1400-100 ppm

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARK-09
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/11/05
WEATHER: sunny

START TIME: 815

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	26.5°		
SOIL GRAIN SIZE DESCRIPTION			
SAMPLE DEPTH (FT)	11-12		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	FINE SAND		
MOISTURE CONTENT (%)	SATURATED		
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 019-01 QA/QC NUMBER (S): TIME: 825

DESCRIPTION: Soil

LABORATORY (1)	STL	COC #	
LABORATORY (2)	CAS	COC #	
LABORATORY (3)	Axys	COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	(Poli)
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP - Drum

SAMPLING METHOD USED: Direct-Push
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): Grab
INSTRUMENT CALIBRATION: (Date/Time) 8/11/05 1630
INSTRUMENT CALIBRATION STANDARD: 100ppm Isob

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: ARX-04 DATE: 8/11/05 START TIME: 815

PERSONNEL: C. Johnson, L. Glonek WEATHER: SUNNY

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	25		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	11-16		
SOIL COLOR	GRAY		
SOIL TYPE DESCRIPTION	FINE SAND		
MOISTURE CONTENT (%)	SATURATED		
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0 ppm		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 020-01 QA/QC NUMBER (S): TIME: 830

DESCRIPTION: SOIL

LABORATORY (1)	STL	COC #	
LABORATORY (2)		COC #	
LABORATORY (3)		COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
~~Dioxins/Furans (PCDD/PCDF) by EPA Method 8290~~ GRAIN SIZE	Refrigerate to 4°C/ 4 oz Glass Jar	2-8oz ~~1-4oz jar~~	~~STL Bur~~	Y	ANALYZE

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO

QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:

CHAIN OF CUSTODY COMPLETED? YES/NO

WASTE DISPOSAL: RP-DRUM

SAMPLING METHOD USED: DIRECT PUSH

SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB

INSTRUMENT CALIBRATION: (Date/Time) 8/11/05 1630

INSTRUMENT CALIBRATION STANDARD: 100 ppm IsoB

ADDITIONAL COMMENTS:

SIGNATURE [signature] 8/11/2005

0-61M-107030 - RP SOIL SAMPLING FORM

MPLE LOCATION: AKK-09
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/11/05
WEATHER: Sunny

START TIME: 815

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	65°		
SOIL GRAIN SIZE DESCRIPTION	SP		
SAMPLE DEPTH (FT)	15-16		
SOIL COLOR	Gray		
SOIL TYPE DESCRIPTION	fine sand		
MOISTURE CONTENT (%)	100%		
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

- SOIL COLLECTED 8/12/05 - Additional Volume need for analytical sample

SAMPLE COLLECTION

SAMPLE NUMBER: 0227-01
QA/QC NUMBER (S):
TIME: 8/12/05 7:46

DESCRIPTION: SOIL

LABORATORY (1): STL
LABORATORY (2): CAS
LABORATORY (3): AXYS
LABORATORY (4):

COC #:
COC #:
COC #:
COC #:

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	(21)
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RP-DRUM

SAMPLING METHOD USED: Direct Push
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): Grab
INSTRUMENT CALIBRATION: (Date/Time) 8/12/05 (7:21)
INSTRUMENT CALIBRATION STANDARD: 10/10/05

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

AMPLE LOCATION: ARK-09
PERSONNEL: C. Johnson, L. Glonek

DATE: 8/11/05
WEATHER: Sunny

START TIME: 815

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	70s		
SOIL GRAIN SIZE DESCRIPTION	ML		
SAMPLE DEPTH (FT)	34.40		
SOIL COLOR	GRAY		
SOIL TYPE DESCRIPTION	SILT		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA	trace organics		
VOC HEADSPACE READING	0.0		
UVLIGHT READING	—		
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

GRAIN SIZE ONLY

SAMPLE COLLECTION

SAMPLE NUMBER: 521-D1 QA/QC NUMBER (S): TIME: 905

DESCRIPTION:

LABORATORY (1) COC #
LABORATORY (2) COC #
LABORATORY (3) COC #
LABORATORY (4) COC #

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
~~Dioxins/Furans (PCDD/PCDF) by EPA Method 8290~~ GRAIN SIZE	Refrigerate to 4°C/ 4 oz Glass Jar	~~1-8oz jar~~	~~STL Acys~~	Y	ANALYZE

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RI-DRUM

SAMPLING METHOD USED: DIRECT-PUSH
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/11/05 0830
INSTRUMENT CALIBRATION STANDARD: 100ppm IBU

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

MPLE LOCATION: ARK-09 DATE: 8/11/05 START TIME: 815

PERSONNEL: C. Johnson, L. Glonek WEATHER: Sunny

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	28.0°		
SOIL GRAIN SIZE DESCRIPTION	SM		
SAMPLE DEPTH (FT)	0.3-0.4		
SOIL COLOR	GRAY		
SOIL TYPE DESCRIPTION	SILTY FINE SAND		
MOISTURE CONTENT (%)			
ANIMALS/PLANTS IN MEDIA			
VOC HEADSPACE READING	0.0		
UVLIGHT READING			
OBSERVATION OF CONTAMINATION	None		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 0202-01 QA/QC NUMBER (S): TIME: 1400

DESCRIPTION:

LABORATORY (1): STL COC #:
LABORATORY (2): CAS COC #:
LABORATORY (3): AXYS COC #:
LABORATORY (4): COC #:

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	Clear
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	✓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: RV-DRUM

SAMPLING METHOD USED: DRYSCOOP
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 8/11/05 1020
INSTRUMENT CALIBRATION STANDARD: 100 PPM ISOB

ADDITIONAL COMMENTS:

SIGNATURE

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: SIL-02
PERSONNEL: C. Johnson, L. Glonek

DATE: 11/15/05
WEATHER: RAIN

START TIME: 9:15

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	2.35°		
SOIL GRAIN SIZE DESCRIPTION	~~GRA~~ POORLY GRADED		
SAMPLE DEPTH (FT)	216-218		
SOIL COLOR	GRAY		
SOIL TYPE DESCRIPTION	Clayey GRAVEL		
MOISTURE CONTENT (%)	40%		
ANIMALS/PLANTS IN MEDIA	~~0~~		
VOC HEADSPACE READING	0.0		
UVLIGHT READING	—		
OBSERVATION OF CONTAMINATION	none		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 121-01
QA/QC NUMBER (S): —
TIME: 9:15

DESCRIPTION: GRAY, angular to subangular SILTY, clayey basalt GRAVEL

LABORATORY (1)	STL B	COC #	
LABORATORY (2)		COC #	
LABORATORY (3)		COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					grain size only
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: 55 gal DRUM

SAMPLING METHOD USED: Sonic-Core
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.)
INSTRUMENT CALIBRATION: (Date/Time) 11/15
INSTRUMENT CALIBRATION STANDARD: 150 BUT

ADDITIONAL COMMENTS:

SIGNATURE: Craig Johnson

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: RP-08
PERSONNEL: Joe Fusco, Colonel

DATE: 9/21/2015
WEATHER: Sunny

START TIME: 0915

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	~65°		
SOIL GRAIN SIZE DESCRIPTION	fine		
SAMPLE DEPTH (FT)	86-88		
SOIL COLOR	brown		
SOIL TYPE DESCRIPTION	dense sand		
MOISTURE CONTENT (%)	4%		
ANIMALS/PLANTS IN MEDIA	NO		
VOC HEADSPACE READING	0.5	PID	
UVLIGHT READING	NA		
OBSERVATION OF CONTAMINATION	chemical odor		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 077-01
QA/QC NUMBER (S):
TIME: 10:00

DESCRIPTION: SOIL

LABORATORY (1)	STL B	COC #	electronic
LABORATORY (2)	CAS	COC #	↓
LABORATORY (3)	ANYS	COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz	STL Burl	Y	
Organochlorine Pesticides by EPA Method 8081A	Cool to 4°C/ 1- 8 oz Glass Jar	1-8oz	↓	↓	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010A, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz	CAS		
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Cool to 4°C/ 4 oz Glass Jar	1-4oz	ANYS		

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? (YES) / NO
QA/QC SAMPLE COLLECTED? YES / (NO) DESCRIBE:
CHAIN OF CUSTODY COMPLETED? (YES)/NO
WASTE DISPOSAL: RP Site Drum

SAMPLING METHOD USED: Scoop
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): Grab
INSTRUMENT CALIBRATION: (Date/Time) 9/21/2015 0750
INSTRUMENT CALIBRATION STANDARD: Isobutylene 100ppm

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: RP-08
PERSONNEL: S Fabio, L Klonek

DATE: 9/21/2005
WEATHER: Sunny

START TIME: 0715

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	~45°F		
SOIL GRAIN SIZE DESCRIPTION	gravel/cobbles, silt/clay		
SAMPLE DEPTH (FT)	92-93'		
SOIL COLOR	green/gray		
SOIL TYPE DESCRIPTION	Sev-W weathered basalt w/silt clay matrix		
MOISTURE CONTENT (%)	30%		
ANIMALS/PLANTS IN MEDIA	ND		
VOC HEADSPACE READING	1.9	PID	
UVLIGHT READING	NA		
OBSERVATION OF CONTAMINATION	phenol type odor		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 078-01 QA/QC NUMBER (S): TIME: 1130

DESCRIPTION:

LABORATORY (1)	STL-Burl	COC #	electronic
LABORATORY (2)	CAS	COC #	✓
LABORATORY (3)	AXYS	COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz	STL-Burl	Y	
Organochlorine Pesticides by EPA Method 8081A	Cool to 4°C/ 1- 8 oz Glass Jar	1-8oz	↓	↓	
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010A, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz	CAS		
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Cool to 4°C/ 4 oz Glass Jar	1-4oz	AXYS	✓	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? (YES) / NO
QA/QC SAMPLE COLLECTED? YES / (NO) DESCRIBE:
CHAIN OF CUSTODY COMPLETED? (YES) NO
WASTE DISPOSAL: RP Sediment

SAMPLING METHOD USED: Sonic Core
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): Grab
INSTRUMENT CALIBRATION: (Date/Time) 9/21/05 0650
INSTRUMENT CALIBRATION STANDARD: Isobutylene (100 ppm)

ADDITIONAL COMMENTS:

SIGNATURE: Lisa Klonek

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: RP-11 DATE: 11/17/05 START TIME: 8:50
PERSONNEL: C. Johnson, L. Glonek WEATHER: RAIN

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	23.5°		
SOIL GRAIN SIZE DESCRIPTION	Poorly Graded		
SAMPLE DEPTH (FT)	7.5-8		
SOIL COLOR	DK GRAY/BLACK		
SOIL TYPE DESCRIPTION	SP		
MOISTURE CONTENT (%)	10%		
ANIMALS/PLANTS IN MEDIA	none		
VOC HEADSPACE READING	0.0		
UVLIGHT READING	—		
OBSERVATION OF CONTAMINATION	YES PETROLEUM-LIKE odor		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 128-01 QA/QC NUMBER (S): TIME: 8:50

DESCRIPTION: DK GRAY to BLACK Med SAND

LABORATORY (1)	STL	COC #	
LABORATORY (2)	CAS	COC #	
LABORATORY (3)	AXYS	COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	(LOCD)
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	✓
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	✓
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: 55gal DRUM

SAMPLING METHOD USED: Scoop
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): Grab
INSTRUMENT CALIBRATION: (Date/Time) 11/17/05
INSTRUMENT CALIBRATION STANDARD: 450 BUT.

ADDITIONAL COMMENTS:

SIGNATURE: C. Johnson

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: RP-11
PERSONNEL: C. Johnson, L. Glonek

DATE: 12/2/05
WEATHER: Rain

START TIME: 945

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	2.35		
SOIL GRAIN SIZE DESCRIPTION	Poorly graded		
SAMPLE DEPTH (FT)	28-31		
SOIL COLOR	Brown		
SOIL TYPE DESCRIPTION	SM/ML		
MOISTURE CONTENT (%)	Lo%		
ANIMALS/PLANTS IN MEDIA	None observed		
VOC HEADSPACE READING	0.0		
UVLIGHT READING	—		
OBSERVATION OF CONTAMINATION	None		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 141-01
QA/QC NUMBER (S):
TIME: 945

DESCRIPTION: Brown ~~[illegible]~~ - gray silty fine sand

LABORATORY (1)	STLB	COC #	
LABORATORY (2)		COC #	
LABORATORY (3)		COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	Grain size only
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: Drum

SAMPLING METHOD USED: Sonic
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): Core
INSTRUMENT CALIBRATION: (Date/Time) 12/2/05
INSTRUMENT CALIBRATION STANDARD: 150B

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: RP-11 DATE: 12/1/05 START TIME: 1000
PERSONNEL: C. Johnson, L. Glonek WEATHER: 24/1

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	23.8		
SOIL GRAIN SIZE DESCRIPTION	POORLY GRADED		
SAMPLE DEPTH (FT)	154-155		
SOIL COLOR	GRAY		
SOIL TYPE DESCRIPTION	SP/SM		
MOISTURE CONTENT (%)	40%		
ANIMALS/PLANTS IN MEDIA	—		
VOC HEADSPACE READING	0.0		
UVLIGHT READING	—		
OBSERVATION OF CONTAMINATION	None		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 140-01 QA/QC NUMBER (S): TIME: 1000

DESCRIPTION: GRAY FINE SAND W/ TRACE SILT

LABORATORY (1): STLB COC #:
LABORATORY (2): COC #:
LABORATORY (3): COC #:
LABORATORY (4): COC #:

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	grain size only
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: DRUM

SAMPLING METHOD USED: SONIC
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): GRAB
INSTRUMENT CALIBRATION: (Date/Time) 12/1/05
INSTRUMENT CALIBRATION STANDARD: 1500 NTU.

ADDITIONAL COMMENTS:

SIGNATURE: [signature]

0-61M-107030 - RP SOIL SAMPLING FORM

SAMPLE LOCATION: RP-11 DATE: 11/29/05 START TIME: 900
PERSONNEL: C. Johnson, L. Glonek WEATHER: RAIN

OBSERVATIONS/FIELD MEASUREMENTS

MEASUREMENT TYPE	VALUE / UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	235		
SOIL GRAIN SIZE DESCRIPTION	POORLY GRADED		
SAMPLE DEPTH (FT)	0.0-2.0		
SOIL COLOR	BROWN		
SOIL TYPE DESCRIPTION	GM		
MOISTURE CONTENT (%)	5%		
ANIMALS/PLANTS IN MEDIA	0%		
VOC HEADSPACE READING	0.0		
UVLIGHT READING	—		
OBSERVATION OF CONTAMINATION	NO		

(FT=DEPTH IN FEET)

ADDITIONAL COMMENTS/OBSERVATIONS

SAMPLE COLLECTION

SAMPLE NUMBER: 138-01 QA/QC NUMBER (S): TIME: 900

DESCRIPTION: Brownish-red Sub-Angular-to Sub-rounded silty basalt + lithics

LABORATORY (1)	STLB	COC #	
LABORATORY (2)		COC #	
LABORATORY (3)		COC #	
LABORATORY (4)		COC #	

PARAMETER(S)	PRESERVATION/ SIZE	NUMBER/ VOLUME	LABORATORY	ICED (Y/N)	COMMENTS
Volatile Organic Compounds (VOCs) by EPA Method 8260B	Cool to 4°C (no headspace)/ 4 oz Glass Jar	1-4oz jar	STL-Bur	Y	
Organochlorine Pesticides by EPA Method 8081A	Refrigerate to 4°C/ 1- 8 oz Jar	1-8oz jar	STL-Bur	Y	ARM Arsenic
Chlorinated Herbicides by EPA Method 8151A					
Semivolatile Organic Compounds (SVOCs), including phenols, by EPA Method 8270C					
Polychlorinated Biphenyls (PCBs) by EPA Method 80802A					
Metals by EPA Methods 6010B, 6020, 7471A					
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx	Cool to 4°C/ 4 oz Glass Jar	1-4oz jar	CAS	Y	DRY
Dioxins/Furans (PCDD/PCDF) by EPA Method 8290	Refrigerate to 4°C/ 4 oz Glass Jar	1-4oz jar	Axys	Y	

SOP - 3: DECONTAMINATION PROCEDURES FOLLOWED? YES / NO
QA/QC SAMPLE COLLECTED? YES / NO DESCRIBE:
CHAIN OF CUSTODY COMPLETED? YES/NO
WASTE DISPOSAL: Stock ARM

SAMPLING METHOD USED: Bowl
SAMPLE TYPE (IE: GRAB, SPLIT, ETC.): Grab
INSTRUMENT CALIBRATION: (Date/Time) 11/29/05
INSTRUMENT CALIBRATION STANDARD: 1905-01

ADDITIONAL COMMENTS:

SIGNATURE

A-2

APPENDIX A-2

Groundwater Sampling Field Forms

ARK-01	15; 31.5; 54
ARK-02	40; 80
ARK-03	26; 58; 80; 102.5
ARK-04	15; 36; 47
ARK-05	22; 41; 67.5
ARK-06	27; 58; 80; 97.5
ARK-07	14; 26; 45
ARK-08	15; 43.5
ARK-09	16; 35; 56; 94
SIL-01	31.5; 100; 130; 160; 188; 208; 217
SIL-02	32; 100; 130; 160; 190; 216
SIL-03	35; 99; 130
SIL-04	30; 74; 89
RP-11	31; 100; 130; 152; 190; 216

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/15/05

Monitoring Well ID: ARK-01-15
Start Time: 1300
Field Personnel: L. Glonek, C. Johnson
Weather Conditions:
Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date:
Date/Time of Measurement: 1300 / 8/15
Depth Well Bottom (TOC - ft.): 15 ft
Depth to Water Level (TOC - ft.): 14.1
Depth to Water Measuring Technique: solnist #5
Detection Method of Free Product: N/A
Depth to Free Product (TOC - ft.):
Calculated Column Height (ft.):
Casing Diameter (in.):
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Quantity of Free Product Collected (gal.): N/A
Three Well Purge Volumes (gallons) = 3 x _____ = _____
Obsevation of sheen or LNAPL:
Method of Collecting Free Product: N/A
Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

V. slow recharge 5 min to collect one volume

Total Purged =
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Decontamination Method: DI/Alconox
Instrument Type & Number:
Water Disposal: RP Water Treatment Plant
Instrument Calibration Date & Time:
Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/15/05
Time Sampled: 1345
QA/QC Sample (circle one): YES / NO
Water Chemistry Sample: YES / NO
Chain-of-Custody #s:
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
042-01	13	various	various	STL-Burl	courier	various
	2	1 L	none	Axys	courier	dioxins/furans
	2	1 L	HCL	CAS	courier	NWTPH-Dx
	3	40ml	TSP	UofDX	✓	compspec.

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY JOHNSON Sampler Signature: [signature] Date Signed: 8/15/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 8/15/05

Monitoring Well ID: ARK-01-15 | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 8/15/05 | Additional Chain-of-Custody #s:

Time Sampled: 1345

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
042-01	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print) CHRISTY JOHNSON Sampler Signature: [signature] Date Signed: 8/15/05

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/16/2005

Monitoring Well ID: ARX01-31.5
Start Time: 1330
Field Personnel: L. Glonek, ~~C. Johnson~~ B. McFillicuddy
Weather Conditions: Sunny
Approx. Air Temp (F): 80°

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: N/A In well Casing: N/A
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date: N/A
Date/Time of Measurement: /
Depth Well Bottom (TOC - ft.): 31.5
Depth to Water Measuring Technique: solnist #5
Depth to Water Level (TOC - ft.): N/A couldn't find water
Detection Method of Free Product: N/A
Depth to Free Product (TOC - ft.): N/A
Calculated Column Height (ft.):
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):
Quantity of Free Product Collected (gal.): N/A
Three Well Purge Volumes (gallons) = 3 x _____ =
Obsevation of sheen or LNAPL: NO
Method of Collecting Free Product: N/A
Observation of DNAPL: NO

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

flow too low needed to fill bottles

Total Purged =
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Decontamination Method: DI/Alconox
Instrument Type & Number:
Water Disposal: RP Water Treatment Plant
Instrument Calibration Date & Time:
Approx. Pump/Intake Depth: 31.5

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/16/2005
QA/QC Sample (circle one): YES / NO
Water Chemistry Sample: YES / NO
Time Sampled: 1345
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other:
Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
044-01	13	various	various	STL-Burl	courier	various
↓	2	1 L	none	Axys	courier	dioxins/furans
	2	1 L	HCL	CAS	courier	NWTPH-Dx

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: well would dry up + would have to let sit for a few minutes at times so well could recharge

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): LISA GLONEK Sampler Signature: Lisa Glonek Date Signed: 8/16/2005

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 8/16/2005

Monitoring Well ID: AKL-01-31.5 | Field Personnel: L. Glonek, ~~C. Johnson~~ B McFillen

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: | Additional Chain-of-Custody #s:

Time Sampled:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
AKL-01	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
✓	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): LISA GLONEK Sampler Signature: [signature] Date Signed: 8/16/2005

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/16/2005

Monitoring Well ID: AU-01-54
Start Time: 1320
Field Personnel: L. Glonek, ~~G. Johnson~~ B. McGillicuddy
Weather Conditions: Sunny
Approx. Air Temp (F): 80°

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: N/A In well Casing: N/A
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date: N/A
Date/Time of Measurement: /
Depth Well Bottom (TOC - ft.): 54
Depth to Water Measuring Technique: solnist #5
Depth to Water Level (TOC - ft.): N/A - Cracked cap
Detection Method of Free Product: N/A
Depth to Free Product (TOC - ft.): No indication
Calculated Column Height (ft.): NA
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):
Quantity of Free Product Collected (gal.): N/A
Three Well Purge Volumes (gallons) = 3 x _____ = _____
Obsevation of sheen or LNAPL: NO
Method of Collecting Free Product: N/A
Observation of DNAPL: NO

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other = Waterra
Well Yield: High / Moderate / Low
Ferrous Iron (ppm): NA
Decontamination Method: DI/Alconox
Instrument Type & Number:
Water Disposal: RP Water Treatment Plant
Instrument Calibration Date & Time: NA
Approx. Pump/Intake Depth: 54'

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/16/2005
QA/QC Sample (circle one): YES / NO
Time Sampled: 1330
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other
Water Chemistry Sample: YES / NO
Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
04301	2 ~~3~~	various	various	STL-Burl	courier	various
↓	4 ~~2~~	1 L	none	Axys	courier	dioxins/furans
	4 ~~2~~	1 L	HCL	CAS	courier	NWTPH-Dx
04303	7	40ml	HCL	STL-Burl	↓	VOCs 8260B

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: Collected MS/MSD sample

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): [illegible]
Sampler Signature: LISA GLONEK
Date Signed: 8/16/2005

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 8/16/2005

Monitoring Well ID: ARK-01-54 | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: | Additional Chain-of-Custody #s:

Time Sampled:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
043-01	6 ~~3~~	40 ml	HCl	STL-Bur		VOCs 8260B
	4 ~~2~~	1 L	None	STL-Bur		SVOCs 8270C
	4 ~~2~~	1 L	None	STL-Bur		Herbicides 8151A
	4 ~~2~~	1 L	None	STL-Bur		Pesticides 8081A
	4 ~~2~~	1 L	None	Axys		Dioxins/Furans 8290
	4 ~~2~~	1 L	HCl	CAS		NWTPH-Dx
	4 ~~2~~	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	6 ~~3~~	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	2 ~~1~~	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	2 ~~1~~	500 ml	None	STL-Bur		Chloride 300.0
043-03	1	40ml	HCL	✓		VOCs 8260B

Field Observations/Notes of Sampling Event: Collection MS/MSD sample

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): LISA GLONEK Sampler Signature: [signature] Date Signed: 8/16/2005

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/22/05

Monitoring Well ID: HK-TW-4D
Start Time:
Field Personnel: L. Glonek, C. Johnson
Weather Conditions:
Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: NA In well Casing: NA
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date: NA
Date/Time of Measurement:
Depth Well Bottom (TOC - ft.): 40 ft
Depth to Water Measuring Technique: solnist #5
Depth to Water Level (TOC - ft.): NA - Broken well
Detection Method of Free Product: N/A
Depth to Free Product (TOC - ft.): NA
Calculated Column Height (ft.):
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):
Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.): N/A
Method of Collecting Free Product: N/A
Obsevation of sheen or LNAPL: NO
Observation of DNAPL: NO

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other = Waster
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Instrument Type & Number:
Decontamination Method: DI/Alconox
Instrument Calibration Date & Time:
Water Disposal: RP Water Treatment Plant
Approx. Pump/Intake Depth: 40

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/22/05
QA/QC Sample (circle one): YES / NO
Time Sampled: 0830
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other: Waster
Water Chemistry Sample: YES / NO
Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
0d0-01	13	various	various	STL-Burl	courier	various
↓	2	1 L	none	Axys	courier	dioxins/furans
✓	2	1 L	HCL	CAS	courier	NWTPH-Dx

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: extremely low yield

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print):
Sampler Signature:
Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date:

Monitoring Well ID: | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 8/22/05 | Additional Chain-of-Custody #s:

Time Sampled: 0830

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
0606-01	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event: extremely low well yield

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date:

Monitoring Well ID: ARK-02-80
Start Time: 1232
Field Personnel: V. Acker, BLM, ~~L. Glenek~~, C. Johnson
Weather Conditions: Sunny
Approx. Air Temp (F): 80-90

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
Date/Time of Measurement: /
PID Calibration Date:
Depth Well Bottom (TOC - ft.): 80
Depth to Water Measuring Technique: solnist #5
Depth to Water Level (TOC - ft.): 59
Detection Method of Free Product: N/A
Depth to Free Product (TOC - ft.):
Calculated Column Height (ft.):
Casing Diameter (in.):
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.): N/A
Method of Collecting Free Product: N/A
Obsevation of sheen or LNAPL:
Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	0	21.26	~~21.60~~ 7.27	976	7400	1.82	-48.6	1232
	1.5mL	20.15	7.19	914	7400	1.10	-43.2	1235

Total Purged =
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Decontamination Method: DI/Alconox
Instrument Type & Number:
Water Disposal: RP Water Treatment Plant
Instrument Calibration Date & Time:
Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/19/05
QA/QC Sample (circle one): YES / NO
Water Chemistry Sample: YES / NO
Time Sampled: 1245
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other:
Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
65-04,065-01	13	various	various	STL-Burl	courier	various
65-04,065-01	2	1 L	none	Axys	courier	dioxins/furans
65-04,065-01	2	1 L	HCL	CAS	courier	NWTPH-Dx
065-01	3	40mL	TS	U. of OK	courier	Comp. Specific

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted YES / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print):
Sampler Signature:
Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date:

Monitoring Well ID: | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: | Additional Chain-of-Custody #s:

Time Sampled:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): | Sampler Signature: | Date Signed:

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/23/2005

Monitoring Well ID: ARK-03-26
Start Time:
Field Personnel: L. Glonek, C. Johnson
Weather Conditions:
Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
Date/Time of Measurement: /
PID Calibration Date:
Depth Well Bottom (TOC - ft.): 26
Depth to Water Measuring Technique: solnist #5
Depth to Water Level (TOC - ft.): NA
Detection Method of Free Product: N/A
Depth to Free Product (TOC - ft.):
Calculated Column Height (ft.):
Casing Diameter (in.):
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.): N/A
Method of Collecting Free Product: N/A
Obsevation of sheen or LNAPL: NO
Observation of DNAPL: NO

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	1L	14.64	6.83	402	>1000	1.50	-40.0	
	10L	14.22	6.78	395	Slightly turbid	1.23	-40.3	

Total Purged =
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Decontamination Method: DI/Alconox
Instrument Type & Number: YSI #5
Water Disposal: RP Water Treatment Plant
Instrument Calibration Date & Time: 8/23/05 0645
Approx. Pump/Intake Depth: 26

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/23/2005
Time Sampled: 0900
QA/QC Sample (circle one): YES / NO
Water Chemistry Sample: YES / NO
Chain-of-Custody #s:
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
071-01	13	various	various	STL-Burl.	courier	various
↓	2	1 L	none	Axys	courier	dioxins/furans
	2	1 L	HCL	CAS	courier	NWTPH-Dx

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print):
Sampler Signature:
Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 8/23/2005

Monitoring Well ID: ALL-8-26 | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 8/23/2005 | Additional Chain-of-Custody #s:

Time Sampled: 0800

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
CH-01	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69

Monitoring Well ID: ARK-03-56
Monitoring/Sampling Date:
Start Time:
Field Personnel: L. Glonek, C. Johnson
Weather Conditions:
Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:
PID Calibration Standard: Isobutylene
%LEL Background: N/A In well Casing: N/A
PID Calibration Date:
Date/Time of Measurement: /
Depth to Water Measuring Technique: solnist #5
Depth Well Bottom (TOC - ft.):
Detection Method of Free Product: N/A
Depth to Water Level (TOC - ft.):
Depth to Free Product (TOC - ft.):
Calculated Column Height (ft.):
Casing Diameter (in.):
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Quantity of Free Product Collected (gal.): N/A
Three Well Purge Volumes (gallons) = 3 x _____ =
Obsevation of sheen or LNAPL:
Method of Collecting Free Product: N/A
Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	4L	14.85	6.50	2415	+1000	1.44	-0.3	911
	10L	14.93	6.08	1771		1.91	0.3	

Total Purged =
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Decontamination Method: DI/Alconox
Instrument Type & Number:
Water Disposal: RP Water Treatment Plant
Instrument Calibration Date & Time:
Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled:
QA/QC Sample (circle one): YES / NO
Water Chemistry Sample: YES / NO
Time Sampled: 9:00
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other:
Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
0732-01	13	various	various	STL-Burl	courier	various
	2	1 L	none	Axys	courier	dioxins/furans
	2	1 L	HCL	CAS	courier	NWTPH-Dx

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print):
Sampler Signature:
Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date:

Monitoring Well ID: | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: | Additional Chain-of-Custody #s:

Time Sampled:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): | Sampler Signature: | Date Signed:

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P 69
Monitoring/Sampling Date: 8/22/05

Monitoring Well ID: ACK-03-07W0 | Field Personnel: L. Glonek, C. Johnson
Start Time: 1300 | Weather Conditions: | Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing: | PID Calibration Standard: Isobuylene
%LEL Background: N/A In well Casing: N/A | PID Calibration Date:
Date/Time of Measurement: / | Depth to Water Measuring Technique: solnist #5
Depth Well Bottom (TOC - ft.): 80 | Detection Method of Free Product: N/A
Depth to Water Level (TOC - ft.): | Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.): N/A | 0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.): | 4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.): | Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.): N/A | Method of Collecting Free Product: N/A
Obsevation of sheen or LNAPL: | Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
		No Data Available						

Total Purged = | Purge Pumping Rate (approx. L/m): | Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Ferrous Iron (ppm): | Decontamination Method: DI/Alconox
Instrument Type & Number: | Water Disposal: RP Water Treatment Plant
Instrument Calibration Date & Time: | Approx. Pump/Intake Depth: 80

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: TEMP WELL POINT
Casing Condition: OK / NA / Needs Repairs / Repaired | Lock Condition: OK / NA / ~~Needs Repairs / Replaced~~
Cap Condition: OK / NA / Needs Repairs / Repaired | Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired | Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/22/2005 | QA/QC Sample (circle one): YES / NO | Water Chemistry Sample: YES / NO
Time Sampled: 1330 | Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump
Chain-of-Custody #s: | Teflon Bailer Peristaltic Pump Other:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
0207-01	13	various	various	STL-Burl	courier	various
↓	2	1 L	none	Axys	courier	dioxins/furans
✓	2	1 L	HCL	CAS	courier	NWTPH-Dx

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): LISA GLONEK Sampler Signature: [signature] Date Signed: 8/22/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date:

Monitoring Well ID: | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: | Additional Chain-of-Custody #s:

Time Sampled:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
0001	3	40 ml	HCL	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCL	CAS		NWPTH-Dx
	2	1 L	Nitric Acid	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP- Stg 1 SCE Arkema Lot land
Project #: 061M107030 P69
Monitoring/Sampling Date: 9/9/05

Monitoring Well ID: ARIS-03A-102 | Field Personnel: J. Fassio
Start Time: 930 | Weather Conditions: Partly Cloudy, Showers | Approx. Air Temp (F): 60°F

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: —	In well Casing: —	PID Calibration Standard: —	
%LEL Background: —	In well Casing: —	PID Calibration Date: —	
Date/Time of Measurement: /		Depth to Water Measuring Technique: Solinst	
Depth Well Bottom (TOC - ft.): Bottom of casing @ 90'		Detection Method of Free Product: None	
Depth to Water Level (TOC - ft.): 37' bgs		Conversions Factors (casing dia. = gallons/linear ft.) Circle One	
Depth to Free Product (TOC - ft.): None		0.75" = 0.02	1" = 0.04	2" = 0.17	3" = 0.37
Calculated Column Height (ft.): 20 below packer		4" = 0.66	6" = 1.47	8" = 2.61	12" = 5.88
Casing Diameter (in.): 6"		Three Well Purge Volumes (gallons) = 3 x _____ = _____	
Quantity of Free Product Collected (gal.): None		Method of Collecting Free Product:	
Obsevation of sheen or LNAPL: None		Observation of DNAPL: None	

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged = 45 gal | Purge Pumping Rate (approx. L/m): 3 gpm | Well Yield: (High) / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other = Jet Pump
Ferrous Iron (ppm): NA | Decontamination Method: Submersible pump
Instrument Type & Number: NA | Water Disposal: Tank @ RP site
Instrument Calibration Date & Time: NA | Approx. Pump/Intake Depth: ~82.5'

WELL CONDITION

Casing (circle one): Stainless Steel / (Carbon Steel) / PVC / Other:

Casing Condition:	OK / (NA) / Needs Repairs / Repaired	Lock Condition:	OK / (NA) / Needs Repairs / Replaced
Cap Condition:	OK / (NA) / Needs Repairs / Repaired	Inner Casing Condition:	OK / (NA) / Needs Repairs / Repaired
Paint Condition:	OK / (NA) / Needs Repairs / Repaired	Monument Condition:	OK / (NA) / Needs Repairs / Repaired

Recommended Well Repairs: NA

SAMPLING INFORMATION / DATA

Date Sampled: 9/9/05 | QA/QC Sample (circle one): (YES) / NO | Water Chemistry Sample: (YES) / NO
Time Sampled: 930 | Sampling Method (circle one): SS Bailer / Poly Bailer / Grunfos Pump / Teflon Bailer / Peristaltic Pump / Other: Submersible
Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters with packer
076-01	13	various	various	STL-Burl	Courier	various
↓	2	1L	None	Axys	↓	dioxin/Furans
	2	1L	HCl	CAS		NWTPH-Dx
↓	3	VOAs	TSP	U of OK	↓	Compound Specific Isotopes
076-03	1	VOA	HCl	STL-Burl.	↓	VOCs 8260B

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Joe Fassio | Sampler Signature: [signature] | Date Signed: 9/9/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-STG1 SCE/ARKEMA Project #: 06IM107030 P69 Monitoring/Sampling Date: 9/9/05

Lots 1 and 2

Monitoring Well ID: | Field Personnel: J. Fassio

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 9/9/05 | Additional Chain-of-Custody #s:

Time Sampled: 930

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
076-01	3	40ml	HCl	STL-Burl.		VOCs 8260B
	2	1l	None			SVOCs 8270C
						Herbs. 8151A
						Pests 8081A
				Axys		Dioxin/Furans 8290
			HCl	CAS		NW-TPH-Dx
	2	1lt+500ml	Nitric	STL-Burl.		Tot./Diss. Metals 6010/6020/7470A
	3	40ml	TSP	VOFOK		Compound Specific Isotopes
	1	1l	Sulfuric	STL-Burl.		Ammonia 350.3
	1	500ml	None			Chloride 300.0
076-03	1	VOA	HCl	STL-Burl.		VOCs 8260B

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Joe Fassio | Sampler Signature: Joe Fassio | Date Signed: 9/9/05

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/12/05

Monitoring Well ID: ARK-04-15
Start Time: 1330
Field Personnel: L. Glonek, C. Johnson
Weather Conditions: Sunny
Approx. Air Temp (F): 75

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date:
Date/Time of Measurement: 8/12/05 1215
Depth to Water Measuring Technique: solnist #5
Depth Well Bottom (TOC - ft.): 15'
Depth to Water Level (TOC - ft.): 9.2'
Detection Method of Free Product: N/A
Depth to Free Product (TOC - ft.):
Calculated Column Height (ft.):
Casing Diameter (in.):
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.): N/A
Method of Collecting Free Product: N/A
Obsevation of sheen or LNAPL:
Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Not enough water for sample Stop Recovery

Total Purged =
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Decontamination Method: DI/Alconox
Instrument Type & Number: YSI #5
Water Disposal: DRUM RP ~~Water~~ Treatment Plant
Instrument Calibration Date & Time: 8/12/05 630
Approx. Pump/Intake Depth: 15'

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/12/05
Time Sampled: 1300
QA/QC Sample (circle one): YES / NO
Water Chemistry Sample: YES / NO
Chain-of-Custody #s:
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
034-01	13	various	various	STL-Burl	courier	various
↓	2	1 L	none	Axys	courier	dioxins/furans
	2	1 L	HCL	CAS	courier	NWTPH-Dx
	3	1L	SS	WETCK	Cooler	Comp Sec

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY JOHNSON Sampler Signature: [signature] Date Signed: 8/12/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 8/12/05

Monitoring Well ID: ARK-04-15 | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 8/12/05 | Additional Chain-of-Custody #s:

Time Sampled: 1300

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
0341-01	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	~~2~~ 1	1 L	None	STL-Bur		Herbicides 8151A
	~~2~~ 1	1 L	None	STL-Bur		Pesticides 8081A
	~~2~~ 1	1 L	None	Axys		Dioxins/Furans 8290
	~~2~~ 1	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): KRISTY JEFFERSON Sampler Signature: [signature] Date Signed: 8/12/05

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 9/15/05

Monitoring Well ID: ARK-04-31C
Start Time: 8:40
Field Personnel: L. Glonek, C. Johnson
Weather Conditions: Sunny
Approx. Air Temp (F): 70°F

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date:
Date/Time of Measurement: 9/15/05
Depth Well Bottom (TOC - ft.): 35.5'
Depth to Water Measuring Technique: solnist #5
Depth to Water Level (TOC - ft.): 29.31'
Detection Method of Free Product: N/A
Depth to Free Product (TOC - ft.): –
Calculated Column Height (ft.):
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.): .5"
Three Well Purge Volumes (gallons) = 3 x _____ =
Quantity of Free Product Collected (gal.): N/A
Method of Collecting Free Product: N/A
Obsevation of sheen or LNAPL:
Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	0	18.53	6.57	5429	>1000	2.42	634	0841
	250 ml	17.72	6.56	5446	>1000	2.02	62.7	0846
	500 ml		6.54	5458	>1000		18.6	0850

Total Purged =
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Decontamination Method: DI/Alconox
Instrument Type & Number:
Water Disposal: RP Water Treatment Plant
Instrument Calibration Date & Time:
Approx. Pump/Intake Depth: 35.5'

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 9/15/05
QA/QC Sample (circle one): YES / NO
Water Chemistry Sample: YES / NO
Time Sampled: 0850
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other:
Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
035-01	13	various	various	STL-Burl	courier	various
035-01	2	1 L	none	Axys	courier	dioxins/furans
035-01	2	1 L	HCL	CAS	courier	NWTPH-Dx
035-01	3	VOA	TS	UofOK	courier	Comp Spec

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Chris Johnson
Sampler Signature: [signature]
Date Signed: 9/15/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 8/15/05

Monitoring Well ID: AKK-TL-3L0 | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 8/15/05 | Additional Chain-of-Custody #s:

Time Sampled: 800

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
035-01	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY JOHNSON Sampler Signature: [signature] Date Signed: 8/15/05

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/12/05

Monitoring Well ID: ARK-04-47
Start Time: 1210
Field Personnel: L. Glonek, C. Johnson
Weather Conditions: Cloudy
Approx. Air Temp (F): 409

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date:
Date/Time of Measurement: 8/12/05 1218
Depth Well Bottom (TOC - ft.): 47ft
Depth to Water Level (TOC - ft.): 43.5ft
Depth to Free Product (TOC - ft.):
Calculated Column Height (ft.):
Casing Diameter (in.):
Quantity of Free Product Collected (gal.): N/A
Obsevation of sheen or LNAPL:
Depth to Water Measuring Technique: solnist #5
Detection Method of Free Product: N/A
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Three Well Purge Volumes (gallons) = 3 x _____ = _____
Method of Collecting Free Product: N/A
Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

NO GROUNDWATER - VERY SLOW RECHARGE

Total Purged =
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other = LOATTERA
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Instrument Type & Number: YST-25
Instrument Calibration Date & Time: 8/12/05 P.100
Decontamination Method: DI/Alconox
Water Disposal: DRUM RP ~~Water Treatment Plant~~
Approx. Pump/Intake Depth: 47ft

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Cap Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/12/05
Time Sampled: 1230
Chain-of-Custody #s:
QA/QC Sample (circle one): YES / NO
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other: LOATTERA
Water Chemistry Sample: YES / NO

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
0233121	13 11	various	various	STL-Burl	courier	various
	2 1	1 L	none	Axys	courier	dioxins/furans
	2 1	1 L	HCL	CAS	courier	NWTPH-Dx
	3	40ml	ST	UOFCK	Courier	comp spec

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: Arkema 44-47ft

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY JOHNSON Sampler Signature: [signature] Date Signed: 8/12/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 8/12/05

Monitoring Well ID: ARK-04-47 | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: | Additional Chain-of-Custody #s:

Time Sampled:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
D33-01	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	~~2~~ 1	1 L	None	STL-Bur		Herbicides 8151A
	~~2~~ 1	1 L	None	STL-Bur		Pesticides 8081A
	~~2~~ 1	1 L	None	Axys		Dioxins/Furans 8290
	~~2~~ 1	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY JOHNSON Sampler Signature: [signature] Date Signed: 8/12/05

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/17/05

Monitoring Well ID: HKL05-22
Start Time: 1300
Field Personnel: L. Glonek, C. Johnson
Weather Conditions: cloudy
Approx. Air Temp (F): 65

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date:
Date/Time of Measurement: 8/17/05
Depth Well Bottom (TOC - ft.): 22
Depth to Water Level (TOC - ft.): 12.6
Depth to Free Product (TOC - ft.):
Calculated Column Height (ft.):
Casing Diameter (in.):
Quantity of Free Product Collected (gal.): N/A
Obsevation of sheen or LNAPL:
Depth to Water Measuring Technique: solnist #5
Detection Method of Free Product: N/A
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Three Well Purge Volumes (gallons) = 3 x _____ = _____
Method of Collecting Free Product: N/A
Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
		18.9	8.20	746	+100	1.44	-56.1	1300
		17.3	7.98	744	+100	0.57	-98.2	1304

Total Purged =
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / ~~Other~~ =
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Instrument Type & Number: LOSI #5
Instrument Calibration Date & Time:
Decontamination Method: DI/Alconox
Water Disposal: DRUM ~~RP Water Treatment Plant~~
Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Cap Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/17/05
Time Sampled: 1300
Chain-of-Custody #s:
QA/QC Sample (circle one): YES / NO
Sampling Method (circle one): SS Bailer ~~Poly Bailer~~ Teflon Bailer Peristaltic Pump Grunfos Pump Other:
Water Chemistry Sample: YES / NO

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
GSD-D1	13	various	various	STL-Burl	courier	various
	2	1 L	none	Axys	courier	dioxins/furans
	2	1 L	HCL	CAS	courier	NWTPH-Dx
	3	40ml	TS	Horizon	courier	COMP SPEC
GSD-D8	2	40ml	HCL	STL	courier	TRIP Blank

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Christy Johnson Sampler Signature: [signature] Date Signed: 8/17/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 8/17/05

Monitoring Well ID: ARK-05-22 | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 8/17/05 | Additional Chain-of-Custody #s:

Time Sampled: 1300

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
050-01	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print) CHRISTY JOHNSON Sampler Signature: [signature] Date Signed: 8/17/05

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/17/05

Monitoring Well ID: ARK-05-41
Start Time: 0
Field Personnel: L. Glonek, C. Johnson
Weather Conditions: Cloudy
Approx. Air Temp (F): 75

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: N/A In well Casing: N/A
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date: 8/17/2005
Date/Time of Measurement: 8/17/2005
Depth Well Bottom (TOC - ft.): ~~[illegible]~~ 41
Depth to Water Level (TOC - ft.): ~~[illegible]~~ 37.9
Depth to Free Product (TOC - ft.): N/A
Calculated Column Height (ft.):
Casing Diameter (in.):
Quantity of Free Product Collected (gal.): N/A
Obsevation of sheen or LNAPL:
Depth to Water Measuring Technique: solnist #5
Detection Method of Free Product: N/A
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Three Well Purge Volumes (gallons) = 3 x _____ = _____
Method of Collecting Free Product: N/A
Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
		21.11	6.99	16.26	>1000	2.11	-0.6	

Total Purged =
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other = None
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Decontamination Method: DI/Alconox
Instrument Type & Number:
Water Disposal: DRUM ~~RP Water Treatment Plant~~
Instrument Calibration Date & Time:
Approx. Pump/Intake Depth: 41-37.9

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / ~~Needs Repairs / Replaced~~
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/17/2005
Time Sampled: 1330
QA/QC Sample (circle one): YES / NO
Water Chemistry Sample: YES / NO
Chain-of-Custody #s:
Sampling Method (circle one): SS Bailer Poly Bailer ~~Grunfos Pump~~ Teflon Bailer Peristaltic Pump Other: GRAVITY

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
051-01	13	various	various	STL-Burl	courier	various
↓	2	1 L	none	Axys	courier	dioxins/furans
↓	2	1 L	HCL	CAS	courier	NWTPH-Dx

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Kristy Johnson Sampler Signature: [signature] Date Signed: 8/17/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 8/17/2005

Monitoring Well ID: ALL-05-41 | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 8/17/2005 | Additional Chain-of-Custody #s:

Time Sampled: 1330

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
051-01	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Christy Johnson Sampler Signature: [signature] Date Signed: 8/17/05

1.5
3
4.5

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1 and
Project #: 061M107030 P69
Monitoring/Sampling Date: 9/8/05

Monitoring Well ID: ARK-05A-62.5 | Field Personnel: J. Fussio
Start Time: 1100 | Weather Conditions: Clear, ~80°F | Approx. Air Temp (F): 60°F

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: — In well Casing: — | PID Calibration Standard: —
%LEL Background: NA In well Casing: NA | PID Calibration Date: —
Date/Time of Measurement: 9/8/05 / 1050 | Depth to Water Measuring Technique: Tape
Depth Well Bottom (TOC - ft.): Bottom of casing 62' | Detection Method of Free Product: NA
Depth to Water Level (TOC - ft.): ~59' for TOC
Depth to Free Product (TOC - ft.): NA
Calculated Column Height (ft.): 3 ft
Casing Diameter (in.): 6" casing
Quantity of Free Product Collected (gal.): None | Method of Collecting Free Product:
Obsevation of sheen or LNAPL: None | Observation of DNAPL: None

Conversions Factors (casing dia. = gallons/linear ft.) Circle One

0.75" = 0.02	1" = 0.04	2" = 0.17	3" = 0.37
4" = 0.66	6" = 1.47	8" = 2.61	12" = 5.88

Three Well Purge Volumes (gallons) = 3 x 4.5 = 13.5

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

due to suspected slow recharge collect sample w/o purging

Total Purged = 0 gal | Purge Pumping Rate (approx. L/m): NA | Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Ferrous Iron (ppm): NA | Decontamination Method: No decon - use dedicated bailer
Instrument Type & Number: NA | Water Disposal: Tank at RP site
Instrument Calibration Date & Time: NA | Approx. Pump/Intake Depth: NA

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:
Casing Condition: OK / NA / Needs Repairs / Repaired | Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired | Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired | Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 9/8/05 | QA/QC Sample (circle one): YES / NO | Water Chemistry Sample: YES / NO
Time Sampled: 1100 | Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other:
Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
07501	13	varies	various	STL-Burl.	courier	various
	2	1L	none	Axys	courier	dioxin/furans
	2	1L	HCl	CAS	courier	NW TPH-Dx
	3	VOAs	TSP	U of OK	courier	Compound specific isotopes

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Joe Fussio | Sampler Signature: [signature] | Date Signed: 9/9/05

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER
SAMPLING FIELD FORM

Project Name: RP-STG-1 SCE ARKEMA
Project #: 06IM107030 P69
Monitoring/Sampling Date: 9/8/05

Lots 1 and 2

Monitoring Well ID:
Field Personnel: J. Fassio

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 9/8/05
Time Sampled: 1100
Additional Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
075-01	3	40ml	HCL	STL-Bui.		VOCs 8260B
	2	1l	None	↓		SVOCs 8270C
	↓	↓	↓	↓		Herbs. 8151A
						Pests. 8081A
				Axys		Dioxin/Furan 8290
				CAS		Nw-TPH-Dx
	2	1+ 250ml	Nitric Acid	STL-Bui.		Tot/Diss Metals 6010/6020/7470A
	3	40ml	TSP	U of OK		Compound Specific Isotopes
	1	1L	Sulfuric	STL-Bui.		Ammonia 350-3
	1	500ml	None	↓		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Joe Fassio
Sampler Signature: [signature]
Date Signed: 9/7/05

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/18/05

Monitoring Well ID: ALY-0027
Start Time:
Field Personnel: L. Glonek, C. Johnson
Weather Conditions: Sunny ~ 75° F
Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
Date/Time of Measurement: /
PID Calibration Date:
Depth Well Bottom (TOC - ft.): 27
Depth to Water Measuring Technique: solnist #5
Depth to Water Level (TOC - ft.): N/A
Detection Method of Free Product: N/A
Depth to Free Product (TOC - ft.): N/A
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Calculated Column Height (ft.):
Casing Diameter (in.):
Three Well Purge Volumes (gallons) = 3 x _____ =
Quantity of Free Product Collected (gal.): N/A
Method of Collecting Free Product: N/A
Obsevation of sheen or LNAPL: ND
Observation of DNAPL: NO

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	50L	17.54	8.55	436	260	3.96	-59.2	1450

Total Purged =
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Decontamination Method: DI/Alconox
Instrument Type & Number:
Water Disposal: RP Water Treatment Plant
Instrument Calibration Date & Time:
Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION/ DATA

Date Sampled:
QA/QC Sample (circle one): YES / NO
Water Chemistry Sample: YES / NO
Time Sampled:
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other:
Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
058-01	13	various	various	STL-Burl	courier	various
↓	2	1 L	none	Axys	courier	dioxins/furans
	2	1 L	HCL	CAS	courier	NWTPH-Dx
058-02	13	various	various	STL-Burl		various
058-02	2	1L	none	Axys		dioxins/furans

All samples were immediately placed into a cooler and packed with Ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): LISA GLONEK Sampler Signature: Lisa Glonek Date Signed: 8/18/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date:

Monitoring Well ID: | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: | Additional Chain-of-Custody #s:

Time Sampled:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): | Sampler Signature: | Date Signed:

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/19/05

Monitoring Well ID: ARK-06-58
Start Time: 0804
Field Personnel: V. Ackw B. McGill ~~L. Glonek~~ C. Johnson
Weather Conditions: 80° - Sunny
Approx. Air Temp (F): 80°-90

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
Date/Time of Measurement: /
PID Calibration Date:
Depth Well Bottom (TOC - ft.): 58
Depth to Water Measuring Technique: solinist #5
Depth to Water Level (TOC - ft.): 28.5
Detection Method of Free Product: N/A
Depth to Free Product (TOC - ft.):
Calculated Column Height (ft.):
Casing Diameter (in.): 1
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Three Well Purge Volumes (gallons) = 3 x _____ =
Quantity of Free Product Collected (gal.): N/A
Method of Collecting Free Product: N/A
Obsevation of sheen or LNAPL: NA
Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	0	18.29	6.64	4430	>400	0.83	43.4	08:04
	1.5	17.87	6.58	4384	>400	0.47	9.0	08:07
	1.5	17.87	6.56	4379	>400	0.50	1.8	08:10

Total Purged =
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Decontamination Method: DI/Alconox
Instrument Type & Number:
Water Disposal: Drumed ~~RP Water Treatment Plant~~
Instrument Calibration Date & Time:
Approx. Pump/Intake Depth:
direct push rods

WELL CONDITION

Casing (circle one): (Stainless Steel) Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/19/05
QA/QC Sample (circle one): (YES) NO
Water Chemistry Sample: (YES) NO
Time Sampled: 0815
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other: WATERA
Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
059-01	13	various	various	STL-Burl	courier	various
059-01	2	1 L	none	Axys	courier	dioxins/furans
059-01	2	1 L	HCL	CAS	courier	NWTPH-Dx
059-01	3	40ml	TS	U. of OK	courier	compound specific

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: (YES) / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Vicki Acker
Sampler Signature: Vicki A. Acker
Date Signed: 8/19/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date:

Monitoring Well ID: | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: | Additional Chain-of-Custody #s:

Time Sampled:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): | Sampler Signature: | Date Signed:

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/18/05

Monitoring Well ID: AL-06-80
Start Time:
Field Personnel: L. Glonek, C. Johnson
Weather Conditions:
Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: NA In well Casing:
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date: NA
Date/Time of Measurement: /
Depth Well Bottom (TOC - ft.): 80
Depth to Water Measuring Technique: solnist #5
Depth to Water Level (TOC - ft.):
Detection Method of Free Product: N/A
Depth to Free Product (TOC - ft.): NA
Calculated Column Height (ft.):
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):
Quantity of Free Product Collected (gal.): N/A
Three Well Purge Volumes (gallons) = 3 x _____ = _____
Obsevation of sheen or LNAPL: NA
Method of Collecting Free Product: N/A
Observation of DNAPL: NA

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
		19.52	6.46	5215	↑1000	~~14.88~~	74.7	
						3.82		

Total Purged =
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Decontamination Method: DI/Alconox
Instrument Type & Number:
Water Disposal: RP Water Treatment Plant
Instrument Calibration Date & Time:
Approx. Pump/Intake Depth: 80

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / ~~Needs Repairs~~ / Replaced (Temp well point)
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/18/05
Time Sampled: 1245
QA/QC Sample (circle one): YES / NO
Water Chemistry Sample: YES / NO
Chain-of-Custody #s:
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other: Waster

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
57-d ~~[illegible]~~	13	various	various	STL-Burl	courier	various
057-01	2	1 L	none	Axys	courier	dioxins/furans
057-01	2	1 L	HCL	CAS	courier	NWTPH-Dx

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print):
Sampler Signature:
Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date:

Monitoring Well ID: | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: | Additional Chain-of-Custody #s:

Time Sampled:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 9/07/05

Monitoring Well ID: ARK-EW-97.5
Start Time: 1030
Field Personnel: J. Fassio ~~L. Glonek, C. Johnson~~
Weather Conditions: Clear, ~70°F
Approx. Air Temp (F): 70°F

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: — In well Casing: —
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date: NA
Date/Time of Measurement:
Depth Well Bottom (TOC - ft.): Bottom of casing 88'
Depth to Water Measuring Technique: solinist #5
Depth to Water Level (TOC - ft.): 78.47' gmw
Detection Method of Free Product: N/A
Depth to Free Product (TOC - ft.): NA
Calculated Column Height (ft.): 10 ft / 14.7 gal. / casing volume
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.): 6" (casing)
Three Well Purge Volumes (gallons) = 3 x 15 = 45 gallons
Quantity of Free Product Collected (gal.): N/A
Method of Collecting Free Product: N/A
Obsevation of sheen or LNAPL: None
Observation of DNAPL: None

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged = 45 gal
Purge Pumping Rate (approx. L/m): 1 gpm
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other = 3" Jet Pump
Well Yield: High / Moderate / Low
Ferrous Iron (ppm): NA
Decontamination Method: DI/Alconox
Instrument Type & Number: NA
Water Disposal: tank @ RP RP Water Treatment Plant
Instrument Calibration Date & Time: NA
Approx. Pump/Intake Depth: ~88' Sample interval ~88'-9

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 9/7/05
Time Sampled: 1040
QA/QC Sample (circle one): YES / NO
Water Chemistry Sample: YES / NO
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other:
Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
974-01	12	various	various	STL-Burl	courier	various
	2	1 L	none	Axys	courier	dioxins/furans
	2	1 L	HCL	CAS	courier	NWTPH-Dx

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted YES / NO

Field Observations/Notes of Sampling Event: ↳ placed in RP Refrigerator

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Joe Fassio
Sampler Signature: Joe Fassio
Date Signed: 9/7/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 9/7/05

Monitoring Well ID: | Field Personnel: J. Fassio ~~L. Glonek, C. Johnson~~

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 9/7/05 | Additional Chain-of-Custody #s:

Time Sampled: 1040

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
074-01	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L + 1 500ml	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	~~1~~	~~500 ml~~	~~None~~	~~STL-Bur~~		~~Chloride 300.0~~

Field Observations/Notes of Sampling Event: used chloride sample to field filter for dissolved metals — low sample volume for dissolved metals

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Joe Fassio | Sampler Signature: Joe Fassio | Date Signed: 9/7/05

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/9/05

Monitoring Well ID: ARK-07-14
Start Time: 1110
Field Personnel: L. Glonek, C. Johnson
Weather Conditions: Sun 75°
Approx. Air Temp (F): 75°

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: NA In well Casing: NA
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date:
Date/Time of Measurement: 8/9/2005 1045
Depth Well Bottom (TOC - ft.): 14
Depth to Water Measuring Technique: solnist #5
Depth to Water Level (TOC - ft.): 10
Detection Method of Free Product: N/A
Depth to Free Product (TOC - ft.): —
Calculated Column Height (ft.): —
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.): 10
Quantity of Free Product Collected (gal.): N/A
Three Well Purge Volumes (gallons) = 3 x _____ =
Obsevation of sheen or LNAPL: —
Method of Collecting Free Product: N/A
Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	3	18.08	10.29	1462	>1000	3.42	97.2	1115
	5	17.95	~~10.47~~	1591	>1000	3.77	95.6	1119
			10.42					

Total Purged = 7L
Purge Pumping Rate (approx. L/m): 0.2 L/m
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / (Peristalic Pump) / Grunfos Pump / Other =
Well Yield: High / Moderate / (Low)
Ferrous iron (ppm):
Decontamination Method: DI/Alconox
Instrument Type & Number: YSI #5
Water Disposal: DRUM ~~RP Water Treatment Plant~~
Instrument Calibration Date & Time: 8/9/05 0730
Approx. Pump/Intake Depth: 14 ft BGS

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / (NA) / Needs Repairs / Repaired
Lock Condition: OK / (NA) / Needs Repairs / Replaced
Cap Condition: OK / (NA) / Needs Repairs / Repaired
Inner Casing Condition: OK / (NA) / Needs Repairs / Repaired
Paint Condition: OK / (NA) / Needs Repairs / Repaired
Monument Condition: OK / (NA) / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/9/05
Time Sampled: 1113
QA/QC Sample (circle one): YES / (NO)
Water Chemistry Sample: YES / NO
Chain-of-Custody #s:
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer (Peristaltic Pump) Other:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
007-01	13	various	various	STL-Burl	courier	various
↓	2	1 L	none	Axys	courier	dioxins/furans
↓	2	1 L	HCL	CAS	courier	NWTPH-Dx
007-01	3	40mL	NaPO4	Lab OK		Comp

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: (YES) / NO

Field Observations/Notes of Sampling Event: Screen set 10-14ft

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY JOHNSON Sampler Signature: [signature] Date Signed: 8/10/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 8/9/05

Monitoring Well ID: ARK-07-14 | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 8/9/05 | Additional Chain-of-Custody #s:

Time Sampled: 1113

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
007-01	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print) 141215Y JOHNSON Sampler Signature: [signature] Date Signed: 8/10/05

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/9/2005

Monitoring Well ID: ALK-07-26
Start Time:
Field Personnel: L. Glonek, C. Johnson
Weather Conditions:
Approx. Air Temp (F): 75

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: NA In well Casing:
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
Date/Time of Measurement: /
PID Calibration Date:
Depth Well Bottom (TOC - ft.): 26
Depth to Water Measuring Technique: solnist #5
Depth to Water Level (TOC - ft.): N/A - probe would not fit down hole
Detection Method of Free Product: N/A
Depth to Free Product (TOC - ft.):
Calculated Column Height (ft.):
Casing Diameter (in.):
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Quantity of Free Product Collected (gal.): N/A
Three Well Purge Volumes (gallons) = 3 x _____ =
Obsevation of sheen or LNAPL:
Method of Collecting Free Product: N/A
Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	200ml	22.88	9.95	2004	↑1000		109.8	1430

Total Purged = 200ml
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Decontamination Method: DI/Alconox
Instrument Type & Number: YSI #5
Water Disposal: RP Water Treatment Plant
Instrument Calibration Date & Time: 8/9/05 0630
Approx. Pump/Intake Depth: 22-26

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/9/2005
QA/QC Sample (circle one): YES / NO
Time Sampled: 1245
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other:
Water Chemistry Sample: YES / NO
Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
008-01	13	various	various	STL-Burl	courier	various
↓	2	1 L	none	Axys	courier	dioxins/furans
	2	1 L	HCL	CAS	courier	NWTPH-Dx
008-01	3	40ml	ph ucf OK	→	↓	Isotope

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: Screened 81-26ft

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY JOHNSON Sampler Signature: [signature] Date Signed: 8/10/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 8/9/05

Monitoring Well ID: ARK-07-24 | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 8/9/2005 | Additional Chain-of-Custody #s:

Time Sampled: 1245

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
008-01	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY JOHNSON Sampler Signature: [signature] Date Signed: 8/10/05

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date:

Monitoring Well ID: ARK-07-45
Start Time:
Field Personnel: L. Glonek, C. Johnson, B McWilliams
Weather Conditions: Sunny, 5-10mph wind from west
Approx. Air Temp (F): 65°

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: N/A In well Casing: N/A
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date: 8/9/2005
Date/Time of Measurement:
Depth Well Bottom (TOC - ft.): 45 bgs
Depth to Water Level (TOC - ft.): 32 ft bgs
Depth to Free Product (TOC - ft.): N/A
Calculated Column Height (ft.):
Casing Diameter (in.): 1.0
Quantity of Free Product Collected (gal.): N/A
Obsevation of sheen or LNAPL:
Depth to Water Measuring Technique:
Detection Method of Free Product: solnist #5
N/A
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Three Well Purge Volumes (gallons) = 3 x _____ =
Method of Collecting Free Product: N/A
Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	4	18.69	8.90	3534	↑1000 well turbid	2.68	91.4	1030
	6	16.76	8.80	3511		1.21	69.1	1035

Total Purged = 10L
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other = WATERRA
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Decontamination Method: Disposable ~~DI/Alconox~~ Tubing
Instrument Type & Number: YSI #5
Instrument Calibration Date & Time: 8/9/05 1:30
Water Disposal: RP Water Treatment Plant
Approx. Pump/Intake Depth: 41-45 - well screen

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp Boring (Temp well point)
Casing Condition: OK / NA / Needs Repairs / Repaired
Cap Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/9/2005
Time Sampled: 1015
QA/QC Sample (circle one): YES / NO
Water Chemistry Sample: YES / NO
Chain-of-Custody #s:
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer ~~Peristaltic Pump~~ Other: WATERRA

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
006-01	13	various	various	STL-Burl	courier	various
006-01	2	1 L	none	Axys	courier	dioxins/furans
006-01	2	1 L	HCL	CAS	courier	NWTPH-Dx
006-03	1	40ml	HCL	STL-Burl	↓	8260B VOCs

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: Screen 41-45ft

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY JOHNSON Sampler Signature: [signature] Date Signed: 8/10/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 8/9/05

Monitoring Well ID: ARK-07-45 | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 8/9/2005 | Additional Chain-of-Custody #s:

Time Sampled: 1015

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
006-01	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Chrissy Johnson Sampler Signature: [signature] Date Signed: 8/10/05

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date:

Monitoring Well ID: ARK-08-15
Start Time: 950
Field Personnel: L. Glonek, C. Johnson
Weather Conditions: cloudy
Approx. Air Temp (F): 105

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: — In well Casing: —
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date: —
Date/Time of Measurement: 8/10/05 / 930
Depth Well Bottom (TOC - ft.): 27.4+8.5
Depth to Water Level (TOC - ft.): —
Depth to Free Product (TOC - ft.): —
Calculated Column Height (ft.): —
Casing Diameter (in.): 1 3/4"
Quantity of Free Product Collected (gal.): N/A
Obsevation of sheen or LNAPL: —
Depth to Water Measuring Technique: solnist #5
Detection Method of Free Product: N/A
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Three Well Purge Volumes (gallons) = 3 x _____ =
Method of Collecting Free Product: N/A
Observation of DNAPL: —

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	1L	16.26	7.01	845	2700	1.82	101.9	955

Total Purged = 1L
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / (Peristalic Pump) / Grunfos Pump / Other =
Well Yield: (High) / Moderate / Low
Ferrous Iron (ppm): —
Instrument Type & Number: YSI #5
Instrument Calibration Date & Time: 8/10/05 700
Decontamination Method: DI/Alconox
Water Disposal: Drum ~~RP Water Treatment Plant~~
Approx. Pump/Intake Depth: 15 ft

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel (PVC) Other: Temp well point
Casing Condition: OK / (NA) / Needs Repairs / Repaired
Cap Condition: OK / (NA) / Needs Repairs / Repaired
Paint Condition: OK / (NA) / Needs Repairs / Repaired
Lock Condition: OK / (NA) / Needs Repairs / Replaced
Inner Casing Condition: OK / (NA) / Needs Repairs / Repaired
Monument Condition: OK / (NA) / Needs Repairs / Repaired
Recommended Well Repairs: NA

SAMPLING INFORMATION / DATA

Date Sampled: 8/10/05
Time Sampled: 1000
QA/QC Sample (circle one): (YES) / NO
Sampling Method (circle one): SS Bailer Poly Bailer Teflon Bailer (Peristaltic Pump) Grunfos Pump Other:
Water Chemistry Sample: YES / NO
Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
D16-01	13	various	various	STL-Burl	courier	various
	2	1 L	none	Axys	courier	dioxins/furans
	2	1 L	HCL	CAS	courier	NWTPH-Dx
D16-05	13	various	various	CAS	courier	various
	2	1L	none	ALTA	cooler	dioxins/furans

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: screen 10-15 ft

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print) Christy Johnson Sampler Signature: [signature] Date Signed: 8/10/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 8/10/05

Monitoring Well ID: ARK-TB-15 | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: | Additional Chain-of-Custody #s:

Time Sampled:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
B110-01	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0
B10-05	2	1L	none	CAS		8151A/8081A/8270C
	2	1L	none	ALTA		Dioxins/Furans 8290
	3	40ml	HCL	CAS		VOCs 8260B
	2	1L	NITRIC	CAS		TOT/DISS METALS
	1	1L	SULFURIC	CAS		AMMONIA
	1	500ml	none	CAS		CHLORIDE

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY JOHNSON | Sampler Signature: [signature] | Date Signed: 8/10/05

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/10/05

Monitoring Well ID: ARK-08-435
Start Time: 9:32
Field Personnel: L. Glonek, C. Johnson
Weather Conditions: CLOUDY
Approx. Air Temp (F): 65°

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: N/A In well Casing:
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date: —
Date/Time of Measurement: 8/10/05 / 9:30
Depth Well Bottom (TOC - ft.): 12.55 ft 8/05
Depth to Water Level (TOC - ft.): 12.55 ft 8/05
Depth to Free Product (TOC - ft.): —
Calculated Column Height (ft.): —
Casing Diameter (in.): 1¾
Quantity of Free Product Collected (gal.): N/A
Obsevation of sheen or LNAPL: —
Depth to Water Measuring Technique: solnist #5
Detection Method of Free Product: N/A
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Three Well Purge Volumes (gallons) = 3 x _____ = _____
Method of Collecting Free Product: N/A
Observation of DNAPL: —

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	3L	15.95	6.77	1105	↑1000	2.50	-15.2	935
	6L	15.50	6.34	1124	↑1000	3.01	27.9	930
	9L	15.51	6.37	1003	↑1000	3.40	40.5	942

Total Purged = 8L
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other = WATTERA
Well Yield: (High) / Moderate / Low
Ferrous Iron (ppm): —
Instrument Type & Number: YSI #5
Instrument Calibration Date & Time: 8/10/05 700
Decontamination Method: DI/Alconox
Water Disposal: DRUM RP Water Treatment Plant
Approx. Pump/Intake Depth: ~~15ft~~ 43ft

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel (PVC) Other: Temp well point
Casing Condition: OK / (NA) / Needs Repairs / Repaired
Cap Condition: OK / (NA) / Needs Repairs / Repaired
Paint Condition: OK / (NA) / Needs Repairs / Repaired
Lock Condition: OK / (NA) / Needs Repairs / Replaced
Inner Casing Condition: OK / (NA) / Needs Repairs / Repaired
Monument Condition: OK / (NA) / Needs Repairs / Repaired
Recommended Well Repairs: N/A

SAMPLING INFORMATION / DATA

Date Sampled: 8/10/05
Time Sampled: 945
QA/QC Sample (circle one): (YES) / NO
Water Chemistry Sample: YES / NO
Chain-of-Custody #s:
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other: WATTERA

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
015-01	13	various	various	STL-Burl	courier	various
015-01	2	1 L	none	Axys	courier	dioxins/furans
015-01	2	1 L	HCL	CAS	courier	NWTPH-Dx
015-02		same as	015-01			

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: (YES) / NO

Field Observations/Notes of Sampling Event: Screen from 38.5-43.5 ft

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY JOHNSON
Sampler Signature: Christy Johnson
Date Signed: 8/10/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 8/10/05

Monitoring Well ID: ARK-08-43.5 | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: | Additional Chain-of-Custody #s:

Time Sampled:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
015-01	3	40 ml	HCl	STL-Bur	courier	VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0
015-02	Same as 015-01					

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Chelsea Johnson | Sampler Signature: [signature] | Date Signed: 8/10/05

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/11/2005

Monitoring Well ID: ARK-09-16
Start Time: 1500
Field Personnel: L. Glonek, C. Johnson
Weather Conditions: Sunny 80°F
Approx. Air Temp (F): 80

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: NA In well Casing: NA
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date:
Date/Time of Measurement: /
Depth Well Bottom (TOC - ft.): 16
Depth to Water Measuring Technique: solnist #5
Depth to Water Level (TOC - ft.): 11.74 tgs
Detection Method of Free Product: N/A
Depth to Free Product (TOC - ft.): NA
Calculated Column Height (ft.): NA
Casing Diameter (in.): NA
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.): N/A
Method of Collecting Free Product: N/A
Obsevation of sheen or LNAPL:
Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	1L	19.62	7.30	729		2.31	-19.9	1505
	2L	17.89	6.98	727		2.46	-39.1	1510
	3L	17.52	7.04	727		2.49	-51.9	1515

Total Purged =
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Decontamination Method: DI/Alconox
Instrument Type & Number: YSI #5
Water Disposal: Drum RP Water Treatment Plant
Instrument Calibration Date & Time: 8/11/2005 0640
Approx. Pump/Intake Depth: 11-16

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/11/2005
Time Sampled: 1515
QA/QC Sample (circle one): YES / NO
Water Chemistry Sample: YES / NO
Chain-of-Custody #s:
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
023-01	13	various	various	STL-Burl	courier	various
	2	1 L	none	Axys	courier	dioxins/furans
	2	1 L	HCL	CAS	courier	NWTPH-Dx
	3	40ml	HCL	U of OK	↓	compound specific isotope

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: Screened 11-16ft

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY JOHNSON Sampler Signature: [signature] Date Signed: 8/11/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 8/11/05

Monitoring Well ID: ARK-DG-110 | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 8/11/05 | Additional Chain-of-Custody #s:

Time Sampled: 1515

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
023-01	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY JOHNSON Sampler Signature: [signature] Date Signed: 8/11/05

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/12/05

Monitoring Well ID: ARK-09-35
Start Time: 930
Field Personnel: J. Hanner, J. Fassio, ~~Glonek~~, C. Johnson
Weather Conditions:
Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: – In well Casing: –
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date: –
Date/Time of Measurement: 8/12/05 / 0845
Depth Well Bottom (TOC - ft.): 35'
Depth to Water Measuring Technique: solnist #5
Depth to Water Level (TOC - ft.): 19.92
Detection Method of Free Product: N/A
Depth to Free Product (TOC - ft.): NA
Calculated Column Height (ft.): –
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.): 3/4"
Three Well Purge Volumes (gallons) = 3 x _____ =
Quantity of Free Product Collected (gal.): N/A
Method of Collecting Free Product: N/A
Obsevation of sheen or LNAPL: None
Observation of DNAPL: None

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (~~mS~~ µS)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	1L	16.24	6.04	12780	>1000	1.64	54.7	4
		Pumped dry after 1.5 l						

Total Purged =
Purge Pumping Rate (approx. L/m): 0.5 L/m
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other = with check valve
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Decontamination Method: DI/Alconox
Instrument Type & Number: YSI 5
Water Disposal: RP Water Treatment Plant
Instrument Calibration Date & Time: 630 8/12/05
Approx. Pump/Intake Depth: ~34'

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temporary well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs: Temp well point

SAMPLING INFORMATION / DATA

Date Sampled: 8/12/05
QA/QC Sample (circle one): YES / NO
Water Chemistry Sample: YES / NO
Time Sampled: 900
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other:
Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
025-01	13	various	various	STL-Burl	courier	used tube w/check valve for VOAs
↓	2	1 L	none	Axys	courier	various
	2	1 L	HCL	CAS	courier	dioxins/furans
						NWTPH-Dx

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: ~ high turbidity for VOAs, lower turbidity for 1l Ambers

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Joe Fassio
Sampler Signature: Joe Fassio
Date Signed: 8/12/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date:

Monitoring Well ID: | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: | Additional Chain-of-Custody #s:

Time Sampled:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): | Sampler Signature: | Date Signed:

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 8/12/05

Monitoring Well ID: ARK-09-SLG
Field Personnel: J. Hommel, J. Fassio ~~L. Glonek~~, C. Johnson
Start Time: 930
Weather Conditions:
Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: — In well Casing: —
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date: —
Date/Time of Measurement: 8/12/05 / 900
Depth Well Bottom (TOC - ft.): 56'
Depth to Water Level (TOC - ft.): 25.20
Depth to Free Product (TOC - ft.): NA
Calculated Column Height (ft.): —
Casing Diameter (in.): 3/4"
Quantity of Free Product Collected (gal.): N/A
Obsevation of sheen or LNAPL: None
Depth to Water Measuring Technique: solnist #5
Detection Method of Free Product: N/A
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Three Well Purge Volumes (gallons) = 3 x _____ =
Method of Collecting Free Product: N/A
Observation of DNAPL: None

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	0.5L	16.74	6.74	3983	Clear	3.35	30.9	916
		Purge dry						

Total Purged =
Purge Pumping Rate (approx. L/m): 0.5 mil/L
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Well Yield: High / Moderate / Low
Ferrous Iron (ppm): —
Decontamination Method: DI/Alconox
Instrument Type & Number: YSI-5
Water Disposal: RP Water Treatment Plant
Instrument Calibration Date & Time: 630 8/12/05
Approx. Pump/Intake Depth: 55'

WELL CONDITION

Geoprobe steel well point w/screen
Casing (circle one): Stainless Steel Carbon Steel PVC Other: Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Cap Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 8/12/05
Time Sampled: 945
Chain-of-Custody #s:
QA/QC Sample (circle one): YES / NO
Water Chemistry Sample: YES / NO
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
	13	various	various	STL-Burl	courier	various
	2	1 L	none	Axys	courier	dioxins/furans
	2	1 L	HCL	CAS	courier	NWTPH-Dx

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: Production improved while sampling

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Joe Fassio
Sampler Signature: [signature]
Date Signed: 8/12/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date:

Monitoring Well ID: | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: | Additional Chain-of-Custody #s:

Time Sampled:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: RP-Stg 1 SCE Arkema Lots 1&2
Project #: 0-61M-10703-0 P69
Monitoring/Sampling Date: 9/16/05

Monitoring Well ID: ARK 01-94
Start Time: 1100
Field Personnel: L. Glonek, C. Johnson
Weather Conditions: Sunny
Approx. Air Temp (F): 65

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:
%LEL Background: N/A In well Casing: N/A
PID Calibration Standard: Isobutylene
PID Calibration Date:
Date/Time of Measurement: 1100 / 9/16/05
Depth Well Bottom (TOC - ft.): 94
Depth to Water Level (TOC - ft.): 42
Depth to Free Product (TOC - ft.):
Calculated Column Height (ft.):
Casing Diameter (in.):
Quantity of Free Product Collected (gal.): N/A
Obsevation of sheen or LNAPL:
Depth to Water Measuring Technique: solnist #5
Detection Method of Free Product: N/A
Conversions Factors (casing dia. = gallons/linear ft.) Circle One
0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Three Well Purge Volumes (gallons) = 3 x _____ = _____
Method of Collecting Free Product: N/A
Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged = 3500l
Purge Pumping Rate (approx. L/m):
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Well Yield: High / Moderate / Low
Ferrous Iron (ppm):
Instrument Type & Number:
Instrument Calibration Date & Time:
Decontamination Method: DI/Alconox
Water Disposal: tank ~~RP Water Treatment Plant~~
Approx. Pump/Intake Depth: 84 ft

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: steel / 10ft + 10ft Temp well point
Casing Condition: OK / NA / Needs Repairs / Repaired
Cap Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired
Lock Condition: OK / NA / Needs Repairs / Replaced
Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 9/16/05
Time Sampled: 1130
Chain-of-Custody #s:
QA/QC Sample (circle one): YES / NO
Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump Teflon Bailer Peristaltic Pump Other:
Water Chemistry Sample: YES / NO

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
073-01	13	various	various	STL-Burl	courier	various
↓	2	1 L	none	Axys	courier	dioxins/furans
073-01	2	1 L	HCL	CAS	courier	NWTPH-Dx
073-03	2	40ml	TSP	U of OR	↓	Comp Spec
	2	40ml	HCL	STL	↓	VOC - Rec

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: DRAINING WATER SAMPLE 8 94 PACKER @ 74 ft casing @ 84 ft

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY JOHNSON Sampler Signature: [signature] Date Signed: 9/16/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: RP-Stg 1 SCE Arkema Lots 1&2 Project #: 0-61M-10703-0 P 69 Monitoring/Sampling Date: 9/6/05

Monitoring Well ID: ARK-09-94 | Field Personnel: L. Glonek, C. Johnson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 9/6/05 | Additional Chain-of-Custody #s:

Time Sampled: 1130

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
073-01	3	40 ml	HCl	STL-Bur		VOCs 8260B
	2	1 L	None	STL-Bur		SVOCs 8270C
	2	1 L	None	STL-Bur		Herbicides 8151A
	2	1 L	None	STL-Bur		Pesticides 8081A
	2	1 L	None	Axys		Dioxins/Furans 8290
	2	1 L	HCl	CAS		NWTPH-Dx
	2	1 L	Nitric Acic	STL-Bur		Tot/Diss Metals 6010/6020/7470A
	3	40 ml	TSP	U of OK		Compound Specific Isotope (GC/C/IRMS)
	1	1 L	Sulfuric Acid	STL-Bur		Ammonia 350.3
	1	500 ml	None	STL-Bur		Chloride 300.0
073-03	2	40ml	HCL	STL-Bur		VOC-TRIP Blank

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY TRAVIS Sampler Signature: [signature] Date Signed: 9/6/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/1/05

Monitoring Well ID: SIL-01-W-2315 | Field Personnel: C. Donell, C. Johnson
Start Time: 0700 | Weather Conditions: cold, rainy | Approx. Air Temp (F): 50

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing: | PID Calibration Standard:
%LEL Background: In well Casing: | PID Calibration Date:
Date/Time of Measurement: / | Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.): 31 | Detection Method of Free Product:
Depth to Water Level (TOC - ft.): | Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.): | 0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.): | 4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.): 6 | Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.): | Method of Collecting Free Product:
Obsevation of sheen or LNAPL: | Observation of DNAPL:

Casing Volumes (#)	Volume Purged (~~liters~~) gal	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	2.5	16.41	6.44	1.40	>1000	3.40	-110.5	0727
		16.82	6.30	1.49	high	1.73	-50.7	0735

Total Purged = | Purge Pumping Rate (approx. L/m): | Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Ferrous Iron (ppm): N/A | Decontamination Method: Alconox, DI Water
Instrument Type & Number: YSI | Water Disposal: Holing Tank - RP
Instrument Calibration Date & Time: | Approx. Pump/Intake Depth: 31

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:
Casing Condition: OK / NA / Needs Repairs / Repaired | Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired | Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired | Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: ~~11/2/2005~~ 11/1/2005 | QA/QC Sample (circle one): YES / NO | Water Chemistry Sample: YES / NO
Time Sampled: ~~1330~~ 0715 | Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump
Chain-of-Custody #s: | Teflon ~~Bailer~~ Peristaltic Pump Other:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
101-01						
101-01						
101-03	2	40ml	HCL	SB		

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): | Sampler Signature: | Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID: | Field Personnel:

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: | Additional Chain-of-Custody #s:

Time Sampled:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): | Sampler Signature: | Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:	
Start Time:	Weather Conditions:	Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background:	In well Casing:	PID Calibration Standard:
%LEL Background:	In well Casing:	PID Calibration Date:
Date/Time of Measurement: /		Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):		Detection Method of Free Product:
Depth to Water Level (TOC - ft.):		Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):		0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):		4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):		Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.):		Method of Collecting Free Product:
Obsevation of sheen or LNAPL:		Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =		
Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water	
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP	
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:	

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:	
Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:	

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/11/05

Monitoring Well ID: SIL-1/1001 | Field Personnel: BARB LARY / CHRISTY JOHNSON

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	~2L	16.1	6.53	715	533	8.56	-74.6	1015

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 11/11/05 | Additional Chain-of-Custody #s:

Time Sampled: 945

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
115-01	3	40ml	3 - HCl			8260 B
	3	40ml	TSP			Isotopes
	2	500ml	HNO_3			Total + dissolved Metals
	2	1L	HCl			TPH
	8	1L	—			dioxins, pest, herb, 8270 SVOCs

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LARY | Sampler Signature: Barb Lary | Date Signed: 11/11/05

amec	**AMEC Earth & Environmental, Inc.** **GROUNDWATER** **SAMPLING FIELD FORM**	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:
Start Time:	Weather Conditions: Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =		
Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water	
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP	
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:	

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:	
Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:	

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: Stage 1 SCE - Siltronic
Project #: 061M107030 P69
Monitoring/Sampling Date: 11/11/05

Monitoring Well ID: SIL-1/130' Field Personnel: BARB LACY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (µS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	~500 mL+	15.37	7.02	591	>1,000	8.54	-304.2	1136

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 11/11/05
Time Sampled: 1115
Additional Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
116-01	~~pd~~ 3	VOAs	HCl			8260B

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LACY Sampler Signature: Barb Lacy Date Signed: 11/11/05

amec	**AMEC Earth & Environmental, Inc.** **GROUNDWATER** **SAMPLING FIELD FORM**	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:
Start Time:	Weather Conditions: Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ =
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =		
Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water	
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP	
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:	

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:	
Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:	

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/11/05

Monitoring Well ID: SIL-1/160 | Field Personnel: BARB LAPY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	1L+	13.94	7.2	745 µs/cm	>1000	10.15	-205.0	1245

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 11/11/05 | Additional Chain-of-Custody #s:

Time Sampled: 1230

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
117-01	4	40ml (VOAs)	HCl			8260B

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LAPY | Sampler Signature: Barb Lapy | Date Signed: 11/11/05

amec	**AMEC Earth & Environmental, Inc.** **GROUNDWATER** **SAMPLING FIELD FORM**	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:
Start Time:	Weather Conditions: Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =		
Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water	
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP	
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:	

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:	
Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:	

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: Stage 1 SCE - Siltronic
Project #: 061M107030 P69
Monitoring/Sampling Date: 11/14/05

Monitoring Well ID: SIL-1/188' Field Personnel: BARB LARY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ds/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	2L+	18.3°C	6.83	949		2.37	-66.1	1405

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 11/14/05
Time Sampled: 1345
Additional Chain-of-Custody #s: SIL-1/GW/188'

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
118-01	6	40ml (VOAs)	HCl			VOCs by 8260B
~~118-Bal~~		~~40ml~~	~~HCl~~			Lab QA/QC (MS/MSD) EXTRA QUANTITY
118-03	2	40ml	HCl			TRIP BLANK

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LARY Sampler Signature: Barb Lary Date Signed: 11/14/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/7/05

Monitoring Well ID: SIL-1		Field Personnel: J. Fussie L. Glovek	
Start Time: 1050		Weather Conditions:	Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: —	In well Casing: —	PID Calibration Standard: —	
%LEL Background: —	In well Casing: —	PID Calibration Date: —	
Date/Time of Measurement: 11/7/05 /		Depth to Water Measuring Technique:	Solinist
Depth Well Bottom (TOC - ft.): 195' with		Detection Method of Free Product: None	
Depth to Water Level (TOC - ft.): 208'		Conversions Factors (casing dia. = gallons/linear ft.) Circle One	
Depth to Free Product (TOC - ft.): None		0.75" = 0.02 / 1" = 0.04 / 2" = 0.17 / 3" = 0.37	
Calculated Column Height (ft.): 108'		4" = 0.66 / 6" = 1.47 / 8" = 2.61 / 12" = 5.88	
Casing Diameter (in.): 6"		Three Well Purge Volumes (gallons) = 3 x =	
Quantity of Free Product Collected (gal.): None		Method of Collecting Free Product: NA	
Obsevation of sheen or LNAPL: NA		Observation of DNAPL: NA	

Casing Volumes (#) gal.	Volume Purged ~~(liters)~~	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
0	0	13.19	9.37	93	—	7.5	-256	
	45	13.81	7.42	66	—	3.82	78.0	
	95	13.91	6.60	890	—	0.48	-439.6	
	150	13.83	6.69	942	—	0.90	-247.7	
	205	13.65	6.70	938	—	1.00	-139.5	
	260	14.14	6.84	542	—	2.68	-9.2	
	315	13.58	6.67	889	—	1.44	-67.6	79.3

Total Purged =	Purge Pumping Rate (approx. L/m): 5 gpm	Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =		
Ferrous Iron (ppm): N/A —	Decontamination Method:	Alconox, DI Water
Instrument Type & Number: YSI	Water Disposal:	Holing Tank - RP
Instrument Calibration Date & Time: 11/7/05 630	Approx. Pump/Intake Depth:	100'

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other: Steel Alloy 6" casing			
Casing Condition: OK / NA / Needs Repairs / Repaired		Lock Condition: OK / NA / Needs Repairs / Replaced	
Cap Condition: OK / NA / Needs Repairs / Repaired		Inner Casing Condition: OK / NA / Needs Repairs / Repaired	
Paint Condition: OK / NA / Needs Repairs / Repaired		Monument Condition: OK / NA / Needs Repairs / Repaired	
Recommended Well Repairs:			

SAMPLING INFORMATION / DATA

Date Sampled: 11/7/05	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled: 1230	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
109-01	3	VOA				Compound specific
	3	VOA	HCl			~~Carbon~~ isotope
	2	1l	~~Herbicides~~	← None		VOCs
	2	1l	~~Pesticides~~	← None		Herbicides
	2	1l	~~SVOCs~~	← None		Pesticides
						SVOCs

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: noted fine sand in water starting at 95 gallons while purge - quantity of sand decreased with additional purging

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Joe Fussie Sampler Signature: [signature] Date Signed: 11/7/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/7/05

Monitoring Well ID: | Field Personnel:

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged gal ~~(liters)~~	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	370	13.39	6.75	853	799	1.68	NR	
	425	13.25	6.78	900	91.5	1.45	NR	
	450	13.46	6.85	874	—	1.35	NR	
	460	13.70	6.73	873	—	1.15	NR	
	475	13.75	6.77	881	—	1.30	NR	
	505	13.75	6.82	883	47.4	1.10	-89.5	

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: | Additional Chain-of-Custody #s:

Time Sampled:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
109-01	2	1 l	None			Dioxin/Furans
	2	1 l	HCl			NWTPH-Dx
	1	500 ml	Nitric Acid			Total metals
	1	500 ml	Nitric acid			Dissolved metals - field filtered

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Joe Fussi | Sampler Signature: Joe Fussi | Date Signed: 11/7/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/8/05

Monitoring Well ID: SIL-1	Field Personnel: Joe Fussio, Lisa Glovek	
Start Time: 1030	Weather Conditions: Clear ~40°F	Approx. Air Temp (F): ~40°F

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: — In well Casing: —	PID Calibration Standard: —	
%LEL Background: — In well Casing: —	PID Calibration Date: —	
Date/Time of Measurement: 11/8/05 / 900	Depth to Water Measuring Technique: Solnist	
Depth Well Bottom (TOC - ft.): 210'	Detection Method of Free Product:	
Depth to Water Level (TOC - ft.): 60.7	Conversions Factors (casing dia. = gallons/linear ft.) Circle One	
Depth to Free Product (TOC - ft.): None	0.75" = 0.02 / 1" = 0.04 / 2" = 0.17 / 3" = 0.37	
Calculated Column Height (ft.): 149.3	4" = 0.66 / 6" = 1.47 / 8" = 2.61 / 12" = 5.88	
Casing Diameter (in.): 6"	Three Well Purge Volumes (gallons) = 3 x _____ =	
Quantity of Free Product Collected (gal.): None	Method of Collecting Free Product: NA	
Obsevation of sheen or LNAPL: None	Observation of DNAPL: None	

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
~~73 gal~~	73	15.83	6.67	1385	—	0.71	-530↓	
~~128~~	128	16.06	7.03	1377	—	1.58	-407↓	
	150	16.95	7.14	1427	—	1.10	-498↓	
used →	190	14.21	7.36	1414	—	3.5↓	-353↑	
Bailer →	230	13.30	7.29	1513	—	3.13↓	-310.8	
		Bailed Dry						

Total Purged =	Purge Pumping Rate (approx. L/m): 2-0.5 gpm	Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristaltic Pump / Grunfos Pump / Other =		
Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water	
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP	
Instrument Calibration Date & Time: 1030 11/8/05	Approx. Pump/Intake Depth: NA	

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:	
Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:	

SAMPLING INFORMATION / DATA

Date Sampled: 11/8/05	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled: 1630	Sampling Method (circle one): SS Bailer / Poly Bailer / Grunfos Pump / Teflon Bailer / Peristaltic Pump / Other:	
Chain-of-Custody #s:		

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
1/1-01	2	VOA	HCl	STL		VOCs
1	2	1l	None	STL		Herbicides
1	2	1l	None	STL		SVOCs
1	2	1l	None	STL		Pesticides
↓	2	1l	None	Axys		Dioxins

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: Pump water to ~180' used bailer to remove water 207.5' - Bailed dry

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Joe Fussio Sampler Signature: [signature] Date Signed: 11/8/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/5/05

Monitoring Well ID: JIL-1 | Field Personnel: J. Fussio, L. Glowzik

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

WELL CONDITION

Recommended Well Repairs/Additional Notes: NA

SAMPLING INFORMATION / DATA

Date Sampled:

Time Sampled:

Additional Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
114-01	1	500 ml	Nitric Acid	STL	S	Total Metals
	1	500 ml	Nitric Acid	STL		Dissolved Metals - Field Filtered
	3	VOA		UO		Isotope Analysis
	2	1 l	HCl	CAS		NWTPH-Dx

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Joe Fussio | Sampler Signature: Joe Fussio | Date Signed: 11/8/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:	
Start Time:	Weather Conditions:	Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background:	In well Casing:	PID Calibration Standard:	
%LEL Background:	In well Casing:	PID Calibration Date:	
Date/Time of Measurement: /		Depth to Water Measuring Technique:	Solnist
Depth Well Bottom (TOC - ft.):		Detection Method of Free Product:	
Depth to Water Level (TOC - ft.):		Conversions Factors (casing dia. = gallons/linear ft.) Circle One	
Depth to Free Product (TOC - ft.):		0.75" = 0.02	1" = 0.04 / 2" = 0.17 / 3" = 0.37
Calculated Column Height (ft.):		4" = 0.66	6" = 1.47 / 8" = 2.61 / 12" = 5.88
Casing Diameter (in.):		Three Well Purge Volumes (gallons) = 3 x _____ =	
Quantity of Free Product Collected (gal.):		Method of Collecting Free Product:	
Obsevation of sheen or LNAPL:		Observation of DNAPL:	

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =		
Ferrous Iron (ppm): N/A	Decontamination Method:	Alconox, DI Water
Instrument Type & Number: YSI	Water Disposal:	Holing Tank - RP
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:	

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:	
Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:	

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/17/05

Monitoring Well ID: SIL-2/32 | Field Personnel: BARB LARY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity ~~(mS)~~/cm	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	500ml+	15.06	6.36	1392	71,000	3.93	-91.4	1205

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

SIL-2/GW/32

Date Sampled: 11/17/05 | Additional Chain-of-Custody #s:

Time Sampled: 1030

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
127-01	~~ENTIRE~~		~~COOLER~~	@ 1030	— 1230	PRIMARY SAMPLE
127-03	2	40ml	@ 730			8260B VOCs TRIP BLANK
127-04	3	40ml	@ 730			8260B VOCs EQUIP. BLANK
	4	40ml	HCl			
	3	40ml	TSP	PRIMARY SAMPLE.		
	5	1L	—			
	1	1L	HCl			
	1	500ml	HNO_3			
	1	500ml	HNO_3			FIELD FILTERED

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LARY Sampler Signature: [signature] Date Signed: 11/17/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:
Start Time:	Weather Conditions: Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solinist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low

Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =

Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:

Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired

Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: SIL-2 / 11/17/05

Monitoring Well ID: SIL-2-GW-100 Field Personnel: B. LARY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	500ml	17.46	6.43	498	>1000	2.62	-75.1	

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SIL-02-GW-100

SAMPLING INFORMATION / DATA

Date Sampled: 11/17/05

Time Sampled: 1440

Additional Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
131-01	3	40ml	HCL	STLB	Cooler	VOC
	3	40ml	TSP	UDFOX		Comp Spec
	1	500ml	NITRIC	STLB		Diss. Metals
	1	500ml	NITRIC	STLB		Total Metals
	12	1L	None	STLB		SVOC, PEST, HERB
	2	1L	None	AXYS		DIOXIN
	2	1L	HCL	CAS		TPH-DX

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LARY Sampler Signature: Barb Lary Date Signed: 11/17/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:
Start Time:	Weather Conditions: Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low

Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =

Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:

Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired

Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/17/05

Monitoring Well ID: SLC-2/130' Field Personnel: BARB LARY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (~~µs~~)/cm	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	~500 ml	17.43	6.30	581	>1000	1.31	-109.8	1530

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SLC-2/GW/130' **SAMPLING INFORMATION / DATA**

Date Sampled: 11/17/05 Additional Chain-of-Custody #s:

Time Sampled: 1530

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
132-01	4	40ml	HCl			8260B VOCs.

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LARY Sampler Signature: Barb Lary Date Signed: 11/17/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:
Start Time:	Weather Conditions: Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ =
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =		
Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water	
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP	
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:	

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:	
Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:	

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/18/05

Monitoring Well ID: SIL-2/GW/160 Field Personnel: BARB LARY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity mS/cm	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	300 ml	~~8.66~~	~~6.46~~	~~5~~	>1000	~~1.23~~		~~830~~
		8.29	6.68	421	"	6.32	152.4	835

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SIL-2/GW/160

SAMPLING INFORMATION / DATA

Date Sampled: 11/18/05 Additional Chain-of-Custody #s:

Time Sampled: 815

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
133-01	4	40ml	HCl			VOCs by 8260B
133-02	4	40ml	HCl			" "

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LARY Sampler Signature: Barb Lary Date Signed: 11/18/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:
Start Time:	Weather Conditions: Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ =
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low

Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =

Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:

Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired

Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/18/05

Monitoring Well ID: SIL-2/90 | Field Personnel: BARB LARY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity µS/cm (mS)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	~500ml	11.25	6.29	800	227	5.12	-37.4	950

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SIL-2/GW/1/90

SAMPLING INFORMATION / DATA

Date Sampled: 11/18/05 | Additional Chain-of-Custody #s:

Time Sampled: 1945

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
134-01	4	40ml	HCl			VOCs 8260B
134-05	4	40ml	HCl			VOCs 8260B

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LARY | Sampler Signature: Barb Lary | Date Signed: 11/18/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/14/05

Monitoring Well ID: S11-02-bw Field Personnel: C. Jackson

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
Bailer	90	14.58	6.52	1094	+999	1.42	-138.2	
	95	14.30	6.51	1084	+999	1.04	-129.3	
	15	17.08	6.97	1016	+999	7.11	-257.5	
Bil Pump	25	15.41	6.72	1257	+999	0.40	-214.8	
	40 gal	15.50	6.79	1229	+999	0.26	-246.7	
	45	15.27	6.768	1156	+999	0.24	-221.2	
	60 gal	15.10	6.66	1132	+999	0.25	-229.0	
	70 gal	15.15	6.52	1104	+999	0.26	-235.8	
	95 gal	15.15	6.66	1058	+999	0.22	-268.5	
	110	15.23	6.57	1052	+999	1.04	-237.0	
	125 gal	15.24	6.54	1049	+999	0.34	-234.3	
		DK GRAY, cloudy, turbid, no odor, no sheen						

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

Date Sampled: 11/14/05

Time Sampled: 1630

Additional Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
119-01	3	40ml	HCL	STLB	Courier	VOC
	3	40ml	TSP	U of DK	Courier	Comp Spec
	1	500ml		STLB		T. Metals
	1	500ml		STLB		D. Metals
	6	1L	—	STLB		SVOC, Pest, Herb
	2	1L	HCL	CAS		TPH-Dx
	2	1L	—	Axys		Dioxin
119-05	3	40ml	HCL	CAS		VOC
	1	500ml				T. Metals
	1	500ml				D. Metals
	6	1L				SVOC, Herb, Pest
	2	1L		ALTA		Dioxins

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY JACKSON Sampler Signature: [signature] Date Signed: 11/14/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID: SIL-2-6/2021L0 | Field Personnel: S. Johnson
Start Time: 1300 | Weather Conditions: P. Cloudy | Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing: | PID Calibration Standard:
%LEL Background: In well Casing: | PID Calibration Date:

Date/Time of Measurement: 11/14/05 1300 | Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.): 214 | Detection Method of Free Product:
Depth to Water Level (TOC - ft.): 89.4 | Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.): | 0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.): | 4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.): 4.25 | Three Well Purge Volumes (gallons) = 3 x =
Quantity of Free Product Collected (gal.): | Method of Collecting Free Product:
Obsevation of sheen or LNAPL: | Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
		See back page						

Total Purged = 22 gal | Purge Pumping Rate (approx. L/m): | Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =
Ferrous Iron (ppm): N/A | Decontamination Method: Alconox, DI Water
Instrument Type & Number: YSI | Water Disposal: ~~Holding Tank~~ - RP Holding tank
Instrument Calibration Date & Time: 11/14/05 @ 1030 | Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): (Stainless Steel) Carbon Steel PVC Other:
Casing Condition: OK / NA / Needs Repairs / Repaired | Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired | Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired | Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: 11/14/05 | QA/QC Sample (circle one) (YES) NO | Water Chemistry Sample: YES (NO)
Time Sampled: 1030 | Sampling Method (circle one): SS Bailer Poly Bailer (Grunfos Pump)
Chain-of-Custody #s: | Teflon Bailer Peristaltic Pump Other:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
		See back page				

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event:
Casing to 214 ft. Open hole to 211 ft

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.
Sampler (Print): Kristy Johnson | Sampler Signature: [signature] | Date Signed: 11/14/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:
Start Time:	Weather Conditions: Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low

Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =

Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:

Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired

Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/16/05

Monitoring Well ID: SIL-3/35' Field Personnel: BARB LARY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	500 ml	11.62	6.36	1238	27.8	10.23	54.8	1145

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SAMPLING INFORMATION / DATA

SIL-3/GW/35

Date Sampled: 11/16/05 Additional Chain-of-Custody #s:

Time Sampled: 1100

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
125-01	TOTAL		RP COOLER OF BOTTLES			
125-03	2	40ml			—	TRIP 8260B

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LARY Sampler Signature: Barb Lary Date Signed: 11/16/05

amec	**AMEC Earth & Environmental, Inc.** **GROUNDWATER** **SAMPLING FIELD FORM**	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:
Start Time:	Weather Conditions: Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ =
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =		
Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water	
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP	
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:	

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:	
Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:	

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/16/05

Monitoring Well ID: SIL-3 | Field Personnel: BARB LARY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity µS/cm	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	~500ml	15.71	6.53	2223	21000	8.25	-106.6	1415

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SIL-3/GW/99

SAMPLING INFORMATION / DATA

Date Sampled: 11/16/05 | Additional Chain-of-Custody #s:

Time Sampled: 1340

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
126-01	total		AT COOLER			

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LARY | Sampler Signature: Barb Lary | Date Signed: 11/16/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID: | Field Personnel:
Start Time: | Weather Conditions: | Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing: | PID Calibration Standard:
%LEL Background: In well Casing: | PID Calibration Date:
Date/Time of Measurement: / | Depth to Water Measuring Technique: Solinist
Depth Well Bottom (TOC - ft.): | Detection Method of Free Product:
Depth to Water Level (TOC - ft.): | Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.): | 0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.): | 4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.): | Three Well Purge Volumes (gallons) = 3 x _____ =
Quantity of Free Product Collected (gal.): | Method of Collecting Free Product:
Obsevation of sheen or LNAPL: | Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged = | Purge Pumping Rate (approx. L/m): | Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristaltic Pump / Grunfos Pump / Other =
Ferrous Iron (ppm): N/A | Decontamination Method: Alconox, DI Water
Instrument Type & Number: YSI | Water Disposal: Holing Tank - RP
Instrument Calibration Date & Time: | Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:
Casing Condition: OK / NA / Needs Repairs / Repaired | Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired | Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired | Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled: | QA/QC Sample (circle one): YES / NO | Water Chemistry Sample: YES / NO
Time Sampled: | Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump
Chain-of-Custody #s: | Teflon Bailer Peristaltic Pump Other:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): | Sampler Signature: | Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 12/6/05

Monitoring Well ID SIL-3/GW/98' (130') Field Personnel: BARB LARY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity ~~mS/m~~	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	~25GAL	15.62	5.96	1832	V.TURBID	2.04	-72.0	1330
	60	14.90	6.62	1834	"	1.19	-160.8	1340
	80	14.70	6.63	1827		1.05	-144.2	1345
	90	14.51	6.62	1824	Sl. turbid	1.12	-139.5	1350
	100	14.52	6.70	1821	"	1.13	-130.7	1352
	110	14.68	6.69	1820	"	0.82	-135.4	1354
TOTAL PURGED		~130 GAL.						

WELL CONDITION

Recommended Well Repairs/Additional Notes:

PUMP SET @ 98' BUT HOLE OPEN TO 130' bgs.

SIL-3/GW/130'

SAMPLING INFORMATION / DATA

Date Sampled: 12/06/05 Additional Chain-of-Custody #s:

Time Sampled: 1430

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
MZ-01	3	40ml	HCl			VOCs
	3	40ml	TSP			Isotope
	1	500ml	HNO_3			TOTAL METALS
	1	500ml	HNO_3			FIELD FILTERED DISS. METALS
	2	1L	—			SVOCs.
	6	1L	—			PEST, HERB, SVOCs
	16 BOTTLES					

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LARY Sampler Signature: Barb Lary Date Signed: 12/6/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:
Start Time:	Weather Conditions: Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ =
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low

Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =

Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:

Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired

Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/18/05

Monitoring Well ID: SIL-4/34 | Field Personnel: BARB LARY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (~~mS~~ µS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	1L	13.41	6.21	1039	71000	1.30	-79.1	1530

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SIL-4/SW/BAR

SAMPLING INFORMATION / DATA

Date Sampled: ~~SIL-4~~ 11/18/05 | Additional Chain-of-Custody #s:

Time Sampled: 1500

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
136-01	3	40ml	HCl			
	3	40ml	TSP			
	6	1L	—			
	2	1L	—			
	2	1L	HCl			
	2	500ml	HNO_3			

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LARY | Sampler Signature: [signature] | Date Signed: 11/18/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:
Start Time:	Weather Conditions: Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ =
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =		
Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water	
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP	
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:	

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:	
Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:	

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/21/05

Monitoring Well ID: SL-4 | Field Personnel: BARB LARY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	500 ml	13.40	6.33	810 µS/cm	>1000	3.06	-61.2	1120

WELL CONDITION

Recommended Well Repairs/Additional Notes:

SL-4/GW/74

SAMPLING INFORMATION / DATA

Date Sampled: 11/21/05 | Additional Chain-of-Custody #s:

Time Sampled: 1100

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
137-01	4	40ml	HCl			VOCs by 8260B
	3	40ml	TSP			ISOTOPES
	8	1L	—			Pest. Herb, SVOCs & Dioxins
	2	1L	HCl			NWTPH-
137-03	2	40ml	HCl			8260B VOCs. (TRIP)

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LARY | Sampler Signature: Barb Lary | Date Signed: 11/21/05

amec	**AMEC Earth & Environmental, Inc.** **GROUNDWATER** **SAMPLING FIELD FORM**	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:
Start Time:	Weather Conditions: Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =		
Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water	
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP	
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:	

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:	
Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:	

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec

AMEC Earth & Environmental, Inc.
GROUNDWATER SAMPLING FIELD FORM

Project Name: Stage 1 SCE - Siltronic
Project #: 061M107030 P69
Monitoring/Sampling Date: 12/09/05

Monitoring Well ID: SL-4/GW-~~87.5~~ 89 Field Personnel: BARB LARY (V. cold (<32°F) + CLEAR)

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged ~~(liters)~~ GAL	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity ~~(mS/cm)~~ µS/cm	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
1	50	0°C	5.73	497	v. turbid	14.08	161.4 ↓	810
	~~50~~ 57	-0.06	5.09	1515	"	4.84	120.3 ↓	817
	~~60~~ 55	11.67	6.29	2067	"	2.88	-39.0 ↓	823
	~~65~~ 60	13.75	6.46	2128	"	2.40	-75.9 ↓	826
	~~70~~ 65	14.44	6.62	2157	"	2.95	-89.9	832
	~70	14.54	6.62	2164	"	2.84	-88.8	835
	75	14.76	6.56	2138	"	2.67	-81.6	842
	~~85~~ 90	14.28	6.61	21~~82~~	sl. turbid	2.70	-~~60~~ 7	907
	100	13.97	6.80	2174	sl. cloudy	1.68	-52.1	915
	102	14.75	6.70	2166	"	2.20	-57.3	921
	107	14.74	6.76	2172	"	2.07	-51.2	924
					32.3			

WELL CONDITION

Recommended Well Repairs/Additional Notes:
FLOW RATE: 0.5 GAL/MIN 0.76 ICE FREEZING ON YSI PROBE

SAMPLING INFORMATION / DATA

Date Sampled: 12/09/05
Time Sampled: ~~0845~~ 830 BR
Additional Chain-of-Custody #s:

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
144-01	3	40 ml	TSP			
	3	40 ml	HCl			
	8	1L	—			
	2	1L	HCl			
	2	500 ml	HNO_3			1 field filtered.
144-03	1	40 ml	HCl			

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LARY Sampler Signature: Barb Lary Date Signed: 12/9/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:	
Start Time:	Weather Conditions:	Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low

Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =

Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:

Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired

Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/15/05

Monitoring Well ID: RP-11 | Field Personnel: BARB LARY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity ~~(mS)~~ µS/cm	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	1 GAL	1.22	6.48	1577	6.16	6.13	-66.9	9:30

WELL CONDITION

Recommended Well Repairs/Additional Notes:

RP-11/GW/3

SAMPLING INFORMATION / DATA

Date Sampled: 11/15/05 | Additional Chain-of-Custody #s:

Time Sampled: ~~1~~ 840

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
120-01	3	40ml	HCl			8260
	3	40ml	TSP			Isotope
	1	500ml	HNO3			Total metals
	1	500ml	HNO3	Field filtered		Diss. metals
	2	1L	HCl			NW TPH
	2	1L	|			SVOCs 8270
	2	1L	|			Pest
	2	1L	|			herb.
	2	1L	|			dioxins

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LARY | Sampler Signature: [signature] | Date Signed: 11/15/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:
Start Time:	Weather Conditions: Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solinist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ =
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low

Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =

Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:

Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired

Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/15/05

Monitoring Well ID: RP-11 | Field Personnel: BARB LARY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	~2L	12.04	6.09	3607 µS/cm	71,000	10.4	-59.7	1215

WELL CONDITION

Recommended Well Repairs/Additional Notes:

RP-11/GW/100

SAMPLING INFORMATION / DATA

Date Sampled: 11/15/05 | Additional Chain-of-Custody #s:

Time Sampled: 1050

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
122-01	PRIMARY	—	entire RP sample set			
122-02	DUPLICATE		entire RP sample set			(- ISOTOPES)

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Barb Lary | Sampler Signature: BARB LARY | Date Signed: 11/15/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:
Start Time:	Weather Conditions: Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low

Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =

Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:

Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired

Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/15/05

Monitoring Well ID: RP-11 | Field Personnel: BARB LARY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity µS/cm	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	~500ml	13.61	6.20	2780	>1000	2.26	-120.7	1310

WELL CONDITION

Recommended Well Repairs/Additional Notes:

RP-11 - 6.20 - 1310 SAMPLING INFORMATION / DATA

Date Sampled: 11/15/05 | Additional Chain-of-Custody #s:

Time Sampled: 1310

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
123-01	4	40ml	HCl			8260B VOCs

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LARY | Sampler Signature: Barb Lary | Date Signed: 11/15/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:	
Start Time:	Weather Conditions:	Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ = _____
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low

Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =

Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:

Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired

Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/15/05

Monitoring Well ID: RP-11 / 152' Field Personnel: BARB LARY

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (uS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	~1L	11.48	6.93	1030	>1000	11.23	-129.5	14:30

WELL CONDITION

Recommended Well Repairs/Additional Notes:

RP-11/GW/152

SAMPLING INFORMATION / DATA

Date Sampled: 11/15/05 Additional Chain-of-Custody #s:

Time Sampled: 1420

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
124-01	4	VOAs	HCl			8260B VOCs

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): BARB LARY Sampler Signature: Barb Lary Date Signed: 11/15/05

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:	
Start Time:	Weather Conditions:	Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background:	In well Casing:	PID Calibration Standard:
%LEL Background:	In well Casing:	PID Calibration Date:
Date/Time of Measurement: /		Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):		Detection Method of Free Product:
Depth to Water Level (TOC - ft.):		Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):		0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):		4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):		Three Well Purge Volumes (gallons) = 3 x _____ =
Quantity of Free Product Collected (gal.):		Method of Collecting Free Product:
Obsevation of sheen or LNAPL:		Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low

Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =

Ferrous Iron (ppm): N/A	Decontamination Method: Alconox, DI Water
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:

Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired

Recommended Well Repairs:

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event: _____

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/18/05

Monitoring Well ID: RD-11-190 | Field Personnel: (illegible)

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	20gal	11.09	6.54	888	+1000	1.49	-4.3	
	30gal	12.77	6.42	887	+1000	2.30	-31.5	
	40gal	13.05	6.49	886	+1000	0.88	-51.8	
	60gal	13.92	6.42	889	+1000	1.55	-47.9	
	75gal	14.23	6.59	896	+1000	0.80	-32.6	
	85gal	14.47	6.43	907	+1000	0.79	-28.8	
	TOTAL PURGED		215gallons					

WELL CONDITION

Recommended Well Repairs/Additional Notes:

1300gals purged via bailer prior to install of pump
water level @ 85ft. set pump @ 101ft (last ng to 191ft.

RD-11-GW-190

SAMPLING INFORMATION / DATA

Date Sampled: 11/18/05 | Additional Chain-of-Custody #s:

Time Sampled: 1300

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
125-01	4	40ml	HCL	STL	Courier	VOC

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date:

Monitoring Well ID:	Field Personnel:
Start Time:	Weather Conditions: Approx. Air Temp (F):

INITIAL WELL DATA & WELL PURGING INFORMATION

PID (ppm) Background: In well Casing:	PID Calibration Standard:
%LEL Background: In well Casing:	PID Calibration Date:
Date/Time of Measurement: /	Depth to Water Measuring Technique: Solnist
Depth Well Bottom (TOC - ft.):	Detection Method of Free Product:
Depth to Water Level (TOC - ft.):	Conversions Factors (casing dia. = gallons/linear ft.) Circle One
Depth to Free Product (TOC - ft.):	0.75" = 0.02 1" = 0.04 2" = 0.17 3" = 0.37
Calculated Column Height (ft.):	4" = 0.66 6" = 1.47 8" = 2.61 12" = 5.88
Casing Diameter (in.):	Three Well Purge Volumes (gallons) = 3 x _____ =
Quantity of Free Product Collected (gal.):	Method of Collecting Free Product:
Obsevation of sheen or LNAPL:	Observation of DNAPL:

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)

Total Purged =	Purge Pumping Rate (approx. L/m):	Well Yield: High / Moderate / Low
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristalic Pump / Grunfos Pump / Other =		
Ferrous iron (ppm): N/A	Decontamination Method: Alconox, DI Water	
Instrument Type & Number: YSI	Water Disposal: Holing Tank - RP	
Instrument Calibration Date & Time:	Approx. Pump/Intake Depth:	

WELL CONDITION

Casing (circle one): Stainless Steel Carbon Steel PVC Other:	
Casing Condition: OK / NA / Needs Repairs / Repaired	Lock Condition: OK / NA / Needs Repairs / Replaced
Cap Condition: OK / NA / Needs Repairs / Repaired	Inner Casing Condition: OK / NA / Needs Repairs / Repaired
Paint Condition: OK / NA / Needs Repairs / Repaired	Monument Condition: OK / NA / Needs Repairs / Repaired
Recommended Well Repairs:	

SAMPLING INFORMATION / DATA

Date Sampled:	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled:	Sampling Method (circle one): SS Bailer Poly Bailer Grunfos Pump	
Chain-of-Custody #s:	Teflon Bailer Peristaltic Pump Other:	

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): Sampler Signature: Date Signed:

amec	AMEC Earth & Environmental, Inc. GROUNDWATER SAMPLING FIELD FORM	Project Name: Stage 1 SCE - Siltronic Project #: 061M107030 P69 Monitoring/Sampling Date: 11/28/05

Monitoring Well ID: RP-11-GW-216 | Field Personnel: CHRISTY JOHNSON

INITIAL WELL DATA & WELL PURGING INFORMATION

Casing Volumes (#)	Volume Purged (liters)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (ms)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
	50gal	11.95	7.22	1018	+1000	2.76	-218	
	75gal	12.14	6.75	11082	+1000	0.96	-232.3	
	125gal	11.77	6.71	11064	+1000	0.60	-218.3	
	200gal	12.48	6.49	11035	+1000	0.71	-219.1	
	250gal	11.39	6.51	11033	+1000	0.50	-238.2	
	275gal	12.11	6.47	11017	793	0.93	-202.3	
	300gal	12.76	6.44	11025	432	1.10	-171.5	
	TOTAL GALLONS PURGED 335gal							

WELL CONDITION

Recommended Well Repairs/Additional Notes:

CASING TO 21.0 ft. BORING TO 21.6 ft.

RP-11-GW-216

SAMPLING INFORMATION / DATA

Date Sampled: 11/28/05 | Additional Chain-of-Custody #s:

Time Sampled: 1430

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
139-03	2	40ml	HCL	STLB	Courier	VOC
139-01	9	40ml	HCL	STLB		VOC
	9	40ml	TSP	ALPHA		COMP SPEC
	18	1L	none	STLB		SVOC, PESTICIDES
	6	1L	HCL	CAS		TPH-DX
	6	1L	none	AXYS		DIOXINS/FURANS
	3	500ml	NITRIC	STLB		T. METALS
	3	500ml	NITRIC	STLB		D METALS

Field Observations/Notes of Sampling Event:

CERTIFICATION STATEMENT

By signing below, the listed AMEC sampler states that the information provided on this page is accurate.

Sampler (Print): CHRISTY JOHNSON Sampler Signature: [signature] Date Signed: 11/28/05

A-3

APPENDIX A-3

Well Development Field Forms

RP-08	23; 80; 107
RP-09	30; 35; 47; 64
RP-10	30; 60; 97; 130
RP-11	30; 160; 216

amec

WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 061M10703 0 P69

Date: 10/4/05

Completed By: JR & BM

Well Name: RP0823

Well Development Method: DC Pump

Contractor Name: NA

Static Water Level Before Development (ft): 17.57

Depth of Well (toc): 23.31

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 3.73 + .97 = 4.7 gal × 5 volumes = 23.5 gal total

Time Start Development: 14:20

Sediment in Well Bottom (in): Start: 23.31 Finish: 23.32

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
14:20	1.5 gpm	N	3.5 gal	>1000 ntu	next day after 3.5 gal

Volume of Water Removed from Well (gal): 3.5 gal

Time Complete Development: 14:23

Static Water Level After Development (ft): 17.53

Notes:

amec

WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 061M10703D F69

Date: 10/5/05 - 10/6/05

Completed By: Jae R, John R.

Well Name: RP03-23

Well Development Method: DC Pump

Contractor Name: N.A

Static Water Level Before Development (ft): 10/5/05 17.60, 10/6/05 17.59

Depth of Well (toc): 10/5/05 23.31, 10/6/05 23.31

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 4.7 gal x 5 = 23.5 total gallons needed

Time Start Development: 9:35

Sediment in Well Bottom (in): Start: 23.31 Finish: 23.31

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
9:35	1.5 gpm	N	3 gal	>1000 ntu	well dried up @ 3 gal
10:30	1.5 gpm		2.5 gal	>1000 ntu	well went dry
1[illegible]:30	1.5 gpm		2.5 gal	>1000 ntu	well went dry
1330	1.5 gpm		2 gal	>1000 ntu	well went dry
1440	1.5 gpm		2 gal	>1000 ntu	well went dry
1510	1.5 gpm		2 gal	>1000 ntu	well went dry
			14 gal		

Volume of Water Removed from Well (gal): 14 + 3.5 from previous = 17.5 gal total + 6 gal from 10/6 = 23.5 gallons

Time Complete Development: 15:15

Static Water Level After Development (ft): 17.59

Notes: Continued development on 10/6/05

14:00	1.5 gpm	2 gallons	>1000 ntu	well went dry after 2 gallons
14:30	1.5 gpm	2 gallons	290 ntu	well went dry
15:00	1.5 gpm	2 gallons	415 ntu	well went dry, finished development

amec

WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 0G1M107030 P69

Date: 10/5/05 - ~~10/6/05~~ OR

Completed By: Joe Rocle, John Roth

Well Name: RF03-80

Well Development Method: Grundfos Pump

Contractor Name: NA

Static Water Level Before Development (ft): ~~10/5~~ ~~27.29~~ ~~10/6 OR~~ 27.30

Depth of Well (toc): ~~10/5 OR~~ 79.45 ~~10/6 OR~~ ~~79.60~~

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 11.2 gal x 5 volumes = 56 gallons total

Time Start Development: 9:55

Sediment in Well Bottom (in): Start: 79.45 Finish: OR 79.60 ~~79.6~~

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
9:55	5 l/min	N	55 gal	>1000 ntu	1.3 gpm Shutdown *
13:55	4 l/min	N	70 gal	152 ntu	
14:15	4 l/min	N	80 gal	56 ntu	Finished Development

Volume of Water Removed from Well (gal): 80 gal

Time Complete Development: 14:25

Static Water Level After Development (ft): 27.30

Notes: * Pump shut down after pumping 60 gallons. Rebuilt pump and restarted. 10 37

amec

WELL DEVELOPMENT LOG

Project Name: EP

Project Number: 061M107030 P69

Date: 9/30/05

Completed By: Joe Rock

Well Name: RP08-107

Well Development Method: Stainless Steel Bailer / Grundfos

Contractor Name: NA

Static Water Level Before Development (ft): 21.29

Depth of Well (toc): 99.4

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 16 gal

Time Start Development: 11:15

Sediment in Well Bottom (in): Start: 99.40 Finish: _____

Time Start Development: —

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
11:15-12:45	Bail	N	6 gallons	>1000	Pulled out 8 ft. of sediment
13:15 *	2.5 l/min	↓	INITIAL ~~30 GAL~~	>1000	SURGING
13:50 **	~~DAY~~ "	↓	30 GAL.	>500	DONE FOR DAY

Volume of Water Removed from Well (gal): _____

Time Complete Development: _____

Static Water Level After Development (ft): _____

Notes: * BUSIN w/ GRUNDFOS
** FAULT BUS UNDERVOLTAGE

amec

WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 061M107030 P69

Date: 10/5/05 *

Completed By: Joe Rock, John Roth

Well Name: RP08-107

Well Development Method: Grundfos

Contractor Name: NA

Static Water Level Before Development (ft): 27.19

Depth of Well (toc): 107.60

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 16 gal x 5 = 80 gal total for development

Time Start Development:

Sediment in Well Bottom (in): Start: 107.60 Finish:

Time Start Development: 1500

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
1500	4 l/min	N	10 gal	>1000 ntu	Pump shut down *

Volume of Water Removed from Well (gal): 10 gal + 30 from previous = 40 gal

Time Complete Development: 1515

Static Water Level After Development (ft):

Notes: * Ground fault error on pump. Will have to fix wiring and finish development on next visit.

amec

WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 061M107030 P69

Date: 10/6/05

Completed By: Joe Rock, Braden Mc.

Well Name: RP08-107

Well Development Method: Ground fos

Contractor Name: N/A

Static Water Level Before Development (ft): 27.07

Depth of Well (toc): 107.60

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 16 gal x 5 = 80 total

Time Start Development: 14:

Sediment in Well Bottom (in): Start: 107.60 Finish: 107.60

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
14:08	3 l/min	N	45 gal	87.1	volume from all previous efforts
14:45	3 l/min	N	60 gal	24.7	
15:10	3 l/min	N	80 gal	12.50	
			85 gal		Development complete

Volume of Water Removed from Well (gal): 85 gallons total

Time Complete Development: 15:20

Static Water Level After Development (ft): 27.10

Notes:

amec

WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 0 61M 107030-69

Date: 9/29/05

Completed By: JJH

Well Name: RP-09-30

Well Development Method: WHALE PUMP

Contractor Name: NA

Static Water Level Before Development (ft): 28.80!

Depth of Well (toc): 35.30

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 5

Time Start Development: 10:13

Sediment in Well Bottom (in): Start: 35.30 Finish: 35.30

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
1015	~5 L/MIN	N	INITIAL	>1000	
1016	DRY	↓	~4 GAL.	>1000	RECHARGING
1102	~5		RESTART	>1000	DRK BRN COLOR
1109	DRY		~3 GAL.	>1000	↓
1323	~5 L/MIN		RESTART	>1000	
1326	<1 L/MIN		~4 GAL.	>1000	
1334	DRY		~0.5 GAL	>1000	RECHARGING
1409	~3 L/MIN		RESTART	>1000	COLA COLOR
1415	DRY		~2 GAL.	>1000	↓ STOPPING FOR DAY. CONTINUE TOMORROW

Volume of Water Removed from Well (gal): 13.5

Time Complete Development: ~~1415~~ 14:15

Static Water Level After Development (ft): 29.88

Notes:

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WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 061M10703 0 P 69

Date: 9/30/05

Completed By: Joe Rock

Well Name: RP09-35

Well Development Method: DC electric pump (whale pump)

Contractor Name: NA

Static Water Level Before Development (ft): 29.61

Depth of Well (toc): 35.30

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): ~~5~~ 4.8 gal JR

Time Start Development: 10:47

Sediment in Well Bottom (in): Start: 35.30 Finish: 35.30

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
10 47	5 l/min	N	1 gal	>1000	muddy, after 1 minute
14:38	5 l/min	N	1.5 gal	>1000 NTU	mud d' after 2 minutes
					Done for day

Volume of Water Removed from Well (gal): 2.5 gal

Time Complete Development: 14:40

Static Water Level After Development (ft): 28.79

Notes:

amec

WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 061M107030 P69

Date: 10/3/05

Completed By: Joe Rock

Well Name: RP09-35

Well Development Method: DC Pump

Contractor Name: NA

Static Water Level Before Development (ft): 28.64

Depth of Well (toc): 35.30

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): ~~4~~ 4.8 gal

5 well volumes = 24 gal

Time Start Development:

Sediment in Well Bottom (in): Start: 35.3 Finish: 35.30

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
1335	~~1.5~~ .5 l/min	N	3 gal	>1000 ntu	Stopped @ 1338
1339	.5 l/min	N	2 gal	>1000 ntu	Stopped @ 1350

Volume of Water Removed from Well (gal): ~~5~~ 5 gal ~~25~~ 21 gal total including previous efforts

Time Complete Development: ~~1338~~ 1350

Static Water Level After Development (ft):

Notes: well productivity increased after each recharge

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WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 061M107030 P69

Date: 10/4/05

Completed By: Joe Rock

Well Name: RF09-35

Well Development Method: DC Pump

Contractor Name: NA

Static Water Level Before Development (ft): 23.58

Depth of Well (toc): 35.30

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 4.8 gal

Time Start Development:

Sediment in Well Bottom (in): Start: 35.30 Finish:

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
10:54	5 l/min	N			

Volume of Water Removed from Well (gal):

Time Complete Development:

Static Water Level After Development (ft):

Notes: Pump would run for approximately 1 min until well was dry. Repeated this process while working on RP0964 to achieve total volume listed above.

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WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 061M107030-69

Date: 9/28/05

Completed By: JJH

Well Name: RP-09-47

Well Development Method: WHALE PUMP

Contractor Name: NA

Static Water Level Before Development (ft): 22.60

Depth of Well (toc): 44.20

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 6

Time Start Development: 1422

Sediment in Well Bottom (in): Start: 44.30 Finish: 46.0 = 21.6"

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
1423	~4 L/min	N	INITIAL	>1000	SURGING
1428	DRY	↓	~5 GAL	—	RECHARGING
1503	~2 L/min		INITIAL	>1000	-
1520	DRY *		~15 GAL	>1000	DONE FOR DAY

Volume of Water Removed from Well (gal): 20

Time Complete Development: 46.0

Static Water Level After Development (ft): ~~30.40~~ 29.45 AND RISING

Notes: * THOUGHT WELL WAS DRY BUT DISCOVERED THAT THE TUBING DISCONNECTED DURING SURGING INSTEAD. RESUME TOMORROW.

amec

WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 0 61M 107030-69

Date: 9/29/05

Completed By: JJH

Well Name: RP-09-47

Well Development Method: WHALE PUMP

Contractor Name: NA

Static Water Level Before Development (ft): 29.02

Depth of Well (toc): 46.00

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 5

Time Start Development: 1018

Sediment in Well Bottom (in): Start: 46.00 Finish: 46.55 = 6.6"

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
1019	~5 L/MIN	N	INITIAL	>1000	SURGING
1032	~5 L/MIN	↓	~20 GAL	>1000	SURGING
1049	~5 L/MIN		~40 GAL	310	
1101	~5 L/MIN		~55 GAL	126	STOPPING

Volume of Water Removed from Well (gal): 55

Time Complete Development: 1102

Static Water Level After Development (ft): 29.08

Notes:

amec

WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 061M107030-69

Date: 9/29/05

Completed By: JJH

Well Name: RP-09-64

Well Development Method: GRUNDFOS PUMP

Contractor Name: NA

Static Water Level Before Development (ft): 30.57

Depth of Well (toc): 57.00 (VERY SOFT)

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 6.5

Time Start Development: 1110

Sediment in Well Bottom (in): Start: 57.00 Finish: 64.20 = 7.2'!

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
1112	ONY (<1L/MIN)	N	0.5 GAL	>1000	THICK!
1115	<1L/MIN	↓	RESTART	>1000	PUMP PROBLEMS
1123	SWITCHING OVER TO WATER PUMP, H2O TOO THICK W/ SEDIMENT				
1137	<1L/MIN	DRAINING H2O DOWN - ONY		>1000	VERY THICK NO CHANGE
1255	≈3.5 L/MIN	N	RESTART ~~0 GAL~~	>1000	
1300	ONY	↓	1.00 GAL	>1000	SWITCHING TO GRUNDFOS
★ 1313	2.4 L/MIN	N	RESTART	>1000	
1317	ONY	N	2.5 GAL	>1000	~~RECHARGING~~ DONE

Volume of Water Removed from Well (gal): 4

CONTINUE TOMORROW

Time Complete Development: 1317

Static Water Level After Development (ft): 47.90

Notes: ★ BACK TO GRUNDFOS

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WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 06M10703 0 P69

Date: 10/4/05

Completed By: JR & RM

Well Name: RP0964

Well Development Method: Grundfos

Contractor Name: NA

Static Water Level Before Development (ft): 31.26

Depth of Well (toc): 60.5

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 6.5 gal × 5 = 32.5 gal total

Time Start Development: 11:00

Sediment in Well Bottom (in): Start: 60.5 Finish: 64.67

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
11:00	3 l/min	N	3.5 gal	>1000 ntu	Pump stopped @ 11:15 due to silt
					Rebuilt pump
11:36	3 l/min	N	7 gal	>1000 ntu	11:43 stopped / ran dry
12:21	3 l/min	N	4 gal	229 ntu	12:25 ran dry
12:48	5 l/min	N	4 gal	200 ntu	1252 ran dry
13:20	3 l/min	N	4 gal	154 ntu	1326 ran dry
14:33	5 l/min	N	4 gal	9.02 ntu	14:40 ran dry
					Stopped development

Volume of Water Removed from Well (gal): 32 gallons total including previous effort

Time Complete Development: 14.40

Static Water Level After Development (ft):

Recharge rate

11:49 60.20 — 11:50 60.70 15

Notes: 32.5 gallons needed for 5 well + annulus volumes. 11:52.00 60.0 → 11:54.40

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WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 061M107030-69

Date: 9/23/05

Completed By: JJH

Well Name: RP-10-30

Well Development Method: WHALE PUMP

Contractor Name: NA

Static Water Level Before Development (ft): 13.17

Depth of Well (toc): 30.02

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 7.75

Time Start Development: 11:01

Sediment in Well Bottom (in): Start: DTB: 30.02 Finish: DTB: 30.62 = 0.6' OR 7.2"

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
1103	5 L/MIN	N	INITIAL	>1000	SURGING
1110	7.5 L/MIN	↓	~15 GAL	>1000	SURGING
1120	7.5 L/MIN.	↓	~30 GAL.	83.5	SURGING
1130	7.5 L/MIN.	↓	~45 GAL.	11.1	

Volume of Water Removed from Well (gal): ~50

Time Complete Development: 11:32

Static Water Level After Development (ft): 13.25

Notes:

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WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 0 61M 10703-0-69

Date: 9/28/05

Completed By: JJH

Well Name: RP-10-30

Well Development Method: WHALE PUMP

Contractor Name: NA

Static Water Level Before Development (ft): 14.00

Depth of Well (toc): 34.33

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 7

Time Start Development: 1356

Sediment in Well Bottom (in): Start: 34.33 Finish: 35.30 = 12.84"

STILL SOFT

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
1400	~5.0 L/MIN	N	INITIAL	>1000	SURGING
1402	DRY	↓	~10 GAL	—	RECHARGING
1458	~5.0 L/MIN	↓	INITIAL	7000	PURGING
1502	DRY		~5 GAL	—	STOP FOR DAY

Volume of Water Removed from Well (gal): 15

Time Complete Development: 1502

Static Water Level After Development (ft): 30.40 AND RISING

Notes: WELL CAP UNDER PRESSURE

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WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 061M10703-0-69

Date: 9/23/05

Completed By: JJH

Well Name: RP-10-60

Well Development Method: WHALE PUMP

Contractor Name: NA

Static Water Level Before Development (ft): 24.79

Depth of Well (toc): 60.77

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 16.5

Time Start Development: 12:05

Sediment in Well Bottom (in): Start: DTB: 60.77 Finish: DTB: 60.76

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
1207	4.5 L/MIN	N	INITIAL	>1000	SURGING
12[illegible]15	EMPTIED WELL	↓	~7 GAL	>1000	ALLOW TO RECHARGE
1308	3 L/MIN.	↓	RESTART	>1000	DTW: 49.09
1314	EMPTIED WELL		~3 GAL	>1000	ALLOW TO RECHARGE.
1508	3 L/MIN.		RESTART	>1000	DTW: 40.89
1515	EMPTIED WELL		~5 GAL.	>1000	DONE FOR DAY

60.47.

Volume of Water Removed from Well (gal): ~15

Time Complete Development: 15:15

Static Water Level After Development (ft): 60.47

Notes: 50.0' @ 12:39:30
51.0' @ 12:39:20 = 1'/5 MIN. = 0.2'/MIN. RECHARGE.

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WELL DEVELOPMENT LOG

Project Name: RPAC

Project Number: 061M107030-69

Date: 9/26/05

Completed By: B. McGillicuddy

Well Name: RP-10-97

Well Development Method: Redflo (Grundfos) Pump

Contractor Name: AMEC

Static Water Level Before Development (ft): 26.29'

Depth of Well (toc): ~~93.50~~ BLM ~~97~~ BLM 93.50'

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 2.32 gal IN ANNULUS, 11.81 gal IN WELL, 14.12 gal

Time Start Development: 1410

Sediment in Well Bottom (in): Start: 93.50' Finish: 98.32' = 4.88' OF SEDIMENT

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
1410	10 L/min	N	0	>1000	27 gal
1418	DRY	N	–		
1429	7.5 L/min	N	–	>1000	DTW: 59.64'
1432	DRY	N	–		6.2 gal
1443	7.5 L/min	N	–	71000	DTW: 59.81'
1446	DRY	N	–		6.1 gal BLM ~~DTW~~
1457	7.5 L/min	N	–	786	DTW: 59.87'
1501	DRY	N	–		6.1 gal

Volume of Water Removed from Well (gal): 39.1

Time Complete Development: 1501

Static Water Level After Development (ft): 26.39'

Notes: RECHARGE RATE IS ~10' FOR EVERY 3 MINUTES.
PID: 0.2 ppm

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WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 0 61M 10730-69

Date: 9/28/05

Completed By: JJH

Well Name: RP-10-97 (CONT.)

Well Development Method: GRUNDFOS

Contractor Name: NA

Static Water Level Before Development (ft): 24.67

Depth of Well (toc): 98.40

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 14

Time Start Development: 11:32

Sediment in Well Bottom (in): Start: 98.40 Finish: 98.40

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
1135	~3.6 L/MIN	N	INITIAL	>1000	SURGING
1140	~2-8 L/MIN	↓	~7 GAL	>1000	DRAWING H2O LEVEL DOWN
1150	~3-7 L/MIN		~15 GAL	>1000	SURGING
1158	~3.6 L/MIN		~25 GAL	55	
1207	~3.6 L/MIN		~30 GAL	39.6	

Volume of Water Removed from Well (gal): ~30

Time Complete Development: 12:09

Static Water Level After Development (ft): 39.40 AND RISING

Notes:

amec

WELL DEVELOPMENT LOG

Project Name: RP

Project Number: 061M 107030-69

Date: 9/23/05

Completed By: JJH

Well Name: RP-10-130

Well Development Method: GRUNDFOS PUMP

Contractor Name: NA

Static Water Level Before Development (ft): 24.61

Depth of Well (toc): 127.58

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 47

Time Start Development: 13:53

Sediment in Well Bottom (in): Start: DTB: 127.58 Finish: DTB:

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
1358	5 L/MIN.	N	INITIAL	>1000	SURGING
1455	4 L/MIN.		~45 GAL.	>1000	SURGING
1500	STOP FOR DAY				

Volume of Water Removed from Well (gal):

Time Complete Development:

Static Water Level After Development (ft):

Notes: HAD TO STOP AND RESTART GRUNDFOS FREQUENTLY, → PROBLEMS W/ PUMP.

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WELL DEVELOPMENT LOG

Project Name: RPAC

Project Number: 0-61M10703-0-69

Date: 9/26/05

Completed By: B. McGILLICUDDY

Well Name: RP-10-130

Well Development Method: REDI-FLO (GRUNDFOS) PUMP

Contractor Name: AMEC

Static Water Level Before Development (ft): 24.92'

Depth of Well (toc): 130.47'

Inside Diameter (in): 2"

Volume of Water in Filter Pack and Well (gal): 2.32 = VOL. ANNULUS; 17.63 = WELL CASING; 19.94 gal

Time Start Development: 1125

Sediment in Well Bottom (in): Start: 130.47' Finish: 130.47'

Time Start Development:

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
1125	4 L/MIN	N	0	>1000	0 gal
1141	5 L/MIN	N	1	146	20 gal DTW: 25.15'
1155	5 L/MIN	N	2	132	40 gal DTW: 25.14'
1212	5 L/MIN	N	3	213	60 gal DTW: 25.18'
1227	5 L/MIN	N	4	182	80 gal DTW: 25.17'
1243	5 L/MIN	N	5	15.0	100 gal DTW: 25.19'

Volume of Water Removed from Well (gal): 110

Time Complete Development: 1256

Static Water Level After Development (ft): 24.93'

Notes:

amec

WELL DEVELOPMENT LOG

Project Name: RP-STAGE 1 SCE

Project Number: 061M10703OP69

Date: 1/11/06

Completed By: Joe Rock, Jason G.

Well Name: RP-11-30

PID @ well head = Ø

Well Development Method: Grundfos

Contractor Name: AMEC

Static Water Level Before Development (ft): ~~Ø~~ JR 17.32

Depth of Well (toc): 29.05

(casing vol) 29.05 - 17.32 = 11.73 × .17 = 2.0 gal + 13 (Annulus vol) = 15

Volume of Water in Filter Pack and Well (gal):

Inside Diameter (in): 2in

Time Start Development:

SCREEN 15-30ft bgs ×5 =
FILTERPACK 13-30ft bgs.

Sediment in Well Bottom (in): Start: Ø Finish: Ø

Time Start Development: 9:00

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
9:10	.5 gal/minute	N	5 gal	>1000 Unitu	Light Brown Color
9:20	.5 gal/minute		10 gal	>1000	Light [illegible]
9:32	Stopped		12 gal	—	[illegible]
[illegible]:30	Back till .5 gal/minute		20 gal	936	[illegible]
10:00	.25 gal/min		27 gal	387	[illegible]
10:10	.5 gal/min		29 gal	183	[illegible]
10:15	.25 gal/min		33 gal	52	[illegible]

Volume of Water Removed from Well (gal): 33 gal

Time Complete Development: 10:15

Static Water Level After Development (ft): 17.98 Final Depth = 29.05

Notes: 2" hole 2 ft bad = × .3 .705 × .17 = 13 [illegible] = 5 gal total

- Dedicated dual valve pump set @ 26' upon completion of well development.

1-11-06

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WELL DEVELOPMENT LOG

Project Name: RP-STAGE 1 SCE

Project Number: 0061M10703D P69

Date: 1/11/06

Completed By: Joe Park, Jason

Well Name: RP-11-160

PID @ well head = Ø

Well Development Method: GrundFos

Contractor Name: AMEC

Static Water Level Before Development (ft): 17.36

Depth of Well (toc): 160.20

Casing: 160.00 − 17.36 = 142.64 × .17 = 25.4 gal × 5 = 127

Annulus: 2.55 × .3 = .765 × 15 = 11.5

Volume of Water in Filter Pack and Well (gal): 127 + 11.5 = 138 gal

Inside Diameter (in): 2in

Time Start Development: 12:50

Screen 150-160ft bgs

FILTER PACK 145-160ft bgs

Sediment in Well Bottom (in): Start: _____ Finish: _____

Time Start Development: 12:50

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
12:58	.5gpm	N	4gal	>1000	Black, Brownish color.
13:30	.75gpm		35gal	151	Greyish to Clear color
14:05	.5gpm		55gal	86.1	Clear
14:45	[illegible]		75gal	22.4	Clear
15:10	[illegible]		90gal	9.37	Clear

Volume of Water Removed from Well (gal): 90gal

Time Complete Development: 15:10

Static Water Level After Development (ft): 17.25

Notes: 138gal for 5 well volumes + Annulus
87 gal for 3 well volumes + Annulus

- Dedicated dual valve pump set @ 155' after completion of well development

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WELL DEVELOPMENT LOG

Project Name: RP-STADE ISCE

Project Number: 0L61M10703DP69

Date: 1/12/06

Completed By: Joe Rock, Jason Gadner

Well Name: RP-11-216

PID @ well head = Ø

Well Development Method: Grundfos

Contractor Name: AMEC

Static Water Level Before Development (ft): 16.78

Depth of Well (toc): 215.88

Inside Diameter (in): 2in

Volume of Water in Filter Pack and Well (gal): 3 casing vol = 101 gal + Annulus 13 gal = 114 total

Time Start Development: 10:00

Screen 211-216ft bgs
FILTERPACK 209-216ft bgs.

Sediment in Well Bottom (in): Start: _____ Finish: _____

Time Start Development: 10:00

Time	Pumping Rate	Surveyed (Y/N)	Total Volume	Turbidity (NTU)	Notes
10:05	.5 gpm	N	2.5	>1000	Brown/Silty
10:57	.5 gpm		35 gal	288	Clearing, Grayish/silt
11:25	.5 gpm		55 gal	104	Clear
13:00	.5 gpm		70 gal	91.1	Clear
13:45	.5 gpm		100 gal	45.6	Clear
14:15	.5 gpm		115 gal	11.4	Clear

Volume of Water Removed from Well (gal): 115 gallons

Time Complete Development: 14:15

Static Water Level After Development (ft): 16.59

- Dedicated dual valve pump set @ 212' after completion of well development.

Notes:

216
- 16.78
x.17 x 7 = [illegible] gal

2.55
x.3
.765
x 17
13 gal

114 gal for 3 well volumes plus volume of annulus

APPENDIX B

B-1 Arkema Lots 1 and 2 Boring Logs

B-2 Siltronic Riverbank Soil Boring Logs

B-3 Grain Size Analysis

B-1

DEPTH (ft bgs)	USCS SYMBOL	SOIL DESCRIPTION	VOLATILE READING (ppm)	TESTING AND LABORATORY DATA
0	ML	Medium stiff, brown, sandy SILT (FILL) with angular gravel.		036-01
	SP	Medium dense, brown, fine SAND; moist.	0.0	
		Becomes wet.		037-01
5	ML	Stiff, gray SILT with trace organics; wet.	0.0	038-01
	SP	Medium stiff, gray-brown, fine SAND with some organics; wet.		
10			0.0	
	ML	Stiff, gray SILT with trace organics; wet.		
	SP	Loose, gray-brown, fine SAND; wet.		039-01
15	ML	Stiff, brown SILT; moist.	0.0	042-01
20			0.0	
	ML	Medium stiff, brown, fine, sandy SILT; wet.		
25			0.0	
	ML	Stiff, brown SILT; wet.		
30	SP	Loose, brown, fine SAND; wet.		

BORING METHOD: Direct Push
ELEVATION REFERENCE: NA
BOREHOLE DIAMETER: 2.0 (in)
REMARKS:
DRILL RIG: Geoprobe
GROUND SURFACE ELEVATION: NA
CONTRACTOR: Cascade Drilling
LOGGED BY: L. Glonek, C. Johnson
DRILLING DATES: 08/15/2005 - 08/15/2005

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Stage 1 SCE

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LOG OF BORING ARK-01

DIRECT PUSH BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
30		SP			0.0				
		ML	Medium stiff, brown, sandy SILT; wet.						044-01
		SP	Loose, brown, fine SAND; wet.						
					0.0				
35		ML	Stiff, brown SILT; moist.						
		ML	Medium stiff, brown, sandy SILT; wet.						
		SP	Loose, brown, fine SAND; wet.						
					0.0				
		SM	Medium dense, brown, silty SAND; wet.						
40		ML	Stiff, brown SILT; moist.						
		ML	Medium stiff, sandy SILT; wet.						
		ML	Stiff, brown SILT with sand; wet.						
		ML	Medium stiff, sandy SILT; wet.						
45		ML	Stiff, brown SILT; wet.						
		SP	Loose, brown, fine SAND; wet.						
50									
		ML	Stiff, brown SILT; moist.						
		SM	Medium dense, brown with orange mottling, silty SAND; wet.						043-01
55		SP	Dense, brown, fine SAND with trace silt; wet.						
		SP	Medium dense, brown, fine SAND with trace gravel; wet.						
		GP	Medium dense, brown-gray, rounded to subrounded, sandy GRAVEL with weathered ash and recrystallization; wet.						
60		GP	Medium dense, black, sandy, angular, slightly weathered, slightly vesicular, aphanitic, basalt GRAVEL; wet.						040-01

BORING METHOD: Direct Push

ELEVATION REFERENCE: NA

BOREHOLE DIAMETER: 2.0 (in)

REMARKS:

DRILL RIG: Geoprobe

GROUND SURFACE ELEVATION: NA

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

DRILLING DATES: 08/15/2005 - 08/15/2005

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LOG OF BORING ARK-01

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
60		GP	Medium dense, black, sandy, angular, slightly weathered, slightly vesicular, aphanitic, basalt GRAVEL; wet. Total depth drilled = 62 ft bgs due to drill refusal.						041-01
65									
70									
75									
80									
85									
90									

BORING METHOD: Direct Push

BOREHOLE DIAMETER: 2.0 (in)

DRILL RIG: Geoprobe

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

DRILLING DATES: 08/15/2005 - 08/15/2005

REMARKS:

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LOG OF BORING ARK-01

DIRECT PUSH BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
0		GP	Medium dense, brown, fine sandy GRAVEL (FILL); dry.		0.0				060-01
		SM	Brown with gray, silty, fine SAND; moist.						
		ML	Medium stiff, brown with gray and orange mottling, fine, sandy SILT; moist.						
5					0.0				061-01
		SP	Medium dense, gray, fine SAND with trace gravel and wood debris; moist.						
10					0.0				062-01
			Becomes wet.						
			Trace wood debris.						
					0.0				063-01
15		ML	Medium stiff, gray, fine, sandy SILT; wet.						
		SP	Medium dense, gray, fine SAND; wet.						
20					0.0				
25		SM	Medium dense, gray, silty, fine SAND; wet.						
		ML	Medium stiff, gray, fine, sandy SILT; wet.		0.0				
		ML	Stiff, brown with gray mottled SILT with fine sand; moist to wet.						
30									

BORING METHOD: Direct Push

ELEVATION REFERENCE: NA

BOREHOLE DIAMETER: 2.0 (in)

REMARKS:

DRILL RIG: Geoprobe

GROUND SURFACE ELEVATION: NA

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

DRILLING DATES: 08/19/2005 - 08/19/2005

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LOG OF BORING ARK-02

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
30		ML			0.0				
					0.0				
35									
		SM	Very loose, brownish-gray, silty, fine SAND; wet.						
					0.0				
40		ML	Medium stiff, grayish-brown, fine, sandy SILT; wet.						066-01
					0.0				
		SM	Medium dense, grayish-brown, silty, fine SAND; wet.						
45									
		ML	Medium stiff, grayish-brown, fine, sandy SILT; wet.						
		SP	Medium dense, grayish-brown, fine SAND; wet.						
50									
55		SM	Medium dense, grayish-brown, silty, fine SAND; wet.						
		SP	Medium dense, grayish-brown, fine SAND; wet.						
60									

BORING METHOD: Direct Push

ELEVATION REFERENCE: NA

BOREHOLE DIAMETER: 2.0 (in)

REMARKS:

DRILL RIG: Geoprobe

GROUND SURFACE ELEVATION: NA

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

DRILLING DATES: 08/19/2005 - 08/19/2005

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LOG OF BORING ARK-02

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
60		SP	Medium dense, grayish-brown, fine SAND; wet.						
			Becomes medium dense.						
65									
70			Becomes dense.						
75									
			Total depth drilled = 80 ft bgs due to heaving sands and rod retrieval difficulty.						064-01 065-01
80									
85									
90									

BORING METHOD: Direct Push

ELEVATION REFERENCE: NA

BOREHOLE DIAMETER: 2.0 (in)

REMARKS:

DRILL RIG: Geoprobe

GROUND SURFACE ELEVATION: NA

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

DRILLING DATES: 08/19/2005 - 08/19/2005

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LOG OF BORING ARK-02

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
0		GP	Medium dense, brown, fine sandy GRAVEL (FILL); dry.		0.0				068-01
		SP	Medium dense, brown, fine SAND; moist.						
			Grades to gray.						
5					0.0				069-01
		ML	Medium stiff, gray, fine, sandy SILT wtih wood debris; moist to wet.						
		SM	Medium dense, gray, silty, fine SAND with trace wood debris; wet.						
10		ML	Medium stiff, gray, fine, sandy SILT with trace organics; wet.		0.0				
		SP	Medium dense, gray, fine SAND; wet.						
		ML	Medium stiff, gray SILT with fine sand; wet.		0.0				
		SM	Medium dense, gray, silty, fine SAND; wet.						
15									
		SP	Medium dense, gray, fine SAND; wet.						
					0.0				
20									
					0.0				
25									
		ML	Medium stiff, gray, fine, sandy SILT with trace organics; wet.		0.0				071-01
30									

BORING METHOD: Direct Push
ELEVATION REFERENCE: NA
BOREHOLE DIAMETER: 2.0 (in)
REMARKS:
DRILL RIG: Geoprobe
GROUND SURFACE ELEVATION: NA
CONTRACTOR: Cascade Drilling
LOGGED BY: L. Glonek, C. Johnson
DRILLING DATES: 08/22/2005 - 08/22/2005

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LOG OF BORING ARK-03

DIRECT PUSH BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
30		SP	Medium dense, gray, fine SAND, trace organics; wet.						
		ML	Medium stiff, gray SILT with trace fine sand and organics; wet.						
35			With no organics.						
		ML	Medium stiff, gray, fine, sandy SILT with trace organics; wet.						
		ML	Medium stiff, gray with blue-gray SILT; wet.						
40			Becomes blue-gray.		0.0				
		SM	Blue-gray, silty, fine SAND; wet.						
45					0.0				
			Becomes brown.						
50					0.0				
		SP	Medium dense, brown, fine SAND; wet.						
55									
		ML	Medium stiff, brown, fine, sandy SILT; wet.						072-01
60									

BORING METHOD: Direct Push
ELEVATION REFERENCE: NA
BOREHOLE DIAMETER: 2.0 (in)
REMARKS:
DRILL RIG: Geoprobe
GROUND SURFACE ELEVATION: NA
CONTRACTOR: Cascade Drilling
LOGGED BY: L. Glonek, C. Johnson
DRILLING DATES: 08/22/2005 - 08/22/2005

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
60		SM	Medium dense, brown, silty, fine SAND; wet.						
		SP	Loose, brown, fine SAND; wet.						
65									
70									
75									
			Becomes medium dense.						
			Total depth drilled = 80 ft bgs.						070-01 067-01
80									
85									
90									

BORING METHOD: Direct Push

BOREHOLE DIAMETER: 2.0 (in)

DRILL RIG: Geoprobe

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

DRILLING DATES: 08/22/2005 - 08/22/2005

REMARKS:

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LOG OF BORING ARK-03

DIRECT PUSH BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
0			Refer to boring ARK-03 for lithology between 0 to 80 ft bgs.						
5									
10									
15									
20									
25									
30									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 09/08/2005 - 09/08/2005

REMARKS:

RP - Portland
Stage 1 SCE

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LOG OF BORING ARK-03A

ENVIRONMENTAL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
30			Refer to boring ARK-03 for lithology between 0 to 80 ft bgs.						
35							▽		
40									
45									
50									
55									
60									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 09/08/2005 - 09/08/2005

REMARKS:

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
60			Refer to boring ARK-03 for lithology between 0 to 80 ft bgs.						
65									
70									
75									
80		ML	Stiff, brown SILT with trace fine sand and clay; wet.						
		ML	Medium stiff, brown, sandy SILT, fine sand; wet.						
85									
90									

BORING METHOD: Sonic
BOREHOLE DIAMETER: 6.0 (in)
DRILL RIG: Sonic
CONTRACTOR: Cascade Drilling
LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
DRILLING DATES: 09/08/2005 - 09/08/2005

REMARKS:

RP - Portland
Stage 1 SCE

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LOG OF BORING ARK-03A

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
90		GP	Dense, gray, rounded to subrounded GRAVEL with some sand, trace silt; wet.						
95									
		ML	Stiff to very stiff, reddish-brown, subangular to subrounded, gravelly SILT with some clay and fine sand; wet.						
100		GM	Very dense, reddish-brown, clayey, basalt GRAVEL with trace sand and silt; moist.						
		GM	Dense gray, severely weathered, basalt GRAVEL, low strength, remnants of slight vesiculation, some hard corestones with manganese/iron oxide staining. Total depth drilled = 102.5 ft bgs.						076-01
105									
110									
115									
120									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 09/08/2005 - 09/08/2005

REMARKS:

RP - Portland
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LOG OF BORING ARK-03A

ENVIRONMENTAL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	USCS SYMBOL	SOIL DESCRIPTION	VOLATILE READING (ppm)	TESTING AND LABORATORY DATA
0	GP	Medium dense, brown, fine to medium, sandy GRAVEL (FILL); dry.	0.0	028-01
	SP	Medium dense, gray, fine SAND with silt; moist.		
5			4.8	029-01
	SP	Medium dense, gray, fine SAND; moist. Slight solvent-like odor.		
	SM	Medium dense, gray, silty, fine SAND; moist.		
	SP	Medium dense, gray, fine SAND; moist.		
		Becomes wet.		
10			0.0	
			0.7	034-01
15				030-01
		Slight organic-like odor mixed with unidentified odor.		031-01
	ML	Medium stiff, gray, fine, sandy SILT; moist. Slight organic-like odor.		
20				
	SM	Medium dense, gray, silty, fine SAND; moist.	0.0	
	ML	Medium stiff, gray SILT with fine sand; moist.		
25	SM	Medium dense, gray, silty, fine SAND interbedded with medium sand and silt lenses, trace wood debris; moist.		
	ML	Stiff, brown, fine sandy SILT; moist.		
30				

GRAPHIC LOG | SAMPLE | GROUNDWATER | GW SCREENED INTERVAL | FIELD TESTING

BORING METHOD: Direct Push
ELEVATION REFERENCE: NA
BOREHOLE DIAMETER: 2.0 (in)
REMARKS:
DRILL RIG: Geoprobe
GROUND SURFACE ELEVATION: NA
CONTRACTOR: Cascade Drilling
LOGGED BY: L. Glonek, C. Johnson
DRILLING DATES: 08/12/2005 - 08/12/2005

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LOG OF BORING ARK-04

DIRECT PUSH BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
30		ML	Stiff, brown, fine sandy SILT; moist.						
			Grades to grayish-brown.						
		SM	Medium dense, grayish-brown, silty, fine SAND; wet.						
35			Grades to fine SAND with silt; wet.						035-01
		ML	Medium stiff, grayish-brown SILT with fine sand; moist to wet.						
40		SP	Medium dense, brown, fine SAND; wet.		0.0				
45			Basalt chips in shoe. Total depth drilled = 47 ft bgs due to drill refusal.						032-01 033-01
50									
55									
60									

BORING METHOD: Direct Push

BOREHOLE DIAMETER: 2.0 (in)

DRILL RIG: Geoprobe

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

DRILLING DATES: 08/12/2005 - 08/12/2005

REMARKS:

RP - Portland
Stage 1 SCE

0-61M-107030 P69

AMEC
7376 SW Durham Road
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USA 97224
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LOG OF BORING ARK-04

DIRECT PUSH BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
0		GP	Medium dense, brown, fine to medium, sandy GRAVEL (FILL); dry.		0.0				045-01
		GP	Medium dense, dark gray, fine to medium, sandy GRAVEL; dry.						
		SM	Grayish-brown, fine SAND with silt; moist.						
		SP	Medium dense, brown, fine SAND; moist.						
5					0.0				046-01
		SP	Medium dense, gray, fine SAND; moist.						
10									
					0.0				
15					0.0				047-01
			Becomes wet.						
20					0.0				048-01
		ML	Medium stiff, dark gray SILT with fine sand; wet. Mild organic-like odor.						050-01
25		ML	Medium stiff, grayish-brown with dark gray mottled SILT with fine sand; wet.		0.0				
		ML	Medium stiff, brown SILT with fine sand; moist.						
30									

BORING METHOD: Direct Push

ELEVATION REFERENCE: NA

BOREHOLE DIAMETER: 2.0 (in)

REMARKS:

DRILL RIG: Geoprobe

GROUND SURFACE ELEVATION: NA

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

DRILLING DATES: 08/17/2005 - 08/17/2005

RP - Portland
Stage 1 SCE

0-61M-107030 P69

AMEC
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LOG OF BORING ARK-05

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
30		ML			0.0				
		SP	Medium dense, brown, fine SAND; wet.						
		ML	Medium stiff, brown, fine, sandy SILT; wet.						
		SP	Medium dense, brown, fine SAND; wet.		0.0				
35									
		ML	Medium stiff, brown, fine, sandy SILT; wet.						
		SP	Medium dense, brown, fine SAND; wet.						
					0.0				
40									
		ML	Medium stiff, brown, fine sandy SILT; wet.		0.0				051-01
		SP	Medium dense, brown, fine SAND; wet.						
45									
					0.0				
		SM	Medium dense, brown, silty, fine SAND; wet.						
50					0.0				
		ML	Medium stiff, brown, fine, sandy SILT; wet.						
		SM	Medium dense, brown, silty, fine SAND; wet.						
55					0.0				
		ML	Medium stiff, brown, fine, sandy SILT; wet.						
		SM	Medium dense, brown, silty, fine SAND; wet.		0.0				
60									049-01

BORING METHOD: Direct Push

ELEVATION REFERENCE: NA

BOREHOLE DIAMETER: 2.0 (in)

REMARKS:

DRILL RIG: Geoprobe

GROUND SURFACE ELEVATION: NA

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

DRILLING DATES: 08/17/2005 - 08/17/2005

RP - Portland
Stage 1 SCE

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LOG OF BORING ARK-05

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
60		SM							
			Total depth drilled = 64 ft bgs.						
65									
70									
75									
80									
85									
90									

BORING METHOD: Direct Push

BOREHOLE DIAMETER: 2.0 (in)

DRILL RIG: Geoprobe

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

DRILLING DATES: 08/17/2005 - 08/17/2005

REMARKS:

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING ARK-05

DIRECT PUSH BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
0			Refer to boring ARK-05 for lithology between 0 to 60 ft bgs.						
5									
10									
15									
20									
25									
30									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 09/08/2005 - 09/08/2005

REMARKS:

RP - Portland
Stage 1 SCE

0-61M-107030 P69

AMEC
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LOG OF BORING ARK-05A

ENVIRONMENTAL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
30			Refer to boring ARK-05 for lithology between 0 to 60 ft bgs.						
35									
40									
45									
50									
55									
60									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 09/08/2005 - 09/08/2005

REMARKS:

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING ARK-05A

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
60		ML	Medium stiff, brown SILT with trace fine sand and clay; wet.						
65		ML	Medium stiff, brown, sandy SILT with trace clay; moist.						
		GP	Dense, gray, severely weathered, basalt GRAVEL, some unweathered, hard corestones (possible weathered basalt); wet.						075-01
			Total depth drilled = 67.5 ft bgs.						
70									
75									
80									
85									
90									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 09/08/2005 - 09/08/2005

REMARKS:

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING ARK-05A

ENVIRONMENTAL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	USCS SYMBOL	SOIL DESCRIPTION	TESTING AND LABORATORY DATA
0	GP	Medium dense, brown, fine to medium, sandy GRAVEL (FILL); dry.	052-01
	SP	Medium dense, brown, fine to medium SAND (FILL) with gravel; moist.	
	GP		
	SP	Medium dense, dark gray, fine to medium, sandy GRAVEL (FILL) with asphalt. Mild petroleum-like odor.	053-01
		Medium dense, brown with black, fine to medium SAND (FILL) with gravel; moist.	
	SP	Medium dense, brown, fine to medium SAND; moist.	
5			054-01
			055-01
10	SP	Medium dense, gray, fine SAND, some organics; wet.	
	ML	Medium stiff, gray SILT, trace organics; wet.	
	SP	Medium dense, gray, fine SAND; wet.	
	ML	Medium stiff, gray SILT; wet.	
	SP	Medium dense, gray, fine SAND; wet.	
	ML	Medium stiff, gray SILT; wet.	
15	SP	Medium dense, gray, fine SAND with trace gravel, trace organics; wet.	
	GW	Medium dense, gray, subrounded to subangular, sandy GRAVEL; wet.	
	ML	Medium stiff, gray SILT; wet.	
	SP	Medium dense, gray, fine SAND; wet.	
	ML	Medium stiff, gray SILT, trace organics; wet.	
	SP	Medium dense, gray, fine SAND with trace gravel, some organics; wet.	
20	SP	Medium dense, gray, fine SAND; wet.	
	PT	Wood debris.	
25	SP	Medium dense, gray, fine SAND, trace organics; wet.	
	ML	Medium stiff, gray-brown SILT with some organics; wet.	058-01
	SP	Medium dense, gray, fine SAND; wet.	
	ML	Stiff, gray-brown SILT with some organics.	
	SP	Medium dense, gray, fine SAND, trace organics; wet.	
	ML	Medium stiff, gray SILT, some organics; wet.	
30	SP	Medium dense, gray, fine SAND, trace organics; wet.	

SAMPLE | VOLATILE READING (ppm) | GROUNDWATER | GW SCREENED INTERVAL | FIELD TESTING

BORING METHOD: Direct Push

ELEVATION REFERENCE: NA

BOREHOLE DIAMETER: 2.0 (in)

REMARKS:

DRILL RIG: Geoprobe

GROUND SURFACE ELEVATION: NA

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

DRILLING DATES: 08/18/2005 - 08/18/2005

DIRECT PUSH BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING ARK-06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
30		ML	Stiff, gray SILT; wet.						
		SP	Medium dense, gray SAND, trace organics; wet.						
		ML	Stiff, gray-brown SILT, some organics; wet.						
		SP	Medium dense, gray, fine to medium SAND, some organics; wet.						
		SM	Dense, gray-brown, silty SAND, trace organics; wet.						
35		ML	Stiff, gray, clayey SILT, trace organics; wet.						
		ML	Soft, gray-brown SILT with sand, trace organics; wet.						
		ML	Very stiff, blue-gray with brown mottled SILT, trace organics; wet.						
40		ML	Very stiff, brown, fine, sandy SILT; wet.						
45		SP	Medium dense, brown, micaceous, fine SAND; wet.						
		SP	Dense, brown SAND with trace silt; wet.						
		SP	Loose, brown, fine SAND; wet.						
50		SP	Medium dense, gray, fine SAND; wet.						
		SP	Loose, brown, fine SAND; wet.						
55									059-01
		ML	Medium stiff, brown, fine, sandy SILT; wet.						
60		SP	Medium dense, brown, fine SAND; wet.						

BORING METHOD: Direct Push

ELEVATION REFERENCE: NA

BOREHOLE DIAMETER: 2.0 (in)

REMARKS:

DRILL RIG: Geoprobe

GROUND SURFACE ELEVATION: NA

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

DRILLING DATES: 08/18/2005 - 08/18/2005

RP - Portland
Stage 1 SCE

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LOG OF BORING
ARK-06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
60		SP	Medium dense, brown, fine SAND; wet.						
65									
		SP	Medium dense, brown, fine SAND wet.						
		SM	Medium dense, brown, silty SAND; wet.						
		SP	Loose, brown, fine SAND; wet.						
70									
		ML	Stiff, brown with orange and gray mottled, fine, sandy SILT; wet.						
		SP	Loose, brown, fine SAND; wet.						
		ML	Stiff, brown with orange and gray mottled, fine, sandy SILT; wet.						
75									056-01
			Total depth drilled = 80 ft bgs.						
80									057-01
85									
90									

BORING METHOD: Direct Push

ELEVATION REFERENCE: NA

BOREHOLE DIAMETER: 2.0 (in)

REMARKS:

DRILL RIG: Geoprobe

GROUND SURFACE ELEVATION: NA

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

DRILLING DATES: 08/18/2005 - 08/18/2005

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING ARK-06

DIRECT PUSH BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
0			Refer to boring ARK-06 for lithology between 0 to 70 ft bgs.						
5									
10									
15									
20									
25									
30									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 09/07/2005 - 09/07/2005

REMARKS:

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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USA 97224
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LOG OF BORING ARK-06A

ENVIRONMENTAL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
30			Refer to boring ARK-06 for lithology between 0 to 70 ft bgs.						
35									
40									
45									
50									
55									
60									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 09/07/2005 - 09/07/2005

REMARKS:

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING ARK-06A

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
60			Refer to boring ARK-06 for lithology between 0 to 70 ft bgs.						
65									
70		ML	Stiff, brown SILT with trace fine sand; wet.						
75									
80		ML	Medium stiff to stiff, brown, fine, sandy SILT; wet.						
		ML	Stiff, brown SILT; wet.						
85		ML	Medium stiff, brown, fine, sandy SILT; wet.						
		GM	Dense, brown, rounded to subrounded, fine to coarse GRAVEL with silt and some fine to medium sand; wet.						
90									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 09/07/2005 - 09/07/2005

REMARKS:

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
90		GM							
		GW	Dense to very dense, brown, rounded to subrounded, fine to coarse GRAVEL with sand and some silt; wet.						
95		GP	Very dense, rounded to subrounded, coarse GRAVEL with some silt, trace sand and cobbles.						074-01
100		GW	Very dense, rounded to subrounded GRAVEL with coarse to medium sand, trace silt; wet.						
105		GM	Dense, gray, angular, clayey, moderately weathered, basalt GRAVEL, (iron and manganese oxide coating basalt fracture surfaces); wet. Total depth drilled =107.5 ft bgs.						
110									
115									
120									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 09/07/2005 - 09/07/2005

REMARKS:

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING ARK-06A

ENVIRONMENTAL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
0		SP	Medium dense, brown, fine to medium SAND (FILL) with gravel; dry.						001-01
		SP	Asphalt (1/2-inch thick). Brown, fine SAND (FILL) with trace silt; moist.		0.0				
5									002-01
		CL	White, clay-like material (1-inch thick). (FILL)		0.0				
		SP	Medium dense, brown, fine SAND; moist.						003-01
			Becomes wet.			▽			
10					0.0				
					0.0				
									007-01
15		SP	Medium dense, gray-brown, fine SAND; wet.						
			Becomes moist.		0.0				
20									
					0.0				
		ML	Stiff, gray, fine, sandy SILT; wet.						
25					0.0				008-01
			Becomes moist.						
30					0.0				

BORING METHOD: Direct Push

ELEVATION REFERENCE: NA

BOREHOLE DIAMETER: 2.0 (in)

REMARKS:

DRILL RIG: Geoprobe

GROUND SURFACE ELEVATION: NA

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

DRILLING DATES: 08/09/2005 - 08/09/2005

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING ARK-07

DIRECT PUSH BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
30		ML	Stiff, gray, fine, sandy SILT; wet.						004-01
		SP	Medium dense, brown, fine SAND; wet.						
		ML	Medium stiff, brown, fine, sandy SILT; wet.		0.0				
35		SP	Medium dense, brown, fine SAND; wet.						
		ML	Medium stiff, grayish-brown, fine, sandy SILT; wet.		0.0				
		ML	Stiff, grayish-brown SILT with trace fine sand; moist.						
40		SP	Medium dense, brown, fine SAND; wet.		0.0				
		SP	Medium dense, brown with orange mottled, silty SAND; wet.						
		SP	Medium dense, grayish-brown, fine SAND; wet.		0.0				
		ML	Medium stiff, gray, sandy SILT; moist.						005-01
		ML	Medium stiff, brown, fine, sandy SILT; wet.						
45			Total depth drilled = 45 ft bgs due to direct push refusal.						006-01
50									
55									
60									

BORING METHOD: Direct Push

ELEVATION REFERENCE: NA

BOREHOLE DIAMETER: 2.0 (in)

REMARKS:

DRILL RIG: Geoprobe

GROUND SURFACE ELEVATION: NA

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

DRILLING DATES: 08/09/2005 - 08/09/2005

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING ARK-07

DEPTH (ft bgs)	USCS SYMBOL	SOIL DESCRIPTION	VOLATILE READING (ppm)	TESTING AND LABORATORY DATA
0	GP	Medium dense, brown, fine, sandy GRAVEL (FILL); moist.	0.0	009-01
	SP	Medium dense, brown, fine SAND; moist.		
5			0.0	010-01
	ML	Medium stiff, brown, fine, sandy SILT; moist.		
	SP	Medium dense, brown, fine SAND; moist.	0.0	
10			0.0	011-01
			0.0	
		Becomes wet.		012-01
				016-01
15	ML	Dark gray, fine, sandy SILT; wet.		013-01
		Grades to gray.	0.0	
20	ML	Medium stiff to stiff, brownish-gray, fine, sandy SILT; moist to wet.	0.0	
25	SM	Loose to medium dense, brownish-gray, silty, fine SAND; wet.	0.0	
	ML	Medium stiff, brownish-gray, fine, sandy SILT; wet.		
	SP	Loose, brown, fine SAND with silt; wet.	0.0	
30				

GRAPHIC LOG

SAMPLE

GROUNDWATER

GW SCREENED INTERVAL

FIELD TESTING

BORING METHOD: Direct Push

ELEVATION REFERENCE: NA

BOREHOLE DIAMETER: 2.0 (in)

REMARKS:

DRILL RIG: Geoprobe

GROUND SURFACE ELEVATION: NA

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

DRILLING DATES: 08/10/2005 - 08/10/2005

DIRECT PUSH BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING ARK-08

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
30		SP	Loose, brown, fine SAND with silt; wet.						
		SM	Medium dense, grayish-brown, silty, fine SAND; wet.						
		SP	Medium dense, grayish-brown, fine SAND with silt; wet.		0.0				
35		SM	Medium dense, grayish-brown, silty, fine SAND; wet.						
		SP	Loose, brown, fine SAND with trace silt; wet.		0.0				
40		SM	Medium dense, brown, silty, fine SAND; wet.						
		SP	Medium dense, brown, fine SAND with silt; wet.		0.0				
		SM	Medium dense, brown, silty, fine SAND; wet.						014-01
		GP	Brown, silty, fine SAND with angular gravel. Total depth drilled = 43.5 ft bgs due to direct push refusal.						015-01
45									
50									
55									
60									

BORING METHOD: Direct Push

BOREHOLE DIAMETER: 2.0 (in)

DRILL RIG: Geoprobe

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

DRILLING DATES: 08/10/2005 - 08/10/2005

REMARKS:

RP - Portland
Stage 1 SCE

0-61M-107030 P69

AMEC
7376 SW Durham Road
Portland, Oregon
USA 97224
Tel (503) 639-3400
Fax (503) 620-7892

LOG OF BORING ARK-08

DIRECT PUSH BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	USCS SYMBOL	SOIL DESCRIPTION	VOLATILE READING (ppm)	TESTING AND LABORATORY DATA
0	SM	Medium dense, brown, silty SAND (FILL) with angular gravel; dry.		017-01
	SP	Asphalt debris. (FILL)		
		Medium dense, brown, fine SAND (FILL); moist.	0.0	
5			0.0	018-01
10			0.0	
				019-01
		Becomes wet.	0.0	
	SP	Medium dense, brown, fine SAND (FILL) with subangular gravel; wet.		
	SP	Medium dense, gray, fine SAND (FILL) with subangular gravel; wet.		020-01 & 027-01 (15-16)
15	ML	Medium stiff, gray SILT; wet.		023-01
	SP	Medium dense, gray, fine SAND; wet.	0.0	
20	ML	Medium stiff, gray, sandy SILT; wet.		
	ML	Stiff, gray, sandy SILT; wet.	0.0	
	ML	Stiff, gray with orange mottled SILT, trace organics; wet. Organic-like odor.		
25	SM	Loose, gray with orange mottled, silty SAND, trace organics. Organic-like odor.	0.0	
	ML	Stiff, gray SILT with trace organics; wet. Organic-like odor.		
	SP	Loose, gray-brown SAND; wet.		
	ML	Stiff, gray with orange mottled SILT, trace organics; wet.		
30	SP	Loose, gray with orange mottled, fine SAND; wet.		

GRAPHIC LOG

SAMPLE

GROUNDWATER

GW SCREENED INTERVAL

FIELD TESTING

BORING METHOD: Direct Push

ELEVATION REFERENCE: NA

BOREHOLE DIAMETER: 2.0 (in)

REMARKS:

DRILL RIG: Geoprobe

GROUND SURFACE ELEVATION: NA

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

DRILLING DATES: 08/11/2005 - 08/11/2005

RP - Portland
Stage 1 SCE

0-61M-107030 P69

AMEC
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LOG OF BORING ARK-09

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
30		SM	Medium dense, gray, silty SAND; wet.		0.0				
					0.0				
		ML	Stiff, gray SILT with trace organics; wet.						
35									025-01
					0.0				
									021-01
40									
		ML	Stiff, brown SILT with trace organics; wet.		0.0				
45		SM	Medium dense, brown, silty, fine SAND; wet.						
					0.0				
		SP	Dense, brown, fine SAND with silt; wet.						
		ML	Medium stiff, brown SILT with sand; wet.						
50					0.0				
		SP	Medium dense, brown SAND with silt; wet.						
		SP	Loose, brown, fine SAND; wet.						
55					0.0				
									026-01
		ML	Stiff, brown SILT; wet.						
		SP	Loose, brown, fine SAND; wet.						
					0.0				
		ML	Stiff, brown SILT; wet.						
60		SP	Loose, brown, fine SAND; wet.						

BORING METHOD: Direct Push

ELEVATION REFERENCE: NA

BOREHOLE DIAMETER: 2.0 (in)

REMARKS:

DRILL RIG: Geoprobe

GROUND SURFACE ELEVATION: NA

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

DRILLING DATES: 08/11/2005 - 08/11/2005

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING ARK-09

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppm)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	TESTING AND LABORATORY DATA
60		SP	Medium dense, brown, fine SAND; wet.		0.0				
		SM	Medium dense, brown, silty, fine SAND; wet.						
65					0.0				
		ML	Stiff, brown, sandy SILT; wet.						
					0.0				
70									
					0.0				
75									
		SM	Medium dense, grayish-brown, silty, fine SAND; wet.		0.0				
80									
					0.0				
		ML	Stiff, brown SILT; wet. Total depth drilled = 84 ft bgs, direct push rods broke.						022-01
85									
90									

BORING METHOD: Direct Push

ELEVATION REFERENCE: NA

BOREHOLE DIAMETER: 2.0 (in)

REMARKS:

DRILL RIG: Geoprobe

GROUND SURFACE ELEVATION: NA

CONTRACTOR: Cascade Drilling

LOGGED BY: L. Glonek, C. Johnson

DRILLING DATES: 08/11/2005 - 08/11/2005

RP - Portland
Stage 1 SCE

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LOG OF BORING ARK-09

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
0			Refer to boring ARK-09 for lithology between 0 to 70 ft bgs.						
5									
10									
15									
20									
25									
30									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 09/06/2005 - 09/06/2005

REMARKS:

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING ARK-09A

ENVIRONMENTAL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
30			Refer to boring ARK-09 for lithology between 0 to 70 ft bgs.						
35									
40									
45									
50									
55									
60									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 09/06/2005 - 09/06/2005

REMARKS:

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
60			Refer to boring ARK-09 for lithology between 0 to 70 ft bgs.						
65									
70		SM	Medium dense, brown with gray, fine SAND with silt; wet.			0.0			
75						0.0			
			Becomes brown.						
80		SM	Medium dense, brown, silty, fine SAND; moist to wet.						
85		GP	Dense, gray, rounded to subangular, sandy, fresh to moderately weathered, basalt GRAVEL; wet.			0.0			
90									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 09/06/2005 - 09/06/2005

REMARKS:

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING ARK-09A

ENVIRONMENTAL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
90		GP				0.0			
		GM-GP	Dense, dark gray, fine, sandy GRAVEL with silt to silty GRAVEL with fine sand; moist.						073-01
			Hard, dark gray, slightly weathered BASALT cobble, minor vesicles (< 2 mm), aphanitic with hydrothermal alteration. Total depth drilled = 95 ft bgs.			0.0			
95									
100									
105									
110									
115									
120									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 09/06/2005 - 09/06/2005

REMARKS:

RP - Portland
Stage 1 SCE

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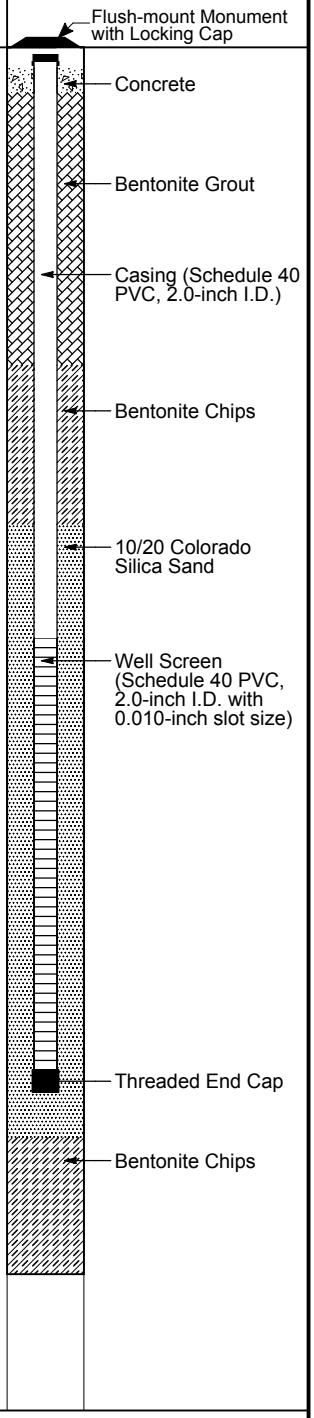
LOG OF BORING ARK-09A

ENVIRONMENTAL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING
0			Refer to boring RP-08-107 for lithology between 0 to 15 ft bgs.					
5								
10								
15								
		ML	Medium stiff, gray, clayey SILT, trace fine sand; moist.					
20		SP	Medium dense, gray, fine SAND; moist.					
		ML	Medium stiff, dark gray, clayey SILT; moist.					
25			Grades to brown.					
			Total depth drilled = 27 ft bgs.					
30								

WELL SCHEMATIC



BORING METHOD: Sonic
BOREHOLE DIAMETER: 6.0 (in)
DRILL RIG: Sonic
CONTRACTOR: Cascade Drilling
LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: 180287/80951
DRILLING DATES: 09/26/2005 - 09/26/2005

REMARKS:
Three bollards surround flush-mount monument.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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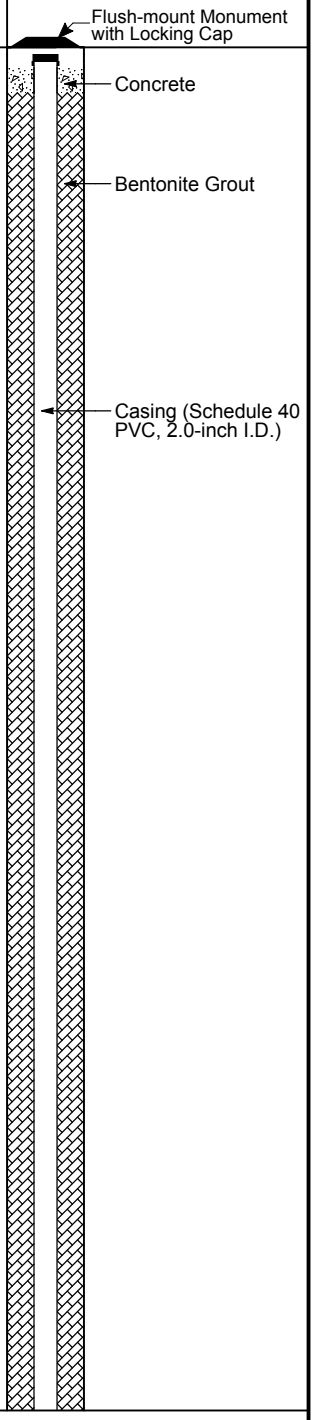
LOG OF BORING RP-08-23

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
0			Refer to boring RP-08-107 for lithology between 0 to 75 ft bgs.						
5									
10									
15									
20									
25									
30									



BORING METHOD: Sonic
BOREHOLE DIAMETER: 6.0 (in)
DRILL RIG: Sonic
CONTRACTOR: Cascade Drilling
LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: 176815/80950
DRILLING DATES: 09/26/2005 - 09/26/2005

REMARKS:
Three bollards surround flush-mount monument.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

AMEC
7376 SW Durham Road
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LOG OF BORING RP-08-80

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
30			Refer to boring RP-08-107 for lithology between 0 to 75 ft bgs.						Bentonite Grout; Casing (Schedule 40 PVC, 2.0-inch I.D.)
35									
40									
45									
50									
55									
60									

BORING METHOD: Sonic
BOREHOLE DIAMETER: 6.0 (in)
DRILL RIG: Sonic
CONTRACTOR: Cascade Drilling
LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: 176815/80950
DRILLING DATES: 09/26/2005 - 09/26/2005

REMARKS:
Three bollards surround flush-mount monument.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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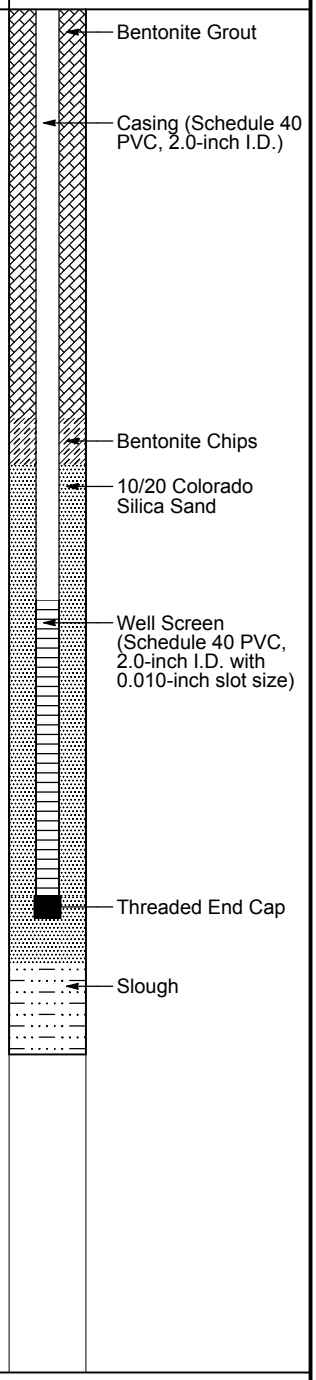
LOG OF BORING
RP-08-80

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
60			Refer to boring RP-08-107 for lithology between 0 to 75 ft bgs.						
65									
70									
75		SP	Medium dense, gray, fine SAND; wet.						
		GP	Dense, gray, subrounded to angular, fine GRAVEL with sand, trace silt; wet.						
80		GM	Dense to very dense, dark brown to gray, subrounded to angular, severely weathered, basalt GRAVEL with clay and silt with yellow-brown stringers within clay and silt; moist.						
			Total depth drilled = 83 ft bgs.						
85									
90									



BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

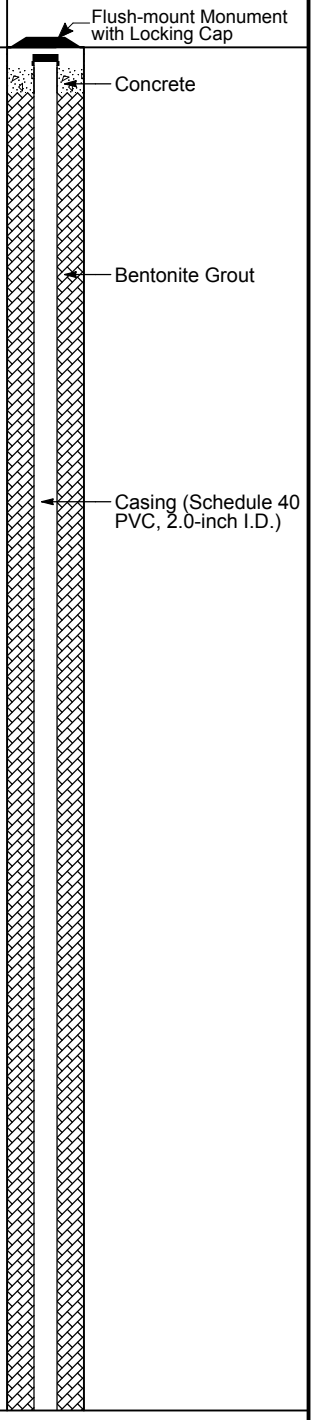
START CARD/TAG ID: 176815/80950

DRILLING DATES: 09/26/2005 - 09/26/2005

REMARKS:
Three bollards surround flush-mount monument.

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING
0		ML	Medium stiff, brown, sandy SILT (FILL) with trace gravel; moist.					
5								
		SP	Medium dense, brown, fine SAND with some silt; moist.			0.0		
10								
		ML	Medium stiff, gray SILT with trace clay; moist.					
		SP	Medium dense, gray, fine SAND with trace silt; moist.					
15						0.5		
20						0.0		
25						0.0		
		ML	Stiff, gray SILT with trace fine sand; moist.					
		ML	Stiff, brown, clayey SILT with trace fine sand; moist.					
30								

WELL SCHEMATIC



BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 176814/80949

DRILLING DATES: 09/20/2005 - 09/22/2005

REMARKS:

Three bollards surround flush-mount monument.

Borehole diameter: 8-inch - 0 to 88 ft bgs. 6-inch - 88 to 107.5 ft bgs.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING RP-08-107

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
30		ML	Becomes medium stiff; wet.						Bentonite Grout; Casing (Schedule 40 PVC, 2.0-inch I.D.)
		ML	Medium stiff, brown, sandy SILT; wet.						
35									
		ML	Medium stiff, brown SILT; moist.						
40		ML	Medium stiff, brown, sandy SILT; wet.						
		ML	Medium stiff, brown SILT; wet.						
45		ML	Medium stiff, brown, sandy SILT; wet.						
		ML	Medium stiff, brown SILT; wet.						
50									
55									
		ML	Medium stiff, brown SILT with some fine sand; wet.						
60									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 176814/80949

DRILLING DATES: 09/20/2005 - 09/22/2005

REMARKS:

Three bollards surround flush-mount monument.

Borehole diameter: 8-inch - 0 to 88 ft bgs. 6-inch - 88 to 107.5 ft bgs.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
60		ML	Medium stiff, brown SILT with trace sand; wet.				▽		Bentonite Grout
		ML	Stiff, brown SILT with fine sand; moist.						Casing (Schedule 40 PVC, 2.0-inch I.D.)
65		ML	Medium stiff, brown, sandy SILT; wet.						
70		ML	Stiff, brown SILT with trace fine sand; wet.						
		SM	Medium dense, brown, silty, fine SAND; wet.						
75									Coated Bentonite Pellets
		SP	Medium dense, brownish-gray, fine SAND; moist.						
80			Becomes dense.						
85			Strong phenol-like odor from 86-88 ft bgs.			0.5			
		GW	Dense to very dense, gray, rounded to subrounded GRAVEL with sand and trace silt; wet.						Step Down to 6.0-inch
		GM	Dense, gray, clayey, subrounded GRAVEL with trace silt; moist. Strong phenol-like odor from 88-96 ft bgs.						
90									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 176814/80949

DRILLING DATES: 09/20/2005 - 09/22/2005

REMARKS:

Three bollards surround flush-mount monument.

Borehole diameter: 8-inch - 0 to 88 ft bgs. 6-inch - 88 to 107.5 ft bgs.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
90		GM	Dense, gray, clayey, subrounded, basalt GRAVEL with trace silt, corestone surrounded by gray, silty clay with relic rock texture (ie. vesicles, infilled fractures, completely weathered corestones); moist.			1.9			Coated Bentonite Pellets; Casing (Schedule 40 PVC, 2.0-inch I.D.)
95									Bentonite Chips
		GM	Dense, gray, angular, basalt GRAVEL with clay matrix and in fractures (friable basalt, reduced to gravel); wet.						
100									10/20 Colorado Silica Sand
									Well Screen (Schedule 40 PVC, 2.0-inch I.D. with 0.010-inch slot size)
105									
			Total depth drilled = 107.5 ft bgs.						Threaded End Cap
110									
115									
120									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 176814/80949

DRILLING DATES: 09/20/2005 - 09/22/2005

REMARKS:

Three bollards surround flush-mount monument.

Borehole diameter: 8-inch - 0 to 88 ft bgs. 6-inch - 88 to 107.5 ft bgs.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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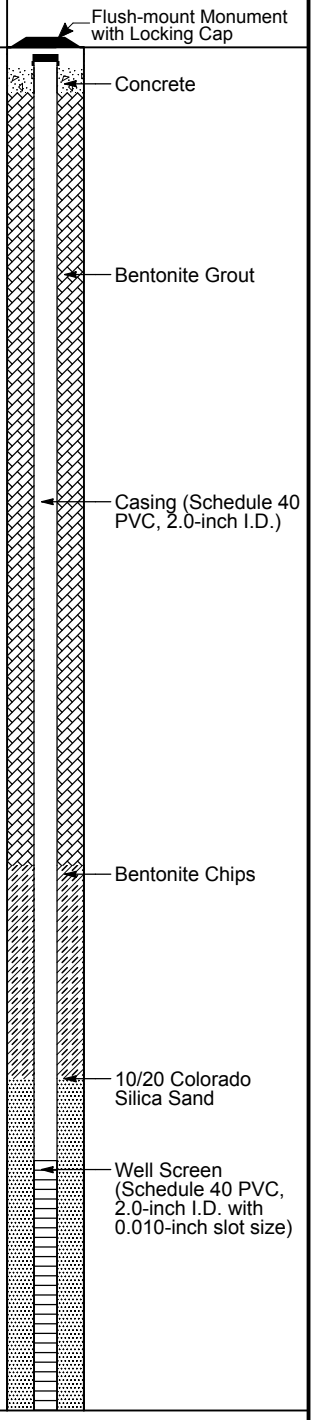
LOG OF BORING RP-08-107

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
0			Refer to boring RP-09-64 for lithology between 0 to 32 ft bgs.						
5									
10									
15									
20									
25									
30									



BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 176813/80948

DRILLING DATES: 09/20/2005 - 09/20/2005

REMARKS:
Three bollards surround flush-mount monument.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING RP-09-35

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
30		ML	Medium stiff, dark brown, fine, sandy SILT with trace clay; wet.						10/20 Colorado Silica Sand; Well Screen (Schedule 40 PVC, 2.0-inch I.D. with 0.010-inch slot size)
		GP	Dense, brown GRAVEL with sand, trace silt; wet. Total depth drilled = 35 ft bgs.						Threaded End Cap
35									
40									
45									
50									
55									
60									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 176813/80948

DRILLING DATES: 09/20/2005 - 09/20/2005

REMARKS:
Three bollards surround flush-mount monument.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

AMEC
7376 SW Durham Road
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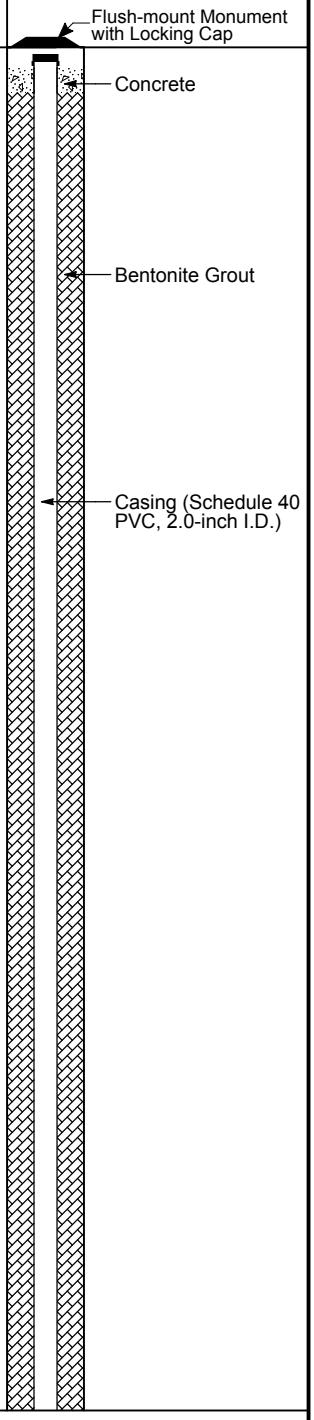
LOG OF BORING RP-09-35

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
0			Refer to boring RP-09-64 for lithology between 0 to 40 ft bgs.						
5									
10									
15									
20									
25									
30									



BORING METHOD: Sonic
BOREHOLE DIAMETER: 6.0 (in)
DRILL RIG: Sonic
CONTRACTOR: Cascade Drilling
LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: 176812/80947
DRILLING DATES: 09/20/2005 - 09/20/2005

REMARKS:
Three bollards surround flush-mount monument.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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USA 97224
Tel (503) 639-3400
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LOG OF BORING RP-09-47

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
30									Bentonite Grout; Casing (Schedule 40 PVC, 2.0-inch I.D.)
35									Bentonite Chips
40		SP	Medium dense, brown, fine SAND with silt; wet.						10/20 Colorado Silica Sand; Well Screen (Schedule 40 PVC, 2.0-inch I.D. with 0.010-inch slot size)
		ML	Stiff, brown SILT with trace fine sand; wet.						
45									Threaded End Cap
		ML	Very stiff, dark brown SILT with some clay and angular gravel; wet.						Hole caved to 47 ft bgs.
		GM	Very dense, dark brown, subangular to angular GRAVEL with clay and silt; moist. Total depth drilled = 49 ft bgs.						
50									
55									
60									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 176812/80947

DRILLING DATES: 09/20/2005 - 09/20/2005

REMARKS:
Three bollards surround flush-mount monument.

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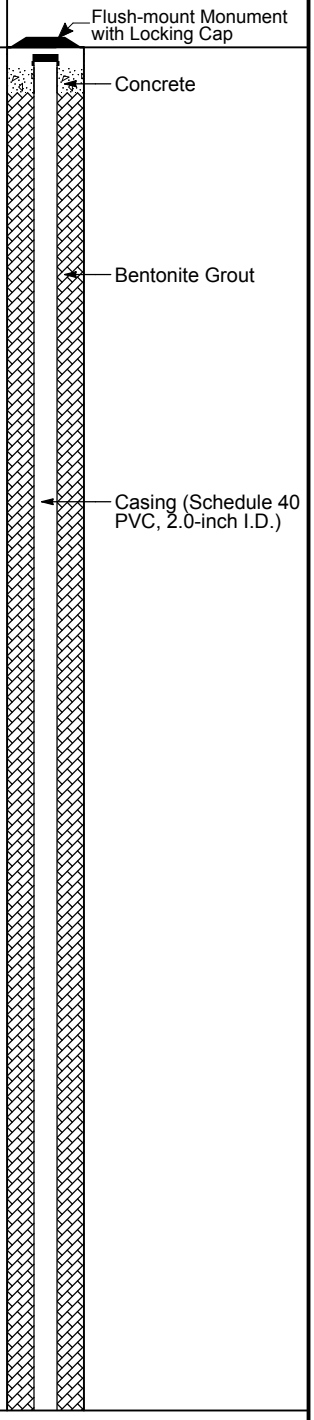
DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING
0		PCC	Construction debris, crushed concrete with rebar. (FILL)					
		SP	Medium dense, brown, fine SAND (FILL) with gravel; dry.			0.0		
5		SP	Medium dense, brown, fine SAND; dry to moist.			0.0		
10		SP	Medium dense, gray, fine SAND with trace silt; wet.			0.0		
15								
20								
25						0.0		
30								

WELL SCHEMATIC



BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 176811/80946

DRILLING DATES: 09/19/2005 - 09/19/2005

REMARKS:
Three bollards surround flush-mount monument.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING RP-09-64

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
30		SP							Bentonite Grout; Casing (Schedule 40 PVC, 2.0-inch I.D.)
35									
		SP	Medium dense, brown, fine SAND; wet.						
40						0.0			
		SM	Medium dense, brown, silty, fine SAND; wet.						
45									
		SP	Medium dense, brown, fine SAND; wet.						
		GP	Becomes dark orange at 49 ft bgs. Gray, fine, sandy, slightly weathered, basalt GRAVEL with cobbles and silt; wet.						
50			Basalt cobble or boulder, slightly weathered, minor vesicles (< 2 mm), aphanitic between 51.5 to 52.5 ft bgs.						Bentonite Chips
55			Basalt cobble or boulder, moderately weathered, highly vesicular (up to 1/2-inch diameter), aphanitic, minor recrystalization in vesicles between 54 to 55 ft bgs.						10/20 Colorado Silica Sand
			Basalt cobble or boulder, slightly weathered, minor vesicles (< 5 mm), aphanitic between 57 to 58 ft bgs.						Well Screen
60									

BORING METHOD: Sonic
BOREHOLE DIAMETER: 6.0 (in)
DRILL RIG: Sonic
CONTRACTOR: Cascade Drilling
LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: 176811/80946
DRILLING DATES: 09/19/2005 - 09/19/2005

REMARKS:
Three bollards surround flush-mount monument.

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
60		GP	Grades to dark gray.						Well Screen (Schedule 40 PVC, 2.0-inch I.D. with 0.010-inch slot size); 10/20 Colorado Silica Sand; Threaded End Cap
65			Total depth drilled = 66 ft bgs.						
70									
75									
80									
85									
90									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

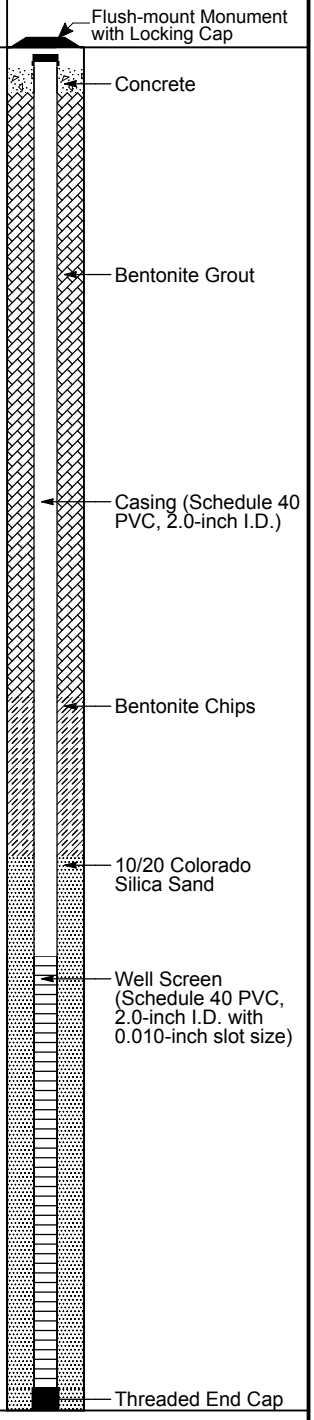
START CARD/TAG ID: 176811/80946

DRILLING DATES: 09/19/2005 - 09/19/2005

REMARKS:
Three bollards surround flush-mount monument.

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING
0			Refer to boring RP-10-139 for lithology between 0 to 20 ft bgs.					
5								
10								
15								
20		SP	Medium dense, gray, fine SAND with trace silt; wet.					
25			With silt at 25 ft bgs.					
		ML	Medium stiff, gray SILT with some sand, laminated with 2-inch to 4-inch layers of silty fine sand; moist.					
30			Total depth drilled = 30 ft bgs.					

WELL SCHEMATIC



BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 176810/80945

DRILLING DATES: 09/16/2005 - 09/16/2005

REMARKS:
Three bollards surround flush-mount monument.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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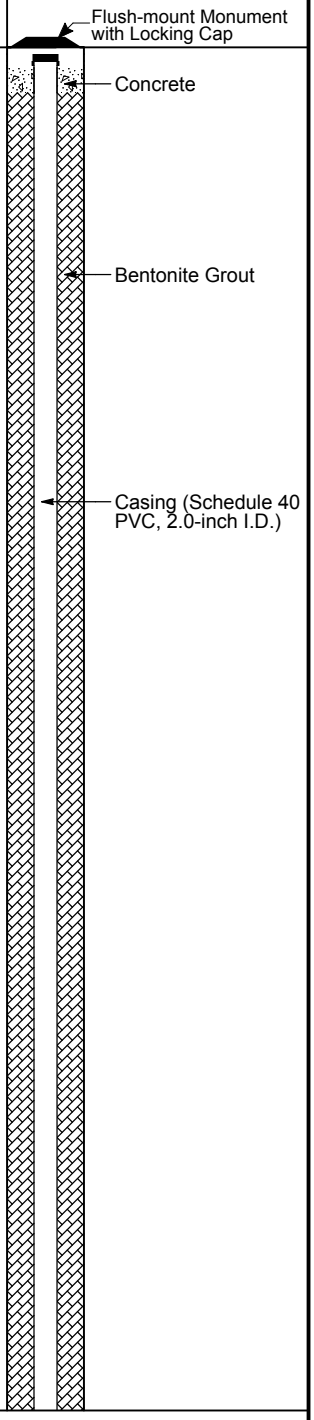
LOG OF BORING RP-10-30

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
0			Refer to boring RP-10-139 for lithology between 0 to 45 ft bgs.						
5									
10									
15									
20									
25									
30									



BORING METHOD: Sonic
BOREHOLE DIAMETER: 6.0 (in)
DRILL RIG: Sonic
CONTRACTOR: Cascade Drilling
LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: 176809/80944
DRILLING DATES: 09/16/2005 - 09/16/2005

REMARKS:
Three bollards surround flush-mount monument.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING RP-10-60

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
30									Bentonite Grout
									Casing (Schedule 40 PVC, 2.0-inch I.D.)
35									
40									
45		SM	Medium dense, mottled brown and gray, silty, fine SAND with trace clay; wet.						
		ML	Medium stiff, gray SILT with some clay; wet.						Bentonite Chips
50			Becomes brown.						10/20 Colorado Silica Sand
55		SM	Medium dense, brown, silty, fine SAND, interbedded with silt layers approximately 6 inches in thickness; wet.						Well Screen (Schedule 40 PVC, 2.0-inch I.D. with 0.010-inch slot size)
60									Threaded End Cap

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 176809/80944

DRILLING DATES: 09/16/2005 - 09/16/2005

REMARKS:

Three bollards surround flush-mount monument.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
60		ML	Medium stiff, brown SILT with trace clay; moist.						10/20 Colorado Silica Sand
			Total depth drilled = 62 ft bgs.						
65									
70									
75									
80									
85									
90									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: J. Fassio

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 176809/80944

DRILLING DATES: 09/16/2005 - 09/16/2005

REMARKS:
Three bollards surround flush-mount monument.

RP - Portland
Stage 1 SCE

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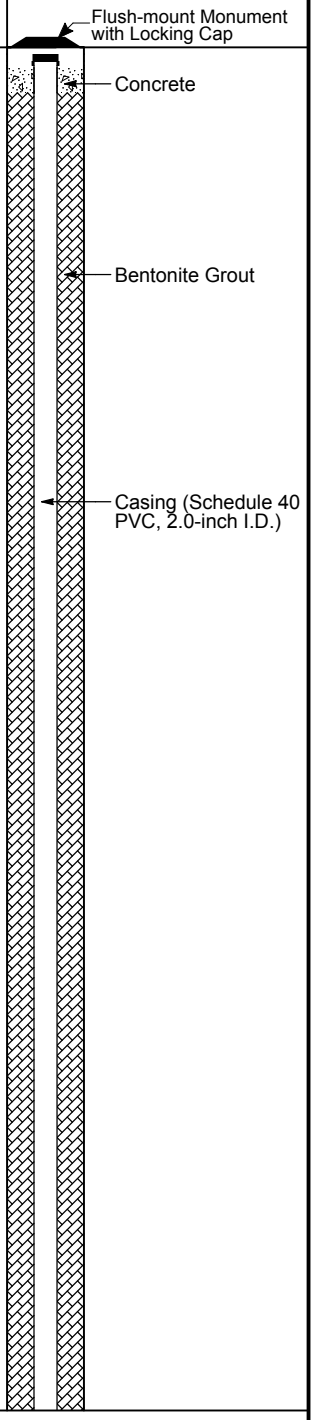
LOG OF BORING RP-10-60

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING
0		SP	Medium dense, brown, gravelly SAND (FILL); dry.					
		PCC	Concrete. (FILL)			0.0		
		SP						
5								
10								
		SP	Medium dense, brown, fine SAND; moist.					
						0.0		
15								
		SM	Medium dense, gray, silty, fine SAND; moist.					
20		SP	Medium dense, gray, fine SAND with trace silt and trace wood debris; wet.					
		ML	Medium stiff, gray, fine, sandy SILT; wet.					
		SP	Medium dense, gray, fine SAND; wet.					
						0.0		
25								
30								

WELL SCHEMATIC



BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 176807/80942

DRILLING DATES: 09/13/2005 - 09/13/2005

REMARKS:
Three bollards surround flush-mount monument.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING RP-10-97

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
30		SP							Bentonite Grout
		SM	Medium dense, grayish-brown, silty, fine SAND with wood debris; wet.						Casing (Schedule 40 PVC, 2.0-inch I.D.)
		SM	Medium dense, gray, silty, fine SAND; wet.						
35									
40			Grades to brownish-gray.						
		ML	Stiff, blue-gray SILT; moist.						
45		SP	Medium dense, gray, fine SAND; wet.						
		SM	Medium dense, grayish-brown, silty, fine SAND; wet.						
50		SP	Medium dense, gray, fine SAND with silt; wet.						
55						0.0			
		SP	Medium dense, gray, fine SAND; wet.						
60									

BORING METHOD: Sonic
BOREHOLE DIAMETER: 6.0 (in)
DRILL RIG: Sonic
CONTRACTOR: Cascade Drilling
LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: 176807/80942
DRILLING DATES: 09/13/2005 - 09/13/2005

REMARKS:
Three bollards surround flush-mount monument.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
60		SP							Bentonite Grout
		ML	Stiff, blue-gray SILT; wet.						Casing (Schedule 40 PVC, 2.0-inch I.D.)
65									
		ML	Medium stiff, brown SILT; wet.						
70		SP	Medium dense, brown, fine SAND with trace silt; wet.			0.0			
75									
		ML	Medium stiff, brown SILT; wet.						
		SP	Medium dense, brown, fine SAND with trace silt; wet.						
80									
85									
		GP	Dense, brown, subangular to rounded, sandy GRAVEL; wet.						Bentonite Chips
90									

BORING METHOD: Sonic
BOREHOLE DIAMETER: 6.0 (in)
DRILL RIG: Sonic
CONTRACTOR: Cascade Drilling
LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: 176807/80942
DRILLING DATES: 09/13/2005 - 09/13/2005

REMARKS:
Three bollards surround flush-mount monument.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING
RP-10-97

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
90		GP	Grades to gray.			0.0			10/20 Colorado Silica Sand; Well Screen (Schedule 40 PVC, 2.0-inch I.D. with 0.010-inch slot size)
95						0.0			Threaded End Cap; Bentonite Chips
100		GP	Reddish-brown, sandy, highly weathered basalt GRAVEL, with hydrothermal and recalcification.						
105			Total depth drilled = 106 ft bgs.			0.0			
110									
115									
120									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 176807/80942

DRILLING DATES: 09/13/2005 - 09/13/2005

REMARKS:
Three bollards surround flush-mount monument.

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
0			Refer to boring RP-10-97 for lithology between 0 to 106 ft bgs.						Flush-mount Monument with Locking Cap; Concrete
						0.0			
5									Bentonite Grout
10									Casing (Schedule 40 PVC, 2.0-inch I.D.)
						0.0			
15									
20									
						0.0			
25									
30									

BORING METHOD: Sonic
BOREHOLE DIAMETER: 6.0 (in)
DRILL RIG: Sonic
CONTRACTOR: Cascade Drilling
LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: 176808/80943
DRILLING DATES: 09/15/2005 - 09/15/2005

REMARKS:
Three bollards surround flush-mount monument.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

AMEC
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LOG OF BORING RP-10-130

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
30			Refer to boring RP-10-97 for lithology between 0 to 106 ft bgs.						Bentonite Grout; Casing (Schedule 40 PVC, 2.0-inch I.D.)
35									
40									
45									
50									
55						0.0			
60									

BORING METHOD: Sonic
BOREHOLE DIAMETER: 6.0 (in)
DRILL RIG: Sonic
CONTRACTOR: Cascade Drilling
LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: 176808/80943
DRILLING DATES: 09/15/2005 - 09/15/2005

REMARKS:
Three bollards surround flush-mount monument.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
60			Refer to boring RP-10-97 for lithology between 0 to 106 ft bgs.						Bentonite Grout; Casing (Schedule 40 PVC, 2.0-inch I.D.)
65									
70						0.0			
75									
80									
85									Bentonite Chips; Bentonite Pellets
90									

BORING METHOD: Sonic
BOREHOLE DIAMETER: 6.0 (in)
DRILL RIG: Sonic
CONTRACTOR: Cascade Drilling
LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: 176808/80943
DRILLING DATES: 09/15/2005 - 09/15/2005

REMARKS:
Three bollards surround flush-mount monument.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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amec

LOG OF BORING
RP-10-130

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
90			Refer to boring RP-10-97 for lithology between 0 to 106 ft bgs.						Bentonite Pellets
						0.0			Casing (Schedule 40 PVC, 2.0-inch I.D.)
95									
						0.0			
100									
105						0.0			
		GP	Reddish-brown, sandy, highly weathered basalt GRAVEL, with hydrothermal and recalcification.						
110			Grades to grayish-brown.						
			Grades to orange, yellow and black mottling.						
115									
120									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 176808/80943

DRILLING DATES: 09/15/2005 - 09/15/2005

REMARKS:
Three bollards surround flush-mount monument.

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LOG OF BORING RP-10-130

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
120		GP				0.0			Bentonite Pellets; Casing (Schedule 40 PVC, 2.0-inch I.D.); 10/20 Colorado Silica Sand
		GP	Dense, light gray, fine, sandy GRAVEL; wet.						
125		GM	Dense, dark gray-brown, fine, sandy GRAVEL with silt; wet.			0.0			Well Screen (Schedule 40 PVC, 2.0-inch I.D. with 0.010-inch slot size)
130						0.0			Threaded End Cap; Bentonite Pellets
135			With cobbles.						
			Total depth drilled = 139 ft bgs.						
140									
145									
150									

BORING METHOD: Sonic
BOREHOLE DIAMETER: 6.0 (in)
DRILL RIG: Sonic
CONTRACTOR: Cascade Drilling
LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: 176808/80943
DRILLING DATES: 09/15/2005 - 09/15/2005

REMARKS:
Three bollards surround flush-mount monument.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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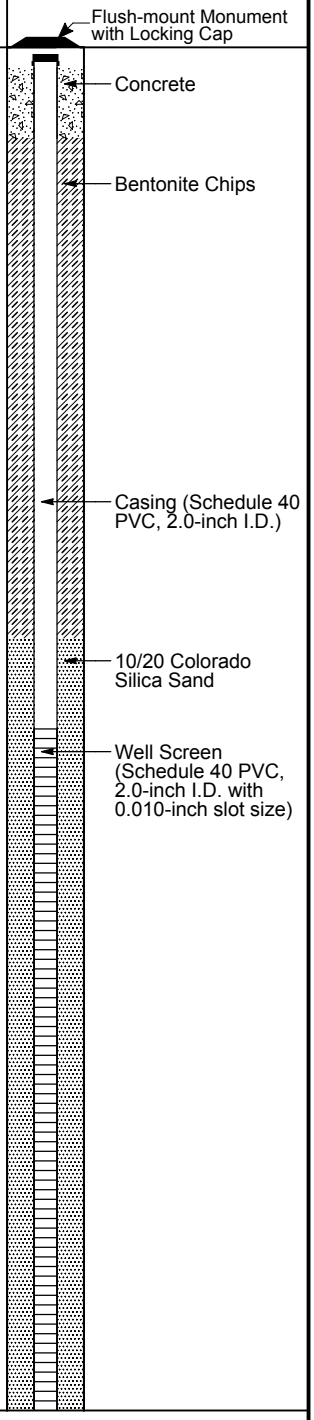
LOG OF BORING RP-10-130

B-2

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING
0			Refer to boring RP-11-216 for lithology between 0 to 12 ft bgs.					
5								
10								
		SM	Medium dense, gray, silty, fine SAND; wet. Strong petroleum-like odor.			1.3		
15			With wood debris from 17-18 ft bgs.			0.0		
						0.0		
20						0.0		
						0.0		
						0.0		
25						0.0		
			With slight sheen.			0.0		041-01
30								

WELL SCHEMATIC



BORING METHOD: Sonic
BOREHOLE DIAMETER: 6.0 (in)
DRILL RIG: Sonic
CONTRACTOR: Cascade Drilling
LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: 183227/L76297
DRILLING DATES: 12/02/2005 - 12/02/2005

REMARKS:

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING RP-11-30

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
30		ML	Medium stiff, brown mottled with orange and gray, fine, sandy SILT; wet.			0.0			Threaded End Cap
						0.0			Bentonite Chips
						0.0			
35						0.0			
						0.0			
40			Total depth drilled = 40 ft bgs.			0.0			
45									
50									
55									
60									

BORING METHOD: Sonic
BOREHOLE DIAMETER: 6.0 (in)
DRILL RIG: Sonic
CONTRACTOR: Cascade Drilling
LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: 183227/L76297
DRILLING DATES: 12/02/2005 - 12/02/2005

REMARKS:

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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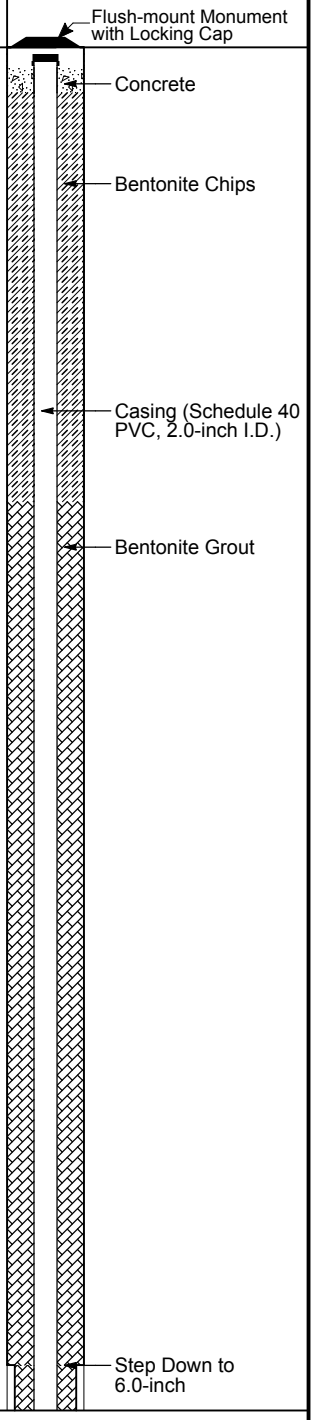
LOG OF BORING RP-11-30

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING
0			Refer to boring RP-11-216 for lithology between 0 to 25 ft bgs.					
5								
10								
15								
20								
25		SM	Medium dense, dark gray, silty, fine SAND with wood debris; wet.			0.0		
		ML	Medium stiff, brown mottled with orange, fine, sandy SILT; wet.					
30								

WELL SCHEMATIC



BORING METHOD: Sonic
BOREHOLE DIAMETER: 8.0 & 6.0 (in)
DRILL RIG: Sonic
CONTRACTOR: Cascade Drilling
LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: 183228/L76296
DRILLING DATES: 11/30/2005 - 12/01/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 29 ft bgs. 6-inch - 29 to 160 ft bgs.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING RP-11-160

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
30			Refer to boring RP-11-216 for lithology between 30 to 150 ft bgs.			0.0			Bentonite Grout; Casing (Schedule 40 PVC, 2.0-inch I.D.)
35									
40									
45									
50									
55									
60									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 183228/L76296

DRILLING DATES: 11/30/2005 - 12/01/2005

REMARKS:

Borehole diameter: 8-inch - 0 to 29 ft bgs. 6-inch - 29 to 160 ft bgs.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING RP-11-160

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
60			Refer to boring RP-11-216 for lithology between 30 to 150 ft bgs.						Bentonite Grout Casing (Schedule 40 PVC, 2.0-inch I.D.)
65									
70									
75									
80									
85									
90									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 183228/L76296

DRILLING DATES: 11/30/2005 - 12/01/2005

REMARKS:

Borehole diameter: 8-inch - 0 to 29 ft bgs. 6-inch - 29 to 160 ft bgs.

RP - Portland
Stage 1 SCE

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LOG OF BORING RP-11-160

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
90			Refer to boring RP-11-216 for lithology between 30 to 150 ft bgs.						Bentonite Grout; Casing (Schedule 40 PVC, 2.0-inch I.D.)
95									
100									
105									
110									
115									
120									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 183228/L76296

DRILLING DATES: 11/30/2005 - 12/01/2005

REMARKS:

Borehole diameter: 8-inch - 0 to 29 ft bgs. 6-inch - 29 to 160 ft bgs.

RP - Portland
Stage 1 SCE

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LOG OF BORING RP-11-160

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
120			Refer to boring RP-11-216 for lithology between 30 to 150 ft bgs.						Bentonite Grout; Casing (Schedule 40 PVC, 2.0-inch I.D.)
125									
130									
135									
140									
145									20/40 Colorado Silica Sand; 10/20 Colorado Silica Sand
150									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 183228/L76296

DRILLING DATES: 11/30/2005 - 12/01/2005

REMARKS:

Borehole diameter: 8-inch - 0 to 29 ft bgs. 6-inch - 29 to 160 ft bgs.

RP - Portland
Stage 1 SCE

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LOG OF BORING RP-11-160

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
150		SP	Medium dense, dark gray, fine SAND with silt; wet.			0.0			Well Screen (Schedule 40 PVC, 2.0-inch I.D. with 0.010-inch slot size)
			With trace organics (leaves, wood).			0.0		140-01	10/20 Colorado Silica Sand
155						0.0			
						0.0			
160			Total depth drilled = 160 ft bgs.			0.0			Threaded End Cap
165									
170									
175									
180									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 183228/L76296

DRILLING DATES: 11/30/2005 - 12/01/2005

REMARKS:

Borehole diameter: 8-inch - 0 to 29 ft bgs. 6-inch - 29 to 160 ft bgs.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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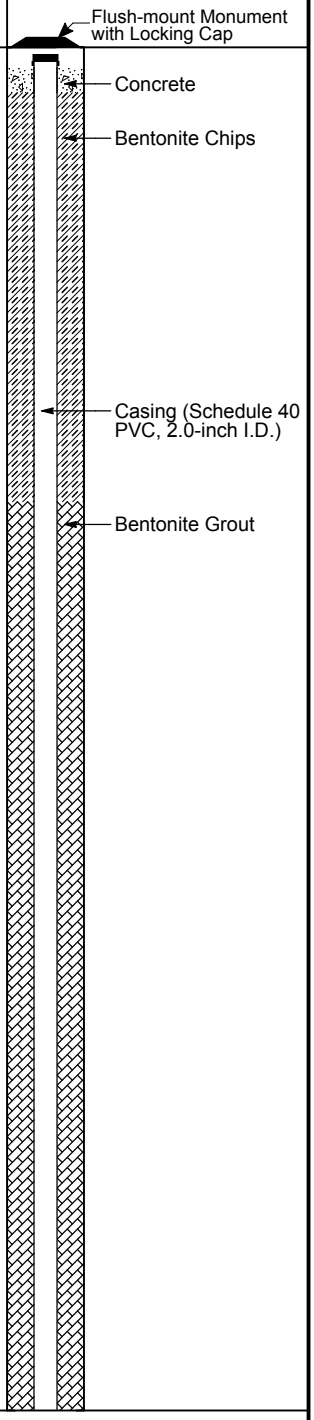
LOG OF BORING RP-11-160

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING
0		GP	Medium dense, brown, fine to medium, sandy GRAVEL (FILL); moist.			0.0		
		SP	Medium dense, brown, gravelly, fine SAND (FILL); moist.					
5						0.0		
						0.0		
		SP	Medium dense, dark gray to black, medium SAND with fine sand; moist. Strong petroleum-like odor and heavy sheen.			0.0		128-01
10								
15			Grades to medium dense, fine SAND; moist. Moderate petroleum-like odor, no sheen.			14		
20			With trace silt.			0.0		
			Becomes wet. Slight petroleum-like odor.			0.0		
25		SM	Medium dense, gray, silty, fine SAND with wood debris; wet.					
		ML	Medium stiff, brown mottled with orange and gray, fine, sandy SILT; wet.			0.4		
30						0.0		

WELL SCHEMATIC



BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 183229/L76278

DRILLING DATES: 11/17/2005 - 11/29/2005

REMARKS:

Borehole diameter: 8-inch - 0 to 30 ft bgs. 6-inch - 30 to 216 ft bgs.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING RP-11-216

ENVR+WELL BORING 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
30		ML				0.9		120-01@ 27-31'	Stainless Steel Centralizer; Step Down to 6.0-inch; Bentonite Grout; Casing (Schedule 40 PVC, 2.0-inch I.D.)
						1.0			
35									
40		SP	Medium dense, gray, fine SAND with trace silt; wet.			0.0			
						0.0			
45						0.0			
			Grades to fine SAND with occasional silt.			0.0			
50						0.0			
						0.0			
		SP	Medium dense, brown with gray, fine SAND with occasional silt; wet.			0.0			
55		SP	Medium dense, gray, fine SAND with occasional silt; wet.						
						0.0			
60									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 183229/L76278

DRILLING DATES: 11/17/2005 - 11/29/2005

REMARKS:

Borehole diameter: 8-inch - 0 to 30 ft bgs. 6-inch - 30 to 216 ft bgs.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
60		SM	Medium dense, gray, silty, fine SAND; wet.			0.0			Bentonite Grout
		ML	Medium stiff, gray, fine, sandy SILT with occasional organics; wet.			0.0			Casing (Schedule 40 PVC, 2.0-inch I.D.)
		SP	Medium dense, gray, fine SAND with silt and occasional organics; wet.			0.0			
65						0.0			
		SM	Medium dense, gray, silty, fine SAND; wet.			0.0			
70						0.0			Stainless Steel Centralizer
			With occasional organics.			0.0			
		SP	Medium dense, gray, fine SAND with occasional silt; wet.			0.0			
75		SM	Medium dense, gray, silty, fine SAND; wet.						
		SP	Medium dense, gray, fine SAND with trace silt; wet.						
80									
85						0.0			
		ML	Medium stiff, gray SILT with fine sand and organics; wet.			0.0			
		SP	Medium dense, gray, fine SAND with occasional silt; wet.						
90									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 183229/L76278

DRILLING DATES: 11/17/2005 - 11/29/2005

REMARKS:

Borehole diameter: 8-inch - 0 to 30 ft bgs. 6-inch - 30 to 216 ft bgs.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
90		SP				0.0			Bentonite Grout
						0.0			
		ML	Medium stiff, gray SILT with fine sand; wet.						Casing (Schedule 40 PVC, 2.0-inch I.D.)
		SP	Medium dense, gray, fine SAND with trace silt; wet.			0.0			
95									
		ML	Medium stiff, gray, fine, sandy SILT with trace organics; wet.						
						0.0			
100						0.0		122-01@ 96-100'	
						0.0			
		SM	Medium dense, gray, silty, fine SAND; wet.			0.0			
		ML	Medium stiff, gray, fine, sandy SILT; wet.			0.0			
105									
						0.0			
		SM	Medium dense, gray, silty, fine SAND; wet.						
						0.0			
110		ML	Medium stiff, gray SILT with fine sand; wet.						Stainless Steel Centralizer
		SP	Medium dense, gray, fine SAND with occasional silt; wet.						
						0.0			
		ML	Medium stiff, gray, fine, sandy SILT; wet.			0.0			
115						0.8			
						0.0			
		SP	Medium dense, gray, fine SAND; wet.			0.0			
120									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 183229/L76278

DRILLING DATES: 11/17/2005 - 11/29/2005

REMARKS:

Borehole diameter: 8-inch - 0 to 30 ft bgs. 6-inch - 30 to 216 ft bgs.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
120		SP							Bentonite Grout
		ML	Medium stiff, gray, fine, sandy SILT with occasional organics; wet.			0.0			Casing (Schedule 40 PVC, 2.0-inch I.D.)
						0.0			
125						0.0			
						0.0			
130						0.0		123-01@ 126-130'	
		SP	Medium dense, gray, fine SAND with trace silt; wet.			0.0			
						0.0			
135									
		SP	Medium dense, gray, fine SAND; wet.			0.0			
140						0.0			
		SM	Medium dense, gray, silty, fine SAND; wet.			0.0			
		ML	Medium stiff, gray, fine, sandy SILT; wet.			0.0			
145						0.0			
						0.0			
150									Stainless Steel Centralizer

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 183229/L76278

DRILLING DATES: 11/17/2005 - 11/29/2005

REMARKS:

Borehole diameter: 8-inch - 0 to 30 ft bgs. 6-inch - 30 to 216 ft bgs.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
150		ML				0.0			Bentonite Grout
						0.0		124-01@ 148-152'	Casing (Schedule 40 PVC, 2.0-inch I.D.)
		SP	Medium dense, gray, fine SAND with trace silt; wet.			0.0			
155		SM	Medium dense, gray, silty, fine SAND; wet.						
						0.0			
160		SP	Medium dense, gray, fine SAND with silt and organic debris (leaves, roots); wet.			0.0			
		ML	Medium stiff, gray SILT with fine sand; wet.			0.0			
		SP	Medium dense, gray, fine SAND with silt; wet.						
		SM	Dense, gray, silty, fine SAND with organics (roots, leaves, wood); wet.						
165						0.0			
						0.0			
170						0.0			
						0.0			
						0.0			
175		SP	Medium dense, gray, fine SAND with trace silt; wet.						
180									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 183229/L76278

DRILLING DATES: 11/17/2005 - 11/29/2005

REMARKS:

Borehole diameter: 8-inch - 0 to 30 ft bgs. 6-inch - 30 to 216 ft bgs.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
180		SM	Medium dense, gray, silty, fine SAND; wet.						Bentonite Grout
						0.0			
						0.0			Casing (Schedule 40 PVC, 2.0-inch I.D.)
						0.0			
185									
		SP	Medium dense, gray, fine SAND with silt; wet.			0.0			
						0.0			
190								135-01@ 176-190'	Stainless Steel Centralizer
		SP	Medium dense, gray, fine SAND; wet.						
						0.0			
195									
						0.0			
						0.0			
		SP	Medium dense, brown, fine SAND; wet.						
200		SM	Medium dense, gray, silty, fine SAND; wet.			0.0			
						0.0			
						0.0			
		GP	Medium dense, dark gray, fine to coarse, rounded to angular, sandy GRAVEL; wet.						Bentonite Chips
205		GM	Dense, dark gray with brown and green, angular to subangular, silty, basalt GRAVEL; wet.						
		GM	Dense, brown, subangular, silty, highly weathered, basalt GRAVEL with clay and sand, minor vesicles with soft, white, mineral replacement; moist.						
		GM	Brownish-red, subangular to subrounded, silty, highly weathered, basalt GRAVEL with trace clay and sand, trace gravels with abundant vesicles replaced with soft, white minerals.			0.0		138-01	10/20 Colorado Silica Sand Stainless Steel Centralizer
210									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 183229/L76278

DRILLING DATES: 11/17/2005 - 11/29/2005

REMARKS:

Borehole diameter: 8-inch - 0 to 30 ft bgs. 6-inch - 30 to 216 ft bgs.

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Fax (503) 620-7892

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD AND LABORATORY TESTING	WELL SCHEMATIC
210		ML	Very stiff, grayish red, gravelly SILT with trace clay and sand, subrounded, highly weathered, basalt gravel; wet.			0.0 0.0 0.0			Well Screen (Schedule 40 PVC, 2.0-inch I.D. with 0.010-inch slot size)
215		GM	Dense, gray, angular to subangular, silty, slightly weathered, basalt GRAVEL with fine sand and trace clay; wet.			0.0		139-01@ 210-216'	Threaded End Cap
			Total depth drilled = 216 ft bgs.						
220									
225									
230									
235									
240									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

START CARD/TAG ID: 183229/L76278

DRILLING DATES: 11/17/2005 - 11/29/2005

REMARKS:

Borehole diameter: 8-inch - 0 to 30 ft bgs. 6-inch - 30 to 216 ft bgs.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
0		SP	Loose, brown, fine SAND (FILL) with trace gravel; moist.			0.0			
						0.0			
5			Gravel becomes rounded and coarser.						
10		SP	Medium dense, gray, fine SAND (FILL); moist. Strong petroleum-like odor.						
		SM	Medium dense, brown, silty SAND (FILL) with debris (rubber); moist.			0.0			
		SM	Medium dense, gray, silty SAND (FILL), debris, trace copper wire; moist. Slight petroleum-like odor.						
		SM	Stiff, gray, sandy SILT (FILL); moist. Slight petroleum-like odor.			0.0			
		SP	Medium dense, brown, fine SAND (FILL) with trace gravel; moist.						
15		SM	Stiff, gray, sandy SILT (FILL) with trace copper wire and glass debris; moist. Moderate petroleum-like odor.						
		SP	Medium dense, dark gray, fine SAND (FILL); moist. Strong petroleum-like odor.						
		ML	Stiff, gray SILT (FILL) with fine sand; moist. Strong petroleum-like odor.						
		SP	Medium dense, gray, fine SAND (FILL); moist. Strong petroleum-like odor and heavy sheen.			169 194			
20			With trace silt.			205			
		SP	Medium dense, gray, fine SAND (FILL); moist. Moderate petroleum-like odor.			262 3.0			
25			With trace organics (roots) and fine gravel.			3.8			
			With trace silt and brick debris. (FILL)			5.1			
		SP	Medium dense, brownish gray, fine SAND (FILL); moist. Slight petroleum-like odor.						
30									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 10.0, 8.0, & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C Johnson & L. Glonek

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 10/31/2005 - 10/31/2005

REMARKS:
Borehole diameter: 10-inch - 0 to 27 ft bgs. 8-inch - 27 to 158 ft bgs. 6-inch - 158 to 218 ft bgs.

Bentonite seal at bottom of casing before stepping down.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

AMEC
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Tel (503) 639-3400
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LOG OF BORING SIL-01

ENVIRONMENTAL BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
30		SP	Loose, brown, fine SAND (FILL) with trace rounded gravel; moist. Strong petroleum-like odor.			18			101-01
		SM	Medium stiff, brown, sandy SILT (FILL) with trace organics; et.						
35						0.0			
		SM	Medium stiff, dark gray, sandy SILT (FILL), metal debris to 40 ft bgs; wet. Moderate petroleum-like odor.						
						7.9			
40									
						3.6			
45									
		SM	Medium dense, dark gray, silty SAND; wet. Slight petroleum-like odor, no sheen.						
		SM							
		SM	Medium stiff, dark gray, sandy SILT; wet. Slight petroleum-like odor.			3.3			
			Medium dense, dark gray, silty SAND; wet.						
50		SP	Medium dense, dark gray, fine SAND; wet.						
						2.1			
			With trace organics.						
55		ML	Stiff, brownish dark gray SILT with trace organics (roots); wet.						
		SP	Medium dense, dark gray, fine SAND with trace organics; wet.			2.3			
						3.3			
60		SM	Medium dense, dark gray, silty SAND, trace organics; wet.						

BORING METHOD: Sonic

BOREHOLE DIAMETER: 10.0, 8.0, & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C Johnson & L. Glonek

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 10/31/2005 - 10/31/2005

REMARKS:
Borehole diameter: 10-inch - 0 to 27 ft bgs. 8-inch - 27 to 158 ft bgs. 6-inch - 158 to 218 ft bgs.

Bentonite seal at bottom of casing before stepping down.

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
60		SP	Medium dense, dark gray, fine SAND with trace organics; wet.						
		ML	Medium stiff, brownish dark gray SILT with trace organics.						
		SP	Medium dense, dark gray, fine SAND with trace organics; wet.			5.3			
65		ML	Medium stiff, brownish dark gray SILT with occasional organics and fine sand laminae.						
		SP	Medium dense, dark gray, fine SAND; wet.			7.2			
		ML	Medium stiff, dark gray SILT with fine sand laminae and some organics; wet.						
70									
		SP	Medium dense, dark gray, fine SAND with occasional organics; wet. Slight petroleum-like odor.			15			
			No organics below 74 ft bgs.						
75									
		ML	Medium stiff, dark gray SILT with fine sand; wet.						
		SM	Medium dense, dark gray, fine SAND with trace silt; wet.			14			
			With silt nodules (to 1-inch diameter) from 79-79.5 ft bgs.						
80									
			With silt nodules (to 1.5-inch diameter) from 81-81.5 ft bgs.			0.0			
		ML	Medium stiff, dark gray, fine, sandy SILT with fine sand lense (1 inch thick at 82 ft bgs); wet.						
		SP	Medium dense, dark gray, fine SAND with abundant silt nodules from 83-84 ft bgs; wet.			0.0			
85		ML	Medium stiff, dark gray SILT with fine sand; wet.			3.9			
		SP	Medium dense, dark gray, fine SAND; wet.			0.0			
90									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 10.0, 8.0, & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C Johnson & L. Glonek

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 10/31/2005 - 10/31/2005

REMARKS:
Borehole diameter: 10-inch - 0 to 27 ft bgs. 8-inch - 27 to 158 ft bgs. 6-inch - 158 to 218 ft bgs.

Bentonite seal at bottom of casing before stepping down.

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
90		SP				0.0			
95		ML	Medium stiff, dark gray, fine, sandy SILT; wet.						
		SP	Medium dense, dark gray, fine SAND; wet.			0.0			
100						0.0			115-01
		SM	Medium dense, dark gray, fine SAND with abundant gray silt nodules; wet.						
105						0.0			
						0.0			
110						0.0			
		ML	Medium stiff, gray SILT with trace organics; wet.						
		SM	Medium dense, dark gray, fine SAND with abundant gray silt nodules (to 1/2-inch diameter); wet.			0.0			
115			With abundant silt nodules (to 1/2-inch to 3-inch diameter).						
120									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 10.0, 8.0, & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C Johnson & L. Glonek

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 10/31/2005 - 10/31/2005

REMARKS:
Borehole diameter: 10-inch - 0 to 27 ft bgs. 8-inch - 27 to 158 ft bgs. 6-inch - 158 to 218 ft bgs.

Bentonite seal at bottom of casing before stepping down.

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
120		SM				0.0			
			With trace silt nodules (to 3/4-inch diameter) and trace organics in nodules.						
125			Occasional silt nodules.			0.0			
		SP	Medium dense, gray, fine SAND; wet. (Heaving sand conditions encountered, resulting in 10 feet of disturbed material inside drill stem/casing.)						
130						0.0			116-01
						0.0			
135						0.0			
						0.0			
140		ML	Medium stiff, gray SILT with trace fine sand lenses; wet.						
		SP	Medium dense, gray, fine SAND; wet.			0.0			
145						0.0			
150									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 10.0, 8.0, & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C Johnson & L. Glonek

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 10/31/2005 - 10/31/2005

REMARKS:
Borehole diameter: 10-inch - 0 to 27 ft bgs. 8-inch - 27 to 158 ft bgs. 6-inch - 158 to 218 ft bgs.

Bentonite seal at bottom of casing before stepping down.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
150		SP				0.0			
						0.0			
155			With trace gray silt nodules (to 1/2-inch diameter).						
						0.0			
		ML	Medium stiff, gray SILT with trace fine sand; wet.			0.0			
160		SP	Medium dense, gray, fine SAND; wet.						117-01
						0.0			
						0.0			
165									
170						0.0			
						0.0			
175						0.0			
		SM	Medium dense, gray, fine SAND with trace silt nodules (to 1.5-inch diameter); wet.			0.0			
						0.0			
180									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 10.0, 8.0, & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C Johnson & L. Glonek

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 10/31/2005 - 10/31/2005

REMARKS:
Borehole diameter: 10-inch - 0 to 27 ft bgs. 8-inch - 27 to 158 ft bgs. 6-inch - 158 to 218 ft bgs.

Bentonite seal at bottom of casing before stepping down.

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LOG OF BORING SIL-01

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
180		SM							
		SP	Medium dense, gray, fine SAND; wet.			0.0			
185						0.0			118-01
			With trace silt nodules from 189-191 ft bgs.			0.0			
190						0.0			
		SP	Medium dense, brown, fine SAND; wet.			0.0			
195						0.0			
						0.0			
200						0.0			
			With trace medium sand.			0.0			
						0.0			
205		GP	Dense, brown, subangular to rounded, sandy GRAVEL with trace silt, alluvium; wet.			0.0			
		GC	Dense, gray, red and greenish-brown, clayey, slightly weathered, basalt GRAVEL, trace vesicles; moist.			0.0			109-01
210									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 10.0, 8.0, & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C Johnson & L. Glonek

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 10/31/2005 - 10/31/2005

REMARKS:
Borehole diameter: 10-inch - 0 to 27 ft bgs. 8-inch - 27 to 158 ft bgs. 6-inch - 158 to 218 ft bgs.

Bentonite seal at bottom of casing before stepping down.

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
210		GC	Very dense, dark gray to red-brown, rounded, clayey GRAVEL with trace sand (10%), gravel lithology varies from basalt, chert, and quartzite; moist.						
		SP	Dense, gray, coarse SAND; wet.						
		GC	Very dense, light to dark gray, coarse, clayey, moderately weathered to decomposed basalt GRAVEL with some silt and sand; wet.						
215									114-01
			Total depth drilled = 218 ft bgs.						
220									
225									
230									
235									
240									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 10.0, 8.0, & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C Johnson & L. Glonek

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 10/31/2005 - 10/31/2005

REMARKS:
Borehole diameter: 10-inch - 0 to 27 ft bgs. 8-inch - 27 to 158 ft bgs. 6-inch - 158 to 218 ft bgs.

Bentonite seal at bottom of casing before stepping down.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
0		SP	Medium dense, brown, fine SAND (FILL) with trace medium sand; moist.						
		SM	Medium dense, brown, silty, fine SAND (FILL); moist.						
		SP	Medium dense, brown, fine SAND (FILL) with occasional fine gravel and wood debris; moist.			1.9			
5						0.0			
		SP	Medium dense, brown with gray, fine SAND (FILL) with occasional gravel; moist.			0.0			
10		SP	Medium dense, dark gray to black, fine SAND (FILL) with occasional fine gravel and silt; moist. Strong petroleum-like odor, slight sheen.						
			Sheen becomes heavy.			67			
						0.0			
						47			
15			No sheen.						
			Petroleum-like odor becomes moderate.						
						9.4			
						0.0			
20			No silt and strong petroleum-like odor.						
						0.0			
						0.0			
25						1.4			
						0.0			
			With heavy sheen.						
30									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 11/10/2005 - 11/15/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 35 ft bgs. 6-inch - 35 to 235 ft bgs.

RP - Portland
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LOG OF BORING SIL-02

ENVIRONMENTAL BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
30		SP							127-01
35		ML	Medium stiff, gray SILT with trace fine sand; moist.			0.0			
						0.0			
40			Becomes wet.			0.0			
		PT	PEAT.						
		ML	Medium stiff, gray SILT with trace fine sand; wet.						
45			With trace organics.			0.0			
						0.0			
		SM	Medium dense, gray, silty, fine SAND with trace organics; wet.						
50		SP	Medium dense, gray, fine SAND with silt; wet.			0.0			
						0.0			
		ML	Medium stiff, gray SILT with fine sand and trace organics; wet.			0.0			
55		SM	Medium dense, gray, silty fine SAND; wet.			0.0			
		ML	Medium stiff, gray, fine, sandy SILT with trace organics; wet.			0.0			
		SM	Medium dense, gray silty, fine SAND; wet.						
60									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 11/10/2005 - 11/15/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 35 ft bgs. 6-inch - 35 to 235 ft bgs.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
60		ML	Medium stiff, gray SILT with fine sand and trace organics; wet.						
		SP	Medium dense, gray, fine SAND with occasional silt; wet.						
		SP	Medium dense, gray, fine SAND; wet.			0.0			
						0.0			
						0.0			
		ML	Medium stiff, gray SILT with trace fine sand; wet.						
65		SP	Medium dense, gray, fine SAND; wet.						
						0.0			
70						0.0			
						0.0			
						0.0			
						0.0			
75									
						0.0			
80									
		ML	Medium stiff, gray SILT with fine sand; wet.						
		SP	Medium dense, gray, fine SAND; wet.			0.0			
						0.0			
						0.0			
85			With trace organics from 84-85 ft bgs.						
			With trace silt.						
		ML	Medium stiff, gray SILT with trace sand and organics; wet.			0.0			
90									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 11/10/2005 - 11/15/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 35 ft bgs. 6-inch - 35 to 235 ft bgs.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
90		SP	Medium dense, gray, fine SAND; wet.			0.0			
						0.0			
						0.0			
		ML	Medium stiff, gray, fine, sandy SILT; wet.						
		SP	Medium dense, gray, fine SAND; wet.			0.0			
95									
						0.0			
100						0.0			131-01
		ML	Medium stiff, gray SILT with fine sand; wet.			0.0			
		SP	Medium dense, gray, fine SAND; wet.			0.0			
						0.0			
105			With trace organics from 104-105 ft bgs.						
						0.0			
		ML	Medium stiff, gray SILT; wet.						
110		SP	Medium dense, gray, fine SAND; wet.			0.0			
		ML	Medium stiff, gray SILT with trace fine sand; wet.			0.0			
						0.0			
						0.0			
115			With trace organics and occasional fine sand.						
		SP	Medium dense, gray, fine SAND with trace silt nodules (to 1-inch diameter); wet.						
						0.0			
		SM	Medium dense, gray, silty, fine SAND; wet.						
120									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 11/10/2005 - 11/15/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 35 ft bgs. 6-inch - 35 to 235 ft bgs.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
120		SM				0.0			
						0.0			
						0.0			
		ML	Medium stiff, gray SILT with fine sand; wet.						
		SM	Medium dense, gray, silty, fine SAND; wet.			0.0			
125									
						0.0			
130		ML	Medium stiff, gray SILT with trace fine sand and occasional organics; wet.			0.0			132-01
		SP	Medium dense, gray, fine SAND with occasional silt; wet.			0.0			
		ML	Medium stiff, gray SILT with trace fine sand; wet.			0.0			
		SP	Medium dense, gray, fine SAND; wet.						
			With trace silt nodules from 134-135 ft bgs.			0.0			
135									
		SM	Medium dense, gray, silty, fine SAND; wet.						
140						0.0			
		SP	Medium dense, gray, fine SAND; wet.						
						0.0			
						0.0			
145		SM	Medium dense, gray, fine SAND with silt nodules (to 2-inch diameter); wet.						
						0.0			
						0.0			
		ML	Medium stiff, gray, fine, sandy SILT; wet.						
150									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 11/10/2005 - 11/15/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 35 ft bgs. 6-inch - 35 to 235 ft bgs.

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
150		ML				0.0			
						0.0			
						0.0			
155									
		SM	Medium dense, gray, silty, fine SAND with occasional organics; wet.						
						0.0			
160									133-01
						0.0			
						0.0			
165									
		ML	Medium stiff, gray SILT with fine sand; wet.			0.0			
		SM	Medium dense, gray, silty, fine SAND; wet.						
						0.0			
170						0.0			
						0.0			
			With trace organics from 174-175 ft bgs.			0.0			
175									
		ML	Medium stiff, gray SILT with organics (leaves, needles, bark) and trace fine sand; wet.						
180									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 11/10/2005 - 11/15/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 35 ft bgs. 6-inch - 35 to 235 ft bgs.

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
180		ML							
						0.0			
						0.0			
185		SP	Medium dense, gray, fine SAND with organics; wet.						
		SM-ML	Medium dense, gray, silty, fine SAND to medium stiff, fine, sandy SILT; wet.			0.0			
						0.0			
190			With trace organics from 190-192 ft bgs.			0.0			134-01
						0.0			
						0.0			
195		SM	Medium dense, gray, silty, fine SAND; wet.						
						0.0			
200						0.0			
						0.0			
						0.0			
205		ML	Very stiff, dark gray to black with green, blue, and brown, fine, sandy SILT with angular to occasional subrounded, weathered, basalt gravel; wet.			0.0			
		ML	Very stiff, brownish red with occasional yellow, fine, sandy SILT with angular to subangular, weathered, basalt gravel; wet.						
						0.0			
210									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 11/10/2005 - 11/15/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 35 ft bgs. 6-inch - 35 to 235 ft bgs.

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
210		ML				0.0			
		GM	Dense, reddish-gray, angular to subangular, silty GRAVEL with some sand and clay; wet.						
			Grades to brownish-gray.						
215		GM	Dense, gray, subangular to subrounded, silty, clayey, basalt GRAVEL with trace fine sand, fractured, orange oxidized surfaces, occasional gravel with oxidized rings (2-mm to 3-mm diameter); wet.						119-01
220			With boulders.						
			Basalt boulders increase in size (6-inch to 8-inch long cores), fresh, aphanitic.						
225									
230									
235			Total depth drilled = 235 ft bgs.						
240									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 11/10/2005 - 11/15/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 35 ft bgs. 6-inch - 35 to 235 ft bgs.

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
0		SP	Loose, brown, medium to fine SAND (FILL); dry.			0.0			
5									
10		SP	Loose, gray, medium to fine SAND (FILL); dry.						
			With wood debris and trace rounded gravel.			1.0			
15									
		ML	Stiff, gray, clayey SILT; moist.			0.0			
20		ML	Very stiff, gray-green clayey SILT with organics; moist.			0.0			
25									
30						0.0			

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: B. Lary & C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 12/05/2005 - 12/06/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 30 ft bgs. 6-inch - 30 to 130 ft bgs.

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LOG OF BORING SIL-03

ENVIRONMENTAL BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
30		SM	Medium dense, brown, silty SAND; moist to wet.						
35									125-01
		SM-ML	Stiff, gray, sandy SILT/silty SAND with organics; wet.						
40									
45									
			With wood debris.						
50									
55									
60									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: B. Lary & C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 12/05/2005 - 12/06/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 30 ft bgs. 6-inch - 30 to 130 ft bgs.

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
60		SM-ML							
65									
		ML	Stiff, gray-green sandy SILT; wet.						
		SM	Medium dense, brown, silty SAND; wet.						
		GP	Dense, brown and gray, subrounded, fine GRAVEL in silt matrix; wet.						
70									
		GM	Dense, gray, medium to coarse, subrounded to rounded, silty GRAVEL in silt and sand matrix; wet.						
75									
80		GP	Gray, fine GRAVEL with some silt; wet.						
		GP	Red, coarse GRAVEL, weathering rinds around some gravel; wet.						
		GM	Subrounded to subangular GRAVEL with yellowish weathering rinds on gravel (clast lithology: basalt, chert, quartz and granite).						
85		GP	Fine GRAVEL in silt matrix; wet.						
		GM	Very dense, dark gray, rounded, well-graded, fine GRAVEL in silty matrix, trace cobbles; wet.						
90									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: B. Lary & C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 12/05/2005 - 12/06/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 30 ft bgs. 6-inch - 30 to 130 ft bgs.

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
90		GM	Matrix grades from silt to sand.						
			Grades to gray-brown.						
95			Grades to coarse GRAVEL.						
		GW	Gray-brown, fine, sandy GRAVEL; wet.						
		GW	Gray-brown, rounded, silty, sandy GRAVEL; wet.						
			Large cobble (4-inch plus diameter).						
			Grades to gray.						126-01
100		GP	BASALT (6-inch piece). Dense, dark brown to gray, coarse, highly weathered, porphyritic, basalt GRAVEL, with occasional cobble clasts (to 6-inch diameter), with trace silt.						
			BASALT cobble.						
			Silt content increases; moist to wet.						
105			BASALT fragments (3-inch to 5-inch diameter).						
		CL	Soft, red, gravelly CLAY with highly weathered basalt gravels.						
			Grades to reddish-brown to brown.						
110			Gravel becomes coarser, basalt gravels have moderate vesicles (to 4-mm).						
		GM	Medium dense, reddish-brown, angular to subangular, silty, slightly to moderately weathered, basalt GRAVEL and cobbles with clay and trace fine sand, trace vesicles (to 2-mm diameter); wet.						
115									
120									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: B. Lary & C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 12/05/2005 - 12/06/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 30 ft bgs. 6-inch - 30 to 130 ft bgs.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
120		CL	Soft, red, gravelly CLAY with highly weathered basalt gravels.						
			Grades to mottled brown and gray.						
125									
			Increase in gravel and cobble content; wet.						
			Total depth drilled = 130 ft bgs.						
130									142-01
135									
140									
145									
150									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: B. Lary & C. Johnson

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 12/05/2005 - 12/06/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 30 ft bgs. 6-inch - 30 to 130 ft bgs.

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LOG OF BORING SIL-03

ENVIRONMENTAL BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
0		ML	Soft, brown, sandy SILT (FILL) with organics; dry.						
		ML	Soft, brown, sandy SILT (FILL) with trace gravel; dry.						
		SM	Loose, brown, silty SAND (FILL); dry.						
5		SP	Loose, dark gray, medium to fine SAND (FILL) with silt; dry to moist. Slight petroleum-like odor.						
		ML	Soft, dark gray, clayey SILT (FILL); moist.						
10						0.4			
						0.8			
		ML-SM	Medium dense/medium stiff, dark gray, silty SAND/sandy SILT (FILL) with some gravel, piece of plastic; moist. Slight organic odor.						
15			Hit piece of wood; no sample from 16-19 ft bgs.						
						0.3			
						0.0			
20			With trace gravel, organics (wood).						
						0.7			
			Silt content increases, large gravel.			1.2			
			Sand content increases.						
25			Piece of metal debris. (FILL)						
			Large piece of wood, metal debris. (FILL)						
						1.6			
30									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: B. Lary

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 12/07/2005 - 12/09/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 40 ft bgs. 6-inch - 40 to 120 ft bgs.

RP - Portland
Stage 1 SCE

0-61M-107030 P69

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LOG OF BORING SIL-04

ENVIRONMENTAL BORING (MULTIPLE SCREENS) 0-61M-107030-P69.GPJ AMEC PORTLAND.GDT 2/7/06

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
30		ML-SM							136-01
35		ML	Soft, brown, fine, sandy SILT; wet.						
40			Encountered pieces of wood from approximately 41-42 ft bgs.			0.1			
45						0.2			
			Sand content increases.						
50		SP	Loose, dark brown, fine to medium SAND with some silt; wet.			0.3			
55						0.4			
			Grades to fine SAND, micaceous, some silt.						
60									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: B. Lary

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 12/07/2005 - 12/09/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 40 ft bgs. 6-inch - 40 to 120 ft bgs.

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DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
60		SP	Silt content increases.			0.4			
65		ML	Soft, brown, fine, sandy SILT; wet.						
		GM	Loose, brownish gray, rounded to subrounded, basalt GRAVEL with some silt and sand, chert and quartz; wet.						
70						0.6			
		ML	Medium stiff, light green with yellowish mottling, gravelly SILT with angular gravel.			0.6			137-01
75		ML	Stiff, light gray, gravelly SILT with some clay and angular, slightly weathered, porphyritic, basalt gravel; moist.			0.0			
		GM	Medium dense, brown, angular, silty, highly weathered, porphyritic, basalt GRAVEL with some clay infilling; moist to wet.						
80		ML	Stiff, gray with yellow and orange SILT with trace fine weathered gravel, vesicles (to 4-mm diameter) filled with soft, yellow/white crystals; wet.						
85		ML	Stiff, brown, gravelly SILT with trace clay, angular, slightly weathered, porphyritic, gravel, abundant vesicles (to 4-mm diameter); wet.						
		CL	Hard, gray, slightly weathered, basalt cobble, with abundant vesicles (to 5-mm diameter), yellowish-green recrystallization in few vesicles and lining fracture surfaces. Stiff, light gray, gravelly CLAY with silt, angular, porphyritic, highly weathered, basalt gravel; moist.						144-01
90									

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: B. Lary

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

CASING ELEVATION: NA

DRILLING DATES: 12/07/2005 - 12/09/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 40 ft bgs. 6-inch - 40 to 120 ft bgs.

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppm)	GROUNDWATER	FIELD TESTING	TESTING AND LABORATORY DATA
90		CL	Stiff, light gray, gravelly CLAY with silt, angular, porphyritic, highly weathered, basalt gravel; moist.						
95			Basalt cobble.						
		ML	Medium stiff, brown, gravelly SILT with some clay and fine sand, angular to subangular, highly weathered gravel, abundant vesicles (to 2-mm diameter), some with soft, yellow-white, recrystallization; wet.						
100		CL	Medium stiff, light gray with green, gravelly CLAY, angular, moderately weathered, porphyritic gravel, trace vesicles (to 2-mm); wet.						
		GM	Medium dense, dark grayish-brown with orange and yellow, angular to subangular, silty, highly weathered, porphyritic basalt GRAVEL with clay; wet.						
105		CL	Medium stiff, light greenish-gray CLAY with silt, decomposed basalt gravel or highly vesicular basalt with weathering rinds; wet.						
110									
115									
120			Grades to reddish-brown. Total depth drilled = 120 ft bgs.						

BORING METHOD: Sonic

BOREHOLE DIAMETER: 8.0 & 6.0 (in)

DRILL RIG: Sonic

CONTRACTOR: Cascade Drilling

LOGGED BY: B. Lary

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

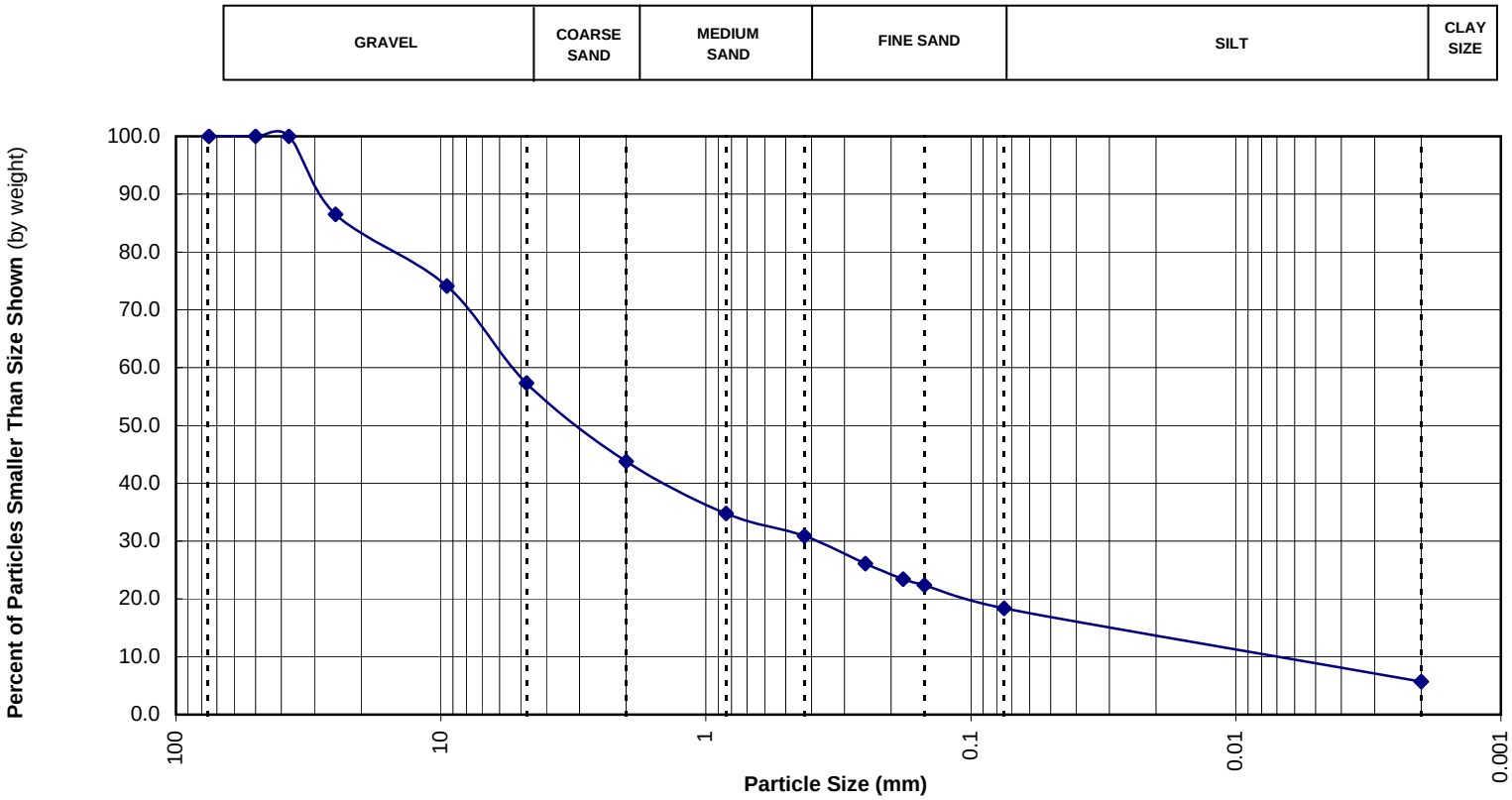
CASING ELEVATION: NA

DRILLING DATES: 12/07/2005 - 12/09/2005

REMARKS:
Borehole diameter: 8-inch - 0 to 40 ft bgs. 6-inch - 40 to 120 ft bgs.

B-3

Grain Size Accumulation Curve



BORING	SAMPLE DEPTH (ft)	MAXIMUM PARTICLE SIZE	UNIFIED SOIL CLASSIFICATION SYSTEM DESCRIPTION
ARK-01	59-60	37.5 mm	GP

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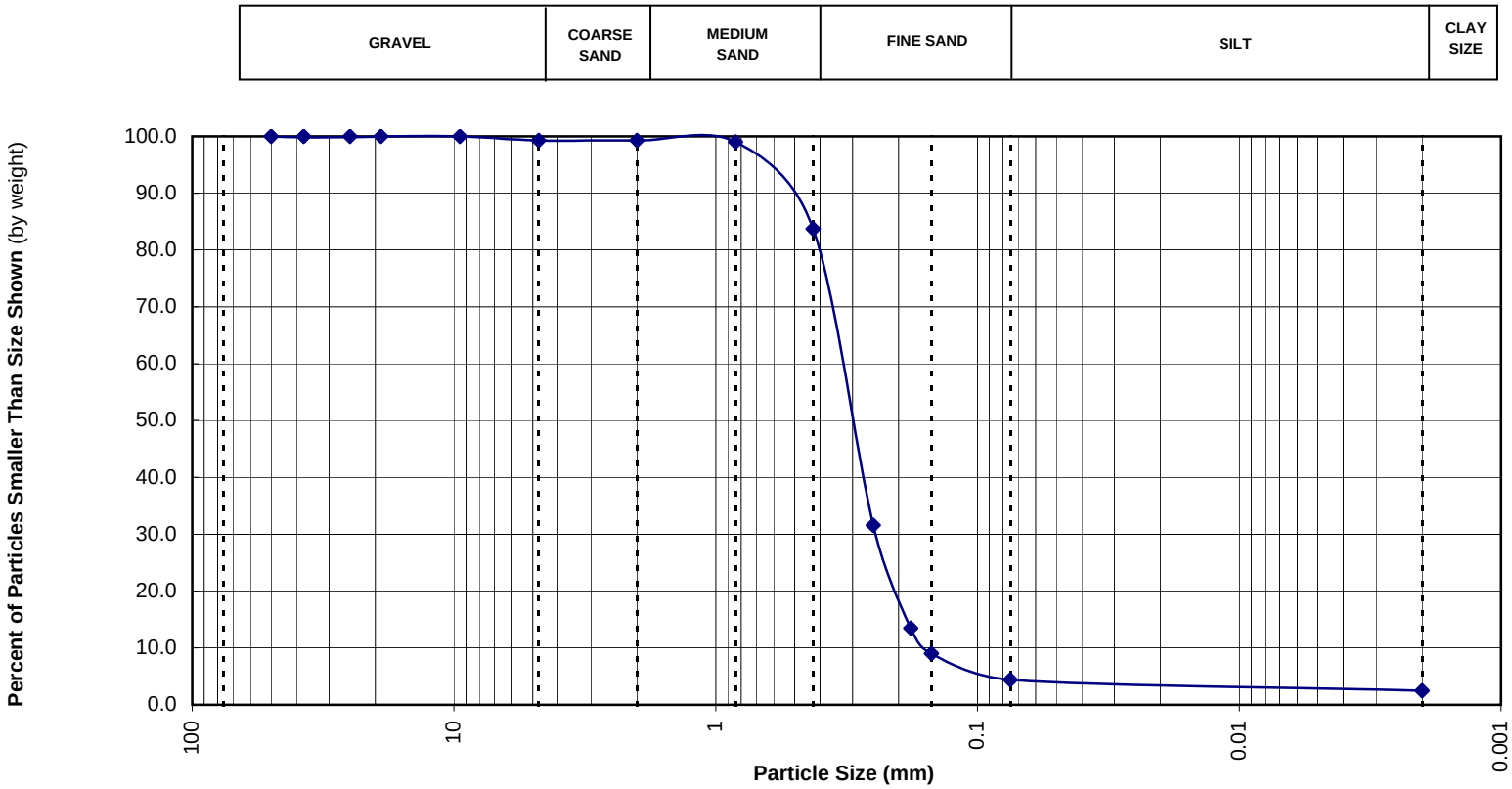
GRAIN SIZE ANALYSIS

FIGURE

B3-1

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\Draft\Appendix B\grain-size distr plots\Revision 2\040-01_ARK01_59-60.xls

Grain Size Accumulation Curve



BORING	SAMPLE DEPTH (ft)	MAXIMUM PARTICLE SIZE	UNIFIED SOIL CLASSIFICATION SYSTEM DESCRIPTION
ARK-09	14-16	9.5 mm	SP

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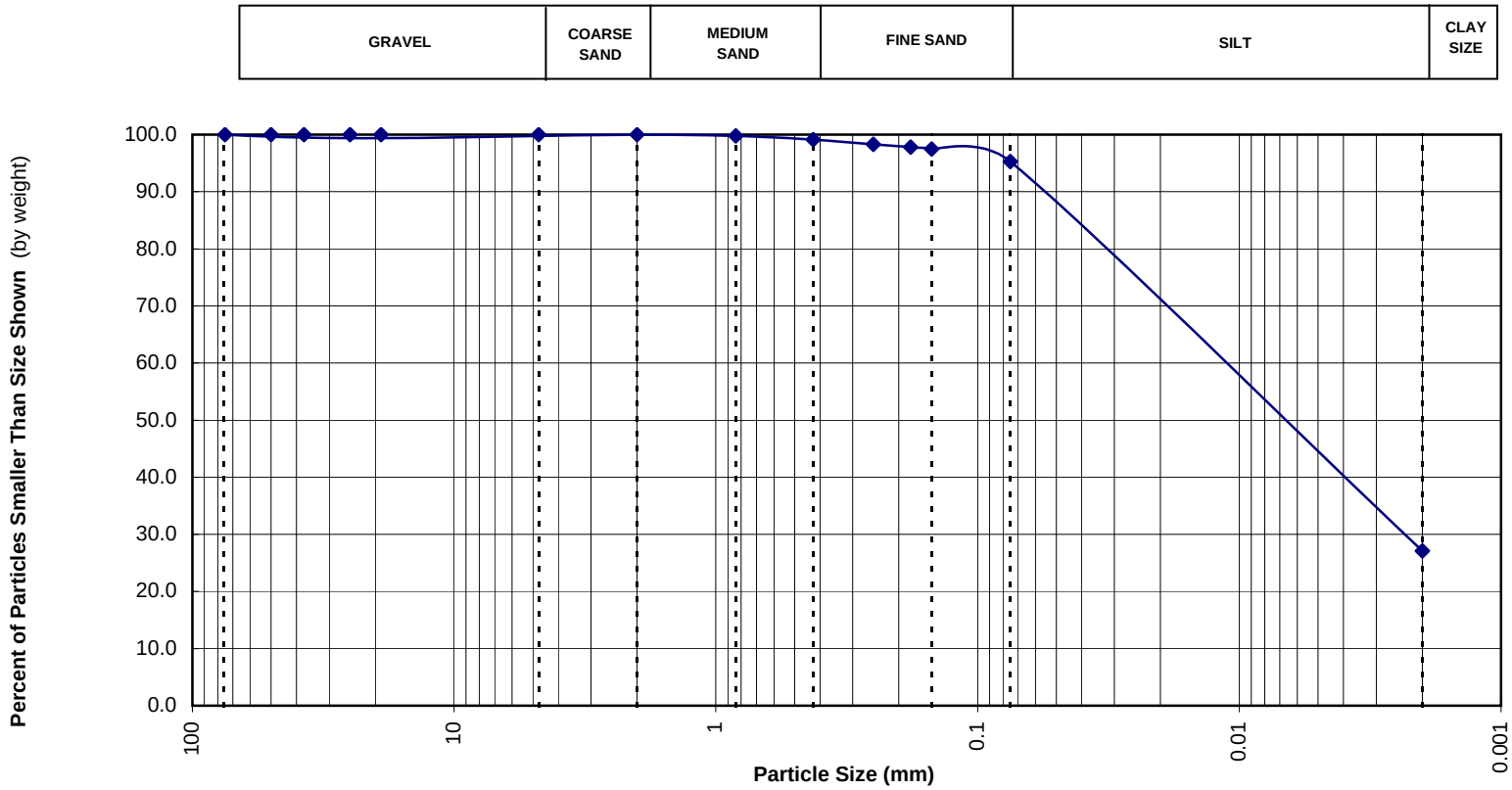
GRAIN SIZE ANALYSIS

FIGURE

B3-2

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\Draft\Appendix B\grain-size distr plots\Revision 2\020-01_ARK09_14-16.xls

Grain Size Accumulation Curve



BORING	SAMPLE DEPTH (ft)	MAXIMUM PARTICLE SIZE	UNIFIED SOIL CLASSIFICATION SYSTEM DESCRIPTION
ARK-09	39-40	2.0 mm	ML

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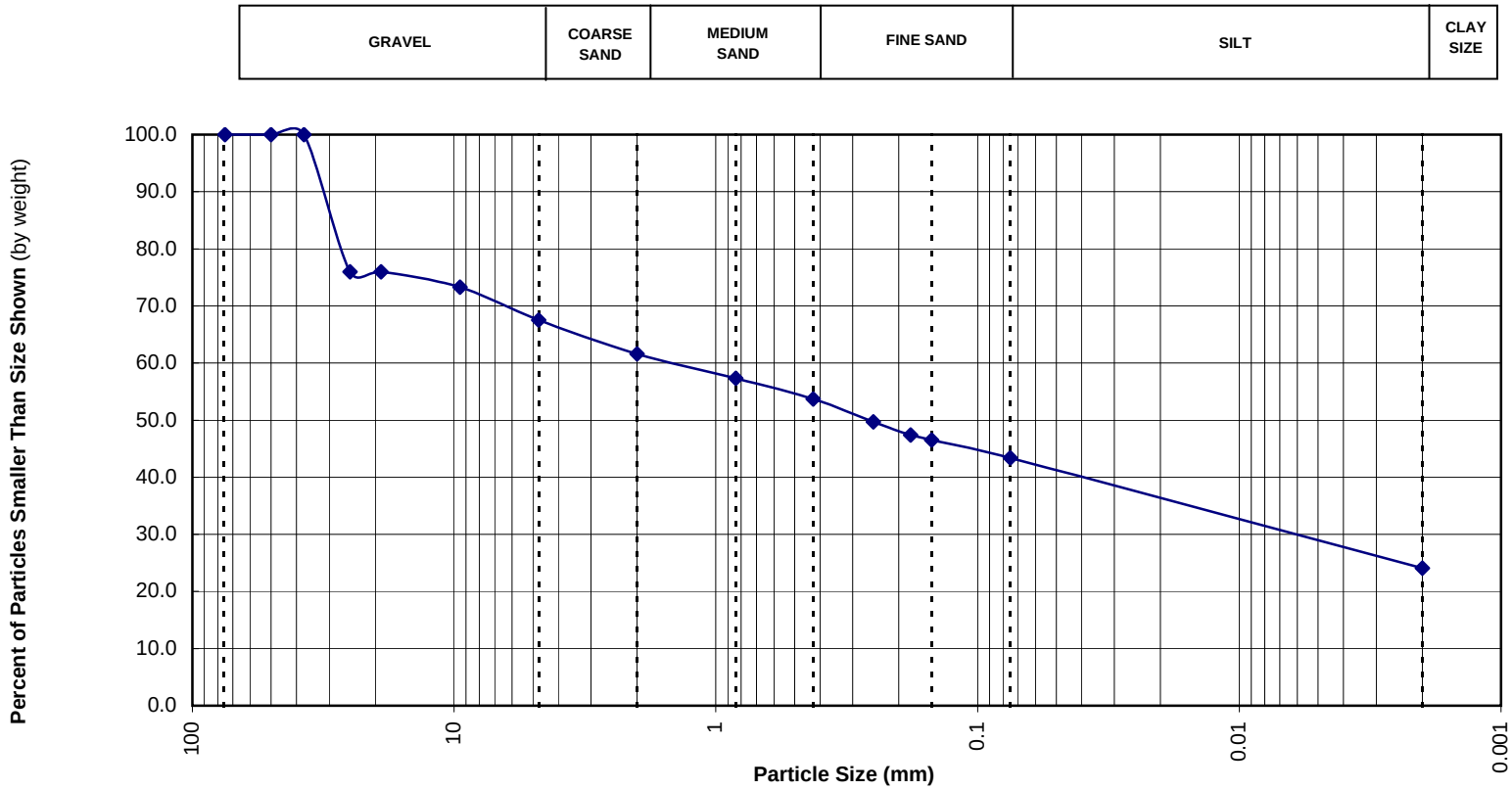
GRAIN SIZE ANALYSIS

FIGURE

B3-3

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\Draft\Appendix B\grain-size distr plots\Revision 2\021-01_ARK09_39-40.xls

Grain Size Accumulation Curve



BORING	SAMPLE DEPTH (ft)	MAXIMUM PARTICLE SIZE	UNIFIED SOIL CLASSIFICATION SYSTEM DESCRIPTION
SIL-02	216-218	37.5 mm	GM

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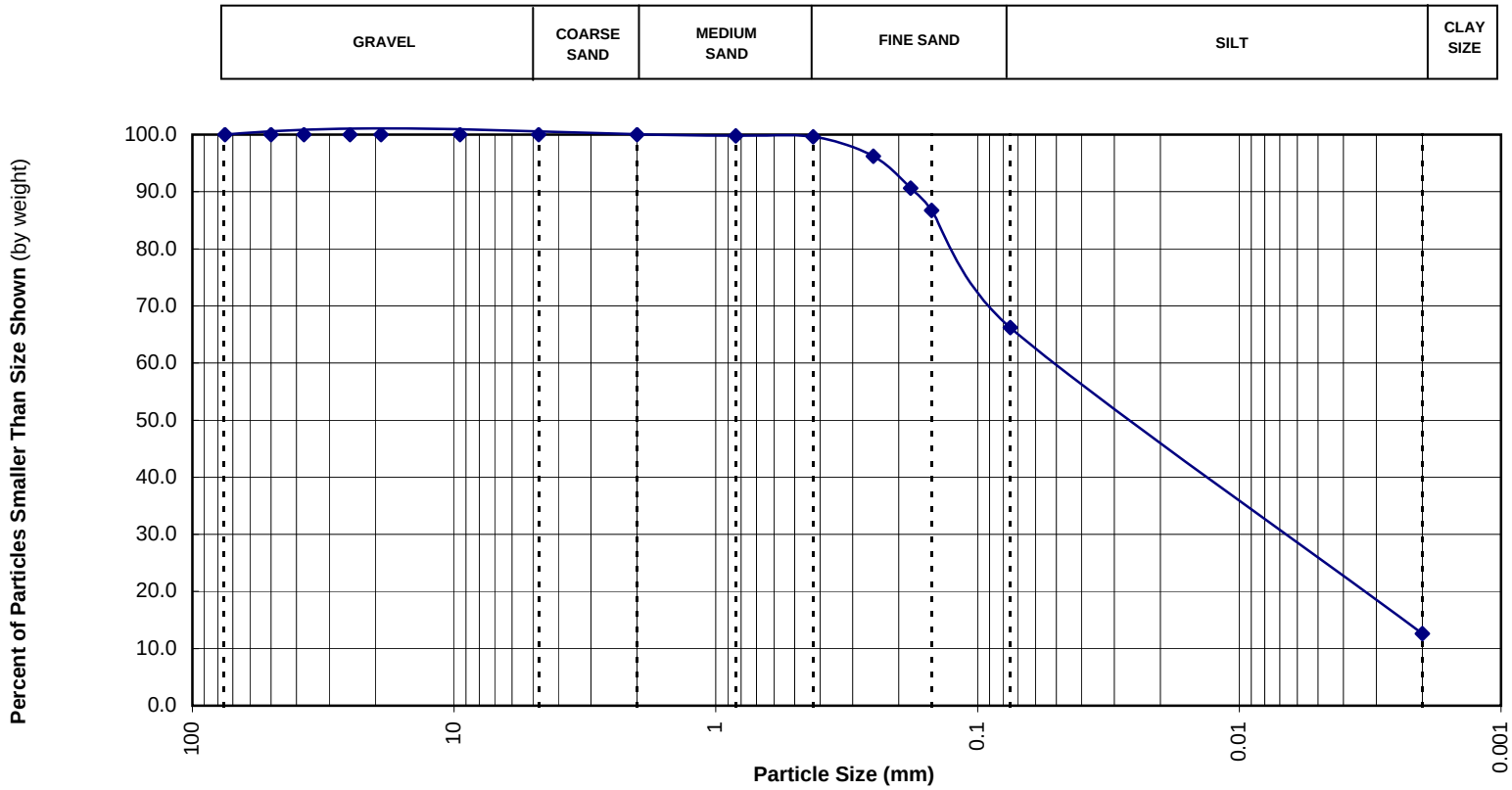
GRAIN SIZE ANALYSIS

FIGURE

B3-4

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\Draft\Appendix B\grain-size distr plots\Revision 2\121-01_SIL02_216-218.xls

Grain Size Accumulation Curve



BORING	SAMPLE DEPTH (ft)	MAXIMUM PARTICLE SIZE	UNIFIED SOIL CLASSIFICATION SYSTEM DESCRIPTION
RP-11	28-29	2.0 mm	SM

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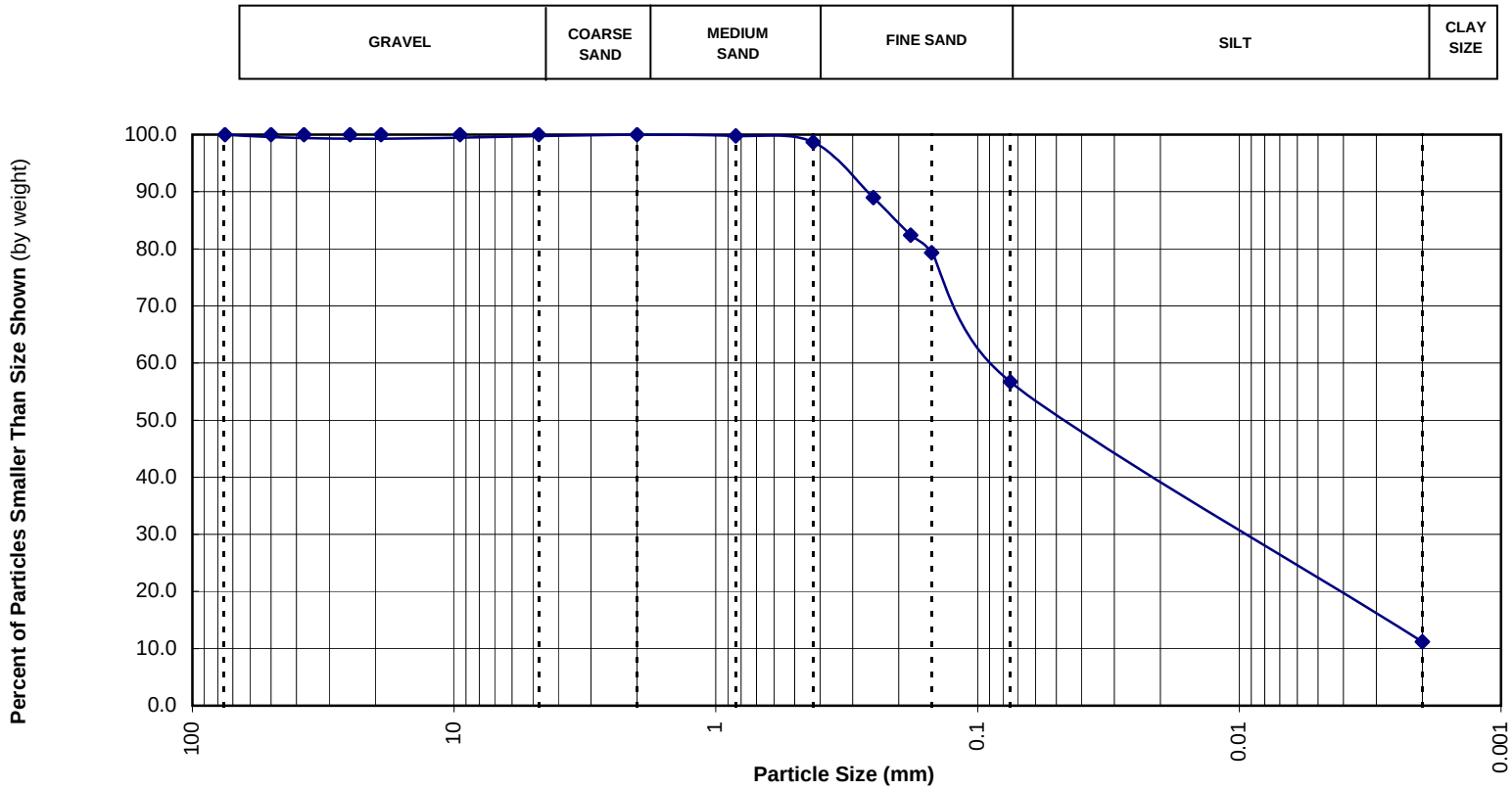
GRAIN SIZE ANALYSIS

FIGURE

B3-5

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\Draft\Appendix B\grain-size distr plots\Revision 2\141-01_RP11_28-29.xls

Grain Size Accumulation Curve



BORING	SAMPLE DEPTH (ft)	MAXIMUM PARTICLE SIZE	UNIFIED SOIL CLASSIFICATION SYSTEM DESCRIPTION
RP-11	154-155	2.0 mm	SP

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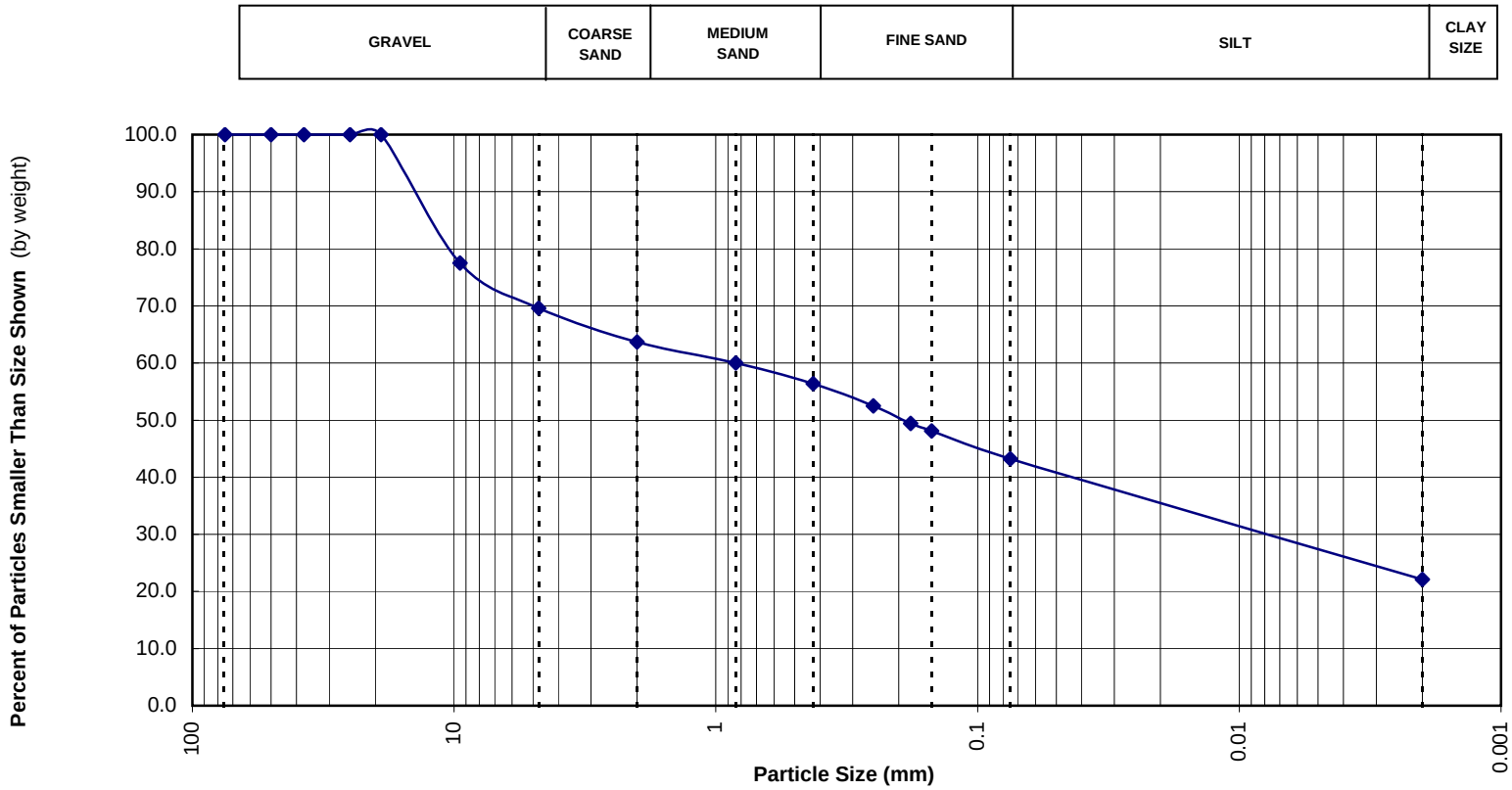
GRAIN SIZE ANALYSIS

FIGURE

B3-6

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\Draft\Appendix B\grain-size distr plots\Revision 2\140-01_RP11_154-155.xls

Grain Size Accumulation Curve



BORING	SAMPLE DEPTH (ft)	MAXIMUM PARTICLE SIZE	UNIFIED SOIL CLASSIFICATION SYSTEM DESCRIPTION
RP-11	208-210	19 mm	GM

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GRAIN SIZE ANALYSIS

FIGURE

B3-7

K:\10000\10700\10703\Phase 69 Source Control Evaluation\Stage 1 SCE Tech Memo\Draft\Appendix B\grain-size distr plots\Revision 2\138-01_RP11_208-210.xls

APPENDIX C

Data Validation Reports

C-1 Data Validation Report for the Stage 1 Source Control Evaluation, excluding PCDD/PCDF, Arkema Lots 1 and 2

C-2 Data Validation Report for the Stage 1 Source Control Evaluation, PCDD/PCDF, Arkema Lots 1 and 2

C-3 Data Validation Report for the Stage 1 Source Control Evaluation, excluding PCDD/PCDF, Siltronic Riverbank

C-4 Data Validation Report for the Stage 1 Source Control Evaluation, PCDD/PCDF, Siltronic Riverbank

C-1

APPENDIX C-1

DATA VALIDATION REPORT FOR
STAGE 1 SOURCE CONTROL EVALUATION - ARKEMA LOTS 1 AND 2
EXCLUDING PCDD/PCDF
RP - PORTLAND SITE

May 12, 2006

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ACRONYMS

%D	percent deviation or percent drift in relative response
µg/kg	microgram per kilogram
µg/L	microgram per liter
1,2-DCB	1,2-Dichlorobenzene
AMEC	AMEC Earth & Environmental, Inc.
BS	blank spike
BSD	blank spike duplicate
CAR	certified analytical report
CAS	Columbia Analytical Services, Inc.
CCAL	continuing calibration
CCB	continuing calibration blank
CCV	continuing calibration verification
CLP	EPA Contract Laboratory Program
COC	chain of custody
DEQ	Oregon Department of Environmental Quality
DQI	Data Quality Indicators
DRO	diesel range organics
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
GC/MS	gas chromatography/mass spectrum
ICAL	initial calibration
ICP	inductively coupled plasma
ICS	interference check sample
ICV	initial calibration verification
ID	identification
IDL	instrument detection limit

IS	internal standard
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
mg/L	milligrams per liter
mg/kg	milligrams per kilogram
MRL	method reporting limit
MS	matrix spike
MSD	matrix spike duplicate
NWTHP-Dx	Northwest Total Petroleum Hydrocarbons - Diesel
OCP	organochlorine pesticide
OSWER	EPA Office of Solid Waste and Emergency Response
PCB	polychlorinated biphenyls
PCE	Tetrachloroethene
PE	performance evaluation
PQL	practical quantitation limit
QAPP	Quality Assurance Project Plan
QC	quality control
RF	response factor
RL	reporting limit
RP	Rhône-Poulenc Portland Site
RPD	relative percent difference
RRF	Relative Response Factor
RRO	residual range organics
RSD	Relative Standard Deviation
SCE	Source Control Evaluation
SOP	standard operating procedure
STL	Severn Trent Laboratories, Inc.

SVOC	semivolatile organic compound
USACE	United States Army Corps of Engineers
VOA	Volatile Organic Analyte
VOC	volatile organic compound

1.0 INTRODUCTION

Eighty-one groundwater samples and six soil samples were collected from the Rhône-Poulenc (RP) Portland Site Stage 1 Source Control Evaluation (SCE) Arkema Lots 1 and 2 reconnaissance activities. The samples included 54 primary samples, four field duplicates, two interlaboratory split samples, 14 trip blanks, four rinsate blanks, and three performance evaluation (PE) samples, which were submitted to Severn Trent Laboraties, Inc. (STL) in Colchester, Vermont, and Columbia Analytical Services, Inc. (CAS) in Kelso, Washington for analyses. Analyses performed on these samples included metals by United States Environmental Protection Agency (EPA) Method 6010B; mercury by EPA Methods 7470A/7471A; organochlorine insecticides by EPA Method 8081A; chlorinated herbicides by EPA Method 8151A; volatile organic compounds (VOCs) by EPA Method 8260B; semivolatile organic compounds (SVOCs) by EPA Method 8270C; and semivolatile petroleum products by Oregon Department of Environmental Quality (DEQ)/ Washington Department of Ecology (Ecology) Method NWTPH-Dx. A list of these samples by sample location, field sample identification (ID), and laboratory sample ID is presented in Table 1.

2.0 DATA VALIDATION METHODOLOGY

This data validation has been performed with reference to EPA guidelines as given in the April 1992 final version of Guidance for Data Usability in Risk Assessment, the current EPA functional guidelines for organic and inorganic data review, and the EPA Office of Solid Waste and Emergency Response (OSWER) standard operating procedures (SOPs) for inorganic and organic data review (EPA, 1999 and 2002). The EPA guidelines listed above were written specifically for the Contract Laboratory Program (CLP), and have been modified for the purposes of this data validation where they differ from EPA Method SW-846 quality control requirements.

AMEC Earth & Environmental, Inc.'s (AMEC) methodology exceeded the validation procedures specified in the DEQ - approved Revised Quality Assurance Project Plan (QAPP), dated June 13, 2001 (AMEC, 2001) and the QAPP Addendum No. 1 dated August 1, 2002 (AMEC, 2002). The laboratory's certified analytical report (CAR) and supporting documentation were reviewed to assess the following: chain of custody (COC) compliance; holding time compliance; presence or absence of laboratory contamination as demonstrated by method and field blanks; accuracy and bias as demonstrated by recovery of surrogate spikes; laboratory control samples (LCS); matrix spikes (MS); and PE samples; analytical precision as relative percent difference (RPD) of analyte concentration between replicate samples (i.e., laboratory duplicates) or MS and matrix spike duplicates (MSD); sampling precision as RPD of analyte

concentration between field duplicates; calibration performance; and insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all quality control (QC) audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3.0 EXPLANATION OF DATA QUALITY INDICATORS

LCS Recoveries

LCS and laboratory control sample duplicates (LCSD), also known as blank spike (BS) and blank spike duplicates (BSD), are aliquots of analyte-free water or Ottawa sand that are spiked with the analytes of interest for an analytical method or a representative subset of those analytes. The spiked water or sand is then processed through the same extraction, concentration, cleanup, and analytical procedures as the samples they accompany. LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference-free matrix. LCS recoveries should generally be within 70 to 130% acceptance limits for organic analytes and 80 to 120% for inorganic analytes.

MS Recoveries

MS and MSD are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related. MS recoveries should generally be within 60 to 140% acceptance limits for organic analytes and 75 to 125% acceptance limits for inorganic analytes.

Internal Standard Recoveries

Internal standards (IS) are compounds that are added to a sample extract after all preparatory steps are completed and before instrumental analysis. These compounds

serve as standards for qualitative analysis using relative retention time and quantitative analysis using relative response factors (RFs). Methods that use IS calibration include requirements for changes in response to the IS relative to the initial calibration (ICAL).

For EPA Method 8260B and EPA Method 8270C, IS response must fall between 50 and 200% of the response in the ICAL. Because the area of the IS is used in the denominator of the equation for calculation of results using internal standardization, a response below 50% may indicate a possible positive bias, and a response above 200% may indicate a possible negative bias.

Surrogate Spike Recoveries

Surrogate spikes are used to evaluate accuracy, method performance, and extraction efficiency in each individual sample. Surrogate compounds are compounds not normally found in environmental samples, but which are similar to target analytes in chemical composition and behavior in the analytical process. Surrogate recoveries generally should be within 70 to 130% acceptance limits in interference-free matrices (blanks, LCS/LCSD) and 60 to 140% acceptance limits in field samples.

Field Duplicate Results

Field duplicates are replicate samples collected at the same location and submitted in blind form to the laboratory. Field duplicates provide an indication of the reproducibility of the sampling and analysis procedures for a given sample matrix, including heterogeneity of the sample itself. RPDs between aqueous field duplicate results should be less than 30% and for soil samples less than 50% for analytes with concentrations greater than 5 times the method reporting limit (MRL) and the difference between analyte concentrations less than 5 times the MRL should be less than or equal to the corresponding MRL. A summary of field duplicate detections may be found in Table 2.

Blank Concentrations

Blank samples are aliquots of analyte free water or Ottawa sand that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results. The three types of blanks employed for this project are:

- Laboratory blanks are aliquots of analyte free water or Ottawa sandthat are processed by the laboratory using exactly the same procedures as the field

samples. Laboratory blanks are used to monitor for contamination introduced by the laboratory during sample preparation and analysis.

- Trip blanks are aliquots of analyte free water that are placed in sample containers at the analytical laboratory and are then sent into the field with the sample containers that are used to collect field samples. Trip blanks are not opened in the field, but accompany the field samples back to the laboratory where they are analyzed as samples. Trip blanks are used to monitor for contamination that result from sample shipping and storage. For the purpose of this project, trip blanks are prepared and analyzed for VOCs only.
- Rinsate blanks are prepared by passing analyte-free water through or over sample collection equipment and collecting the water in sample containers. Rinsate blanks are analyzed for the analytical suite required for the project. Rinsate blanks are used to monitor for possible sample contamination during the sample collection process and serve as a check on the effectiveness of field documentation procedures.

4.0 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

4.1 Sample Receipt at STL

All samples were received by STL in good condition. Specific details of sample receipt condition and COC anomalies are described below.

Sample Receipt Date	Receipt Issue(s)	Affected Sample(s)	Effects on Data Usability
August 11, 2005	Two amber containers were received broken at the laboratory.	ARK-07-GW-45 (006-01)	The laboratory indicated that sufficient volume remained to complete all analyses; therefore, data usability is not adversely affected.
August 12, 2005	Sample containers were not received for metals and ammonia-nitrogen analyses.	ARK-07-GW-26 (008-01)	The laboratory was instructed not to perform these analyses; therefore, data usability is not adversely affected.
August 16, 2005	The temperature of the cooler containing the sample vials for VOC analyses was recorded at 11 degrees Celsius (°C).	ARK-09-GW-35 (025-01), ARK-09-GW-56 (026-01), ARK-04-SO-6.0 (029-01), ARK-04-GW-47 (033-01), and ARK-04-GW-15 (034-01)	AMEC J qualified the detected VOC results and UJ qualified the nondetected VOC results from samples ARK-09-GW-35 (025-01), ARK-09-GW-56 (026-01), ARK-04-SO-6.0 (029-01), ARK-04-GW-47 (033-01), and ARK-04-GW-15 (034-01) because of the elevated sample receipt temperature.
August 16, 2005	The laboratory did not receive a container for the ammonia-nitrogen analysis.	ARK-09-GW-35 (025-01)	AMEC cancelled ammonia-nitrogen analysis for this sample.
August 18, 2005	The laboratory received limited sample volume for the wet chemistry and metals analyses.	ARK-04-GW-36 (035-01).	The laboratory was able to complete the wet chemistry and metals analysis.
	One VOC vial had air bubbles present.	ARK-01-GW-31.5 (044-01)	AMEC assumed the laboratory preformed VOC analyses from a vial that did not contain air bubbles; therefore, data usability is not adversely affected.
August 19, 2005	The temperature of the cooler containing the sample vials for VOC analyses was recorded at 9 (°C)	ARK-05-GW-22 (050-01) and ARK-05-GW-41 (051-01)	AMEC J qualified the detected VOC results and UJ qualified the nondetected VOC results from samples ARK-05-GW-22 (050-01) and ARK-05-GW-41 (051-01) because of the elevated sample receipt temperature.
	One cooler was received at a temperature of 8°C.	-	The laboratory did not indicate which samples were in this cooler; therefore, the effects of the elevated cooler temperature on data usability could not be fully evaluated.
August 23, 2005	One amber liter per sample were received broken.	ARK-06-GW-80 (057-01) and ARK-02-GW-80 (065-01)	There was enough remaining sample volume to complete all analyses.
	A spare liter for sample ARK-01-GW-15 (042-01) and all sample bottles except volatile organic analyte (VOA) vials for sample 065-04 were received at 12°C.	ARK-01-GW-15 (042-01) and Rinsate Blank (065-04)	Because ARK-01-GW-15 (042-01) bottle was a spare and 065-04 is a rinsate blank, data usability is not adversely affected.
September 10, 2005	Bottles were collected for chloride analysis; however, the laboratory did not receive a bottle for the chloride analysis.	ARK-06-GW-97.5 (074-01)	The laboratory was able to complete chloride analysis for sample ARK-06-GW-97.5 (074-01) using extra volume from bottles supplied for other analyses.
	The vial for sample Trip Blank 076-03 and two of three vials for sample ARK-06-GW-97.5 (074-01) had air bubbles present.	Trip Blank 076-03 and ARK-06-GW-97.5 (074-01)	Because sample 076-03 is a trip blank and AMEC assumed the laboratory analyzed the vial for sample ARK-06-GW-97.5 (074-01) that did not contain air bubbles, data usability is not adversely affected.
	One cooler temperature was recorded as 1.5°C.	All	The laboratory did not indicate any samples were frozen or damaged; therefore, data usability is not adversely affected.

4.2 Sample Receipt at CAS

All samples were received at CAS in good condition. Specific details of sample receipt condition and COC anomalies are described below.

Sample Receipt Date	Receipt Issue(s)	Affected Sample(s)	Effects on Data Usability
August 12, 2005	The temperature of the cooler was recorded at 0.2°C.	All	The laboratory did not indicate if samples were frozen or damaged; therefore, data usability is not adversely affected.
August 17, 2005	The temperature of the cooler was recorded at 14.7°C.	ARK-04-GW-36 (035-01), ARK-01-GW-54 (043-01), and ARK-01-GW-31.5 (044-01).	AMEC J qualified the detected diesel range organics (DRO) and residual range organics (RRO) results and UJ qualified the nondetected DRO and RRO results from samples ARK-04-GW-36 (035-01), ARK-01-GW-54 (043-01), and ARK-01-GW-31.5 (044-01) because of the elevated sample receipt temperature.
September 9, 2005	The laboratory did not record the temperature of the cooler on the Cooler Receipt and Preservation Form.	All	Sample receipt temperatures could not be fully evaluated.
September 22, 2005	The temperature of the cooler was recorded at 1.6°C.	All	The laboratory did not indicate if samples were frozen or damaged; therefore, data usability is not adversely affected.
August 24, 2005	The temperature of the cooler was recorded at 14.1°C.	ARK-03-GW-26 (071-01) and ARK-03-GW-58 (072-01)	AMEC UJ qualified the nondetected DRO and RRO results from samples ARK-03-GW-26 (071-01) and ARK-03-GW-58 (072-01) because of the elevated sample receipt temperature.

5.0 SPECIFIC DATA VALIDATION FINDINGS FOR EACH ANALYTICAL METHOD

Sections 5.1 to 5.9 of this Data Validation Report contain narrative descriptions of data validation findings and data quality limitations. Definitions of data qualifiers added during validation may be found in Table 3. Summaries of specific qualifiers added to

each affected sample as a result of the data validation findings are presented in Tables 5 through 12.

5.1 Chloride by EPA Method 300.0

Chloride data from the Stage 1 SCE Arkema Lots 1 and 2 reconnaissance activities may be considered usable with the limitations and exceptions described below. Summaries of qualified chloride results are presented in Table 4.

5.1.1 Holding Times

All samples were prepared and analyzed within the method-recommended maximum holding time of 28 days, except as described below.

Sample ARK-09-GW-94 (073-01) was analyzed for chloride three days beyond the recommended 28-day holding time from sample collection to analysis. AMEC J qualified the detected chloride result from this sample because of a possible low bias in the analytical result.

5.1.2 Initial Calibration

All criteria were met for the ICALs associated with analysis of samples from this sampling event for chloride.

5.1.3 Continuing Calibration

All criteria were met for the continuing calibrations (CCALs) associated with analysis of samples from this sampling event for chloride.

5.1.4 Blanks

Target analytes should not be found in blank samples. When the concentration detected in the blank is less than the MRL, concentrations in associated samples greater than the MRL but less than 5 times the concentration detected in the blank have been U qualified by AMEC.

Continuing Calibration Blanks

Target analyte concentrations greater than the MRL in CCAL blanks associated with analysis of these samples for chloride are described below.

Chloride was detected in the CCAL blank analyzed on 10/7/05 at 18:32 at a concentration of 0.253 milligrams per liter (mg/L). Because the chloride concentration in the associated sample was more than 5 times the blank concentration, including dilution, data usability is not adversely affected.

Laboratory Blanks

Chloride was not detected in the laboratory blanks associated with these samples, except as described below.

- Chloride was detected in Method Blank BLKIC091905B at a concentration of 0.22 mg/L. Because the concentration in the associated samples was less than 5 times the concentration in the method blank data usability is not adversely affected.
- Chloride was detected in method blank BLKIC100705A at a concentration of 0.24 mg/L. Because the chloride concentration in the associated sample including dilution was more than 5 times the concentration detected in the blank, data usability is not adversely affected.

Rinsate Blanks

Chloride was not detected in the rinsate blanks associated with these samples.

5.1.5 LCS/LCSD Recovery and Precision

Recovery and precision for LCS/LCSDs associated with analysis of samples from this project for chloride were acceptable.

5.1.6 MS/MSD Recovery and Precision

The method-specified acceptance limits for chloride MS recoveries are 90 to 110%. However, spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or more.

MS were performed on sample ARK-01-GW-54 (043-01). The chloride recovery was low at 77% in the MS. Because the concentration in the unspiked sample, at 8,270 mg/L, was more than four-times the spike concentration of 1,000 mg/L, data usability could not be fully evaluated.

MS were performed on sample ARK-06-GW-58 (059-01). The chloride recovery was high at 118% in the MS. AMEC J qualified the detected chloride result from this sample because of possible matrix interference.

5.2 Ammonia-Nitrogen by EPA Method 350.2

Ammonia-nitrogen data from the Stage 1 SCE Arkema Lots 1 and 2 reconnaissance activities may be considered usable with the limitations and exceptions described below. Summaries of qualified ammonia-nitrogen results are presented in Table 5.

5.2.1 Holding Times

All samples were prepared and analyzed within the method-recommended maximum holding time of 28 days.

5.2.2 Initial Calibration

All criteria were met for the ICALs associated with analysis of samples from this sampling event for ammonia-nitrogen.

5.2.3 Continuing Calibration

All criteria were met for the CCALs associated with analysis of samples from this sampling event for ammonia-nitrogen.

5.2.4 Blanks

Target analytes should not be found in blank samples. When the concentration detected in the blank is less than the MRL, concentrations in associated samples greater than the MRL but less than 5 times the concentration detected in the blank have been U qualified by AMEC.

Continuing Calibration Blanks

Ammonia-nitrogen was not detected in the CCAL blanks associated with these samples.

Laboratory Blanks

Ammonia-nitrogen was not detected in the laboratory blanks associated with these samples.

Rinsate Blanks

Target analyte concentrations greater than the MRL in the rinsate blanks associated with analysis of these samples for ammonia-nitrogen are described below.

Ammonia-nitrogen was detected in Rinsate Blank 016-04 at a concentration of 0.049 mg/L. Because the concentration in the associated sample was greater than 5 times the concentration detected in the blank, data usability is not adversely affected.

Ammonia-nitrogen was detected in Rinsate Blank 065-04 at a concentration of 0.029 mg/L. Because the concentrations in the associated samples were greater than 5 times the concentration detected in the blank, data usability is not adversely affected.

5.2.5 LCS/LCSD Recovery and Precision

Recovery and precision for LCS/LCSDs associated with analysis of samples from this project for ammonia-nitrogen were acceptable.

5.2.6 MS/MSD Recovery and Precision

The laboratory-specified acceptance limits for ammonia-nitrogen MS recoveries are 85 to 115%. However, spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or more.

MS were performed on sample ARK-01-GW-54 (043-01). Ammonia-nitrogen recovery was high at 118% in the MS. AMEC J qualified the ammonia-nitrogen result from this sample because of a possible high bias in the analytical result.

Matrix spikes were performed on sample ARK-06-GW-58 (059-01). Ammonia-nitrogen recovery was low at 64% in the MS. AMEC J qualified the ammonia-nitrogen result from this sample because of a possible low bias in the analytical result.

5.2.7 Data Reporting

The laboratory did not include the ammonia-nitrogen raw data in the data package for SDG 109114. Upon AMEC's request, the laboratory provided these data.

The laboratory did not summarize the results for the LCSD on the Laboratory Control Sample Report Summary for SDG 109621. AMEC was able to determine the LCSD results from the raw data provided. The LCSD recovery was acceptable; therefore, data usability is not adversely affected.

5.3 Metals by EPA Methods 6010B and 7470A/7471A

Metals data from the Stage 1 SCE Arkema Lots 1 and 2 reconnaissance activities may be considered usable with the limitations and exceptions described below. Summaries of qualified metals results may be found in Table 6.

5.3.1 Holding Times

All samples were analyzed for metals within the recommended technical holding time of 180 days and for mercury within the recommended technical holding time of 28 days.

5.3.2 Initial Calibration

All ICAL associated with analysis of these samples for metals were acceptable.

5.3.3 Initial Calibration Verification

EPA acceptance limits for metals initial calibration verification (ICV) are 90 to 110%. All ICAL verifications associated with the analysis of these samples for metals were acceptable.

5.3.4 Continuing Calibration Verification

EPA acceptance limits for metals continuing calibration verification (CCV) are 90 to 110%. All CCVs associated with reported data from analysis of these samples for metals were acceptable.

5.3.5 Inductively Coupled Plasma Interference Check Sample

All interference check samples (ICS) exhibited recoveries within the 80 to 120% acceptance limits, except as described below:

QC Exceedance	Affected Sample(s)	Effects on Data Usability
Negative cadmium interference (absolute value greater than 2 times the IDL) was observed in the associated ICSA and comparable levels of interfering compounds were observed in the samples; indicating possible matrix interference.	ARK-07-GW-45 (006-01) ARK-08-GW-43.5 (015-01) ARK-09-GW-35 (025-01) ARK-04-GW-47 (033-01) ARK-04-GW-15 (034-01) ARK-04-GW-36 (035-01) ARK-01-GW-54 (043-01) ARK-01-GW-31.5 (044-01) ARK-05-GW-22 (050-01) ARK-05-GW-41 (051-01)	AMEC UJ qualified the nondetected total cadmium results because of possible matrix interference.
	ARK-09-GW-35 (025-01) ARK-04-GW-47 (033-01) ARK-04-GW-15 (034-01) ARK-04-GW-36 (035-01) ARK-05-GW-22 (050-01) ARK-05-GW-41 (051-01)	AMEC UJ qualified the nondetected dissolved cadmium results because of possible matrix interference.
	ARK-09-GW-56 (026-01) ARK-04-SO-6.0 (029-01) ARK-06-GW-80 (057-01) ARK-06-GW-58 (059-01) ARK-02-GW-40 (066-01) ARK-03-GW-80 (067-01) ARK-03-GW-58 (072-01)	AMEC J qualified the detected total cadmium results less than 10 times the absolute value of the ICSA concentration because of possible matrix interference.
	ARK-09-GW-56 (026-01) ARK-01-GW-54 (043-01) ARK-01-GW-31.5 (044-01) ARK-06-GW-80 (057-01) ARK-06-GW-58 (059-01)	AMEC J qualified the detected dissolved cadmium results less than 10 times the absolute value of the ICSA concentration because of possible matrix interference.
Positive chromium interference was observed in the associated ICSA and comparable levels of interfering compounds were observed in the samples.	ARK-06-GW-58 (059-01) ARK-02-GW-40 (066-01) ARK-03-GW-80 (067-01) ARK-03-GW-58 (072-01)	AMEC J qualified the detected total chromium results because of possible matrix interference.
	ARK-06-GW-80 (057-01)	AMEC J qualified the detected dissolved chromium result because of possible matrix interference.
Negative lead interference (absolute value greater than two times the IDL) was observed in the associated ICSA and comparable levels of interfering compounds were observed in the samples.	ARK-06-GW-80 (057-01)	AMEC UJ qualified the nondetected total lead result because of possible matrix interference.
	ARK-06-GW-80 (057-01) ARK-06-GW-58 (059-01)	AMEC UJ qualified the nondetected dissolved lead results because of possible matrix interference.
	ARK-06-GW-58 (059-01)	AMEC J qualified the detected total lead result less than 10 times the absolute value of the ICSA concentration because of possible matrix interference.

5.3.6 Reporting Limit Check Standard

CLP reporting limit check standard (CRI) acceptance limits are 70 to 130% for most metals analyzed by ICP-AES and 50 to150% for lead. All CRIs associated with reported data from analysis of these samples for metals were acceptable, except as described below.

QC Exceedance	Affected Samples	Effects on Data Usability
Aluminum and iron recoveries were high at 464 and 411%, respectively in CRI analyzed on September 12, 2005 on instrument TJA ICAP 4.	ARK-08-SO-13. (011-01) ARK-04-SO-6. (029-01) ARK-06-SO-3. (053-01) ARK-03-SO-6. (069-01)	AMEC J qualified the detected total aluminum and iron results because of possible high bias in the analytical results.
Mercury recovery was low at 55% in CRI analyzed on August 25, 2005.	ARK-08-SO-13. (011-01)	AMEC UJ qualified the nondetected total mercury result because of a possible low bias in the analytical result.
	ARK-04-SO-6. (029-01)	AMEC J qualified the detected total mercury result because of a possible low bias in the analytical result.
Iron recovery was high at 485% in CRI analyzed on September 19, 2005.	ARK-09-GW-35 (025-01) ARK-09-GW-56 (026-01) ARK-04-GW-47 (033-01) ARK-04-GW-15 (034-01) ARK-04-GW-36 (035-01)	AMEC J qualified the detected total and dissolved iron results because of possible high bias in the analytical results.
	ARK-01-GW-54 (043-01)	AMEC J qualified the detected dissolved iron result because of possible high bias in the analytical results.
Iron recovery was high at 226% in CRI analyzed on September 22, 2005 at 17:23.	ARK-05-GW-41 (051-01)	AMEC J qualified the detected total iron result because of a possible high bias in the analytical result.
Aluminum recovery was high at 239% in CRI analyzed on September 22, 2005 at 21:21.	ARK-09-GW-35 (025-01) ARK-09-GW-56 (026-01) ARK-01-GW-31.5 (044-01)	AMEC J qualified the detected total aluminum results because of possible high bias in the analytical results.
	ARK-04-GW-36 (035-01)	AMEC J qualified the detected dissolved aluminum result because of a possible high bias in the analytical result.
	ARK-04-GW-47 (033-01) ARK-04-GW-15 (034-01) ARK-01-GW-54 (043-01) ARK-05-GW-22 (050-01) ARK-05-GW-41 (051-01)	AMEC J qualified the detected total and dissolved aluminum results because of possible high bias in the analytical results.
Iron recovery was low at 62.4% in CRI analyzed on September 22, 2005 at 18:48.	-	Because the iron concentrations in the associated samples were greater than two times the contract required detection limit (CRDL) of 200 micrograms per liter (µg/L), data usability is not adversely affected.
Iron recovery was high at 135% in CRI analyzed on September 23, 2005.		

QC Exceedance	Affected Samples	Effects on Data Usability
Aluminum (502%), cadmium (135%), and iron (430%) recoveries were high in CRI analyzed on September 28, 2005 at 17:22.	ARK-01-GW-15 (042-01) ARK-06-GW-80 (057-01) ARK-02-GW-40 (066-01) ARK-03-GW-80 (067-01)	AMEC J qualified the detected total aluminum and total iron results from samples because of possible high bias in the analytical results.
	ARK-02-GW-80 (065-01) ARK-03-GW-26 (071-01)	AMEC J qualified the detected total and dissolved aluminum and total and dissolved iron results from these samples because of possible high bias in the analytical results.
	ARK-06-GW-27 (058-01) ARK-06-GW-27 (058-02) ARK-06-GW-58 (059-01)	Total aluminum results were previously U qualified due to blank contamination.
Aluminum (502%), cadmium (135%), and iron (430%) recoveries were high in CRI analyzed on September 28, 2005 at 17:22.	ARK-06-GW-80 (057-01) ARK-06-GW-27 (058-01) ARK-06-GW-27 (058-02) ARK-06-GW-58 (059-01) ARK-03-GW-80 (067-01) ARK-03-GW-58 (072-01).	Dissolved aluminum results were previously U qualified due to blank contamination.
	ARK-01-GW-15 (042-01) ARK-02-GW-80 (065-01) ARK-03-GW-80 (067-01)	Total Cadmium results were previously U qualified due to blank contamination.
	ARK-06-GW-80 (057-01) ARK-06-GW-58 (059-01) ARK-02-GW-40 (066-01) ARK-03-GW-58 (072-01)	Total and dissolved Cadmium results were previously U qualified due to blank contamination.
Cadmium recovery was high at 145.5% in CRI analyzed on October 8, 2005 at 01:40.	ARK-09-GW-94 (073-01) ARK-06-GW-97.5 (074-01) ARK-05-GW-67.5 (075-01) ARK-03-GW-102.5 (076-1)	AMEC J qualified the detected total cadmium results because of a possible high bias in the analytical results.
Aluminum and iron recoveries were high at 585 and 503%, respectively in CRI analyzed on October 11, 2005 on instrument TJA ICAP 6.	ARK-09-GW-94 (073-01) ARK-06-GW-97.5 (074-01) ARK-05-GW-67.5 (075-01) ARK-03-GW-102.5 (076-01)	AMEC J qualified the detected total and dissolved aluminum and iron results because of possible high bias in the analytical results.
Aluminum and iron recoveries were high at 337 and 255%, respectively in CRI analyzed on November 10, 2005 on instrument TJA ICAP6.	RP-08-SO-88 (077-1)	AMEC J qualified the detected total aluminum and total iron results because of possible high bias in the analytical results.
Aluminum and iron recoveries were high at 333 and 27`%, respectively in CRI analyzed on November 11, 2005 on instrument TJA ICAP6.	RP-08-SO-93 (078-1)	AMEC J qualified the detected total aluminum and total iron results because of possible high bias in the analytical results.

5.3.7 Blanks

Target analytes should not be found in blank samples. When the concentration detected in the blank is less than the MRL, concentrations in associated samples greater than the MRL but less than 5 times the concentration detected in the blank

have been U qualified by AMEC. When the absolute concentration detected in the blank is greater than the MRL, concentrations in associated samples greater than the MRL but less than 10 times the concentration detected in the blank have been U qualified by AMEC. In both cases, sample concentrations between the instrument detection limit (IDL) and MRL, and less than 5 or 10 times the concentration detected in the blank have been U qualified at the MRL concentration.

5.3.7.1 Laboratory Blanks

Target analyte concentrations in laboratory blanks associated with analysis of these samples for metals are described below:

Blank ID	Detected Analytes	Concentration	Affected Samples	U Qualified Analytes
PBW090205B	Aluminum	59.29 µg/L	-	These analytes were detected in the associated samples at concentrations greater than 5 times the concentrations detected in the blanks, data usability is not adversely affected.
PBS090705F	Chromium Zinc	0.148 mg/kg 0.462 mg/kg		
PBW090605B	Iron	31.32 µg/L		
PBS110905E	Zinc	0.23 mg/kg		
PBW090605C	Aluminum	99.66 µg/L	ARK-09-GW-16 (023-01) ARK-08-GW-43.5 (015-02)	dissolved aluminum
PBW090605B	Lead	2.982 µg/L	ARK-09-GW-56 (026-01) ARK-04-GW-47 (033-01)	total lead
			ARK-04-GW-47 (033-01) ARK-01-GW-54 (043-01) ARK-01-GW-31.5 (044-01) ARK-05-GW-22 (050-01) ARK-05-GW-41 (051-01)	dissolved lead
PBW091405B	Chromium	1.067 µg/L	ARK-06-GW-27 (058-01) ARK-06-GW-27 (058-02)	total and dissolved chromium
			ARK-06-GW-80 (057-01) ARK-02-GW-80 (065-01)	dissolved chromium
PBW091905B	Chromium	0.843 µg/L	ARK-03-GW-26 (071-01)	total and dissolved chromium
			ARK-02-GW-40 (066-01) ARK-03-GW-80 (067-01) ARK-03-GW-58 (072-01) ARK-06-GW-97.5 (074-01)	dissolved chromium
PBW091905B	Zinc	1.973 µg/L	ARK-03-GW-26 (071-01) ARK-09-GW-94 (073-01)	dissolved zinc

Notes:
Mg/kg = milligrams per kilogram

5.3.7.2 Initial and Continuing Calibration Blanks

Target analyte concentrations greater than the IDL in initial and continuing calibration blanks associated with analysis of these samples for metals and samples that required qualification because sample concentrations were less than 5 times the concentration detected in the associated blanks are listed in the table below.

Blank ID	Detected Analytes	Concentration (µg/L)	Affected Samples	U Qualified Analytes
CCB2 9/16/05	Aluminum	63.7	-	Sample concentrations were more than 5 times the concentration detected in the blank, data usability is not adversely affected.
ICB 9/12/05	Aluminum Chromium Copper Iron Lead Manganese	71.5 1.8 2.7 81.3 2.8 1.3		
CCB2 9/12/05	Aluminum Iron	68.7 92.0		
CCB3 9/12/05	Chromium Manganese	1.1 0.3		
CCB4 9/12/05	Aluminum Chromium Iron Manganese	68.0 0.9 94.9 0.6		
ICB 9/19/05	Iron Manganese	75.7 1.4		
CCB1 9/19/05	Iron	121.8		
CCB2 9/19/05	Iron Manganese	109.8 1.6		
ICB 9/22/05	Manganese	1.0		
CCB2 9/22/05	Aluminum Manganese	44.9 37.0		
CCB2 9/22/05	Iron Manganese	429.9 4.9		
ICB 9/28/05 17:04	Iron	96.6		
CCB2 9/28/05	Iron	113.3		
CCB3 9/28/05	Calcium Iron	326.2 99	-	Sample concentrations were more than 5 times the concentration detected in the blank, data usability is not adversely affected.
CCB4 9/28/05	Calcium Lead Potassium Sodium	276.1 2.6 435.2 1,525		
CCB5 9/28/05	Iron Sodium	178.4 678.3		

Blank ID	Detected Analytes	Concentration (µg/L)	Affected Samples	U Qualified Analytes
CCB3 10/11/05	Iron	117.8		
ICB 11/10/05	Cadmium	1.0		
ICB 11/11/05	Cadmium	0.8		
CCB1 11/11/05	Aluminum	62.6		
CCB3 11/11/05	Aluminum	65.2		
ICB 9/16/05	Chromium	1.6	ARK-07-GW-45 (006-01) ARK-08-GW-43.5 (015-01) ARK-08-GW-43.5 (015-02)	Dissolved chromium
ICB 9/19/05	Chromium	1.6	ARK-04-GW-15 (034-01) ARK-04-GW-36 (035-01) ARK-01-GW-54 (043-01)	
CCB1 9/16/05	Arsenic	6.8	ARK-07-GW-45 (006-01) ARK-07-GW-14 (007-01)	Dissolved arsenic
CCB3 9/16/05	Iron	65.2	ARK-09-GW-16 (023-01)	Dissolved iron
ICB 9/12/05	Cadmium	1.4	ARK-08-SO-13.0 (011-01) ARK-04-SO-6.0 (029-01) ARK-06-SO-3.0 (053-01) ARK-03-SO-6.0 (069-01)	Total cadmium
ICB 9/22/05 21:30	Cadmium	1.0	ARK-09-GW-56 (026-01)	
ICB 9/19/0	Chromium	1.6	ARK-09-GW-56 (026-01)	Total chromium
ICB 9/22/05	Cadmium	1.0	ARK-09-GW-56 (026-01) ARK-01-GW-54 (043-01) ARK-01-GW-31.5 (044-01)	Dissolved cadmium
	Lead	3.5	ARK-09-GW-56 (026-01) ARK-04-GW-47 (033-01)	Total lead
			ARK-04-GW-47 (033-01) ARK-01-GW-54 (043-01) ARK-01-GW-31.5 (044-01) ARK-05-GW-22 (050-01) ARK-05-GW-41 (051-01)	Dissolved lead
CCB1 9/22/05	Copper Arsenic	18.9 4.6	ARK-09-GW-35 (025-01) ARK-09-GW-56 (026-01) ARK-04-GW-47 (033-01)	Total and dissolved copper
			ARK-04-GW-15 (034-01)	Dissolved copper
	Lead	2.7	ARK-09-GW-56 (026-01)	Total lead
			ARK-04-GW-47 (033-01)	Total and dissolved lead
CCB2 9/22/05	Lead	2.7	ARK-09-GW-56 (026-01) ARK-04-GW-47 (033-01)	Total lead
			ARK-04-GW-47 (033-01) ARK-01-GW-54 (043-01)	Dissolved lead

Blank ID	Detected Analytes	Concentration (µg/L)	Affected Samples	U Qualified Analytes
CCB3 9/22/05	Aluminum	44.5	ARK-01-GW-31.5 (044-01)	Dissolved aluminum
	Copper	17.8	ARK-04-GW-36 (035-01) ARK-01-GW-54 (043-01) ARK-01-GW-31.5 (044-01) ARK-05-GW-22 (050-01) ARK-05-GW-41 (051-01)	Dissolved copper
	Lead	3.7	ARK-01-GW-54 (043-01) ARK-01-GW-31.5 (044-01) ARK-05-GW-22 (050-01) ARK-05-GW-41 (051-01)	Dissolved lead
CCB4 9/22/05	Aluminum	70.3	ARK-01-GW-31.5 (044-01)	Dissolved aluminum
	Copper	16.5	ARK-01-GW-31.5 (044-01) ARK-05-GW-22 (050-01) ARK-05-GW-41 (051-01)	Dissolved copper
ICB 9/22/05 18:30	Chromium	1.5	ARK-01-GW-31.5 (044-01)	Dissolved chromium
	Nickel	3.9	ARK-05-GW-22 (050-01)	Total nickel
			ARK-05-GW-22 (050-01) ARK-05-GW-41 (051-01)	Dissolved nickel
CCB2 9/22/05	Chromium	3.3	ARK-01-GW-31.5 (044-01) ARK-05-GW-41 (051-01)	Dissolved chromium
	Magnesium	340.4	ARK-05-GW-22 (050-01)	Dissolved magnesium
	Nickel	2.4	ARK-05-GW-22 (050-01) ARK-05-GW-41 (051-01)	Dissolved nickel
ICB 9/28/05 17:04	Aluminum	101.8	ARK-06-GW-27 (058-01) ARK-06-GW-27 (058-02)	Total and dissolved aluminum
			ARK-06-GW-80 (057-01) ARK-06-GW-58 (059-01) ARK-02-GW-80 (065-01) ARK-03-GW-80 (067-01) ARK-03-GW-26 (071-01) ARK-03-GW-58 (072-01)	Dissolved aluminum
	Cadmium	2.3	ARK-01-GW-15 (042-01) ARK-02-GW-80 (065-01) ARK-03-GW-80 (067-01)	Total cadmium
			ARK-06-GW-80 (057-01) ARK-06-GW-58 (059-01) ARK-02-GW-40 (066-01) ARK-03-GW-58 (072-01)	Total and dissolved cadmium
ICB 9/28/05 17:04	Chromium	2.7	ARK-06-GW-27 (058-01) ARK-06-GW-27 (058-02) ARK-03-GW-26 (071-01)	Total and dissolved chromium
			ARK-06-GW-80 (057-01) ARK-06-GW-58 (059-01) ARK-02-GW-80 (065-01) ARK-02-GW-40 (066-01) ARK-03-GW-80 (067-01) ARK-03-GW-26 (071-01) ARK-03-GW-58 (072-01)	Dissolved chromium

Blank ID	Detected Analytes	Concentration (µg/L)	Affected Samples	U Qualified Analytes
	Copper	2.6	ARK-06-GW-27 (058-01) ARK-03-GW-26 (071-01)	Total copper
			ARK-02-GW-80 (065-01) ARK-02-GW-40 (066-01) ARK-03-GW-80 (067-01) ARK-03-GW-58 (072-01)	Dissolved copper
	Lead	5.1	ARK-06-GW-58 (059-01) ARK-02-GW-80 (065-01)	Total lead
	Nickel	2.5	ARK-06-GW-80 (057-01) ARK-03-GW-26 (071-01)	Total nickel
			ARK-06-GW-27 (058-02) ARK-06-GW-58 (059-01) ARK-03-GW-58 (072-01)	Dissolved nickel
ICB 9/28/05 17:04	Vanadium	2.9	ARK-06-GW-27 (058-01) ARK-06-GW-27 (058-02) ARK-03-GW-26 (071-01)	Total and dissolved vanadium
			ARK-06-GW-80 (057-01) ARK-06-GW-58 (059-01) ARK-02-GW-80 (065-01) ARK-02-GW-40 (066-01) ARK-03-GW-80 (067-01) ARK-03-GW-58 (072-01)	Dissolved vanadium
CCB1 9/28/05	Aluminum Chromium Vanadium	138.6 1.0 2.1	ARK-06-GW-27 (058-01) ARK-06-GW-27 (058-02)	Total and dissolved aluminum, chromium, and vanadium
			ARK-06-GW-80 (057-01)	Dissolved aluminum, chromium, and vanadium
	Cadmium	0.6	ARK-01-GW-15 (042-01) ARK-06-GW-80 (057-01)	Total cadmium
	Iron	142.5	ARK-06-GW-80 (057-01)	Dissolved iron
	Lead	3.2	ARK-06-GW-58 (059-01)	Total lead
CCB2 9/28/05	Aluminum Chromium	95.6 0.8	ARK-06-GW-27 (058-01) ARK-06-GW-27 (058-02)	Total and dissolved aluminum and chromium
			ARK-06-GW-80 (057-01) ARK-06-GW-58 (059-01)	Dissolved aluminum
	Cadmium	0.6	ARK-01-GW-15 (042-01) ARK-02-GW-80 (065-01)	Total cadmium
CCB3 9/28/05	Aluminum	101.6	ARK-06-GW-58 (059-01) ARK-02-GW-80 (065-01) ARK-03-GW-80 (067-01)	Dissolved aluminum
	Cadmium	0.5	ARK-02-GW-80 (065-01)	Total cadmium
			ARK-02-GW-40 (066-01)	Dissolved cadmium
	Chromium Zinc	1.2 5.4	ARK-03-GW-26 (071-01)	Total chromium and zinc
			ARK-06-GW-58 (059-01) ARK-02-GW-80 (065-01) ARK-02-GW-40 (066-01) ARK-03-GW-80 (067-01)	Dissolved chromium

Blank ID	Detected Analytes	Concentration (µg/L)	Affected Samples	U Qualified Analytes
CCB4 9/28/05	Aluminum	172.1	ARK-02-GW-80 (065-01) ARK-03-GW-80 (067-01) ARK-03-GW-26 (071-01) ARK-03-GW-58 (072-01)	Dissolved aluminum
	Cadmium	0.9	ARK-02-GW-40 (066-01)	Total and dissolved cadmium
			ARK-03-GW-58 (072-01)	Dissolved cadmium
CCB4 9/28/05	Chromium	1.7	ARK-03-GW-26 (071-01),	Total and dissolved chromium
			ARK-02-GW-80 (065-01) ARK-02-GW-40 (066-01) ARK-03-GW-80 (067-01) ARK-03-GW-58 (072-01)	Dissolved chromium
	Copper Vanadium Zinc	4.7 2.3 3.6	ARK-03-GW-26 (071-01)	Total copper, vanadium, and zinc
			ARK-02-GW-80 (065-01) ARK-02-GW-40 (066-01) ARK-03-GW-80 (067-01) ARK-03-GW-58 (072-01)	Dissolved copper and vanadium
			ARK-03-GW-26 (071-01)	Dissolved zinc
CCB5 9/28/05	Aluminum Chromium	146.7 1.3	ARK-03-GW-26 (071-01) ARK-03-GW-58 (072-01)	Dissolved aluminum and chromium
	Cadmium Copper	0.5 3.2	ARK-03-GW-58 (072-01)	Dissolved cadmium and copper
ICB 10/08/05	Cadmium	1.8	ARK-09-GW-94 (073-01) ARK-03-GW-102.5 (076-01)	Total cadmium
ICB 10/11/05	Aluminum	77.7	ARK-09-GW-94 (073-01) ARK-03-GW-102.5 (076-01)	Dissolved aluminum
	Lead	3.8	ARK-06-GW-97.5 (074-01) ARK-03-GW-102.5 (076-01)	Dissolved lead
	Zinc	1.9	ARK-09-GW-94 (073-01)	Dissolved zinc
CCB1 10/11/05	Aluminum Iron	153.8 129.5	ARK-09-GW-94 (073-01)	Dissolved aluminum and iron
CCB2 10/11/05	Aluminum	106.1	ARK-09-GW-94 (073-01) ARK-03-GW-102.5 (076-01)	Dissolved aluminum
	Iron	140	ARK-09-GW-94 (073-01)	Dissolved iron
	Lead	3.0	ARK-06-GW-97.5 (074-01) ARK-03-GW-102.5 (076-01)	Dissolved lead
CCB3 10/11/05	Aluminum Lead	80.4 4.4	ARK-03-GW-102.5 (076-01)	Dissolved aluminum

5.3.7.3 Rinsate Blanks

Target analyte concentrations greater than the MDL in the rinsate blanks associated with analysis of these samples for metals are described below.

Blank ID	Detected Analytes	Analyte Concentration (µg/L)	Affected Samples	U qualified analytes
016-04	Total Aluminum	152	ARK-09-GW-16 (023-01)	Total chromium, total zinc, and dissolved aluminum
	Total Calcium	2,140		
	Total Chromium	1.7		
	Total Iron	416		
	Total Manganese	6.5		
	Total Sodium	2,040		
	Total Zinc	11.4		
	Dissolved Aluminum	146		
	Dissolved Calcium	787		
	Dissolved Manganese	3.3		
065-04	Total Chromium	0.97	ARK-02-GW-80 (065-01)	Dissolved chromium and copper
	Total Manganese	18.3		
	Dissolved Chromium	0.96		
	Dissolved Copper	2.4		
	Dissolved Manganese	9.4		
	Dissolved Zinc	5.2		

5.3.8 Laboratory Control Sample Recovery

Recoveries were acceptable in all LCS associated with analysis of these samples for metals.

5.3.9 MS/MSD Recovery and Precision

The method-specified acceptance limits for metals MS recoveries are 75 to 125%. However, spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or more.

Because recoveries were acceptable for all analytes in the LCS, AMEC's qualifications of metals results in the samples based on MS recoveries are indicative of sample matrix effects.

Precision and recovery was acceptable in all MS associated with analysis of these samples for metals, except as described below.

Spiked Sample ID	Analytes	Recoveries Outside Acceptance Limits (%)	Effects on Data Usability
ARK-07-GW-45 (006-01)	Aluminum Iron	1,070 710	The aluminum concentration in the unspiked sample, at 246,100 µg/L, was approximately 123 times the spike concentration of 2,000 µg/L. The iron concentration in the unspiked sample, at 476,000 µg/L, was approximately 476 times the spike concentration of 1,000 µg/L. Data usability could not be fully evaluated.
ARK-01-GW-54 (043-01)	All metal recoveries, except for mercury, were outside acceptance limits.	-	Because the background aluminum, arsenic, copper, iron, lead, manganese, vanadium, and zinc concentrations in the unspiked sample were more than 4 times the spike concentrations, data usability could not be fully evaluated.
	Cadmium Chromium Nickel	20.7 24.8 33.8	AMEC J qualified the detected total chromium and nickel results and UJ qualified the nondetected total cadmium result because of possible matrix interference.
Post-digestion spike of sample ARK-01-GW-54 (043-01).	All metal recoveries, except for mercury, were outside acceptance limits	-	Because the background aluminum, arsenic, copper, iron, lead, vanadium, and zinc concentrations in the unspiked sample were more than 4 times the spike concentration, data usability could not be fully evaluated.
	Cadmium Chromium Nickel	0 37.8 34.2	AMEC J qualified the detected total chromium and nickel results and UJ qualified the nondetected total cadmium result because of possible matrix interferences.
Post-digestion spike of sample ARK-01-GW-54 (043-01)	Dissolved Aluminum Dissolved Cadmium Dissolved Lead Dissolved Zinc	38.7 68.0 63.8 67.8	AMEC J qualified the detected dissolved aluminum, cadmium, lead, and zinc results because of possible matrix interference.
	Dissolved Iron	0	Because the background iron concentration in the unspiked sample at 14,130 µg/L was approximately 14-times the spike concentration of 1000 µg/L, data usability could not be fully evaluated.

Spiked Sample ID	Analytes	Recoveries Outside Acceptance Limits (%)	Effects on Data Usability
ARK-06-GW-58 (059-01)	Aluminum Iron Manganese	47.0 0 24,246	Because the background aluminum, iron, and manganese concentrations in the unspiked sample were more than four times the spike added, data usability could not be fully evaluated.
	Mercury	126	Because the mercury recovery was high and this analyte was not detected, data usability is not adversely affected.
Post-digestion spike of sample ARK-06-GW-58 (059-01).	All analyte recoveries, except for aluminum, iron, and manganese, were slightly below acceptance limits	-	Because the background aluminum and manganese concentrations in the unspiked sample were more than four times the spike added, data usability could not be fully evaluated.
	Aluminum Iron Manganese	135 294 3,528	AMEC J qualified the detected arsenic, cadmium, chromium, copper, iron, lead, nickel, vanadium, and zinc results because of possible matrix interference.
ARK-06-GW-58 (059-01)	Dissolved Lead	44.4	AMEC UJ qualified the nondetected lead result because of possible matrix interference.
	Dissolved Manganese	2,376	Because the background manganese concentration in the unspiked sample at 45,020 µg/L was approximately 90-times the spike concentration of 500 µg/L, data usability could not be fully evaluated.
Post-digestion spike of sample ARK-06-GW-58 (059-01)	Dissolved Manganese	3,028	Because the background manganese concentration in the unspiked sample, at 45,020 µg/L was approximately 90-times the spike concentration of 500 µg/L, data usability could not be fully evaluated.
	Dissolved Arsenic Dissolved Iron Dissolved Lead Dissolved Nickel	69.8 70.8 32.0 70.8	AMEC J qualified the detected dissolved iron and nickel results and UJ qualified the nondetected dissolved arsenic and lead results because of possible matrix interference.
ARK-03-GW-58 (072-01).	Dissolved Iron Dissolved Lead	51.5 71.0	AMEC J qualified the detected dissolved iron result and UJ qualified the nondetected dissolved lead because of possible matrix interference.

Spiked Sample ID	Analytes	Recoveries Outside Acceptance Limits (%)	Effects on Data Usability
RP-08-SO-93 (078-01)	Aluminum Iron Vanadium	3,224 4,249 161	Because the background aluminum, iron, and vanadium concentrations in the unspiked sample were more than four times the spike concentration added, data usability could not be fully evaluated.
	Arsenic Cadmium Lead Manganese	41.5 73.6 222 307	AMEC J qualified the detected total arsenic, lead, and manganese results and UJ qualified the nondetected total cadmium result because of possible matrix interference.

5.3.10 Serial Dilutions

EPA acceptance limits for metals serial dilutions are ≤10% difference for analyte concentrations greater than 50 times the IDL in the original sample. Percent differences were acceptable in all serial dilutions associated with analysis of these samples for metals, except as described below.

Sample ID	Analytes Outside Acceptance Limits	Effects on Data Usability
ARK-07-GW-45 (006-01)	Aluminum, calcium, chromium, copper, iron, lead, magnesium, manganese, nickel, vanadium, and zinc	AMEC J qualified the detected results for these analytes because of possible matrix interference.
ARK-08-SO-13.0 (011-01)	Aluminum, calcium, chromium, copper, iron, magnesium, manganese, nickel, vanadium, and zinc	AMEC J qualified the detected results for these analytes because of possible matrix interference.
ARK-01-GW-54 (043-01)	Aluminum, arsenic, calcium, chromium, copper, magnesium, nickel, potassium, vanadium, zinc, dissolved iron, dissolved magnesium, and dissolved zinc	AMEC J qualified the detected results for these analytes because of possible matrix interference.
ARK-04-SO-6.0 (029-01)	Calcium, chromium, iron, manganese, and zinc	AMEC J qualified the detected results for these analytes because of possible matrix interference.
ARK-06-GW-58 (059-01)	Aluminum, iron, magnesium, potassium, vanadium, and zinc	AMEC J qualified the detected results for these analytes because of possible matrix interference.
ARK-06-SO-3.0 (053-01)	Chromium and zinc	AMEC J qualified the detected results for these analytes because of possible matrix interferences.
ARK-09-GW-94 (073-01)	Aluminum, cadmium, calcium, chromium, copper, iron, lead, magnesium, manganese, nickel, potassium, sodium, vanadium, and zinc	AMEC J qualified the detected results for these analytes because of possible matrix interferences.
RP-08-SO-93 (078-01)	Aluminum, calcium, chromium, copper, iron, manganese, vanadium, and zinc	AMEC J qualified the detected results for these analytes because of possible matrix interferences.

5.3.11 Laboratory Duplicates

CLP acceptance limits for duplicate sample analyses are ±20% RPD for sample concentrations greater than or equal to 5 times the MRL. A control limit of ± MRL is used if either the sample or duplicate result is less than 5 times the MRL.

The laboratory duplicates exhibited acceptable precision, except as described below.

Sample Analyzed in Duplicate	Analytes outside acceptance limits	Effects on Data Usability
Rinsate Blank (016-04)	Copper was not detected above the IDL of 2.7 µg/L in the primary analysis but was detected at a concentration of 6.136 µg/L in the laboratory duplicate. In addition, the sodium concentration detected in the primary analysis was 2,040 µg/L and the concentration detected in the duplicate was 1,374 µg/L.	Because the difference in copper and sodium concentrations were less than the MRLs of 25 µg/L and 5,000 µg/L, respectively, data usability is not adversely affected.
ARK-01-GW-54 (043-01)	Total Iron RPD was high at 26.5 %. Dissolved iron RPD was high at 44.7%	AMEC J qualified the detected total and dissolved iron results from because of a possible bias in the analytical result.
ARK-06-GW-58 (059-01)	Total calcium and manganese RPDs were high at 22.8 and 22.4%, respectively. Dissolved calcium and manganese RPDs were high at 21.2 and 20.7%, respectively.	AMEC J qualified the detected total and dissolved calcium and manganese results because of possible bias in the analytical results.
ARK-03-GW-102.5 (076-01)	Dissolved mercury RPD was high at 25.8%.	Because the difference in dissolved mercury concentrations were less than the MRLs of 0.2 µg/L, data usability is not adversely affected.
RP-08-SO-93 (078-01)	Chromium (24.4%), copper (25.4%), magnesium (23.0%), manganese (50.1%), vanadium (38.0%), and zinc (23.1%). RPDs were above acceptance limits.	AMEC J qualified the detected chromium, copper, magnesium, manganese, vanadium, and zinc results from this sample because of possible bias in the analytical results.
	Potassium RPD was high at 27.7%	Because the duplicate potassium results were within the MRL of 500 mg/kg, data usability is not adversely affected.

5.3.12 Data Reporting and Analytical Procedures

The laboratory B qualified detected results with concentrations between the reporting limit (RL) and IDL. AMEC concurs that these results are quantitative estimates and qualified these results J on the data tables.

5.4 Volatile Organic Compounds by EPA Method 8260B

VOC data from the Stage 1 SCE Arkema Lots 1 and 2 reconnaissance activities may be considered usable with the limitations and exceptions described below. Summaries of qualified VOC results are presented in Table 7.

5.4.1 Holding Times

All samples from this event were analyzed for VOCs within the recommended maximum holding time of seven days for unpreserved aqueous samples and 14 days for preserved aqueous samples and soil samples, except as described below.

- According to the associated screening worksheet, sample ARK-09-GW-35 (025-01) was not preserved to a pH less than two and was analyzed five days beyond the technical holding time of seven days for unpreserved samples. AMEC UJ qualified the nondetected results from sample ARK-09-GW-35 (025-01) because of the exceeded holding time.
- Sample ARK-01-GW-15 (042-01) was analyzed one day beyond the technical holding time of 14 days. AMEC J qualified the detected results and UJ qualified the nondetected results from this sample because of the exceeded holding time.

5.4.2 Initial Calibration

All criteria were met for the initial calibrations associated with analysis of samples from this sampling event for VOCs, except as described below.

ICAL ID	Analytes with %RSDs greater than 15%	Effects on Data Usability
ICAL analyzed on August 22, 2005 on instrument N.	Tetrachloroethene (PCE)	AMEC J qualified the detected PCE result from sample ARK-08-GW-15 (016-01) because of a possible bias in the analytical result.
		AMEC UJ qualified the nondetected PCE results from samples ARK-04-GW-47 (033-01), ARK-04-GW-36 (035-01), ARK-04-GW-15 (034-01), ARK-01-GW-54 (043-01), ARK-09-GW-56 (026-01), ARK-09-GW-35 (025-01), ARK-03-GW-58 (072-01), ARK-03-GW-26 (071-01), ARK-03-GW-80 (067-01), and ARK-02-GW-40 (066-01) because of a possible bias in the analytical result.
	Chloroethane	AMEC UJ qualified the nondetected chloroethane results from samples ARK-08-GW-15 (016-01), ARK-04-GW-47 (033-01), and ARK-01-GW-54 (043-01), ARK-04-GW-36 (035-01), ARK-04-GW-15 (034-01), ARK-09-GW-56 (026-01), ARK-09-GW-35 (025-01), ARK-03-GW-58 (072-01), ARK-03-GW-26 (071-01), ARK-03-GW-80 (067-01), and ARK-02-GW-40 (066-01) because of a possible bias in the analytical result.
ICAL analyzed on August 3, 2005 on instrument N.	Acetone	AMEC J qualified the detected acetone results from samples ARK-08-SO-13.0 (011-01), ARK-04-SO-6.0 (029-01), ARK-06-SO-3.0 (053-01), and ARK-03-SO-6.0 (069-01) because of possible bias in the analytical results.
ICAL analyzed on August 28, 2005 on instrument M.	Chloroethane Bromoform	AMEC UJ qualified the nondetected chloroethane and bromoform results from samples ARK-05-GW-22 (050-01), ARK-05-GW-41 (051-01), ARK-01-GW-15 (042-01), ARK-06-GW-80 (057-01), ARK-06-GW-27 (058-01), ARK-06-GW-27 (058-02), ARK-06-GW-58 (059-01), and ARK-02-GW-80 (065-01) because of possible bias in the analytical results.
	Acetone	AMEC J qualified the detected acetone results from samples ARK-05-GW-22 (050-01), ARK-05-GW-41 (051-01), ARK-01-GW-15 (042-01), and ARK-06-GW-80 (057-01) and UJ qualified the nondetected acetone results from samples ARK-06-GW-27 (058-01), ARK-06-GW-27 (058-02),ARK-06-GW-58 (059-01), and ARK-02-GW-80 (065-01) because of a possible bias in the analytical results.
ICAL analyzed October 3, 2005 on instrument M.	Acetone	AMEC J qualified the detected acetone results from samples RP-08-SO-88 (077-01) and RP-08-SO-93 (078-01) because of possible bias in the analytical results.
	Bromomethane, chloroethane, methyl iodide, sec-butyl benzene, 4-isopropyltoluene, n-butylbenzene, and hexachlorobutadiene	AMEC UJ qualified the nondetected bromomethane, chloroethane, methyl iodide, sec-butyl benzene, 4-isopropyltoluene, n-butylbenzene, and hexachlorobutadiene results from samples RP-08-SO-88 (077-01) and RP-08-SO-93 (078-01) because of possible bias in the analytical results.

5.4.3 Continuing Calibration

CCAL performance is evaluated in terms of percent deviation (%D), which corresponds to percent difference (average RF models) or percent drift (regression fit models) from the average ICAL response. To facilitate understanding of CCAL effects on data quality to the end user, %D has been expressed as percent recovery in this narrative.

Compounds with CCAL recoveries greater than 120% and detected results were J qualified by AMEC in all associated samples to indicate a possible high bias in the results. AMEC J qualified detected results or UJ qualified nondetected results associated with compounds with CCAL recoveries less than 80% to indicate possible low bias in the sample results.

All criteria were met for the CCAL associated with analysis of samples from this sampling event for VOCs except as described below:

CCAL ID	Analyte/Problem	Effects on Data Usability
VSTD010 analyzed on August 29, 2005, VSTD010 analyzed on August 22, 2005, VSTD025 August 23, 2005, VSTD010 analyzed on August 26, 2005, VSTD010 analyzed on August 23, 2005, and VSTD010 analyzed on September 16, 2005.	Isobutyl alcohol RRFs were very low (<0.01).	AMEC R qualified and rejected the nondetected isobutyl alcohol results from samples ARK-05-GW-22 (050-01), ARK-05-GW-41 (051-01), ARK-09-GW-35 (025-01), ARK-09-GW-56 (026-01), ARK-04-GW-47 (033-01), ARK-04-GW-15 (034-01, ARK-04-GW-36 (035-01), ARK-01-GW-31.5 (044-01), ARK-01-GW-15 (042-01), ARK-06-GW-80 (057-01), ARK-06-GW-27 (058-01), ARK-06-GW-27 (058-02), ARK-02-GW-80 (065-01), ARK-06-GW-58 (059-01), ARK-02-GW-40 (066-01), ARK-03-GW-80 (067-01), ARK-03-GW-26 (071-01), ARK-03-GW-58 (072-01), and ARK-05-GW-67.5 (075-01) because the presence of this analyte could not be fully determined.
VSTD010, analyzed on August 15, 2005.	Methyl iodide recovery was high at 123%.	Because methyl iodide was not detected in the associated samples, data usability is not adversely affected.
CCAL VSTD010, analyzed on August 23, 2005.	Acetone (78%), 2-butanone (MEK, 78%), and isobutyl alcohol (72%) recoveries were low.	AMEC UJ qualified the nondetected acetone, 2-butanone, and isobutyl alcohol results from sample ARK-07-GW-26 (008-01) because of possible low bias in the analytical results.
	Chloroethane recovery was high at 126%.	Because chloroethane recovery was high and this analyte was not detected in the associated sample, data usability is not adversely affected.

CCAL ID	Analyte/Problem	Effects on Data Usability
CCAL VSTD050, analyzed on August 15, 2005.	Acetone (136%), MEK (138%), 4-methyl-2-pentanone, (MIBK) (124%), isobutyl alcohol (132%), and 2-hexanone (122%) recoveries were high.	AMEC J qualified the detected acetone result from sample ARK-08-SO-13.0 (011-01) because of a possible high bias in the analytical result.
		Because MEK, MIBK, isobutyl alcohol, and 2-hexanone recoveries were high and these analytes were not detected in the associated sample, data usability is not adversely affected.
CCAL VSTD025, analyzed on August 23, 2005.	Acetone (64%), MEK (78%), isobutyl alcohol (56%), and PCE (76%) recoveries were low.	AMEC UJ qualified the nondetected MEK, isobutyl alcohol, and PCE results from samples ARK-09-GW-35 (025-01), ARK-09-GW-56 (026-01), ARK-04-GW-47 (033-01), and ARK-04-GW-15 (034-01) because of possible low bias in the analytical results.
		AMEC J qualified the detected acetone result from sample ARK-04-GW-15 (034-01) and UJ qualified the nondetected acetone results from samples ARK-09-GW-35 (025-01), ARK-09-GW-56 (026-01), and ARK-04-GW-47 (033-01) because of possible low bias in the analytical results.
CCAL VSTD010, analyzed on August 26, 2005.	Acetone (72%), MEK (78%), isobutyl alcohol (68%), and PCE (72%) recoveries were low.	AMEC UJ qualified the nondetected MEK, isobutyl alcohol, and PCE results from samples ARK-04-GW-36 (035-01) and ARK-01-GW-31.5 (044-01) because of possible low bias in the analytical results.
		AMEC J qualified the detected acetone result from sample ARK-01-GW-31.5 (044-01) and UJ qualified the nondetected acetone result from sample ARK-04-GW-36 (035-01) because of possible low bias in the analytical results.
CCAL VSTD010, analyzed on August 27, 2005.	Bromomethane (55%), methyl iodide (78%), and PCE (78%) recoveries were low.	AMEC UJ qualified the nondetected results for these analytes from sample ARK-01-GW-54 (043-01) because of possible low bias in the analytical results.
CCAL VSTD100, analyzed on August 3, 2005.	MEK (103%) and isobutyl alcohol (122%) recoveries were high and dichlorodifluoromethane recovery was low at 70%.	AMEC UJ qualified the nondetected dichlorodifluoromethane result from sample ARK-04-SO-6.0 (029-01) because of a possible low bias in the analytical result.
		Because MEK and isobutyl alcohol recoveries were high and these analytes were not detected in the associated sample, data usability is not adversely affected.
CCAL VSTD010, analyzed on August 30, 2005.	Acetone and MEK recoveries were low at 68% and 72%, respectively.	AMEC J qualified the detected acetone results from samples ARK-01-GW-15 (042-01), ARK-06-GW-80 (057-01), ARK-06-GW-58 (059-01), and ARK-02-GW-80 (065-01) because of possible low bias in the analytical results.

CCAL ID	Analyte/Problem	Effects on Data Usability
		AMEC UJ qualified the nondetected acetone results from samples ARK-06-GW-27 (058-01)and ARK-06-GW-27 (058-02) and the nondetected MEK results from samples ARK-01-GW-15 (042-01), ARK-06-GW-80 (057-01), ARK-06-GW-27 (058-01), ARK-06-GW-27 (058-02), ARK-06-GW-58 (059-01), and ARK-02-GW-80 (065-01) because of possible low bias in the analytical results.
CCAL VSTD010, analyzed on August 31, 2005.	Isobutyl alcohol and PCE recoveries were low at 74% and 72%, respectively.	AMEC UJ qualified the nondetected isobutyl alcohol and PCE results from samples ARK-02-GW-40 (066-01), ARK-03-GW-80 (067-01), ARK-03-GW-26 (071-01), and ARK-03-GW-58 (072-01) because of possible low bias in the analytical results.
CCAL VSTD100 analyzed on August 28, 2005.	Dichlorodifluoromethane recovery was low at 68%.	AMEC UJ qualified the nondetected dichlorodifluoromethane result from sample ARK-06-SO-3.0 (053-01) because of a possible low bias in the analytical result.
CCAL VSTD0100, analyzed on August 29, 2005.	Dichlorodifluoromethane and bromomethane recoveries were low at 64% and 74%, respectively and MEK recovery was high at 126%.	Because MEK recovery was high and this analyte was not detected in the associated sample, data usability is not adversely affected.
		AMEC UJ qualified the nondetected dichlorodifluoromethane and bromomethane results from sample ARK-03-SO-6.0 (069-01) because of possible low bias in the analytical results.
CCAL VSTD010 analyzed on September 16, 2005.	Acetone recovery was low at 78%.	AMEC J qualified the detected acetone result from sample ARK-05-GW-67.5 (075-01) because of a possible low bias in the analytical result.
CCAL VSTD010 analyzed on October 3, 2005.	Bromomethane recovery was low at 78%.	AMEC UJ qualified the nondetected bromomethane results from samples RP-08-SO-88 (077-01) and RP-08-SO-93 (078-01) because of possible low bias in the analytical results.

5.4.4 Blanks

Target analytes should not be found in blank samples. Results greater than the MRL but less than 5 times the concentration found in the blank, or 10 times the amount found in the blank for methylene chloride, acetone, and MEK, have been U qualified. Results between the IDL and MRL, and less than 5 or 10 times the amount found in the blank have been U qualified at the MRL concentration.

Laboratory Blanks

No target analytes were detected in the laboratory blanks associated with the analysis of these samples for VOCs, except as described in the table below.

Blank ID	Detected Analytes	Analyte Concentration (µg/L)	Affected Samples	Effects on Data Usability
Laboratory blank MBLK081505LB	1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene	0.28 0.32 0.55 0.41	ARK-07-GW-14 (007-01)	AMEC U qualified the detected hexachlorobutadiene result from sample ARK-07-GW-14 (007-01) because the sample concentration was less than five times the concentration detected in the blank.
Laboratory blank MBLK082205NA	1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene	0.29 0.61 0.31 0.39	-	Because these analytes were not detected in the associated samples, data usability is not adversely affected.
MBLK082305NA MBLK082305NB MBLK082705NA	Hexachlorobutadiene	0.28 0.33 0.25	-	Because this analyte was not detected in the associated samples, data usability is not adversely affected.
Laboratory Blank MBLK081505NA	Acetone 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene	2.2 1.1 1.4 1.7 1.5	ARK-08-SO-13.0 (011-01)	AMEC U qualified the detected acetone result from sample ARK-08-SO-13.0 (011-01) because the sample concentration was less than five times the concentration detected in the blank.
Laboratory blank MBLK082605NA	Methylene chloride	0.24	-	Because this analyte was not detected in the associated samples, data usability is not adversely affected.
Laboratory blank MBLK081805NA	Acetone Methylene Chloride 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene	3.5 1.3 1.4 1.4 2.3 2.0	ARK-04-SO-6.0 (029-01)	AMEC U qualified the detected acetone result from sample ARK-04-SO-6.0 (029-01) because the sample concentration was less than five times the concentration detected in the blank.

Blank ID	Detected Analytes	Analyte Concentration (µg/L)	Affected Samples	Effects on Data Usability
Laboratory blank MBLK083005MB.	Naphthalene	0.28	-	Because this analyte was not detected in the associated samples or the naphthalene concentrations were greater than 5 times the blank concentration, data usability is not adversely affected.
Laboratory blank MBLK083105NB.	Naphthalene	0.29	-	Because this analyte was not detected in the associated samples, data usability is not adversely affected.
laboratory blank MBLK082805NA	Acetone Isobutyl Alcohol 1,2,4-Trichlorobenzene Naphthalene 1,2,3-Trichlorobenzene	1.6 12 1.1 1.9 1.5	ARK-06-SO-3.0 (053-01)	AMEC U qualified the detected acetone result from sample ARK-06-SO-3.0 (053-01) because the sample concentration was less than 5 times the concentration detected in the blank.
Laboratory blank MBLK082905NA	Acetone Isobutyl Alcohol 1,2,4-Trichlorobenzene Naphthalene 1,2,3-Trichlorobenzene	1.4 9.4 1.0 1.5 1.3	-	Because these analytes were either not detected in the associated sample or the sample concentrations was more than five times the concentration detected in the blank, data usability is not adversely affected.
Laboratory blank MBLK100305MA	1,2,3-trichlorobenzene Naphthalene	2.2 1.2	-	Because these analytes were not detected in the associated samples, data usability is not adversely affected.

Trip Blanks

No target analytes were detected in the trip blanks associated with the analysis of these samples for VOCs, except as described in the below.

Blank ID	Detected Analytes	Analyte Concentration (µg/L)	Affected Samples	Effects on Data Usability
Trip Blank 043-03	1,2-Dichlorobenzene	0.73	ARK-01-GW-31.5 (044-01)	AMEC U qualified the 1,2-DCB result from sample ARK-01-GW-31.5 (044-01) because the concentration detected in the sample was less than 5 times the concentration detected in the blank.
Trip Blank 057-03	Naphthalene	0.20		Because this analyte was not detected in the associated samples, data usability is not adversely affected.
Trip Blank 073-03	Chloromethane 1,2-DCB	0.92 0.58	ARK-09-GW-94 (073-01) ARK-05-GW-67.5 (075-01)	AMEC U qualified the detected chloromethane results from samples ARK-09-GW-94 (073-01) and ARK-05-GW-67.5 (075-01) because the sample concentrations were less than 5 times the associated trip blank concentration.
Trip Blank 076-03	Chloromethane chlorobenzene 1,4-DCB 1,2-DCB	0.79 0.73 1.6 5.5	-	Because these analytes were not detected or were detected at concentrations greater than five times the blank concentration in the associated sample, data usability is not adversely affected. It should be noted that the chlorobenzene, 1,4-DCB, and 1,2-DCB concentrations were most likely due to carry-over from sample ARK-03-GW-102.5 (076-01) which was analyzed prior to TB 076-03 in the associated analytical sequence and demonstrated high concentrations for these analytes.

Rinsate Blanks

No target analytes were detected in the rinsate blanks associated with the analysis of these samples for VOCs, except as described below.

Blank ID	Detected Analytes	Analyte Concentration (µg/L)	Affected Samples	Effects on Data Usability
Rinsate Blank 016-04	Carbon disulfide	2.8	-	Because carbon disulfide was not detected in the associated sample, data usability is not adversely affected.
Rinsate Blank 065-04	Acetone Toluene m&p-Xylene o-Xylene 1.3.5-Trimethylbenzene 1,2,4-Trimethylbenzene Naphthalene	2.9 0.22 0.59 0.41 0.26 0.69 0.39	ARK-06-GW-58 (059-01) and ARK-02-GW-80 (065-01)	AMEC U qualified the detected acetone results from samples ARK-06-GW-58 (059-01) and ARK-02-GW-80 (065-01) because the sample concentrations were less than 5 times the concentration detected in the blank.

5.4.5 LCS Recovery

All LCS recoveries associated with analysis of samples from this project for VOCs were within the QAPP-specified 70% to 130% acceptance limits, except as described below.

- 2-butanone and acetone recoveries were high at 140 and 170%, respectively in LCS LHSL analyzed on August 15, 2005. Because the recoveries were high and these analytes were not detected in the associated samples, data usability is not adversely affected.
- Dichlorodifluoromethane recovery was low at 64% and isobutyl alcohol recovery was high at 132% in LCS NAXH analyzed on August 15, 2005. Specific limitations include the following:
  - Because the isobutyl alcohol recovery was high and this analyte was not detected in the associated sample, data usability is not adversely affected.
  - AMEC UJ qualified the nondetected dichlorodifluoromethane result from sample ARK-08-SO-13.0 (011-01) because of a possible low bias in the analytical result.
- Hexachlorobutadiene recovery was high at 140% in LCS NAYB analyzed on August 23, 2005. Because the recovery was high and this analyte was not detected in the associated samples, data usability is not adversely affected.

- Bromomethane and methyl iodide recoveries were low at 51 and 53%, respectively, in LCS NAYF analyzed on August 27, 2005. AMEC UJ qualified the nondetected results for these analytes from sample ARK-01-GW-31.5 (044-01) because of possible low bias in the analytical results.
- 1,2-Dibromo-3-chloropropane (138%), 1,1,2,2-tetrachloroethane (138%), isobutyl alcohol (140%), 1,2,3-trichloropropane (136%), and naphthalene (136%) recoveries were high in LCS NAXL analyzed on August 19, 2005. Because the recoveries were high and these analytes were not detected in the associated sample, data usability is not adversely affected.
- Dichlorodifluoromethane recovery was low at 68% in LCS NAXN analyzed on August 29, 2005. AMEC UJ qualified the nondetected dichlorodifluoromethane result from sample ARK-03-SO-6.0 (069-01) because of a possible low bias in the analytical result.
- Acetone recovery was high at 124% in LCS NBBB analyzed on September 15, 2005. Because the acetone recovery was high and this analyte was not detected in the associated samples, data usability is not adversely affected.

5.4.6 Surrogate Standard Recoveries

Recovery of all surrogates associated with analysis of samples from this event for VOCs were acceptable.

5.4.7 Internal Standard Recoveries

Recovery of all IS associated with analysis of samples from this event for VOCs were between 50 and 200% of the response in the associated CCAL standard, except as described below.

IS 1,4-dichlorobenzene-d_4 response in sample ARK-06-SO-3.0 (053-01) was less than 50% of the response from the associated CCAL standard. Because a response below 50% may indicate a possible positive bias and target analytes associated with this IS were not detected in sample ARK-06-SO-3.0 (053-01), data usability is not adversely affected.

5.4.8 MS/MSD Recovery and Precision

All MS/MSD recoveries associated with analysis of samples from this project for VOCs were within the QAPP-specified 60 to 140% acceptance limits, except as described below.

- MS were performed on sample ARK-01-GW-54 (043-01). Methyl iodide recovery was low in the MS at 56% but acceptable in the MSD at 65%. Because the average recovery (60.5%) was within acceptance limits, in AMEC's professional opinion data usability is not adversely affected.
- MS were performed on sample ARK-06-GW-58 (059-01). Dichlorodifluoromethane recoveries were high in the MS/MSD at 180% and 190%, respectively. Because the recoveries were high and this analyte was not detected in the associated sample, data usability is not adversely affected.

5.4.9 Data Reporting and Analytical Procedures

The laboratory J qualified detected results with concentrations between the RL and MDL. AMEC concurs that these results are quantitative estimates and qualified these results J on the data tables.

The laboratory did not employ alternate calibration procedures for target compounds in several ICAL that exhibited %RSDs greater than 15%. According to EPA Method 8260B (Section 7.3.8.2), if the %RSD of any target analyte is greater than 15%, additional calibration options must be applied to gas chromatography mass spectrometer (GC/MS) calibration or a new initial calibration must be performed. Effects on data usability are discussed in Section 5.7.2 of this report.

The laboratory reported a detected n-butylbenzene result from laboratory blank MBLK082205NA. According to the raw data, the mass spectrum for this analyte did not meet method requirements and should be considered not detected in laboratory blank MBLK082205NA. This analyte was not detected in the associated samples; therefore, data usability is not adversely affected.

The case narrative associated with SDG 109114 correctly states that the pH of sample ARK-09-GW-35 (025-01) was not less than two; however, the case narrative incorrectly states that this sample was analyzed within the prescribed holding time for unpreserved samples. Effects on data usability are addressed in Section 5.4.1.

The laboratory reported a detected isobutyl alcohol result from laboratory blank MBLK081805NA. According to the raw data, the mass spectrum for this analyte did not meet method requirements and should be considered not detected in laboratory blank MBLK081805NA. This analyte was not detected in the associated samples; therefore, data usability is not adversely affected.

The laboratory reanalyzed sample ARK-06-SO-3.0 (053-01) because of a low internal standard recovery in the initial analysis; however, the reanalysis yielded two low internal standard recoveries and two low surrogate recoveries. AMEC chose to report the initial analysis on the data tables because this analysis yielded less qualified results. Effects on data usability are addressed in Section 5.4.7.

5.5 Semivolatile Organic Compounds by EPA Method 8270C

SVOC results data from the Stage 1 SCE Arkema Lots 1 and 2 reconnaissance activities may be considered usable with the limitations described below. Summaries of qualified SVOC results are presented in Table 8.

5.5.1 Holding Times

All samples were extracted and analyzed within the EPA recommended maximum holding time of 7 days for aqueous extraction, 14 days for soil extraction, and 45 days for analysis, except as described below.

Sample ARK-01-GW-15 (042-01) was extracted three days beyond the seven day holding time from sample collection. AMEC J qualified the detected results and UJ qualified the nondetected results from this sample due to the exceeded holding time.

5.5.2 Initial Calibration

All criteria were met for the initial calibrations associated with analysis of samples from this sampling event for SVOCs, except as described below.

ICAL ID	Analytes with %RSDs greater than 15%	Effects on Data Usability
ICAL analyzed on July 26, 2005 on instrument U.	Bis (2-chloroethylether), 4-methylphenol, and 4-nitrophenol	AMEC UJ qualified the nondetected results for these analytes from samples ARK-07-GW-45 (006-01), ARK-07-GW-14 (007-01), ARK-08-GW-43.5 (015-01), ARK-08-GW-43.5 (015-02), ARK-08-GW-15 (016-01), ARK-07-GW-26 (008-01), and ARK-09-GW-16 (023-01) because of possible bias in the analytical results.
ICAL analyzed on August 23, 2005 on instrument U.	Hexachlorobenzene and benzo(k)fluoranthene	AMEC J qualified the detected benzo(k)fluoranthene results from samples ARK-08-SO-13.0 (011-01) and ARK-04-SO-6.0 (029-01) and UJ qualified the nondetected results from samples ARK-02-GW-40 (066-01), ARK-03-GW-80 (067-01), ARK-03-GW-26 (071-01), ARK-01-GW-15 (042-01), ARK-06-GW-80 (057-01), ARK-06-GW-27 (058-01), ARK-06-GW-27 (058-02), ARK-06-GW-58 (059-01), ARK-03-GW-58 (072-01), ARK-02-GW-80 (065-01), 'ARK-09-GW-35 (025-01), ARK-09-GW-56 (026-01), ARK-04-GW-47 (033-01), ARK-04-GW-15 (034-01), ARK-04-GW-36 (035-01), ARK-01-GW-54 (043-01), ARK-01-GW-31.5 (044-01), ARK-05-GW-22

ICAL ID	Analytes with %RSDs greater than 15%	Effects on Data Usability
		(050-01), and ARK-05-GW-41 (051-01), because of possible bias in the analytical results.
		AMEC UJ qualified the nondetected hexachlorobenzene results from samples ARK-02-GW-40 (066-01), ARK-03-GW-80 (067-01), ARK-03-GW-26 (071-01), ARK-01-GW-15 (042-01), ARK-06-GW-80 (057-01), ARK-06-GW-27 (058-01), ARK-06-GW-27 (058-02), ARK-06-GW-58 (059-01), ARK-03-GW-58 (072-01), ARK-02-GW-80 (065-01), 'ARK-09-GW-35 (025-01), ARK-09-GW-56 (026-01), ARK-04-GW-47 (033-01), ARK-04-GW-15 (034-01), ARK-04-GW-36 (035-01), ARK-01-GW-54 (043-01), ARK-01-GW-31.5 (044-01), ARK-05-GW-22 (050-01), ARK-05-GW-41 (051-01), ARK-08-SO-13.0 (011-01), and ARK-04-SO-6.0 (029-01) because of possible bias in the analytical results.
ICAL analyzed on October 17, 2005 on instrument U.	Hexachloroethane, n-nitroso-di-n-propylamine, 4-methylphenol, dibenzofuran, fluorene, pyrene, benzo(b)fluoranthene, and benzo(k)fluoranthene	AMEC UJ qualified the nondetected results for these analytes from samples RP-08-SO-88 (077-01) and RP-08-SO-93 (078-01) because of possible bias in the analytical results.

5.5.3 Continuing Calibration

CCAL performance is evaluated in terms of %D, which corresponds to percent difference (average RF models) or percent drift (regression fit models) from the average ICAL response. To facilitate understanding of CCAL effects on data quality to the end user, %D has been expressed as % recovery in this narrative. CCAL performance is evaluated in terms of percent recovery for linear and quadratic calibration models.

CCAL recoveries should fall within 80 to 120% acceptance limits. AMEC J qualified all detected results associated with CCAL recoveries greater than 120% due to a possible high bias in the analytical results. AMEC has J qualified all detected results and UJ qualified all nondetected results associated with CCAL recoveries less than 80% due to a possible low bias in the analytical results.

CCAL ID	Analyte/Problem	Effects on Data Usability
CCAL SSTD050 analyzed on August 18, 2005.	N-Nitrosodimethylamine and 2,4-dimethylphenol recoveries were high at 116% and 128%, respectively and 4-nitrophenol recovery was low at 78%	Because N-nitrosodimethylamine and 2,4-dimethylphenol recoveries were high and these analytes were not detected in the associated samples, data usability is not adversely affected.
		AMEC UJ qualified the nondetected 4-nitrophenol results from samples ARK-07-GW-45 (006-01), ARK-07-GW-14 (007-01), ARK-08-GW-43.5 (015-01), ARK-08-GW-43.5 (015-02), ARK-08-GW-15 (016-01), and ARK-07-GW-26 (008-01) because of possible low bias in the analytical results.
CCAL SSTD050 analyzed on August 19, 2005.	Benzyl alcohol (126%), 4-methylphenol (130%), and 2,4-dimethylphenol (128%) recoveries were high and 4-nitrophenol recovery was low at 78%	Because benzyl alcohol, 4-methylphenol, and 2,4-dimethylphenol recoveries were high and these analytes were not detected in the associated samples, data usability is not adversely affected.
		AMEC UJ qualified the nondetected 4-nitrophenol result from sample ARK-09-GW-16 (023-01) because of a possible low bias in the analytical result.
CCAL SSTD050 analyzed on August 29, 2005.	2,4-Dinitrophenol recovery was low at 76%	Because only QC samples were associated with this CCAL, data usability is not adversely affected.
CCAL SSTD050 analyzed on August 31, 2005.	N-Nitrosodimethylamine (128%), pyrene (122%), and dibenzo(a,h)anthracene (122%) recoveries were high	Because N-nitrosodimethylamine and dibenzo(a,h)anthracene recoveries were high and these analytes were not detected in the associated samples, data usability is not adversely affected.
		AMEC J qualified the detected pyrene results from samples ARK-08-SO-13.0 (011-01) and ARK-04-SO-6.0 (029-01) because of possible high bias in the analytical results.
CCAL SSTD050 analyzed on August 24, 2005.	N-Nitrosodimethylamine (74%), benzoic acid (72%), and 2,4-dinitrophenol (70%) recoveries were low	AMEC UJ qualified the nondetected N-nitrosodimethylamine, benzoic acid, and 2,4-dinitrophenol results from samples ARK-09-GW-35 (025-01), ARK-09-GW-56 (026-01), ARK-04-GW-47 (033-01), and ARK-04-GW-15 (034-01) because of possible low bias in the analytical results.
CCAL SSTD050 analyzed on August 29, 2005.	2,4-Dinitrophenol recovery was low at 76%	AMEC UJ qualified the nondetected 2,4-dinitrophenol results from samples ARK-01-GW-15 (042-01), ARK-06-GW-80 (057-01), ARK-06-GW-27 (058-01), ARK-06-GW-27 (058-02), ARK-06-GW-58 (059-01), ARK-02-GW-40 (066-01), ARK-03-GW-80 (067-01), and ARK-03-GW-26 (071-01), because of possible low bias in the analytical results.
CCAL SSTD050 analyzed on September 29, 2005.	Benzyl alcohol (38%), 2,4-dimethylphenol (62%), and 4-nitrophenol (76%) recoveries were low and indeno(1,2,3-cd)pyrene (124%), dibenzo(a,h)anthracene (124%), and	Because only the LCS and method blank were associated with this CCAL, data usability is not adversely affected.

CCAL ID	Analyte/Problem	Effects on Data Usability
	benzo(g,h,i)perylene (140%) recoveries were high	
CCAL SSTD050 analyzed on September 28, 2005.	N-Nitrosodimethylamine (70%), bis(2-chloroethyl)ether (74%), bis(2-chloroisopropyl) ether (78%), bis (2-chloroethoxy)methane (74%),dimethylphthalate (78%), diethylphthalate (78%), 4-chlorophenyl-phenylether (78%), 4-bromophenyl-phenylether (78%), di-n-butylphthalate (78%), butylbenzylphthalate (72%), bis(2-ethylhexyl)phthalate (70%), and di-n-octylphthalate (68%) recoveries were low	AMEC UJ qualified the nondetected n-nitrosodimethylamine, bis(2-chloroethyl)ether, bis(2-chloroisopropyl) ether, bis (2-chloroethoxy)methane, dimethylphthalate, diethylphthalate, 4-chlorophenyl-phenylether, 4-bromophenyl-phenylether, di-n-butylphthalate, butylbenzylphthalate, and di-n-octylphthalate results and J qualified the detected bis(2-ethylhexyl)phthalate result from sample ARK-03-SO-6.0 (069-01) because of possible low bias in the analytical results.
CCAL SSTD050 analyzed on October 3, 2005.	Benzoic acid (78%), bis(2-chloroethyl)ether (78%), bis(2-chloroethoxy)methane (78%),dimethylphthalate (78%), diethylphthalate (78%), 4-chlorophenyl-phenylether (76%), 4-bromophenyl-phenylether (74%), butylbenzylphthalate (74%), bis(2-ethylhexyl)phthalate (72%), di-n-octylphthalate (74%), and benzo(k)fluoranthene (78%) recoveries were low	AMEC UJ qualified the nondetected bis(2-chloroethyl)ether, bis (2-chloroethoxy)methane, dimethylphthalate, diethylphthalate, 4-chlorophenyl-phenylether, 4-bromophenyl-phenylether, butylbenzylphthalate, di-n-octylphthalate, and benzo(k)fluoranthene results from sample ARK-06-SO-3.0 (053-01), ARK-09-GW-94 (073-01), ARK-06-GW-97.5 (074-01), ARK-05-GW-67.5 (075-01), and ARK-03-GW-102.5 (076-01) and the nondetected benzoic acid results from samples ARK-06-SO-3.0 (053-01), ARK-09-GW-94 (073-01), and ARK-06-GW-97.5 (074-01) because of possible low bias in the analytical results.
		AMEC J qualified the detected bis(2-ethylhexyl)phthalate result from sample ARK-06-SO-3.0 (053-01) and the detected benzoic acid results from samples ARK-05-GW-67.5 (075-01) and ARK-03-GW-102.5 (076-01) because of possible low bias in the analytical results.
CCAL SSTD050 analyzed on October 27, 2005.	Benzoic acid, 4-nitrophenol, and benzo(k)fluoranthene recoveries were high at 122%	Because the recoveries were high and these analytes were not detected in the associated samples, data usability is not adversely affected.

5.5.4 Blanks

Target analytes should not be found in blank samples. Results greater than the MRL but less than 5 times the concentration found in the blank have been U qualified. Results between the IDL and MRL, and less than 5 times the amount found in the blank have been U qualified at the MRL concentration.

5.5.4.1 Laboratory Blanks

No SVOCs were detected in the laboratory blanks associated with these samples, except as described below.

- Bis(2-ethylhexyl)phthalate was detected at a concentration of 0.88 µg/L in method blank MBLK082105A. Because this analyte was either not detected in the associated samples or the concentrations were greater than 5 times the blank concentration, data usability is not adversely affected.
- Bis(2-ethylhexyl)phthalate was detected at a concentration of 0.82 µg/L in method blank MBLK082105A. AMEC U qualified the detected bis(2-ethylhexyl)phthalate result from sample ARK-05-GW-22 (050-01) because the concentration was less than 5 times the blank concentration.

5.5.4.2 Rinsate Blanks

No SVOCs were detected in the rinsate blanks associated with these samples, except as described below.

Naphthalene and 2-methylnaphthalene were detected in Rinsate Blank 065-04 at 5.8 µg/L and 2.7 µg/L, respectively. Because these analytes were not detected in the associated samples, data usability is not adversely affected.

5.5.5 LCS Recovery

2,6-Dichlorophenol and 2,3,4,6-tetrachlorophenol were not present in the solution used for LCS and MS spiking. AMEC elected to use 2,4-dichlorophenol as a surrogate for 2,6-dichlorophenol and 2,4,6-trichlorophenol as a surrogate for 2,3,4,6-tetrachlorophenol. 2,4-Dichlorophenol and 2,4,6-trichlorophenol share similar analytical properties with 2,6-dichlorophenol and 2,3,4,6-tetrachlorophenol.

AMEC applied the QAPP-specified 70 to 130% DQI goals for LCS recoveries. Non-detected analytes with LCS recoveries less than 10% were R qualified and rejected by AMEC.

Recoveries for LCS associated with analysis of samples from this project for SVOCs were acceptable, except as described below.

LCS ID	Affected Samples	Analytes with recoveries outside acceptance limits	Effects on Data Usability
LCS 0816	ARK-07-GW-45 (006-01) ARK-07-GW-14 (007-01) ARK-08-GW-43.5 (015-01) ARK-08-GW-43.5 (015-02) ARK-08-GW-15 (016-01) ARK-07-GW-26 (008-01) ARK-09-GW-16 (023-01)	Benzyl alcohol (137%)	Because benzyl alcohol recovery was high and this analyte was not detected in the associated samples, data usability is not adversely affected.
LCS E082905	ARK-06-SO-3.0 (053-01) ARK-03-SO-6.0 (069-01)	Benzyl alcohol (140%)	
LCS 0816	ARK-07-GW-45 (006-01) ARK-07-GW-14 (007-01) ARK-08-GW-43.5 (015-01) ARK-08-GW-43.5 (015-02) ARK-08-GW-15 (016-01) ARK-07-GW-26 (008-01) ARK-09-GW-16 (023-01)	Benzoic acid (5%)	AMEC R qualified and rejected these analytes in the associated samples because of the extremely low (<10%) LCS recoveries.
LCS B081905.	ARK-09-GW-35 (025-01) ARK-09-GW-56 (026-01) ARK-04-GW-47 (033-01) ARK-04-GW-15 (034-01)	Hexachlorocyclopentadiene (1%) Benzoic acid (0%)	
LCS E082905	ARK-06-SO-3.0 (053-01) ARK-03-SO-6.0 (069-01)	4-Nitrophenol (0%)	
LCS 0816	ARK-07-GW-45 (006-01) ARK-07-GW-14 (007-01) ARK-08-GW-43.5 (015-01) ARK-08-GW-43.5 (015-02) ARK-08-GW-15 (016-01) ARK-07-GW-26 (008-01) ARK-09-GW-16 (023-01)	N-Nitrosodimethylamine (60%) Phenol (57%) Benzyl alcohol (137%) Hexachlorocyclopentadiene (68%) 4-Nitrophenol (53%)	AMEC J qualified detected results and UJ qualified nondetected results for these analytes in the associated samples because of a possible low bias in the analytical results.
LCS D082005	ARK-08-SO-13.0 (011-01) ARK-04-SO-6.0 (029-01)	4-Chloroaniline (39%), 3-Nitroaniline (55%), 2,4-Dinitrophenol (65%) 3,3′-Dichlorobenzidine (60%)	
LCS B081905.	ARK-09-GW-35 (025-01) ARK-09-GW-56 (026-01) ARK-04-GW-47 (033-01) ARK-04-GW-15 (034-01)	N-Nitrosodimethylamine (57%) Phenol (60%) 4-Chloroaniline (52%) 2,4,5-Trichlorophenol (67%) 3-Nitroaniline (62%) 4-Nitrophenol (55%) 3,3′-dichlorobenzidine (53%)	
LCS A082105.	ARK-04-GW-36 (035-01) ARK-01-GW-54 (043-01) ARK-01-GW-31.5 (044-01)	N-Nitrosodimethylamine (67%) Phenol (57%) 2,4-Dimethylphenol (63%) Benzoic acid (35%) 4-Chloroaniline (40%) 3-Nitroaniline (62%) 3,3′-Dichlorobenzidine (60%)	

LCS ID	Affected Samples	Analytes with recoveries outside acceptance limits	Effects on Data Usability
LCS A082305.	ARK-05-GW-22 (050-01) ARK-05-GW-41 (051-01)	N-Nitrosodimethylamine (67%) Phenol (57%) Benzoic acid (18%) 4-chloroaniline (52%) 3-Nitroaniline (62%) 4-Nitrophenol (62%) 3,3′-Dichlorobenzidine (63%)	
LCS D082005	ARK-04-SO-6.0 (029-01)	4-Chloroaniline (39%) 3-nitroaniline (55%) 3,3′-dichlorobenzidine (60%)	AMEC J qualified detected results and UJ qualified nondetected results for these analytes in the associated samples because of a possible low bias in the analytical results.
LCS A082505	ARK-01-GW-15 (042-01) ARK-06-GW-80 (057-01) ARK-06-GW-27 (058-01) ARK-06-GW-27 (058-02) ARK-06-GW-58 (059-01) ARK-02-GW-40 (066-01) ARK-03-GW-80 (067-01) ARK-03-GW-26 (071-01)	N-Nitrosodimethylamine (67%) Phenol (53%) Benzoic acid (50%) 4-Chloroaniline (38%) 3-Nitroaniline (53%) 4-Nitrophenol (43%) 3,3′-Dichlorobenzidine (65%)	
LCS E082905	ARK-06-SO-3.0 (053-01) ARK-03-SO-6.0 (069-01)	N-Nitrosodimethylamine (59%) bis(2-Chloroethyl)ether (67%) 1,2-Dichlorobenzene (68%) Hexachloroethane (69%) n-Nitroso-di-n-propylamine (58%) Isophorone (68%) 2,4-Dimethylphenol (59%) bis (2-Chloroethoxy)methane (68%) Benzoic acid (33%) 4-Chloroaniline (55%) Hexachlorocyclopentadiene (50%) Dimethylphthalate (67%) 3-Nitroaniline (55%) 2,4-Dinitrophenol (44%) Diethylphthalate (65%) 4-Chlorophenyl-phenylether (64%) 4-Nitroaniline (65%) Pentachlorophenol (33%) di-n-butylphthalate (67%) Fluoranthene (68%) Butylbenzylphthalate (69%) 3,3′-Dichlorobenzidine (60%) bis(2-Ethylhexyl)phthalate (64%) di-n-octylphthalate (60%) Benzo(b)fluoranthene (57%)	

LCS ID	Affected Samples	Analytes with recoveries outside acceptance limits	Effects on Data Usability
LCS E091305	ARK-09-GW-94 (073-01) ARK-06-GW-97.5 (074-01) ARK-05-GW-67.5 (075-01) ARK-03-GW-102.5 (076-01)	N-Nitrosodimethylamine (50%) Phenol (50%) 1,3-Dichlorobenzene (67%) 1,4-Dichlorobenzene (67%) 1,2-Dichlorobenzene (63%) Hexachloroethane (60%) n-Nitroso-di-n-propylamine (67%) Isophorone (43%) Benzoic acid (27%) 4-Chloroaniline (62%) Hexachlorobutadiene (63%) Hexachlorocyclopentadiene (47%) 3-Nitroaniline (65%)	
LCS A100305	RP-08-SO-88 (077-01) RP-08-SO-93 (078-01)	N-Nitrosodimethylamine (58%) bis(2-chloroethyl)ether (62%) benzoic acid (36%) 4-chloroaniline (55%) hexachlorocyclopentadiene (65%) 3-nitroaniline (55%) n-nitrosodiphenylamine (68%) Pentachlorophenol (65%) 3,3′-dichlorobenzidine (55%)	AMEC J qualified detected results and UJ qualified nondetected results for these analytes in the associated samples because of a possible low bias in the analytical results.

5.5.6 MS/MSD Recovery and Precision

AMEC applied the QAPP-specified 60 to 140% acceptance limits for MS recoveries. Non-detected analytes with MS recoveries less than 10% were R qualified and rejected by AMEC.

Precision and recoveries were acceptable in the MS/MSDs associated with the analysis of samples from this project for SVOCs, except as described below:

Spiked Sample	Analytes with recoveries outside acceptance limits	Effect on Data Usability
ARK-04-SO-6.0 (029-01).	2,4-Dimethylphenol (44%/10%) Benzoic acid (30%/34%) 4-chloroaniline (41%/28%) Hexachlorocyclopentadiene (50%/46%) 3,3′-dichlorobenzidine (50%/32%)	AMEC UJ qualified the nondetected results for these analytes from the spiked sample because of possible matrix interference.
ARK-01-GW-54 (043-01)	Phenol (57%/58%) 1,2-Dichlorobenzene (28%/106%) 2,4-dimethylphenol (19%/106%) 4-Chloroaniline (51%/43%) 3,3′-Dichlorobenzidine (39%/49%)	AMEC UJ qualified the nondetected phenol, 4-chloroaniline and 3,3′-dichlorobenzidine results from the spiked sample because of possible matrix interference.
		Because of the low recoveries in the MS and very high RPDs (106% and 139%, respectively) between the MS and MSD results, AMEC J qualified the detected 1,2-dichlorobenzene result and UJ qualified the nondetected 2,4-dimethylphenol result from the spiked sample because of possible matrix interference.
ARK-06-GW-58 (059-01)	n-Nitrosodimethylamine (60%/0%) Phenol (50%/57%) Benzoic acid (47%/67%) 4-Chloroaniline (25%/38%) 4-Nitrophenol (58%/62%) 3,3′-dichlorobenzidine (58%/53%)	AMEC UJ qualified the nondetected phenol, 4-nitrophenol, 4-chloroaniline, and 3,3′-dichlorobenzidine results from the spiked sample because of possible matrix interference.
		The average benzoic acid recovery was low at 57% and AMEC UJ qualified the nondetected benzoic acid result from this sample because of possible matrix interference.
		AMEC rejected and R qualified the nondetected N-nitrosodimethylamine result from this sample because of possible matrix interference.
ARK-06-SO-3.0 (053-01)	-	Because the laboratory performed a 3.33-fold dilution on the MS/MSD and it appears the spike concentrations are below the sample reporting limits, matrix effects could not be fully evaluated.

5.5.7 Internal Standard Recoveries

IS recoveries were within the method-specified 50 to 200% acceptance limits, except as described below.

Internal standards phenanthrene-d10, chrysene-d12, and perylene-d12 responses were less than 50% of the associated responses from the associated CCAL in sample ARK-06-SO-3.0 (053-01). AMEC J qualified the detected pyrene, bis(2-ethylhexyl)phthalate, and benzo(g,h,i)perylene results from sample ARK-06-SO-3.0 (053-01) because a response below 50% may indicate a possible positive bias in the analytical results.

5.5.8 Surrogate Recoveries

AMEC applied the QAPP-specified DQI goals of 60 to 140% for surrogate compounds in sample matrices. Up to one surrogate from each extraction fraction may be outside of acceptance limits without affecting data usability.

Surrogate recoveries associated with analysis of these samples for SVOCs were acceptable, except as described below.

Sample ID	Surrogates outside acceptance limits	Recovery	Effects on Data Usability
ARK-07-GW-14 (007-01)	2-Fluorophenol Phenol-d_5 Terphenyl-d_{14}	46% 35% 42%	AMEC J qualified all detected results and UJ qualified all nondetected results for the acid extractable compounds (phenols).
ARK-07-GW-26 (008-01)	2-Fluorophenol Phenol-d_5	58% 41%	
ARK-08-GW-43.5 (015-01)	2-Fluorophenol Phenol-d_5	53% 38%	
ARK-08-GW-43.5 (015-02)	2-Fluorophenol Phenol-d_5	57% 43%	
ARK-08-GW-15 (016-01)	2-Fluorophenol Phenol-d_5 Terphenyl-d_{14}	48% 36% 46%	
ARK-09-GW-16 (023-01)	2-Fluorophenol Phenol-d_5	51% 39%	
ARK-04-GW-15 (034-01)	2-Fluorophenol Phenol-d_5 Terphenyl-d_{14}	56% 36% 49%	
ARK-04-GW-36 (035-01)	2-Fluorophenol Phenol-d_5	55% 38%	
ARK-01-GW-15 (042-01)	2-Fluorophenol Phenol-d_5	48% 31%	
ARK-01-GW-31.5 (044-01)	2-Fluorophenol Phenol-d_5	47% 31%	
ARK-06-GW-58 (059-01)	2-Fluorophenol Phenol-d_5	59% 42%	
ARK-03-GW-80 (067-01)	2-Fluorophenol Phenol-d_5	58% 42%	
ARK-03-SO-6.0 (069-01)	2-Fluorophenol 2,4,6-Tribromophenol	58% 59%	
ARK-03-GW-26 (071-01)	2-Fluorophenol Phenol-d_5	55% 35%	
ARK-07-GW-45 (006-01)	2-Fluorophenol Phenol-d_5 2-Fluorobiphenyl 2,4,6-Tribromophenol Terphenyl-d_{14}	56% 39% 58% 56% 29%	AMEC J qualified all detected analytes and UJ qualified all nondetected analytes from these samples.

Sample ID	Surrogates outside acceptance limits	Recovery	Effects on Data Usability
ARK-05-GW-22 (050-01).	2-Fluorophenol Phenol-d_5 1,2-Dichlorobenzene-d_4 2-Fluorobiphenyl Terphenyl-d_{14}	49% 37% 58% 49% 48%	
ARK-05-GW-41 (051-01).	2-Fluorophenol Phenol-d_5 2-Chlorophenol-d_4 1,2-Dichlorobenzene-d_4 Nitrobenzene-d_5 2-Fluorobiphenyl Terphenyl-d_{14}	30% 20% 55% 56% 54% 58% 50%	
Rinsate Blank (016-04)	2-Fluorophenol Phenol-d_5	49% 38%	The affected samples are rinsate blanks and usability of the data set, as a whole, is not adversely affected.
Rinsate Blank (065-04)	Phenol-d_5	445	
ARK-09-GW-35 (025-01)	Phenol-d_5	53%	Up to one surrogate from each extraction fraction may be outside of acceptance limits and data usability is not adversely affected
ARK-09-GW-56 (026-01)	Phenol-d_5	41%	
ARK-01-GW-54 (043-01)	Phenol-d_5	45%	
ARK-04-GW-47 (033-01)	Phenol-d_5 Terphenyl-d_{14}	45% 54%	
ARK-06-GW-80 (057-01)	Phenol-d_5	43%	
ARK-06-GW-27 (058-01)	Phenol-d_5	39%	
ARK-06-GW-27 (058-02)	Phenol-d_5	42%	
ARK-02-GW-80 (065-01)	Phenol-d_5	44%	
ARK-02-GW-40 (066-01)	Phenol-d_5	41%	
ARK-09-GW-94 (073-01)	Phenol-d_5	45%	
ARK-06-GW-97.5 (074-01)	Phenol-d_5	52%	
ARK-05-GW-67.5 (075-01)	Phenol-d_5	45%	
ARK-03-GW-102.5 (076-01)	Phenol-d_5 Terphenyl-d_{14}	47% 58%	

5.5.9 Data Reporting and Analytical Procedures

The laboratory J qualified detected results with concentrations between the RL and MDL. AMEC concurs that these results are quantitative estimates and qualified these results J on the data tables.

The laboratory did not employ alternate calibration procedures for the target compounds which exhibited %RSDs greater than 15% in several ICALs. According to EPA Method 8270C (Section 7.3.7.1), if the %RSD of any target analyte is greater than 15%, additional calibration options must be applied to GC/MS calibration or a new ICAL must be performed. Effects on data usability are discussed in Section 5.5.2 of this report.

The laboratory reanalyzed sample ARK-01-GW-54 (043-01) at a 3.33-fold dilution because the 1,2-dichlorobenzene result exceeded the instrument calibration range in the original analysis. AMEC chose to report the 1,2-dichlorobenzene result from the 3.33-fold dilution analysis on the data tables.

The laboratory re-extracted sample ARK-05-GW-22 (050-01) seven days beyond the seven day technical holding time due to low base neutral surrogate recoveries in the initial extraction. The surrogate recoveries were acceptable in the re-extracted sample and the results confirmed the initial analysis. AMEC chose to report the initial analysis on the data tables because the initial analysis yielded the least qualified results.

Low-level bis (2-ethylhexyl)phthalate results were observed in several samples. Bis (2-ethylhexyl)phthalate is a common laboratory contaminant; therefore, these results should be used with caution.

5.6 Organochlorine Pesticides by EPA Method 8081A

Organochlorine pesticides (OCPs) data from the Stage 1 SCE Arkema Lots 1 and 2 reconnaissance activities may be considered usable with the limitations and exceptions described below. Summaries of qualified OCP results are presented in Table 9.

5.6.1 Holding Times

All samples were extracted and analyzed within the EPA recommended maximum holding times of 7 days for water and 14 days for soil for extraction, and 45 days for analysis except as described below.

Sample ARK-01-GW-15 (042-01) was extracted three days beyond the seven day holding time from sample collection. AMEC UJ qualified the nondetected results from this sample due to the exceeded holding time.

5.6.2 DDT/Endrin Breakdown

Breakdown is a measure of the amount of decomposition that 4,4′-DDT and endrin undergo when analyzed on the GC column. Excessive breakdown is an indication that the chromatographic system is contaminated, chemically active, or too hot. Breakdown is measured by injecting a mixture of DDT and endrin into the GC and dividing the sum of the areas of the breakdown products (DDE and DDD for DDT, and endrin aldehyde and endrin ketone for endrin) by the sums of the areas of the breakdown products and the parent compounds. Breakdown must be less than 15%

for analysis to proceed and data to be fully useable. 4,4′-DDT and endrin breakdown was less than 15% each day that samples from this project were analyzed for OCPs.

5.6.3 Initial Calibration

All ICALs associated with analysis of these samples for OCPs were acceptable.

5.6.4 Continuing Calibration

CCAL performance is evaluated in terms of %D, which corresponds to percent difference (average RF models) or percent drift (regression fit models) from the average ICAL response. To facilitate understanding of CCAL effects on data quality to the end user, %D has been expressed as % recovery in this narrative.

CCAL recoveries should fall within 85 to 115% acceptance limits. AMEC J qualified all detected results associated with CCAL recoveries greater than 115% due to a possible high bias in the analytical results. AMEC J qualified all positive results and UJ qualified all nondetected results associated with CCAL recoveries less than 85% due to a possible low bias in the analytical results.

All CCALs associated with analysis of these samples for OCPs were acceptable, except as described below.

- 4,4′-DDD, 4,4′-DDT, methoxychlor, and endrin ketone recoveries were greater than 115% in CCAL INDA_B-4 (RTX-CLP) analyzed on August 31, 2005. Because the recoveries were high and these analytes were not detected in the associated samples, data usability is not adversely affected.
- 4,4′-DDD, 4,4′-DDT, and methoxychlor recoveries were greater than 115% in CCAL INDA_B-3 (RTX-CLP) analyzed on August 31, 2005. Because the recoveries were high and these analytes were not detected in the associated samples, data usability is not adversely affected.
- Alpha-BHC, 4,4′-DDT, and methoxychlor recoveries were greater than 115% in CCAL INDA_B-3 (RTX-CLP) analyzed on September 3, 2005. Because the associated analyses were used for confirmational purposes only, data usability is not adversely affected.
- Alpha-BHC recovery was greater than 115% in CCAL INDA_B-4 (RTX-CLP) analyzed on September 3, 2005. Because the recovery was high and this analyte was not detected in the associated samples, data usability is not adversely affected.

- Recoveries greater than 115% were observed for the majority of target analytes in CCAL INDA_B-4 and CCAL INDA_B-3 analyzed on both analytical columns on September 8, 2005. Because the recoveries were high and target analytes were not detected in the associated samples, data usability is not adversely affected.

5.6.5 Blanks

Target analytes should not be found in blank samples. Results greater than the MRL but less than 5 times the concentration found in the blank have been U qualified. Results between the IDL and MRL, and less than 5 or 10 times the amount found in the blank have been U qualified at the MRL concentration.

Laboratory Blanks

No target analytes were detected in the laboratory blanks associated with the analysis of these samples for OCP.

Rinsate Blanks

No target compounds were detected in the rinsate blanks associated with analysis of samples from this event for OCPs, except as described below.

Endrin was detected in Rinsate Blank 016-04 at a concentration of 0.11µg/L. Because this analyte was not detected in the associated sample, data usability is not adversely affected.

5.6.6 LCS Recovery

Target analyte recoveries were within the QAPP-specified 70 to 130% acceptance limits in the LCSs associated with the analysis of these samples for OCPs, except as described below.

- All target analyte recoveries, except for endosulfan sulfate and endrin aldehyde were high (133 to 169%) in LCS D08205. Specific limitations include the following:
    - AMEC J qualified the detected 4,4′-DDE result from sample ARK-04-SO-6.0 (029-01) because of a possible high bias in the analytical result; and
    - Because the recovery of all target analyte recoveries, except for endosulfan sulfate and endrin aldehyde were high and these analytes were not detected in

sample ARK-04-SO-6.0 (029-01), except for 4,4′-DDE, data usability is not adversely affected.

- Endrin ketone recovery was low at 68% in LCS D082905. AMEC UJ qualified the nondetected endrin ketone results from samples ARK-06-SO-3.0 (053-01) and ARK-03-SO-6.0 (069-01) because of possible low bias in the analytical results.

5.6.7 MS/MSD Recovery

MS recoveries should be within the QAPP-specified 60 to 140% acceptance limits.

Precision and recoveries were acceptable in the MS/MSDs associated with the analysis of samples from this project for OCP, except as described below.

- MS were performed on sample ARK-08-SO-13.0 (011-01). 4,4′-DDD recoveries were high in the MS/MSD at 147% and 153%, respectively, endrin aldehyde recoveries were low in the MS/MSD at 53% and 51%, respectively, and 4,4′-DDT recovery was high in the MSD at 153%, but acceptable in the MS at 87%. Specific limitations include the following:
  - AMEC UJ qualified the nondetected endrin aldehyde result from this sample because of possible matrix interference;
  - Because the recoveries were high and 4,4′-DDD was not detected in sample ARK-08-SO-13.0 (011-01), data usability is not adversely affected; and
  - Because the 4,4′-DDT concentration (77 µg/kg) in the unspiked sample was more than four-times the spike added (15 µg/kg), data usability could not be fully evaluated.
- MS were performed on sample ARK-03-SO-6.0 (069-01). 4,4’-DDT recovery was high at 169% in the MS but acceptable at 125% in the MSD. Because the MS recovery was high and this analyte was not detected in sample ARK-03-SO-6.0 (069-01), data usability is not adversely affected.

5.6.8 Surrogate Recoveries

Surrogate recoveries associated with analysis of these samples for OCPs were within the QAPP-specified 60 to 140% acceptance limits, except as described below.

Sample ID	Surrogates Outside Acceptance Limits	Recovery	Effects on Data Usability
ARK-07-GW-45 (006-01) ARK-07-GW-14 (007-01) ARK-08-GW-43.5 (015-01) ARK-08-GW-43.5 (015-02) ARK-08-GW-15 (016-01) ARK-07-GW-26 (008-01)	Decachlorobiphenyl (DBC)	38%/38% 46%/46% 58%/59% 31%/32% 22%/22% 24%/25%	AMEC J qualified the detected 4,4′-DDD, 4,4′-DDE, and 4,4′-DDT results from samples ARK-07-GW-45 (006-01) and ARK-07-GW-26 (008-01) and UJ qualified the nondetected OCP results from samples ARK-07-GW-45 (006-01), ARK-07-GW-14 (007-01), ARK-08-GW-43.5 (015-01), ARK-08-GW-43.5 (015-02), ARK-08-GW-15 (016-01), and ARK-07-GW-26 (008-01)
ARK-04-GW-47 (033-01) ARK-04-GW-15 (034-01) ARK-04-GW-36 (035-01) ARK-05-GW-22 (050-01) ARK-05-GW-41 (051-01) ARK-06-GW-80 (057-01	DCB	53%/54% 46%/46% 52%/52% 43%/43% 24%/25% 49%/49%	AMEC UJ qualified the nondetected OCP results from these samples because of possible low bias in the analytical results.
ARK-01-GW-15 (042-01)	DCB Tetrachloro-m-xylene (TCMX)	29%/30% 55%/53%	AMEC UJ qualified the nondetected OCP results from this sample because of a possible low bias in the analytical results.
ARK-06-SO-3.0 (053-01)	DCB	48% 53%	AMEC J qualified the detected endrin result and UJ qualified the nondetected OCP results from this sample because of possible low bias in the analytical results.
ARK-05-GW-67.5 (075-01)	DCB	35%	AMEC UJ qualified the nondetected OCP results from this sample because of possible low bias in the analytical results.
RP-08-SO-88 (077-01) RP-08-SO-93 (078-01)	DCB	147% 148%	Because the recoveries were high and OCPs were not detected in these samples, data usability is not adversely affected.

5.6.9 Data Reporting and Analytical Procedures

The laboratory did not reanalyze samples associated with CCAL INDA_B-4 analyzed on September 8, 2005 which exhibited recoveries greater than 115% for the majority of analytes on both analytical columns. According to EPA Method 8081A (Section 7.5.7), each sample analysis must be bracketed with acceptable calibration verification standard. Effects on data usability are addressed in Section 5.6.4of this report.

The percent difference between the gamma-chlordane results from sample ARK-03-GW-102.5 (076-01) reported on the primary and secondary GC columns was greater than 40%. AMEC N qualified the gamma-chlordane result from this sample because its presence in the sample is uncertain.

5.7 Polychlorinated Biphenyls by EPA Method 8082

Polychlorinated biphenyls (PCB) analyses were only requested for two soil samples. PCB results from this sampling event may be considered usable with the limitations and exceptions described below. Summaries of qualified PCB results are presented in Table 10.

5.7.1 Holding Times

All samples were extracted and analyzed within the EPA recommended maximum holding times of 14 days for soil extraction and 40 days for analysis.

5.7.2 Initial Calibration

All ICAL associated with analysis of these samples for PCBs were acceptable.

5.7.3 Continuing Calibration

CCAL performance is evaluated in terms of %D, which corresponds to percent difference (average RF models) or percent drift (regression fit models) from the average ICAL response. To facilitate understanding of CCAL effects on data quality to the end user, %D has been expressed as % recovery in this narrative.

All CCAL recoveries associated with analysis of these samples for PCBs were within the method-specified 85 to 115% acceptance limits, except as described below.

Aroclor-1260 recoveries were greater than 115% in CCAL AR1660 (RTX-5) analyzed on September 22, 2005 at 03:09. Because the recoveries were high and Aroclor-1260 was not detected in the associate sample, data usability is not adversely affected.

5.7.4 Laboratory Blank

No target compounds were detected in the laboratory blank associated with analysis of samples from this event for PCBs.

5.7.5 LCS Recovery

Target analyte recoveries were within the QAPP-specified 70 to 130% acceptance limits in the LCS associated with the analysis of these samples for PCBs, except as described below.

Aroclor-1260 recovery was high at 135% in LCS D083005. Because the recovery was high and this analyte was not detected in the associated sample, data usability is not adversely affected.

5.7.6 Surrogate Recoveries

Recoveries of the surrogate compounds TCMX and DCB associated with analysis of these samples for PCBs were within the QAPP-specified 60 to 140% acceptance limits, except as described below.

Recoveries of the surrogate compounds DCB (51%/52%) and TCMX (49%) were low in the dual-column analysis of sample ARK-06-SO-3.0 (053-01). AMEC UJ qualified the nondetected PCB results from this sample because of a possible low bias in the analytical results.

5.8 Chlorophenoxy Acid Herbicides by EPA Method 8151A

Herbicides data from the Stage 1 SCE Arkema Lots 1 and 2 reconnaissance activities may be considered usable with the limitations and exceptions described below. Summaries of qualified herbicide results are presented in Table 11.

5.8.1 Holding Times

All samples from this event were extracted for herbicides within the recommended maximum holding time of 7 days and analyzed within the maximum holding time of 40 days, except as described below.

Sample ARK-01-GW-15 (042-01) was extracted two days beyond the seven day holding time from sample collection. AMEC UJ qualified the nondetected herbicide results from this sample due to the exceeded holding time.

5.8.2 Initial Calibration

All ICALs associated with analysis of samples from this event for herbicides were acceptable and met all method criteria.

5.8.3 Continuing Calibration

CCAL performance is evaluated in terms of %D, which corresponds to percent difference (average RF models) or percent drift (regression fit models) from the average ICAL response. To facilitate understanding of CCAL effects on data quality to the end user, %D has been expressed as % recovery in this narrative.

CCAL recoveries should fall within 85 to 115% acceptance limits. AMEC J qualified all detected results associated with CCAL recoveries greater than 115% due to a possible high bias in the analytical results. AMEC J qualified all detected results and UJ qualified all nondetected results associated with CCAL recoveries less than 85% due to a possible low bias in the analytical results.

All CCALs associated with analysis of these samples for herbicides were within acceptance limits.

5.8.4 Laboratory and Rinsate Blanks

No target analytes were detected in the laboratory or rinsate blanks associated with analysis of samples from this event for herbicides.

5.8.5 LCS Recovery

Precision was within the QAPP-specified 70% to 130% acceptance limits in all LCS associated with analysis of these samples for herbicides except as described below.

LCS ID	Analytes with recoveries outside acceptance limits	Effects on Data Usability
LCS J081605	Dalapon recovery was low at 65% in. In addition, the recoveries for 2,4-D and bromoxynil were high on the confirmatory column at 153 and 215%, respectively.	AMEC UJ qualified the nondetected dalapon results from samples ARK-07-GW-45 (006-01), ARK-07-GW-14 (007-01), ARK-07-GW-26 (008-01), ARK-08-GW-43.5 (015-01), ARK-08-GW-43.5 (015-02), ARK-08-GW-15 (016-01), and ARK-09-GW-16 (023-01) due to possible low bias in the analytical results.
		Because the 2,4-D and bromoxynil recoveries were high and these analytes were not detected in the associated samples, data usability is not adversely affected.
LCS 082305H	Dalapon (66%) Dinoseb (66%) Bromoxynil (160%)	AMEC UJ qualified the nondetected dalapon and dinoseb results from samples ARK-08-SO-13.0 (011-01) and ARK-04-SO-6.0 (029-01) due to possible low bias in the analytical results.
		Because the bromoxynil recovery was high and was not detected in the associated samples, data usability is not adversely affected.
LCS J081905	Bromoxynil (148%)	Because the recovery was high and bromoxynil was not detected in the associated samples, data usability is not adversely affected.
LCS M082405	Dalapon (65%)	AMEC UJ qualified the nondetected dalapon results from samples ARK-05-GW-22 (050-01), ARK-05-GW-41 (051-01), ARK-01-GW-15 (042-01), ARK-06-GW-80 (057-01), ARK-06-GW-27 (058-01), ARK-06-GW-27 (058-02), ARK-06-GW-58 (059-01), and ARK-02-GW-80 (065-01) due to possible low bias in the analytical results.
LCS K082905	Dalapon (63%) Dinoseb (58%) Bromoxynil (140%)	AMEC UJ qualified the nondetected dalapon and dinoseb results from samples ARK-02-GW-40 (066-01), ARK-03-GW-80 (067-01), ARK-03-GW-26 (071-01), and ARK-03-GW-58 (072-01) due to possible low bias in the analytical results.
		Because the bromoxynil recovery was high and was not detected in the associated samples, data usability is not adversely affected.

LCS ID	Analytes with recoveries outside acceptance limits	Effects on Data Usability
LCS J090105.	Dalapon (64%) Dinoseb (25%)	AMEC UJ qualified the nondetected dalapon and dinoseb results from samples ARK-06-SO-3.0 (053-01) and ARK-03-SO-6.0 (069-01) due to possible low bias in the analytical results.
LCS E091205	Dalapon (65%) Bromoxynil (165%)	AMEC UJ qualified the nondetected dalapon results from samples ARK-09-GW-94 (073-01), ARK-06-GW-97.5 (074-01), ARK-05-GW-67.5 (075-01), and ARK-03-GW-102.5 (076-01) due to possible low bias in the analytical results.
		Because the bromoxynil recovery was high and this analyte was not detected in the associated samples, data usability is not adversely affected.
LCS I100305	Dalapon (62%) Dinoseb (39%) Bromoxynil (140%)	AMEC UJ qualified the nondetected dalapon and dinoseb results from samples RP-08-SO-88 (077-01) and RP-08-SO-93 (078-01) due to possible low bias in the analytical results.
		Because the bromoxynil recovery was high and was not detected in the associated samples, data usability is not adversely affected.

5.8.6 Surrogate Recoveries

All surrogate recoveries associated with analysis of these samples for herbicides were within the QAPP-specified 70 to 130% acceptance limits for analyte-free matrices and 60 to 140% acceptance limits for field sample matrices, except as described below.

- Surrogate compound 2,4-dichlorophenylacetic acid (2,4-DCAA) recoveries were low in the dual-column analysis of sample ARK-05-GW-22 (050-01) at 53%. AMEC UJ qualified the nondetected herbicide results from this sample because of possible low bias in the analytical results.
- Surrogate 2,4-DCAA recoveries were low in the dual-column analysis of samples RP-08-SO-88 (077-01) (59%/60%) and RP-08-SO-93 (078-01) (47%/48%). AMEC UJ qualified the nondetected herbicide results from these samples because of possible low bias in the analytical results.

5.8.7 MS/MSD Recovery and Precision

Precision and recovery were within the QAPP-specified 60 to 140% acceptance limits in all MS associated with analysis of these samples for herbicides, except as described below.

Spiked Sample	Analytes with recoveries outside acceptance limits	Effect on Data Usability
ARK-01-GW-54 (043-01).	-	The laboratory analyzed the MS/MSD at 18-fold dilutions. Because the on-column concentrations of the majority of target analytes were below the calibration range, the potential effects of matrix interference could not be fully evaluated.
ARK-06-GW-58 (059-01)	Bromoxynil (29%/16%)	AMEC UJ qualified the nondetected bromoxynil result from sample ARK-06-GW-58 (059-01) because of a possible low bias in the analytical result.
	Dinoseb (63%/51%)	Because the average dinoseb recovery was low at 57%, AMEC UJ qualified the nondetected dinoseb result because of a possible low bias in the analytical result.
RP-08-SO-88 (077-01)	Dalapon (29%/49%) MCPA (29%/54%) 2,4-D (22%/50%) 2,4,5-T (24%/41%) Dinoseb (25%/24%) MCPP (54%/71%) 2,4-DB (39%/83%)	AMEC UJ qualified the nondetected dalapon, MCPA, 2,4-D, 2,4,5-T, dinoseb MCPP, and 2,4-DB results from sample RP-08-SO-88 (077-01) because of possible matrix interference.
	Dicamba (46%/62%)	Because the average dicamba recovery was low at 54%, AMEC UJ qualified the nondetected dicamba result from sample RP-08-SO-88 (077-01) because of possible matrix interference.

5.8.8 Data Reporting and Analytical Procedures

The laboratory re-extracted sample ARK-05-GW-22 (050-01) 19 days beyond the 7 day technical holding time due to low surrogate recoveries in the initial extraction. The surrogate recoveries were acceptable in the re-extracted sample and the results confirmed the initial analysis. AMEC chose to report the initial analysis on the data tables because the initial analysis yielded the least qualified results.

The laboratory re-extracted sample ARK-04-SO-6.0 (029-01) 5 days beyond the 7 day technical holding time because the initial extraction went to dryness; however, surrogate recoveries were acceptable. The laboratory re-hydrated the initial extraction and completed the extraction. The laboratory reported the results from both extracts in the data package. AMEC reported the initial results in the data tables because the reextracted analysis confirmed the results of the original analysis.

5.9 Semivolatile Petroleum Products by NWTPH-Dx Method with Silica Gel Cleanup

Diesel-range organics (DRO) and residual-range organics (RRO) data from the Stage 1 SCE Arkema Lots 1 and 2 reconnaissance activities may be considered usable with the limitations and exceptions described below. Summaries of qualified DRO and RRO results are presented in Table 12.

5.9.1 Holding Times

All samples were extracted and analyzed within the method-recommended maximum holding time of 7 days for aqueous extraction of an unpreserved sample and 14 days for aqueous extraction of a preserved sample or soil sample and 45 days for analysis, except as described below.

- According to the associated Preparation Information sheet, samples ARK-06-GW-58 (059-01) and ARK-02-GW-80 (065-01) were not preserved to pH of 2 and were extracted 7 days beyond the 7 day holding time for unpreserved samples. AMEC UJ qualified the nondetected DRO and RRO results from these samples because of the exceeded holding time.
- According to the associated Preparation Information sheet, samples ARK-02-GW-40 (066-01) and ARK-03-GW-80 (067-01) were not preserved to pH of 2 and were extracted 6 days beyond the 7 day holding time for unpreserved samples. AMEC J qualified the detected DRO result from sample ARK-02-GW-40 (066-01) and UJ qualified the nondetected DRO and RRO results from sample ARK-03-GW-80 (067-01) and the nondetected RRO result from sample ARK-02-GW-40 (066-01) because of the exceeded holding time.
- According to the associated Preparation Information sheet, sample ARK-03-GW-58 (072-01) was not preserved to pH of 2 and was extracted 2 days beyond the 7 day holding time for unpreserved samples. AMEC UJ qualified the nondetected DRO and RRO results from this sample because of the exceeded holding time.
- Sample ARK-03-GW-102.5 (076-01) was extracted 20 days past the 14 day holding time for preserved samples. AMEC rejected and R qualified the detected DRO and RRO results from this sample because of the grossly exceeded holding time.

5.9.2 Initial Calibration

All criteria were met for the initial calibrations associated with analysis of samples from this sampling event for DRO and RRO.

5.9.3 Continuing Calibration

All criteria were met for the CCALs associated with analysis of samples from this sampling event for DRO and RRO.

5.9.4 Laboratory and Rinsate Blanks

DRO and RRO were not detected in the laboratory and rinsate blanks associated with these samples.

5.9.5 LCS/LCSD Recovery and Precision

Recovery and precision for LCS/LCSDs associated with analysis of samples from this project for DRO and RRO were acceptable.

5.9.6 Laboratory Duplicates

Acceptance limits for duplicate sample analyses are ±30% RPD for sample concentrations greater than or equal to 5 times the MRL. A control limit of ± MRL is used if either the sample or duplicate result is less than 5 times the MRL.

DRO and RRO were not detected in the laboratory duplicates associated with these samples.

5.9.7 Surrogate Recoveries

Surrogate recoveries associated with analysis of these samples for DRO and RRO were within the method-specified 50 to 150% acceptance limits, except as described below.

- *o*-Terphenyl recovery was low at 49% in sample ARK-04-GW-15 (034-01). Because the recovery was within 1% of the lower acceptance limit, data usability is not adversely affected.
- *o*-Terphenyl and n-triacontane recoveries were low at 43% and 47%, respectively in sample ARK-05-GW-41 (051-01). AMEC UJ qualified the nondetected DRO and RRO results from this sample because of possible low bias in the analytical results.

- *o*-Terphenyl and n-triacontane recoveries were low at 16% and 15%, respectively in sample ARK-08-GW-15 (016-01). AMEC UJ qualified the nondetected DRO and RRO results from this sample because of possible low bias in the analytical results.

6.0 FIELD DUPLICATE RESULTS

Four field duplicate pairs out of 62 field samples were submitted to STL. The samples were labeled blindly, so that the laboratory was not aware which samples were submitted in duplicate. Primary samples were coded with -01 appended to the blind sample ID, and duplicate samples were coded with -02 appended to the blind sample ID. Detected results for each set of field duplicates are summarized in Table 2.

Precision values met the QAPP-specified acceptance limits, with RPDs for aqueous samples less than 30% and for soil samples less than 50% for analytes with concentrations more than 5 times their practical quantitation limit (PQL), and concentrations within one MRL for analytes with concentrations less than 5 times their PQLs, except as described below.

- A field duplicate was collected at ARK-08-GW-43.5 (ARK-08-GW-43.5 (015-01) and ARK-08-GW-43.5 (015-02). The RPDs between the detected results for all analytes, except chloride and sodium were high, ranging from 33 to 107%. AMEC J qualified the detected ammonia-nitrogen, total aluminum, arsenic, calcium, chromium, copper, iron, lead, magnesium, manganese, nickel, potassium, vanadium, and zinc from samples ARK-08-GW-43.5 (ARK-08-GW-43.5 (015-01) and ARK-08-GW-43.5 (015-02) because of possible field sampling imprecision.
- A field duplicate was collected at ARK-08-GW-43.5 (ARK-08-GW-43.5 (015-01F) and ARK-08-GW-43.5 (015-02F). The RPDs between the aluminum (54%), iron (50%), and manganese (46%) results were high. AMEC J qualified the detected dissolved aluminum, iron, and manganese results from samples ARK-08-GW-43.5 (ARK-08-GW-43.5 (015-01F) and ARK-08-GW-43.5 (015-02F) because of possible field sampling imprecision.
- A field duplicate was collected at ARK-06-GW-27 (058-01) and ARK-06-GW-27 (058-02). The RPD between the aluminum results was high at 63%. AMEC J qualified the detected total aluminum results from samples ARK-06-GW-27 (058-01) and ARK-06-GW-27 (058-02) because of possible field sampling imprecision.
- A field duplicate was collected at ARK-06-GW-27 (058-01F) and ARK-06-GW-27 (058-02F). Acceptable precision was demonstrated between the results from the field duplicate pair.

7.0 INTERLABORATORY SPLIT SAMPLE RESULTS

Two field samples were submitted to both STL and CAS. The samples were labeled blindly, so that the primary laboratory (i.e., STL) was not aware which samples were also submitted to the QC laboratory (i.e., CAS). Primary samples were coded with -01 appended to the blind sample ID, and split samples were coded with -05 appended to the blind sample ID. A summary of split sample results may be found in Table 13.

CAS MRLs are generally lower than STL's. STL reports analyte concentrations down to the MDL or IDL; therefore, low-level concentrations comparisons could be made between reported laboratory results. Analyte concentrations reported by both laboratories were generally comparable (<50% RPD), except for the ammonia-nitrogen, TCE, and PCE analyses performed on sample ARK-08-GW-15 (016-01) and the total cadmium, total copper, total zinc, dissolved aluminum, dissolved cadmium, and dissolved zinc analyses performed on sample ARK-03-GW-26 (071-01) In all cases, except for total and dissolved cadmium, STL reported much higher concentrations.

8.0 DOUBLE BLIND PERFORMANCE EVALUATION SAMPLE RESULTS

PE samples were purchased in whole volume form from Environmental Resource Associates (ERA) in Arvada, CO. AMEC labeled all PE sample bottles with the appropriate analyses and submitted them to STL as three samples with the blind IDs 001-06, 002-06, and 003-06.

STL performed well on the pesticides, herbicides, and VOCs PE samples. STL reported a low-level false positive for methyl iodide in the VOC fraction. For the SVOC results submitted to AMEC, the reported benzo(k)fluoranthene, benzo(g,h,i)perylene, and indeno(1,2,3-cd)pyrene recoveries were low. In addition the 2,4-dimethylphenol recovery was high and the bis(2-Ethylhexyl)phthalate recovery was very high. This high bis(2-Ethylhexyl)phthalate recovery may be attributable to the high concentration in the associated method blank. Furthermore, STL reported a false positive for 2,2-oxybis(1-Chloropropane) at a concentration of 100 µg/L.

The results of the PE analyses may be found in Table 14 at the end of this document.

9.0 SUMMARY AND CONCLUSIONS

The data are generally usable and of good quality, with the exceptions listed below.

- The detected chloride result from sample ARK-09-GW-94 (073-01) may be biased low because this sample was analyzed for chloride 3 days beyond the recommended 28-day holding time from sample collection to analysis.
- The detected chloride result from sample ARK-06-GW-58 (059-01) may be biased high due to potential matrix interference. The associated MS recovery was above acceptance limits.
- The detected ammonia-nitrogen result from sample ARK-01-GW-54 (043-01) may be biased high due to potential matrix interference. The associated MS recovery was above acceptance limits.
- The detected ammonia-nitrogen result from sample ARK-06-GW-58 (059-01) may be biased low due to potential matrix interference. The associated MS recovery was below acceptance limits.
- A variety of low-level (less than the RL) metals results from this sampling event were U qualified due to low-level laboratory and field blank contamination.
- The detected total and dissolved cadmium and lead results from several samples may be biased low and the RLs may be higher than reported in several samples due to potential matrix interference demonstrated by low-level cadmium and lead suppression in the associated ICSAs.
- The detected total and dissolved chromium results from a few samples may be biased low due to potential matrix interference demonstrated by low-level false positive results in the associated ICSAs.
- The low-level (<2-times the RL) detected total and dissolved iron and aluminum results from several samples may be biased high due to potential instrument bias near the RL as demonstrated by very high CRI recoveries.
- The low-level mercury result from sample ARK-04-SO-6.0 (029-01) may be biased low and the mercury RL from sample ARK-08-SO-13.0 (011-01) may be higher than reported due to potential instrument insensitivity near the RL as demonstrated by very high CRI recoveries.
- The detected total chromium and nickel and dissolved aluminum, cadmium, lead, and zinc results from sample ARK-01-GW-54 (043-01) may be biased low and the RL for total cadmium from this sample may be higher than reported due to potential matrix interference. The associated MS and/or post-digestion spike recoveries were below acceptance limits.
- The detected total arsenic, cadmium, chromium, copper, iron, lead, nickel, vanadium, and zinc results and dissolved iron and nickel results from sample ARK-

06-GW-58 (059-01) may be biased low and the RLs for dissolved lead and nickel from this sample may be higher than reported due to potential matrix interference. The associated MS and/or post-digestion spike recoveries were below acceptance limits.

- The detected dissolved iron result from sample ARK-03-GW-58 (072-01) may be biased low and the reporting limit for dissolved lead from this sample may be higher than reported due to potential matrix interference. The associated MS recoveries were below acceptance limits.
- The detected total arsenic, lead, and manganese results from sample RP-08-SO-93 (078-01) may be biased low and the reporting limit for total cadmium from this sample may be higher than reported due to potential matrix interference. The associated MS spike recoveries were below acceptance limits.
- The detected metals results from a number of samples may be biased due to potential physical or chemical interferences as demonstrated by high percent differences in the associated serial dilution results. The direction of the bias could not be determined.
- The detected metals results in a few samples may be biased due to analytical imprecision as demonstrated by high relative percent differences in the associated laboratory duplicate results. The direction of the bias could not be determined.
- Several detected metals results from samples ARK-08-GW-43.5 (015-01), ARK-08-GW-43.5 (015-02), ARK-06-GW-27 (058-01), and ARK-06-GW-27 (058-02) may be biased due to imprecision between the associated field duplicate results. The imprecision may be more indicative of the heterogeneity of the constituents in the sample than field sampling precision.
- Several VOC results from this sampling event were U qualified due to low-level laboratory, field blank, and trip blank contamination.
- The cooler temperatures upon laboratory receipt associated with the VOA vials for samples ARK-09-GW-35 (025-01), ARK-09-GW-56 (026-01), ARK-04-SO-6.0 (029-01), ARK-04-GW-47 (033-01), ARK-04-GW-15 (034-01), ARK-05-GW-22 (050-01) and ARK-05-GW-41 (051-01) were reported at an elevated temperatures of 11°C or 9°C . The detected results from these samples may be biased low and the RLs from these samples may be higher than reported due to potential volatilization of these low-boiling constituents.
- The VOC RLs from sample ARK-09-GW-35 (025-01) may be higher than reported because the sample was not preserved to a pH less than 2 and was analyzed 5 days beyond the technical holding time of 7 days for unpreserved samples.

- The detected VOC results from sample ARK-01-GW-15 (042-01) may be biased low and the RLs for the nondetected results may be higher than reported because the sample was analyzed one day beyond the technical holding time of 14 days.
- The isobutyl alcohol results from several samples were rejected due to very low RRFs in the associated CCALs. Because this analyte is not a primary constituent of concern, the rejected results may not impact overall data usability.
- The detected VOC and SVOC results from a number of samples may be biased and the RLs for the nondetected results may be higher than reported because of potential instrument instability demonstrated by %RSDs above method limits in the associated initial calibration curves. Because the direction of the bias could not be determined, the RLs may be acceptable as reported.
- The detected VOC and SVOC results from a number of samples may be biased low or high and the RLs for the nondetected results may be higher than reported because of potential instrument instability demonstrated by recoveries outside acceptance limits in the associated CCALs.
- The dichlorofluoromethane, bromomethane, and methyl iodide RLs in a few samples may be higher than reported due potential low bias in the analytical system as demonstrated by associated LCS recoveries below acceptance limits.
- The bis(2-ethylhexyl)phthalate result from ARK-05-GW-22 (050-01) was U qualified due to low-level laboratory blank contamination.
- The detected SVOC results from sample ARK-01-GW-15 (042-01) may be biased low and the RLs for the nondetected results may be higher than reported because the sample was extracted three days beyond the technical holding time of 7 days.
- A number of detected SVOC results may be biased low and several SVOC RLs may be higher than reported due to low bias in the analytical system as demonstrated by associated LCS recoveries below acceptance limits. In addition, several of these analytes also demonstrated low recoveries in the MS analyses of samples ARK-04-SO-6.0 (029-01), ARK-01-GW-54 (043-01), ARK-06-GW-58 (059-01), and ARK-06-SO-3.0 (053-01).
- The detected pyrene, bis(2-ethylhexyl)phthalate, and benzo(g,h,i)perylene results from sample ARK-06-SO-3.0 (053-01) may be biased high due to low responses of the associated internal standards. The low IS responses may be indicative of matrix interference.
- The detected acid extractable compound (phenols) results and RLs from samples ARK-07-GW-14 (007-01), ARK-07-GW-26 (008-01), ARK-08-GW-43.5 (015-01), ARK-08-GW-43.5 (015-02), ARK-08-GW-15 (016-01), ARK-09-GW-16 (023-01),

ARK-04-GW-15 (034-01), ARK-04-GW-36 (035-01), ARK-01-GW-15 (042-01), ARK-01-GW-31.5 (044-01), ARK-06-GW-58 (059-01), ARK-03-GW-80 (067-01), ARK-03-SO-6.0 (069-01), and ARK-03-GW-26 (071-01) may be biased low as demonstrated by low acid extractable surrogate compound recoveries. The low recoveries may be indicative of laboratory performance or matrix interference. In addition, SVOC results and RLs from samples ARK-07-GW-45 (006-01), ARK-05-GW-22 (050-01), and ARK-05-GW-41 (051-01) may be biased low as demonstrated by low SVOC surrogate compound recoveries.

- The benzoic acid, hexachlorocyclopentadiene, n-nitrosodimethylamine, and 4-nitrophenol results from several samples were R qualified and rejected by AMEC because of very low recoveries in the LCS and/or MS/MSD. Because these analytes are not primary constituents of concern, the rejected results may not impact overall data usability.
- The OCP RLs may be higher than reported from sample ARK-01-GW-15 (042-01) because the sample was extracted 3 days beyond the technical holding time of 7 days.
- The detected 4,4′-DDE result from sample ARK-04-SO-6.0 (029-01) may be biased high due to a high bias in the analytical system as demonstrated by associated LCS recoveries above acceptance limits.
- The endrin ketone RLs from samples ARK-06-SO-3.0 (053-01) and ARK-03-SO-6.0 (069-01) may be higher than reported due to a low bias in the analytical system as demonstrated by the associated LCS recovery below acceptance limits.
- The endrin aldehyde RL from sample ARK-08-SO-13.0 (011-01) may be higher than reported due to possible matrix interference demonstrated by low endrin aldehyde recoveries in the associated MS.
- A number of detected OCP results may be biased low and OCP RLs may be higher than reported due to the potential low bias demonstrated by surrogate recoveries below acceptance limits.
- The PCB RLs from sample ARK-06-SO-3.0 (053-01) may be higher than reported due to potential low bias demonstrated by low surrogate recoveries.
- The herbicide RLs from sample ARK-01-GW-15 (042-01) may be higher than reported due to a potential low bias because the sample was extracted 3 days beyond the technical holding time of 7 days.
- The dalapon and dinoseb RLs from a number of samples may be higher than reported due to a potential low bias demonstrated by associated LCS recoveries below acceptance limits.

- The herbicide RLs from samples ARK-05-GW-22 (050-01), RP-08-SO-88 (077-01), and RP-08-SO-93 (078-01) may be higher than reported due to potential low bias demonstrated by low surrogate recoveries.
- The bromoxynil and dinoseb RLs from sample ARK-06-GW-58 (059-01) and the dalapon, MCPA, 2,4-D, 2,4,5-T, dinoseb, MCPP, and 2,4-DB RLs from sample RP-08-SO-88 (077-01) may be higher than reported due to potential matrix interference demonstrated by associated matrix spike recoveries below acceptance limits.
- The detected DRO and RRO results may be biased low from samples ARK-06-GW-58 (059-01), ARK-02-GW-80 (065-01), ARK-02-GW-40 (066-01), ARK-03-GW-80 (067-01), and ARK-03-GW-58 (072-01) and the RLs may be higher than reported due to potential low bias introduced because these samples were extracted 6 to 7 days beyond extraction holding time.
- The DRO and RRO results from sample ARK-03-GW-102.5 (076-01) were rejected due to a grossly exceed holding time. The sample was extracted 20 days past the 14 day holding time for preserved samples.
- The cooler temperatures upon laboratory receipt associated with the NWTPH-Dx analysis of samples ARK-04-GW-36 (035-01), ARK-01-GW-54 (043-01), ARK-01-GW-31.5 (044-01), ARK-03-GW-26 (071-01), and ARK-03-GW-58 (072-01) were reported at elevated temperatures of 14.7°C or 14.1°C. The detected results from these samples may be biased low and the reporting limits from these samples may be higher than reported due to potential volatilization of the lower boiling constituents.
- No chloride, ammonia-nitrogen, metals, OCP, PCB, or chlorinated herbicide results were rejected by AMEC due to data quality issues.

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LIMITATIONS

This report was prepared exclusively for SLLI by AMEC Earth & Environmental, Inc. (AMEC). The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in AMEC services and based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This Data Validation Report is intended to be used by SLLI for the RP - Portland Site, 6200 N.W. St. Helens Road, Portland, Oregon only, subject to the terms and conditions of its contract with AMEC. Any other use of, or reliance on, this report by any third party is at that party's sole risk.

TABLES

TABLE 1
Field Samples Submitted to NCA and STL with Corresponding Laboratory IDs
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Field Sample ID	Collection Date	Matrix	STL Sample ID	CAS Sample ID	Notes
PE Sample	001-06	07/21/2005	Water	630383	-	PE Sample
PE Sample	002-06	07/21/2005	Water	630384	-	PE Sample
PE Sample	003-06	07/21/2005	Water	630385	-	PE Sample
ARK-07-GW-45	006-01	08/09/2005	Water	633181	K0502976-001	
ARK-07-GW-45	006-01F	08/09/2005	Water	633182	-	Filtered
ARK-07-GW-14	007-01	08/09/2005	Water	633183	K0502976-002	
ARK-07-GW-14	007-01F	08/09/2005	Water	633184	-	Filtered
Trip Blank	006-03	08/09/2005	Water	633185	-	Trip Blank
Trip Blank	015-03	08/10/2005	Water	633195	-	Trip Blank
ARK-08-GW-43.5	015-01	08/10/2005	Water	633196	K0502977-001	
ARK-08-GW-43.5	015-02	08/10/2005	Water	633197	K0502977-002	Field Duplicate
ARK-08-GW-15	016-01	08/10/2005	Water	633198	K0502977-004	
ARK-07-GW-26	008-01	08/10/2005	Water	633199	-	
ARK-08-SO-13.0	011-01	08/10/2005	Soil	633202	K0502977-008	
ARK-08-GW-43.5	015-01F	08/10/2005	Water	633286	-	Filtered
ARK-08-GW-43.5	015-02F	08/10/2005	Water	633287	-	Field Duplicate/Filtered
ARK-08-GW-15	016-01F	08/10/2005	Water	633288	-	
Trip Blank	0016-03	08/10/2005	Water	-	K0502977-005	Trip Blank
ARK-08-GW-15	016-05	08/10/2005	Water	-	K0502977-003	Split Sample
Rinsate Blank	016-04	08/11/2005	Water	633264B	K0503008-001	Rinsate Blank
ARK-09-GW-16	023-01	08/11/2005	Water	633271B	K0503008-006	
Trip Blank	024-03	08/11/2005	Water	633272B	-	Trip Blank
Rinsate Blank	016-04F	08/11/2005	Water	634276	-	Rinsate Blank/Filtered
ARK-09-GW-16	023-01F	08/11/2005	Water	634277	-	Filtered
ARK-09-GW-35	025-01	08/12/2005	Water	633912	K0503093-001	
ARK-09-GW-35	025-01F	08/12/2005	Water	633913	-	Filtered
Trip Blank	025-03	08/12/2005	Water	633914	-	Trip Blank
ARK-09-GW-56	026-01	08/12/2005	Water	633915	K0503093-002	
ARK-09-GW-56	026-01F	08/12/2005	Water	633916	-	Filtered
ARK-04-SO-6.0	029-01	08/12/2005	Soil	633946	K0503093-003	
ARK-04-GW-47	033-01	08/12/2005	Water	633918	K0503093-004	
ARK-04-GW-47	033-01F	08/12/2005	Water	633919	-	Filtered
ARK-04-GW-15	034-01	08/12/2005	Water	633920	K0503093-010	
ARK-04-GW-15	034-01F	08/12/2005	Water	633921	-	Filtered
ARK-04-GW-36	035-01	08/15/2005	Water	634125	K0503133-001	
ARK-04-GW-36	035-01F	08/15/2005	Water	634126	-	Filtered
Trip Blank	035-03	08/15/2005	Water	634127	-	Trip Blank
ARK-01-GW-15	042-01	08/15/2005	Water	634669	K0503219-001	
ARK-01-GW-54	043-01	08/16/2005	Water	634128	K0503133-002	
ARK-01-GW-54	043-01F	08/16/2005	Water	634129	-	Filtered
Trip Blank	043-03	08/16/2005	Water	634130	-	Trip Blank
ARK-01-GW-31.5	044-01	08/16/2005	Water	634131	K0503133-003	
ARK-01-GW-31.5	044-01F	08/16/2005	Water	634132	-	Filtered

TABLE 1
Field Samples Submitted to NCA and STL with Corresponding Laboratory IDs
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Field Sample ID	Collection Date	Matrix	STL Sample ID	CAS Sample ID	Notes
ARK-05-GW-22	050-01	08/17/2005	Water	634284	K0503181-001	
ARK-05-GW-22	050-01F	08/17/2005	Water	634285	-	Filtered
ARK-05-GW-41	051-01	08/17/2005	Water	634286	K0503181-002	
ARK-05-GW-41	051-01F	08/17/2005	Water	634287	-	Filtered
Trip Blank	050-03	08/17/2005	Water	634288	-	Trip Blank
ARK-06-SO-3.0	053-01	08/18/2005	Soil	634885	K0503219-006	
Trip Blank	057-03	08/18/2005	Water	634670	-	Trip Blank
ARK-06-GW-80	057-01	08/18/2005	Water	634671	K0503219-002	
ARK-06-GW-80	057-01F	08/18/2005	Water	634672	-	Filtered
ARK-06-GW-27	058-01	08/18/2005	Water	634673	K0503219-003	
ARK-06-GW-27	058-01F	08/18/2005	Water	634674	-	Filtered
ARK-06-GW-27	058-02	08/18/2005	Water	634675	K0503219-004	Field Duplicate
ARK-06-GW-27	058-02F	08/18/2005	Water	634676	-	Field Duplicate/Filtered
ARK-06-GW-58	059-01	08/19/2005	Water	634677	K0503298-001	
ARK-06-GW-58	059-01F	08/19/2005	Water	634678	-	Filtered
Trip Blank	059-03	08/19/2005	Water	634679	-	Trip Blank
ARK-02-GW-80	065-01	08/19/2005	Water	634680	K0503298-002	
ARK-02-GW-80	065-01F	08/19/2005	Water	634681	-	Filtered
Rinsate Blank	065-04	08/19/2005	Water	634682	K0503298-003	Rinsate Blank
Rinsate Blank	065-04F	08/19/2005	Water	634683	-	Rinsate Blank/Filtered
ARK-02-GW-40	066-01	08/22/2005	Water	634750	K0503300-001	
ARK-02-GW-40	066-01F	08/22/2005	Water	634751	-	Filtered
ARK-03-GW-80	067-01	08/22/2005	Water	634752	K0503300-002	
ARK-03-GW-80	067-01F	08/22/2005	Water	634753	-	Filtered
ARK-03-SO-6.0	069-01	08/22/2005	Soil	634916	K0503300-003	
Trip Blank	070-03	08/22/2005	Water	634754	-	Trip Blank
ARK-03-GW-26	071-01	08/23/2005	Water	634755	K0503336-001	
ARK-03-GW-26	071-01F	08/23/2005	Water	634756	-	Filtered
ARK-03-GW-26	071-05	08/23/2005	Water	-	K0503336-002	Split Sample
ARK-03-GW-58	072-01	08/23/2005	Water	634757	K0503366-003	
ARK-03-GW-58	072-01F	08/23/2005	Water	634758	-	Filtered
Trip Blank	072-03	08/23/2005	Water	634759	-	Trip Blank
ARK-09-GW-94	073-01	09/06/2005	Water	637232	K0503810-001	
ARK-09-GW-94	073-01F	09/06/2005	Water	637233	-	Filtered
ARK-06-GW-97.5	074-01	09/07/2005	Water	637234	K0503810-002	
ARK-06-GW-97.5	074-01F	09/07/2005	Water	637235	-	Filtered
ARK-05-GW-67.5	075-01	09/08/2005	Water	637236	K0503810-003	
ARK-05-GW-67.5	075-01F	09/08/2005	Water	637237	-	Filtered
Trip Blank	073-03	09/06/2005	Water	637238	-	Trip Blank
ARK-03-GW-102.5	076-01	09/09/2005	Water	637239	-	
ARK-03-GW-102.5	076-01F	09/09/2005	Water	637240	-	Filtered
Trip Blank	076-03	09/09/2005	Water	637241	-	Trip Blank
RP-08-SO-88	077-01	09/21/2005	Soil	639707	K0504152-001	
RP-08-SO-93	078-01	09/21/2005	Soil	639708	K0504152-002	

Notes:
CAS = Columbia Analytical Services
ID = Identification
STL = Severn Trent Laboratories, Inc.

TABLE 2
Summary of Field Duplicate Detections
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analytical Method	Analyte	MRL	Primary Result	Duplicate Result	RPD
Sample (015-01 and 015-02)					
Wet Chemistry	Chloride	20	122	160	27%
	Ammonia-nitrogen	0.024	0.14	0.10	**33%**
Metals	Aluminum	200	108000	45600	**81%**
	Arsenic	10	45.5	19.8	**79%**
	Calcium	5000	63500	36000	**55%**
	Chromium	10	114	46.4	**84%**
	Copper	25	165	63.2	**89%**
	Iron	200	26600	87600	**107%**
	Lead	10	67.5	23.6	**96%**
	Magnesium	5000	61400	25700	**82%**
	Manganese	15	4220	1470	**97%**
	Nickel	40	110	39.5	**94%**
	Potassium	5000	13400	7210	**60%**
	Sodium	5000	179000	198000	10%
	Vanadium	50	582	207	**95%**
	Zinc	20	467	161	**97%**
SVOCs	Bis(2-ethylhexyl)phthalate	11	ND	0.81	NC
Sample (015-01F and 015-02F)					
Metals	Aluminum	200	616	354	**54%**
	Arsenic	10	ND	4.8	NC
	Calcium	5000	26400	35400	29%
	Chromium	10	1.9	1.4	30%
	Copper	25	4.6	4.1	11%
	Iron	200	1540	922	**50%**
	Mangesium	5000	12000	16000	29%
	Manganese	15	212	338	**46%**
	Nickel	40	4.1	5.5	29%
	Potassium	5000	3580	3710	4%
	Sodium	5000	176000	192000	9%
	Vanadium	50	23.8	24.0	1%
	Zinc	20	15.0	18.7	22%
Sample (058-01 and 058-02)					
Wet Chemistry	Chloride	2	21.3	21.0	1%
	Ammonia-nitrogen	0.024	3.2	3.0	6%
Metals	Aluminum	200	224	429	**63%**
	Calcium	5000	24600	23000	7%
	Chromium	10	2.3	2.0	14%
	Copper	25	3	ND	NC
	Iron	200	3630	3480	4%
	Mangesium	5000	2450	1860	27%
	Manganese	15	581	527	10%
	Potassium	5000	11200	10700	5%
	Sodium	5000	66700	62200	7%
	Vanadium	50	4.4	4.7	7%
	Zinc	20	3.5	ND	NC
VOCs	1,2-Dichlorobenzene	1.0	1.3	1.4	7%
SVOCs	1,2-Dichlorobenzene	11	1.1	1.5	31%
	Bis-2(ethylhexyl)phthalate	11	0.7	1.9	92%

TABLE 2
Summary of Field Duplicate Detections
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analytical Method	Analyte	MRL	Primary Result	Duplicate Result	RPD
Sample (058-01F and 058-02F)					
Metals	Aluminum	200	36.8	26.4	33%
	Calcium	5000	24800	23700	5%
	Chromium	10	1.5	1.3	14%
	Iron	200	2780	2970	7%
	Mangesium	5000	2100	2240	6%
	Manganese	15	597	612	2%
	Potassium	5000	12000	11500	4%
	Sodium	5000	66900	65900	2%
	Vanadium	50	4.0	4.0	0%
	Zinc	20	ND	4.8	NC

VOCs = volatile organic compounds
SVOCs = semivolatile organic compounds
MRL = method reporting limit
RPD = relative percent difference

TABLE 3
Definitions of Data Qualifiers Added as a Result of Data Validation Findings
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

U The U qualifier indicates that the analyte must be considered to be nondetected at the concentration listed. U qualifiers added during validation are typically a result of detection of target analytes in field, trip, or laboratory blanks.

J The J qualifier indicates that the associated result is quantitatively uncertain. J qualifiers added during validation may indicate a concentration between the method detection limit (MDL) and the method reporting limit (MRL) or sample reporting limit (SRL), or a data limitation related to a QC element that exceeds required acceptance limits.

N The N qualifier indicates an analyte has been presumptively identified. Presumptive detection means that a chromatographic peak was detected at the correct retention time for an analyte, but that not all required identification criteria were met. The associated result is both qualitatively and quantitatively uncertain.

R The R qualifier indicates that a result has been rejected due to serious QC problems. It is not possible to definitively determine whether the analyte is present or absent in the sample.

TABLE 4
Data Qualifiers for Chloride by EPA Method 300.0
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	006-01 (ARK-07-GW-45)	007-01 (ARK-07-GW-14)	008-01 (ARK-07-GW-26)	015-01 (ARK-08-GW-43-5)	015-02 (ARK-08-GW-43-5)	016-01 (ARK-08-GW-15)	023-01 (ARK-09-GW-16)
Chloride	none	none	none	none	none	none	none

Analyte	025-01 (ARK-09-GW-35)	026-01 (ARK-09-GW-56)	033-01 (ARK-04-GW-47)	034-01 (ARK-04-GW-15)	035-01 (ARK-04-GW-36)	042-01 (ARK-01-GW-15)	043-01 (ARK-01-GW-54)
Chloride	none	none	none	none	none	none	none

Analyte	044-01 (ARK-01-GW-31_5)	050-01 (ARK-05-GW-22)	051-01 (ARK-05-GW-41)	057-01 (ARK-06-GW-80)	058-01 (ARK-06-GW-27)	058-02 (ARK-06-GW-27)	059-01 (ARK-06-GW-58)
Chloride	none	none	none	none	none	none	**J HM**

Analyte	065-01 (ARK-02-GW-80)	066-01 (ARK-02-GW-40)	067-01 (ARK-03-GW-80)	071-01 (ARK-03-GW-26)	072-01 (ARK-03-GW-58)	073-01 (ARK-09-GW-97-5)	074-01 (ARK-06-GW-97-5)
Chloride	none	none	none	none	none	**J HT**	none

Analyte	075-01 (ARK-05-GW-67-5)	076-01 (ARK-03-GW-102-5)
Chloride	none	none

HM = High matrix spike recovery. Analyte recovery may be biased high.
HT = Holding time exceedence. Analytical result may be biase low.
EPA = United States Environmental Protection Agency

TABLE 5
Data Qualifiers for Ammonia as Nitrogen by EPA Method 350.2
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	006-01 (ARK-07-GW-45)	007-01 (ARK-07-GW-14)	015-01 (ARK-08-GW-43-5)	015-02 (ARK-08-GW-43-5)	016-01 (ARK-08-GW-15)	023-01 (ARK-09-GW-16)
Ammonia as Nitrogen	none	none	none	none	none	none

Analyte	026-01 (ARK-09-GW-56)	033-01 (ARK-04-GW-47)	034-01 (ARK-04-GW-15)	035-01 (ARK-04-GW-36)	042-01 (ARK-01-GW-15)	043-01 (ARK-01-GW-54)
Ammonia as Nitrogen	none	none	none	none	none	**J HM**

Analyte	044-01 (ARK-01-GW-31_5)	050-01 (ARK-05-GW-22)	051-01 (ARK-05-GW-41)	057-01 (ARK-06-GW-80)	058-01 (ARK-06-GW-27)	058-02 (ARK-06-GW-27)
Ammonia as Nitrogen	none	none	none	none	none	none

Analyte	059-01 (ARK-06-GW-58)	065-01 (ARK-02-GW-80)	066-01 (ARK-02-GW-40)	067-01 (ARK-03-GW-80)	071-01 (ARK-03-GW-26)	072-01 (ARK-03-GW-58)
Ammonia as Nitrogen	**J LM**	none	none	none	none	none

Analyte	073-01 (ARK-09-GW-97-5)	074-01 (ARK-06-GW-97-5)	075-01 (ARK-05-GW-67-5)	076-01 (ARK-03-GW-102-5)
Ammonia as Nitrogen	none	none	none	none

Notes:
HM = High Matrix spike recovery. Analyte recovery may be biased high.
EPA = United States Environmental Protection Agency

TABLE 6
Data Qualifiers for Metals by EPA 6000/7000 Series Methods
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	006-01 (ARK-07-GW-45)	007-01 (ARK-07-GW-14)	011-01 (ARK-08-SO-13-0)	015-01 (ARK-08-GW-43-5)	015-02 (ARK-08-GW-43-5)	016-01 (ARK-08-GW-15)	023-01 (ARK-09-GW-16)
Dissolved Aluminum	none	none	none	none	**U MB**	none	**U MB, RB**
Dissolved Arsenic	**U CB**	**U CB**	none	none	**J DL**	**J DL**	**J DL**
Dissolved Calcium	**J DL**	**J DL**	none	none	none	**J DL**	none
Dissolved Chromium	**U CB**	none	none	**U CB**	**U CB**	none	none
Dissolved Copper	**J DL**	**J DL**	none	**J DL**	**J DL**	none	**J DL**
Dissolved Iron	none	none	none	none	none	none	**U CB**
Dissolved Lead	**J DL**	**J DL**	none	none	none	**J DL**	none
Dissolved Magnesium	**J DL**	**J DL**	none	none	none	**J DL**	none
Dissolved Mercury	none	**J DL**	none	none	none	none	none
Dissolved Nickel	**J DL**	**J DL**	none	**J DL**	**J DL**	**J DL**	none
Dissolved Potassium	**J DL**	none	none	**J DL**	**J DL**	**J DL**	**J DL**
Dissolved Vanadium	**J DL**	none	none	**J DL**	**J DL**	**J DL**	none
Dissolved Zinc	none	none	none	**J DL**	**J DL**	none	**J DL**
Total Aluminum	**J MI**	none	**J CR, MI**	none	none	none	none
Total Cadmium	**UJ IL**	none	**U CB**	**UJ IL**	none	none	none
Total Calcium	**J MI**	**J DL**	**J MI**	none	none	**J DL**	none
Total Chromium	**J MI**	none	**J MI**	none	none	none	**U RB**
Total Copper	**J MI**	none	**J MI**	none	none	none	**J DL**
Total Iron	**J MI**	none	**J CR,MI**	none	none	none	none
Total Lead	**J MI**	none	none	none	none	none	none
Total Magnesium	**J MI**	none	**J MI**	none	none	none	none
Total Manganese	**J MI**	none	**J MI**	none	none	none	none
Total Mercury	none	none	**UJ CR**	none	none	none	none
Total Nickel	**J MI**	**J DL**	**J MI**	none	**J DL**	none	none
Total Potassium	none	**J DL**	none	none	none	none	**J DL**
Total Vanadium	**J MI**	none	**J MI**	none	none	none	**J DL**
Total Zinc	**J MI**	none	**J MI**	none	none	none	**U RB**

TABLE 6
Data Qualifiers for Metals by EPA 6000/7000 Series Methods
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	025-01 (ARK-09-GW-35)	026-01 (ARK-09-GW-56)	029-01 (ARK-04-SO-6-0)	033-01 (ARK-04-GW-47)	034-01 (ARK-04-GW-15)	035-01 (ARK-04-GW-36)	042-01 (ARK-01-GW-15)
Dissolved Aluminum	none	none	none	**J CR**	**J CR**	**J CR**	none
Dissolved Cadmium	**UJ IL**	**UJ CB, IL**	none	**UJ IL**	**UJ IL**	**UJ IL**	none
Dissolved Calcium	none	none	none	none	**J DL**	none	none
Dissolved Chromium	none	none	none	**J DL**	**U CB**	**U CB**	none
Dissolved Copper	**U CB**	**U CB**	none	**U CB**	**U CB**	**U CB**	none
Dissolved Iron	**J CR**	**J CR**	none	**J CR**	**J CR**	**J CR**	none
Dissolved Lead	none	none	none	**U MB, CB**	none	none	none
Dissolved Magnesium	none	none	none	none	**J DL**	none	none
Dissolved Nickel	none	**J DL**	none	**J DL**	**J DL**	**J DL**	none
Dissolved Potassium	none	none	none	none	**J DL**	none	none
Dissolved Vanadium	**J DL**	**J DL**	none	**J DL**	**J DL**	**J DL**	none
Dissolved Zinc	none	none	none	**J DL**	**J DL**	**J DL**	none
Total Aluminum	**J CR**	**J CR**	**J CR**	**J CR**	**J CR**	**J CR**	**J CR**
Total Arsenic	none	none	none	none	**U CB**	none	none
Total Cadmium	**UJ IL**	**UJ CB, IL**	**UJ CB, IL**	**UJ IL**	**UJ IL**	**UJ IL**	**U CB**
Total Calcium	none	none	**J MI**	none	none	none	none
Total Chromium	none	**U CB**	**J MI**	none	none	none	none
Total Copper	**U CB**	**U CB**	none	**U CB**	none	none	none
Total Iron	**J CR**	**J CR**	**J MI, CR**	**J CR**	**J CR**	**J CR**	**J CR**
Total Lead	none	**U MB, CB**	none	**U MB, CB**	none	none	none
Total Manganese	none	none	**J MI**	none	none	none	none
Total Mercury	none	none	**J CR**	none	none	none	none
Total Nickel	none	**J DL**	none	none	**J DL**	none	**J DL**
Total Potassium	none	none	none	none	**J DL**	none	none
Total Vanadium	**J DL**	**J DL**	none	**J DL**	none	none	none
Total Zinc	none	none	**J MI**	none	none	none	none

TABLE 6
Data Qualifiers for Metals by EPA 6000/7000 Series Methods
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	043-01 (ARK-01-GW-54)	044-01 (ARK-01-GW-31-5)	050-01 (ARK-05-GW-22)	051-01 (ARK-05-GW-41)	053-01 (ARK-06-SO-3-0)	057-01 (ARK-06-GW-80)	058-01 (ARK-06-GW-27)
Dissolved Aluminum	**J CR, MI**	**U CB**	**J CR**	**J CR**	none	**U CB**	**U CB**
Dissolved Arsenic	none	none	none	none	none	none	none
Dissolved Cadmium	**UJ CB, IL, MI**	**UJ CB, IL**	**UJ IL**	**UJ IL**	none	**UJ CB, IL**	none
Dissolved Calcium	none	none	**J DL**	none	none	none	none
Dissolved Chromium	**U CB**	**U CB**	none	**U CB**	none	**UJ MB, CB, IH**	**U MB, CB**
Dissolved Copper	**U CB**	**U CB**	**U CB**	**U CB**	none	none	none
Dissolved Iron	**J MI, HD, CR**	none	none	none	none	**U CB**	none
Dissolved Lead	**UJ MB, CB, MI**	**U MB, CB**	**U CB, MB**	**U CB, MB**	none	**UJ IL**	none
Dissolved Magnesium	**J MI**	none	**U CB**	none	none	none	**J DL**
Dissolved Nickel	none	**J DL**	**U CB**	**U CB**	none	none	none
Dissolved Potassium	none	none	**J DL**	**J DL**	none	none	none
Dissolved Sodium	none	none	**J DL**	**J DL**	none	none	none
Dissolved Vanadium	**J DL**	none	none	**J DL**	none	**U CB**	**U CB**
Dissolved Zinc	**J MI**	none	**J DL**	none	none	none	none
Total Aluminum	**J MI**	**J CR**	**J CR**	**J CR**	**J CR**	**J CR**	**U CB**
Total Arsenic	**J MI**	none	none	none	none	none	none
Total Cadmium	**UJ MI, IL, LM**	**UJ IL**	**UJ IL**	**UJ IL**	**U CB**	**UJ CB, IL**	none
Total Calcium	**J MI**	none	**J DL**	none	none	none	none
Total Chromium	**J LM, MI**	none	none	none	**J MI**	none	**U MB, CB**
Total Copper	**UJ MI**	none	none	none	none	none	**U CB**
Total Iron	**J HD**	none	none	**J CR**	**J CR**	**J CR**	none
Total Lead	none	none	none	none	none	**UJ IL**	none
Total Magnesium	**J MI**	none	**J DL**	none	none	none	**J DL**
Total Nickel	**J LM, MI**	none	**U CB**	none	none	**U CB**	none
Total Potassium	**J MI**	none	**J DL**	none	none	none	none
Total Sodium	none	none	**J DL**	**J DL**	**J DL**	none	none
Total Vanadium	**J MI**	none	none	none	none	none	**U CB**
Total Zinc	**J MI**	none	none	none	**J MI**	none	**J DL**

TABLE 6
Data Qualifiers for Metals by EPA 6000/7000 Series Methods
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	058-02 (ARK-06-GW-27)	059-01 (ARK-06-GW-58)	065-01 (ARK-02-GW-80)	066-01 (ARK-02-GW-40)	067-01 (ARK-03-GW-80)	069-01 (ARK-03-SO-6-0)	071-01 (ARK-03-GW-26)
Dissolved Aluminum	**U CB**	**U CB**	**U CB**	**J CR**	**U CB**	none	**U CB**
Dissolved Arsenic	none	**UJ MI**	none	none	none	none	none
Dissolved Cadmium	none	**UJ CB, IL**	none	**U CB**	none	none	none
Dissolved Calcium	none	**J HD**	none	none	none	none	none
Dissolved Chromium	**U MB, CB**	**U CB**	**U CB, RB, MB**	**U MB, CB**	**U MB, CB**	none	**U MB, CB**
Dissolved Copper	none	none	**U RB, CB**	**U CB**	**U CB**	none	none
Dissolved Iron	none	**J MI**	**J CR**	none	**J CR**	none	**J CR**
Dissolved Lead	none	**UJ IL, MI**	none	none	none	none	none
Dissolved Magnesium	**J DL**	none	none	none	none	none	**J DL**
Dissolved Manganese	none	**J HD**	none	none	none	none	none
Dissolved Nickel	**U CB**	**UJ CB, MI**	**J DL**	**J DL**	**J DL**	none	none
Dissolved Potassium	none	none	none	none	none	none	**J DL**
Dissolved Vanadium	**U CB**	**U CB**	**U CB**	**U CB**	**U CB**	none	**U CB**
Dissolved Zinc	**J DL**	none	none	none	none	none	**U CB, MB**
Total Aluminum	**U CB**	**J MI, CR**	**J CR**	**J CR**	**J CR**	**J CR**	**J CR**
Total Arsenic	none	**J MI**	none	none	none	none	none
Total Cadmium	none	**UJ CB, IL MI**	**U CB**	**UJ CB, IL**	**UJ CB, IL**	**U CB**	none
Total Calcium	none	**J HD**	none	none	none	none	none
Total Chromium	**U MB, CB**	**J IH, MI**	none	**J IH**	**J IH**	none	**U MB, CB**
Total Copper	none	**J MI**	none	none	none	none	**U CB**
Total Iron	none	**J MI**	**J CR**	**J CR**	**J CR**	**J CR**	**J CR**
Total Lead	none	**UJ CB, IL, MI**	**U CB**	none	none	none	none
Total Magnesium	**J DL**	**J MI**	none	none	none	none	**J DL**
Total Manganese	none	**J HD**	none	none	none	none	none
Total Nickel	none	**J MI**	none	none	none	none	**U CB**
Total Potassium	none	**J MI**	none	none	none	none	**J DL**
Total Sodium	none	none	none	none	none	**J DL**	none
Total Vanadium	**U CB**	**J MI**	none	none	none	none	**U CB**
Total Zinc	none	**J MI**	none	none	none	none	**U CB**

TABLE 6
Data Qualifiers for Metals by EPA 6000/7000 Series Methods
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	072-01 (ARK-03-GW-58)	073-01 (ARK-09-GW-97-5)	074-01 (ARK-06-GW-97-5)	075-01 (ARK-05-GW-67-5)	076-01 (ARK-03-GW-102-5)	077-01 (RP-08-SO-88)	078-01 (RP-08-SO-93)
Dissolved Aluminum	**U CB**	**U CB**	**J CR**	**J CR**	**U CB**	none	none
Dissolved Cadmium	**U CB**	none	none	none	none	none	none
Dissolved Chromium	**U MB, CB**	none	**U MB**	none	none	none	none
Dissolved Copper	**U CB**	none	**J DL**	**J DL**	none	none	none
Dissolved Iron	**J LM**	**U CB**	**J CR**	**J CR**	**J CR**	none	none
Dissolved Lead	**UJ LM**	none	**U CB**	none	**U CB**	none	none
Dissolved Mercury	none	none	none	none	**J DL**	none	none
Dissolved Nickel	**U CB**	**J DL**	**J DL**	**J DL**	**J DL**	none	none
Dissolved Vanadium	**U CB**	**J DL**	**J DL**	**J DL**	**J DL**	none	none
Dissolved Zinc	none	**U MB, CB**	none	**J DL**	**J DL**	none	none
Total Aluminum	**J CR**	**J CR, MI**	**J CR**	**J CR**	**J CR**	**J CR**	**J CR, MI**
Total Arsenic	none	none	none	none	none	none	**J LM**
Total Cadmium	**UJ CB, IL**	**UJ CB, MI**	**J CR**	**J CR**	**U CB**	none	**UJ LM**
Total Calcium	none	**J MI**	none	none	none	none	**J MI**
Total Chromium	**J IH**	**J MI**	none	none	none	none	**J MI, HD**
Total Copper	none	**J MI**	none	none	none	none	**J MI, HD**
Total Iron	none	**J CR, MI**	**J CR**	**J CR**	**J CR**	**J CR**	**J CR, MI**
Total Lead	none	**J MI**	none	none	none	none	**J HM**
Total Magnesium	none	**J MI**	none	none	none	none	**J HD**
Total Manganese	none	**J MI**	none	none	none	none	**J HM, MI, HD**
Total Nickel	none	**J MI**	none	none	none	none	none
Total Potassium	none	**J MI**	none	none	none	none	**J DL**
Total Sodium	none	**J MI**	none	none	none	**J DL**	**J DL**
Total Vanadium	none	**J MI**	none	none	none	none	**J MI, HD**
Total Zinc	none	**J MI**	none	none	none	none	**J MI, HD**

Notes:
CB = Calibration blank contamination at a concentration more than 20% of the concentration detected in the sample.
CR = High CRI recovery. Analytical results may be biased high.
DL = Value between RL and IDL. Result should be considered estimated.
EPA = United States Environmental Protection Agency
HD = High laboratory duplicate recovery. Result may be biased.
HM = Matrix spike recovery was greater than 125%. Analytical results may be biased high.
IL = Interference check standard failed low. Analytical results may be biased low.
IH = Interference check standard failed high. Analytical results may be biased high.
LM = Matrix spike recovery was less than 75%. Analytical results may be biased low.
MB = Method blank contamination at a concentration more than 20% of the concentration detected in the sample.
MI = Matrix interference. Analytical results may be biased.
RB = Rinsate blank contamination at a concentration more than 20% of the concentration detected in the sample.

TABLE 7
Data Qualifiers for VOCs by EPA Method 8260B
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	006-01 (ARK-07-GW-45)	007-01 (ARK-07-GW-14)	008-01 (ARK-07-GW-26)	011-01 (ARK-08-SO-13-0)	015-01 (ARK-08-GW-43-5)	015-02 (ARK-08-GW-43-5)	016-01 (ARK-08-GW-15)	023-01 (ARK-09-GW-16)	025-01 (ARK-09-GW-35)	026-01 (ARK-09-GW-56)	029-01 (ARK-04-SO-6-0)	033-01 (ARK-04-GW-47)
1,1,1,2-Tetrachloroethane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,1,1-Trichloroethane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,1,2,2-Tetrachloroethane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,1,2-Trichloroethane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,1-Dichloroethane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,1-Dichloroethene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,1-Dichloropropene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,2,3-Trichlorobenzene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,2,3-Trichloropropane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,2,4-Trichlorobenzene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,2,4-Trimethylbenzene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,2-Dibromo-3-chloropropane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,2-Dibromoethane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,2-Dichlorobenzene	none	none	none	none	none	none	none	none	**UJ NP**	**J NP, DL**	**UJ NP**	**UJ NP**
1,2-Dichloroethane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,2-Dichloropropane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,3,5-Trimethylbenzene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,3-Dichlorobenzene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,3-Dichloropropane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
1,4-Dichlorobenzene	none	none	none	none	none	none	none	none	**UJ NP**	**J NP, DL**	**UJ NP**	**UJ NP**
2,2-Dichloropropane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
2-Butanone (MEK)	none	none	**UJ LC**	none	none	none	none	none	**UJ NP, LC**	**UJ NP, LC**	**UJ NP**	**UJ NP, LC**
2-Chlorotoluene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
2-Hexanone	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
4-Chlorotoluene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
4-Isopropyltoluene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
4-methyl-2-pentanone (MIBK)	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Acetone	none	none	**UJ LC**	**UJ MB, BC**	none	none	none	none	**UJ NP, LC**	**UJ NP, LC**	**UJ MB,NP, BC**	**UJ NP, LC**
Benzene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Bromobenzene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Bromochloromethane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Bromodichloromethane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Bromoform	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Bromomethane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Carbon disulfide	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**

TABLE 7
Data Qualifiers for VOCs by EPA Method 8260B
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	006-01 (ARK-07-GW-45)	007-01 (ARK-07-GW-14)	008-01 (ARK-07-GW-26)	011-01 (ARK-08-SO-13-0)	015-01 (ARK-08-GW-43-5)	015-02 (ARK-08-GW-43-5)	016-01 (ARK-08-GW-15)	023-01 (ARK-09-GW-16)	025-01 (ARK-09-GW-35)	026-01 (ARK-09-GW-56)	029-01 (ARK-04-SO-6-0)	033-01 (ARK-04-GW-47)
Carbon tetrachloride	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Chlorobenzene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Chloroethane	none	none	none	none	none	none	**UJ BC**	none	**UJ NP, BC**	**UJ NP, BC**	**UJ NP**	**UJ NP, BC**
Chloroform	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Chloromethane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
cis-1,2-Dichloroethene	none	none	none	none	none	none	**J DL**	none	**UJ NP**	**J NP, DL**	**UJ NP**	**J NP**
cis-1,3-Dichloropropene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Dibromochloromethane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Dibromomethane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Dichlorodifluoromethane	none	none	none	**UJ LL**	none	none	none	none	**UJ NP**	**UJ NP**	**UJ LC,NP**	**UJ NP**
Ethylbenzene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Hexachlorobutadiene	none	**U MB**	none	none	none	none	none	none	**UJ NP**	**R RF**	**UJ NP**	**UJ NP**
Iodomethane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Isobutylalcohol	none	none	**UJ LC**	none	none	none	none	none	**R RF**	**R RF**	**UJ NP**	**R RF**
Isopropylbenzene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
m,p-Xylene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Methylene chloride	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Naphthalene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
n-Butylbenzene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
n-Propylbenzene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
o-Xylene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
sec-Butylbenzene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Styrene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
tert-Butylbenzene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Tetrachloroethene	none	none	none	none	none	none	**J BC**	none	**UJ NP, LC, BC**	**UJ NP, LC, BC**	**UJ NP**	**UJ NP, LC, BC**
Toluene	none	none	**J DL**	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
trans-1,2-Dichloroethene	none	none	none	none	none	none	**J DL**	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
trans-1,3-Dichloropropene	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Trichloroethene	none	**J DL**	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**J NP, DL**
Trichlorofluoromethane	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**
Vinyl chloride	none	none	none	none	none	none	none	none	**UJ NP**	**UJ NP**	**UJ NP**	**UJ NP**

TABLE 7
Data Qualifiers for VOCs by EPA Method 8260B
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	034-01 (ARK-04-GW-15)	035-01 (ARK-04-GW-36)	042-01 (ARK-01-GW-15)	043-01 (ARK-01-GW-54)	044-01 (ARK-01-GW-31-5)	050-01 (ARK-05-GW-22)	051-01 (ARK-05-GW-41)	053-01 (ARK-06-SO-3-0)	057-01 (ARK-06-GW-80)	058-01 (ARK-06-GW-27)	058-02 (ARK-06-GW-27)	059-01 (ARK-06-GW-58)
1,1,1,2-Tetrachloroethane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,1,1-Trichloroethane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,1,2,2-Tetrachloroethane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,1,2-Trichloroethane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,1-Dichloroethane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,1-Dichloroethene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,1-Dichloropropene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,2,3-Trichlorobenzene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,2,3-Trichloropropane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,2,4-Trichlorobenzene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,2,4-Trimethylbenzene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,2-Dibromo-3-chloropropane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,2-Dibromoethane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,2-Dichlorobenzene	**UJ NP**	none	**UJ HT**	none	**U TB**	**UJ NP**	**UJ NP**	none	none	none	none	none
1,2-Dichloroethane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,2-Dichloropropane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,3,5-Trimethylbenzene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,3-Dichlorobenzene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,3-Dichloropropane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
1,4-Dichlorobenzene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
2,2-Dichloropropane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
2-Butanone (MEK)	**UJ NP, LC**	**UJ LC**	**UJ HT, LC**	none	**UJ LC**	**UJ NP**	**UJ NP**	none	**UJ LC**	**UJ LC**	**UJ LC**	**UJ LC**
2-Chlorotoluene	**UJ NP**	none	**UJ HT**	**J DL**	none	**UJ NP**	**UJ NP**	none	none	none	none	none
2-Hexanone	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
4-Chlorotoluene	**UJ NP**	none	**UJ HT**	**J DL**	none	**UJ NP**	**UJ NP**	none	none	none	none	none
4-Isopropyltoluene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
4-methyl-2-pentanone (MIBK)	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Acetone	**J NP, LC**	**UJ LC**	**J HT, LC, BC**	none	**J LC**	**J BC, NP**	**J BC, NP**	**UJ MB, BC**	**J LC, BC**	**UJ LC, BC**	**UJ LC, BC**	**UJ RB, LC, BC**
Benzene	**UJ NP**	none	**J HT, DL**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Bromobenzene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Bromochloromethane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Bromodichloromethane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Bromoform	**UJ NP**	none	**UJ HT, BC**	none	none	**UJ BC, NP**	**UJ BC, NP**	none	**UJ BC**	**UJ BC**	**UJ BC**	**UJ BC**
Bromomethane	**UJ NP**	none	**UJ HT**	**UJ LC**	**UJ LL**	**UJ NP**	**UJ NP**	none	none	none	none	none
Carbon disulfide	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**J DL,NP**	none	none	none	none	none

TABLE 7
Data Qualifiers for VOCs by EPA Method 8260B
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	034-01 (ARK-04-GW-15)	035-01 (ARK-04-GW-36)	042-01 (ARK-01-GW-15)	043-01 (ARK-01-GW-54)	044-01 (ARK-01-GW-31-5)	050-01 (ARK-05-GW-22)	051-01 (ARK-05-GW-41)	053-01 (ARK-06-SO-3-0)	057-01 (ARK-06-GW-80)	058-01 (ARK-06-GW-27)	058-02 (ARK-06-GW-27)	059-01 (ARK-06-GW-58)
Carbon tetrachloride	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Chlorobenzene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Chloroethane	**UJ NP, BC**	**UJ BC**	**UJ HT, BC**	**UJ BC**	none	**UJ BC, NP**	**UJ BC,NP**	none	**UJ BC**	**UJ BC**	**UJ BC**	**UJ BC**
Chloroform	**UJ NP**	**J DL**	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Chloromethane	**J NP, DL**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
cis-1,2-Dichloroethene	**UJ NP**	none	**UJ HT**	**J DL**	none	**UJ NP**	**UJ NP**	none	none	none	none	none
cis-1,3-Dichloropropene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Dibromochloromethane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Dibromomethane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Dichlorodifluoromethane	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	**UJ LC**	none	none	none	none
Ethylbenzene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Hexachlorobutadiene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Iodomethane	**UJ NP**	none	**UJ HT**	**UJ LC**	**UJ LL**	**UJ NP**	**UJ NP**	none	none	none	none	none
Isobutylalcohol	**R RF**	**R RF**	**R RF**	none	**R RF**	**R RF**	**R RF**	none	**R RF**	**R RF**	**R RF**	**R RF**
Isopropylbenzene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
m,p-Xylene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Methylene chloride	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Naphthalene	**UJ NP**	none	**J HT, DL**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
n-Butylbenzene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
n-Propylbenzene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
o-Xylene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
sec-Butylbenzene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Styrene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
tert-Butylbenzene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Tetrachloroethene	**UJ NP, LC, BC**	**UJ LC, BC**	**UJ HT**	**UJ LC, BC**	**UJ LC**	**UJ NP**	**UJ NP**	none	none	none	none	none
Toluene	**UJ NP**	none	**J HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
trans-1,2-Dichloroethene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
trans-1,3-Dichloropropene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Trichloroethene	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Trichlorofluoromethane	**UJ NP**	**J DL**	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none
Vinyl chloride	**UJ NP**	none	**UJ HT**	none	none	**UJ NP**	**UJ NP**	none	none	none	none	none

TABLE 7
Data Qualifiers for VOCs by EPA Method 8260B
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	065-01 (ARK-02-GW-80)	066-01 (ARK-02-GW-40)	067-01 (ARK-03-GW-80)	069-01 (ARK-03-SO-6-0)	071-01 (ARK-03-GW-26)	072-01 (ARK-03-GW-58)	073-01 (ARK-09-GW-97-5)	074-01 (ARK-06-GW-97-5)
1,1,1,2-Tetrachloroethane	none	none	none	none	none	none	none	none
1,1,1-Trichloroethane	none	none	none	none	none	none	none	none
1,1,2,2-Tetrachloroethane	none	none	none	none	none	none	none	none
1,1,2-Trichloroethane	none	none	none	none	none	none	none	none
1,1-Dichloroethane	none	none	none	none	none	none	none	none
1,1-Dichloroethene	none	none	none	none	none	none	none	**J DL**
1,1-Dichloropropene	none	none	none	none	none	none	none	none
1,2,3-Trichlorobenzene	none	none	none	none	none	none	none	none
1,2,3-Trichloropropane	none	none	none	none	none	none	none	none
1,2,4-Trichlorobenzene	none	none	none	none	none	none	none	none
1,2,4-Trimethylbenzene	none	none	none	none	none	none	none	none
1,2-Dibromo-3-chloropropane	none	none	none	none	none	none	none	none
1,2-Dibromoethane	none	none	none	none	none	none	none	none
1,2-Dichlorobenzene	none	none	none	none	none	none	none	none
1,2-Dichloroethane	none	none	none	none	none	none	none	none
1,2-Dichloropropane	none	none	none	none	none	none	none	none
1,3,5-Trimethylbenzene	none	none	none	none	none	none	none	none
1,3-Dichlorobenzene	none	none	none	none	none	none	none	none
1,3-Dichloropropane	none	none	none	none	none	none	none	none
1,4-Dichlorobenzene	none	none	none	none	none	none	none	none
2,2-Dichloropropane	none	none	none	none	none	none	none	none
2-Butanone (MEK)	**UJ LC**	none	none	none	none	none	none	none
2-Chlorotoluene	none	none	none	none	none	none	none	none
2-Hexanone	none	none	none	none	none	none	none	none
4-Chlorotoluene	none	none	none	none	none	none	none	none
4-Isopropyltoluene	none	none	none	none	none	none	none	none
4-methyl-2-pentanone (MIBK)	none	none	none	none	none	none	none	none
Acetone	**UJ RB, LC, BC**	none	**J DL**	**J BC**	none	none	none	none
Benzene	none	none	none	none	none	none	none	none
Bromobenzene	none	none	none	none	none	none	none	none
Bromochloromethane	none	none	none	none	none	none	none	none
Bromodichloromethane	none	none	none	none	none	none	none	none
Bromoform	**UJ BC**	none	none	none	none	none	none	none
Bromomethane	none	none	none	**UJ LC**	none	none	none	none
Carbon disulfide	none	**J DL**	**J DL**	none	none	none	none	none

TABLE 7
Data Qualifiers for VOCs by EPA Method 8260B
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	065-01 (ARK-02-GW-80)	066-01 (ARK-02-GW-40)	067-01 (ARK-03-GW-80)	069-01 (ARK-03-SO-6-0)	071-01 (ARK-03-GW-26)	072-01 (ARK-03-GW-58)	073-01 (ARK-09-GW-97-5)	074-01 (ARK-06-GW-97-5)
Carbon tetrachloride	none	none	none	none	none	none	none	none
Chlorobenzene	none	**J DL**	none	none	**J DL**	none	none	none
Chloroethane	**UJ BC**	**UJ BC**	**UJ BC**	none	**UJ BC**	**UJ BC**	none	none
Chloroform	none	none	none	none	none	none	none	none
Chloromethane	none	none	none	none	none	**J DL**	**U TB**	none
cis-1,2-Dichloroethene	none	none	none	none	none	none	none	none
cis-1,3-Dichloropropene	none	none	none	none	none	none	none	none
Dibromochloromethane	none	none	none	none	none	none	none	none
Dibromomethane	none	none	none	none	none	none	none	none
Dichlorodifluoromethane	none	none	none	**UJ LC, LL**	none	none	none	none
Ethylbenzene	none	none	none	none	none	none	none	none
Hexachlorobutadiene	none	none	none	none	none	none	none	none
Iodomethane	none	none	none	none	none	none	none	none
Isobutylalcohol	**R RF**	**R RF**	**R RF**	none	**R RF**	**R RF**	none	none
Isopropylbenzene	none	none	none	none	none	none	none	none
m,p-Xylene	none	none	none	none	none	none	none	none
Methylene chloride	none	**J DL**	none	none	none	none	none	none
Naphthalene	none	none	none	none	none	none	none	none
n-Butylbenzene	none	none	none	none	none	none	none	none
n-Propylbenzene	none	none	none	none	none	none	none	none
o-Xylene	none	none	none	none	none	none	none	none
sec-Butylbenzene	none	none	none	none	none	none	none	none
Styrene	none	none	none	none	none	none	none	none
tert-Butylbenzene	none	none	none	none	none	none	none	none
Tetrachloroethene	none	**UJ LC, BC**	**UJ LC, BC**	none	**UJ LC, BC**	**UJ LC, BC**	none	none
Toluene	none	none	none	none	none	none	**J DL**	**J DL**
trans-1,2-Dichloroethene	none	none	none	none	none	none	none	none
trans-1,3-Dichloropropene	none	none	none	none	none	none	none	none
Trichloroethene	none	none	none	none	none	none	none	none
Trichlorofluoromethane	none	none	none	none	none	none	none	none
Vinyl chloride	none	none	none	none	none	none	none	none

TABLE 7
Data Qualifiers for VOCs by EPA Method 8260B
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	075-01 (ARK-05-GW-67-5)	076-01 (ARK-03-GW-102-5)	077-01 (RP-08-SO-88)	078-01 (RP-08-SO-93)
1,1,1,2-Tetrachloroethane	none	none	none	none
1,1,1-Trichloroethane	none	none	none	none
1,1,2,2-Tetrachloroethane	none	none	none	none
1,1,2-Trichloroethane	none	none	none	none
1,1-Dichloroethane	none	none	none	none
1,1-Dichloroethene	none	none	none	none
1,1-Dichloropropene	none	none	none	none
1,2,3-Trichlorobenzene	none	**J DL**	none	none
1,2,3-Trichloropropane	none	none	none	none
1,2,4-Trichlorobenzene	none	**J DL**	none	none
1,2,4-Trimethylbenzene	none	none	none	none
1,2-Dibromo-3-chloropropane	none	none	none	none
1,2-Dibromoethane	none	none	none	none
1,2-Dichlorobenzene	none	none	none	none
1,2-Dichloroethane	none	**none**	none	none
1,2-Dichloropropane	none	none	none	none
1,3,5-Trimethylbenzene	none	none	none	none
1,3-Dichlorobenzene	**J DL**	none	none	**J DL**
1,3-Dichloropropane	none	none	none	none
1,4-Dichlorobenzene	none	none	**J DL**	none
2,2-Dichloropropane	none	none	none	none
2-Butanone (MEK)	none	none	none	none
2-Chlorotoluene	none	none	none	none
2-Hexanone	none	none	none	none
4-Chlorotoluene	none	none	none	none
4-Isopropyltoluene	none	none	**UJ BC**	**UJ BC**
4-methyl-2-pentanone (MIBK)	none	none	none	none
Acetone	**J LC**	none	**J BC**	**J BC**
Benzene	none	none	none	**J DL**
Bromobenzene	none	none	none	none
Bromochloromethane	none	none	none	none
Bromodichloromethane	none	none	none	none
Bromoform	none	none	none	none
Bromomethane	none	none	**UJ LC, BC**	**UJ LC, BC**
Carbon disulfide	**J DL**	none	none	none

TABLE 7
Data Qualifiers for VOCs by EPA Method 8260B
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	075-01 (ARK-05-GW-67-5)	076-01 (ARK-03-GW-102-5)	077-01 (RP-08-SO-88)	078-01 (RP-08-SO-93)
Carbon tetrachloride	none	none	none	none
Chlorobenzene	none	none	none	none
Chloroethane	none	none	**UJ BC**	**UJ BC**
Chloroform	none	none	none	none
Chloromethane	**U TB**	none	none	none
cis-1,2-Dichloroethene	none	none	none	**J DL**
cis-1,3-Dichloropropene	none	none	none	none
Dibromochloromethane	none	none	none	none
Dibromomethane	none	none	none	none
Dichlorodifluoromethane	none	none	none	none
Ethylbenzene	none	none	none	none
Hexachlorobutadiene	none	none	**UJ BC**	**UJ BC**
Iodomethane	none	none	**UJ BC**	**UJ BC**
Isobutylalcohol	**R RF**	none	none	none
Isopropylbenzene	none	**J DL**	none	none
m,p-Xylene	none	none	none	none
Methylene chloride	none	none	none	none
Naphthalene	**J DL**	none	none	none
n-Butylbenzene	none	none	**UJ BC**	**UJ BC**
n-Propylbenzene	none	none	none	none
o-Xylene	none	none	none	none
sec-Butylbenzene	none	none	**UJ BC**	**UJ BC**
Styrene	none	**J DL**	none	none
tert-Butylbenzene	none	none	none	none
Tetrachloroethene	none	none	none	none
Toluene	none	**J DL**	none	none
trans-1,2-Dichloroethene	none	none	none	none
trans-1,3-Dichloropropene	none	none	none	none
Trichloroethene	none	none	none	**J DL**
Trichlorofluoromethane	none	none	none	none
Vinyl chloride	none	none	none	none

Notes:
BC = High %RSD in initial calibration curve. Analytical results may be biased.
DL = Value between RL and IDL. Result should be considered estimated.
EPA = United States Environmental Protection Agency
HT = Holding exceeded. Analytical results maybe biased low.
LC = Continuing calibration recovery is less than 80%. Analytical results may be biased low.
LL = Laboratory control sample recovery for this analyte is lower than the QAPP-specified minimum recovery of 70%.
MB = Method blank contamination at a concentration more than 20% of the concentration detected in the sample.
NP = Sample arrived at the laboratory unpreserved.
RF = Relative response factor less than 0.01. Presence of analyte could not be determined.
TB = Trip blank contamination at a concentration more than 20% of the concentration detected in the sample.
VOCs = volatile organic compounds

TABLE 8
Data Qualifiers for SVOCs by EPA Method 8270C
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	006-01 (ARK-07-GW-45)	007-01 (ARK-07-GW-14)	008-01 (ARK-07-GW-26)	011-01 (ARK-08-SO-13-0)	015-01 (ARK-08-GW-43-5)	015-02 (ARK-08-GW-43-5)	016-01 (ARK-08-GW-15)	023-01 (ARK-09-GW-16)	025-01 (ARK-09-GW-35)	026-01 (ARK-09-GW-56)	029-01 (ARK-04-SO-6-0)	033-01 (ARK-04-GW-47)
1,2,4-Trichlorobenzene	UJ LS	none	none	none	none	none	none	none	none	none	none	none
1,2-Dichlorobenzene	UJ LS	none	none	none	none	none	none	none	none	none	none	none
1,3-Dichlorobenzene	UJ LS	none	none	none	none	none	none	none	none	none	none	none
1,4-Dichlorobenzene	UJ LS	none	none	none	none	none	none	none	none	none	none	none
2,4,5-Trichlorophenol	UJ LS	UJ LS	UJ LS	none	UJ LS	UJ LS	UJ LS	UJ LS	UJ LL	UJ LL	none	UJ LL
2,4,6-Trichlorophenol	UJ LS	UJ LS	UJ LS	none	UJ LS	UJ LS	UJ LS	UJ LS	none	none	none	none
2,4-Dichlorophenol	UJ LS	UJ LS	UJ LS	none	UJ LS	UJ LS	UJ LS	UJ LS	none	none	none	none
2,4-Dimethylphenol	UJ LS	UJ LS	UJ LS	none	UJ LS	UJ LS	UJ LS	UJ LS	none	none	UJ LM	none
2,4-Dinitrophenol	UJ LS	UJ LS	UJ LS	UJ LL	UJ LS	UJ LS	UJ LS	UJ LS	UJ LC	UJ LC	UJ LL	UJ LC
2,4-Dinitrotoluene	UJ LS	none	none	none	none	none	none	none	none	none	none	none
2,6-Dichlorophenol	UJ LS	UJ LS	UJ LS	none	UJ LS	UJ LS	UJ LS	UJ LS	none	none	none	none
2,6-Dinitrotoluene	UJ LS	none	none	none	none	none	none	none	none	none	none	none
2-Chloronapthalene	UJ LS	none	none	none	none	none	none	none	none	none	none	none
2-Chlorophenol	UJ LS	UJ LS	UJ LS	none	UJ LS	UJ LS	UJ LS	UJ LS	none	none	none	none
2-Methyl-4,6-dinitrophenol	UJ LS	UJ LS	UJ LS	none	UJ LS	UJ LS	UJ LS	UJ LS	none	none	none	none
2-Methylnaphthalene	UJ LS	none	none	none	none	none	none	none	none	none	none	none
2-Methylphenol	UJ LS	UJ LS	UJ LS	none	UJ LS	UJ LS	UJ LS	UJ LS	none	none	none	none
2-Nitroaniline	UJ LS	none	none	none	none	none	none	none	none	none	none	none
2-Nitrophenol	UJ LS	UJ LS	UJ LS	none	UJ LS	UJ LS	UJ LS	UJ LS	none	none	none	none
3,3'-Dichlorobenzidine	UJ LS	none	none	UJ LL	none	none	none	none	UJ LL	UJ LL	UJ LM, LL	UJ LL
3-Nitroaniline	UJ LS	none	none	UJ LL	none	none	none	none	UJ LL	UJ LL	UJ LL	UJ LL
4-Bromophenylphenyl ether	UJ LS	none	none	none	none	none	none	none	none	none	none	none
4-Chloro-3-methylphenol	UJ LS	UJ LS	UJ LS	none	UJ LS	UJ LS	UJ LS	UJ LS	none	none	none	none
4-Chloroaniline	UJ LS	none	none	UJ LL	none	none	none	none	UJ LL	UJ LL	UJ LM, LL	UJ LL
4-Chlorophenylphenyl ether	UJ LS	none	none	none	none	none	none	none	none	none	none	none
4-METHYLPHENOL(P-CRESOL)	UJ BC	UJ BC	UJ BC	none	UJ BC	UJ BC	UJ BC	UJ BC	none	none	none	none
4-Nitroaniline	UJ LS	none	none	none	none	none	none	none	none	none	none	none
4-Nitrophenol	UJ LC, BC, LS	UJ LC, BC, LS	UJ LC, BC, LS	none	UJ LC, BC, LS	UJ LC, BC, LS	UJ LC, BC, LS	UJ LC, BC, LS	UJ LL	UJ LL	none	UJ LL
Acenaphthene	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Acenaphthylene	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Anthracene	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Benzo(a)anthracene	UJ LS	none	none	J DL	none	none	none	none	none	none	J DL	none
Benzo(a)pyrene	UJ LS	none	none	J DL	none	none	none	none	none	none	J DL	none
Benzo(b)fluoranthene	UJ LS	none	none	J DL	none	none	none	none	none	none	J DL	none

TABLE 8
Data Qualifiers for SVOCs by EPA Method 8270C
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	006-01 (ARK-07-GW-45)	007-01 (ARK-07-GW-14)	008-01 (ARK-07-GW-26)	011-01 (ARK-08-SO-13-0)	015-01 (ARK-08-GW-43-5)	015-02 (ARK-08-GW-43-5)	016-01 (ARK-08-GW-15)	023-01 (ARK-09-GW-16)	025-01 (ARK-09-GW-35)	026-01 (ARK-09-GW-56)	029-01 (ARK-04-SO-6-0)	033-01 (ARK-04-GW-47)
Benzo(ghi)perylene	UJ LS	none	none	J DL	none	none	none	none	none	none	J DL	none
Benzo(k)fluoranthene	UJ LS	none	none	J BC	none	none	none	none	UJ BC	UJ BC	J BC	UJ BC
Benzoic acid	R BS	R BS	R BS	none	R BS	R BS	R BS	R BS	R BS	R BS	UJ LM	R BS
Benzyl alcohol	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Bis(2-Chloroethoxy) methane	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Bis(2-Chloroethyl) ether	UJ LS, BC	UJ BC	UJ BC	none	UJ BC	UJ BC	UJ BC	UJ BC	none	none	none	none
Bis(2-Chloroisopropyl) ether	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Bis(2-Ethylhexyl) pthalate	J LS	none	none	none	none	J DL	none	none	none	none	J DL	none
Butylbenzylphthalate	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Chrysene	UJ LS	none	none	J DL	none	none	none	none	none	none	J DL	none
Dibenzo(a,h)anthracene	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Dibenzofuran	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Diethylphthalate	UJ LS	none	J DL	none	none	none	none	none	none	none	none	none
Dimethylphthalate	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Di-n-butylphthalate	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Di-n-octyl phthalate	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Fluoranthene	UJ LS	none	none	J DL	none	none	none	none	none	none	J DL	none
Fluorene	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Hexachlorobenzene	UJ LS	none	none	UJ BC	none	none	none	none	UJ BC	UJ BC	UJ BC	UJ BC
Hexachlorobutadiene	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Hexachlorocyclopentadiene	UJ LS, LL	UJ LL	UJ LL	none	UJ LL	UJ LL	UJ LL	UJ LL	R BS	R BS	UJ LM	R BS
Hexachloroethane	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Indeno(1,2,3-cd)pyrene	UJ LS	none	none	none	none	none	none	none	none	none	J DL	none
Isophorone	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Naphthalene	UJ LS	none	none	none	none	none	none	none	none	none	J DL	none
N-NITROSODIMETHYLAMINE	UJ LL, LS	UJ LL	UJ LL	none	UJ LL	UJ LL	UJ LL	UJ LL	UJ LC, LL	UJ LC, LL	none	UJ LL, LC
N-Nitrosodi-n-propyl amine	UJ LS	none	none	none	none	none	none	none	none	none	none	none
N-Nitrosodiphenylamine	UJ LS	none	none	none	none	none	none	none	none	none	none	none
Pentachlorophenol	UJ LS	UJ LS	UJ LS	none	UJ LS	UJ LS	UJ LS	UJ LS	none	none	none	none
Phenanthrene	UJ LS	none	none	none	none	none	none	none	none	none	J DL	none
Phenol	UJ LL, LS	UJ LL, LS	UJ LL, LS	none	UJ LL, LS	UJ LL, LS	UJ LL, LS	UJ LL, LS	UJ LL	UJ LL	none	UJ LL
Pyrene	UJ LS	none	none	J CH	none	none	none	none	none	none	J CH	none

TABLE 8
Data Qualifiers for SVOCs by EPA Method 8270C
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	034-01 (ARK-04-GW-15)	035-01 (ARK-04-GW-36)	042-01 (ARK-01-GW-15)	043-01 (ARK-01-GW-54)	044-01 (ARK-01-GW-31-5)	050-01 (ARK-05-GW-22)	051-01 (ARK-05-GW-41)	053-01 (ARK-06-SO-3-0)	057-01 (ARK-06-GW-80)	058-01 (ARK-06-GW-27)	058-02 (ARK-06-GW-27)	059-01 (ARK-06-GW-58)
1,2,4-Trichlorobenzene	none	none	**UJ HT**	none	none	**UJ LS**	**UJ LS**	none	none	none	none	none
1,2-Dichlorobenzene	none	none	**UJ HT**	**J LM**	none	**UJ LS**	**UJ LS**	**UJ LL**	none	**J DL**	**J DL**	none
1,3-Dichlorobenzene	none	none	**UJ HT**	**J DL**	none	**UJ LS**	**UJ LS**	none	none	none	none	none
1,4-Dichlorobenzene	none	none	**UJ HT**	none	none	**UJ LS**	**UJ LS**	none	none	none	none	none
2,4,5-Trichlorophenol	**UJ LL, LS**	**UJ LS**	**UJ HT, LS**	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	**UJ LS**
2,4,6-Trichlorophenol	**UJ LS**	**UJ LS**	**UJ HT, LS**	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	**UJ LS**
2,4-Dichlorophenol	**UJ LS**	**UJ LS**	**UJ HT, LS**	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	**UJ LS**
2,4-Dimethylphenol	**UJ LS**	**UJ LL, LS**	**UJ HT, LS**	**UJ LM, LL**	**UJ LL, LS**	**UJ LS**	**UJ LS**	**UJ LL**	none	none	none	**UJ LS**
2,4-Dinitrophenol	**UJ LC, LS**	**UJ LS**	**UJ HT, LC, LS**	none	**UJ LS**	**UJ LS**	**UJ LS**	**UJ LL**	**UJ LC**	**UJ LC**	**UJ LC**	**UJ LC, LS**
2,4-Dinitrotoluene	none	none	**UJ HT**	none	none	**UJ LS**	**UJ LS**	none	none	none	none	none
2,6-Dichlorophenol	**UJ LS**	**UJ LS**	**UJ HT, LS**	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	**UJ LS**
2,6-Dinitrotoluene	none	none	**UJ HT**	none	none	**UJ LS**	**UJ LS**	none	none	none	none	none
2-Chloronapthalene	none	none	**UJ HT**	none	none	**UJ LS**	**UJ LS**	none	none	none	none	none
2-Chlorophenol	**UJ LS**	**UJ LS**	**UJ HT, LS**	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	**UJ LS**
2-Methyl-4,6-dinitrophenol	**UJ LS**	**UJ LS**	**UJ HT, LS**	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	**UJ LS**
2-Methylnaphthalene	none	none	**UJ HT**	none	none	**UJ LS**	**UJ LS**	none	none	none	none	none
2-Methylphenol	**UJ LS**	**UJ LS**	**UJ HT, LS**	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	**UJ LS**
2-Nitroaniline	none	none	**UJ HT**	none	none	**UJ LS**	**UJ LS**	none	none	none	none	none
2-Nitrophenol	**UJ LS**	**UJ LS**	**UJ HT, LS**	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	**UJ LS**
3,3'-Dichlorobenzidine	**UJ LL**	**UJ LL**	**UJ HT, LL**	**UJ LL, LM**	**UJ LL**	**UJ LL, LS**	**UJ LL, LS**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL, LM**
3-Nitroaniline	**UJ LL**	**UJ LL**	**UJ HT, LL**	**UJ LL**	**UJ LL**	**UJ LL, LS**	**UJ LL, LS**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**
4-Bromophenylphenyl ether	none	none	**UJ HT**	none	none	**UJ LS**	**UJ LS**	**UJ LC**	none	none	none	none
4-Chloro-3-methylphenol	**UJ LS**	**UJ LS**	**UJ HT, LS**	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	**UJ LS**
4-Chloroaniline	**UJ LL**	**UJ LL**	**UJ HT, LL**	**UJ LL, LM**	**UJ LL**	**UJ LL, LS**	**UJ LL, LS**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL, LM**
4-Chlorophenylphenyl ether	none	none	**UJ HT**	none	none	**UJ LS**	**UJ LS**	**UJ LC,LL**	none	none	none	none
4-METHYLPHENOL(P-CRESOL)	none	none	**UJ HT**	none	none	none	**UJ LS**	none	none	none	none	none
4-Nitroaniline	none	none	**UJ HT**	none	none	**UJ LS**	**UJ LS**	**UJ LL**	none	none	none	none
4-Nitrophenol	**UJ LL, LS**	**UJ LS**	**UJ HT, LL, LS**	none	**UJ LS**	**UJ LL, LS**	**UJ LS, LL**	**R BS**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL, LM, LS**
Acenaphthene	none	none	**J HT**	none	none	**UJ LS**	**UJ LS**	none	none	none	none	none
Acenaphthylene	none	none	**UJ HT**	none	none	**UJ LS**	**UJ LS**	none	none	none	none	none
Anthracene	none	none	**UJ HT**	none	none	**UJ LS**	**UJ LS**	none	none	none	none	none
Benzo(a)anthracene	none	none	**UJ HT**	none	none	**UJ LS**	**UJ LS**	none	none	none	none	none
Benzo(a)pyrene	none	none	**UJ HT**	none	none	**UJ LS**	**UJ LS**	none	none	none	none	none
Benzo(b)fluoranthene	none	none	**UJ HT**	none	none	**UJ LS**	**UJ LS**	none	none	none	none	none

TABLE 8
Data Qualifiers for SVOCs by EPA Method 8270C
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	034-01 (ARK-04-GW-15)	035-01 (ARK-04-GW-36)	042-01 (ARK-01-GW-15)	043-01 (ARK-01-GW-54)	044-01 (ARK-01-GW-31-5)	050-01 (ARK-05-GW-22)	051-01 (ARK-05-GW-41)	053-01 (ARK-06-SO-3-0)	057-01 (ARK-06-GW-80)	058-01 (ARK-06-GW-27)	058-02 (ARK-06-GW-27)	059-01 (ARK-06-GW-58)
Benzo(ghi)perylene	none	none	UJ HT	none	none	UJ LS	UJ LS	J LI	none	none	none	none
Benzo(k)fluoranthene	UJ BC	UJ BC	UJ HT, BC	UJ BC	UJ BC	UJ LS,BC	UJ LS, BC	UJ LC	UJ BC	UJ BC	UJ BC	UJ BC
Benzoic acid	R BS	UJ LL	UJ HT, LL	UJ LL	UJ LL	UJ LL, LS	UJ LL, LS	UJ LL, LC	UJ LL	UJ LL	UJ LL	UJ LL, LM
Benzyl alcohol	none	none	UJ HT	none	none	UJ LS	UJ LS	UJ LL	none	none	none	none
Bis(2-Chloroethoxy) methane	none	none	UJ HT	none	none	UJ LS	UJ LS	UJ LC, LL	none	none	none	none
Bis(2-Chloroethyl) ether	none	none	UJ HT	none	none	UJ LS	UJ LS	UJ LC,LL	none	none	none	none
Bis(2-Chloroisopropyl) ether	none	none	UJ HT	none	none	UJ LS	UJ LS	none	none	none	none	none
Bis(2-Ethylhexyl) pthalate	none	none	UJ HT	none	J DL	UJ MB, LS	J LS	J LC, LI	J DL	J DL	J DL	none
Butylbenzylphthalate	none	none	UJ HT	none	none	UJ LS	UJ LS	UJ LC, LL	none	none	none	none
Chrysene	none	none	UJ HT	none	none	UJ LS	UJ LS	none	none	none	none	none
Dibenzo(a,h)anthracene	none	none	UJ HT	none	none	UJ LS	UJ LS	none	none	none	none	none
Dibenzofuran	none	none	UJ HT	none	none	UJ LS	UJ LS	none	none	none	none	none
Diethylphthalate	none	none	J HT	none	none	UJ LS	UJ LS	UJ LC, LL	none	none	none	none
Dimethylphthalate	none	none	UJ HT	none	none	UJ LS	UJ LS	UJ LC, LL	none	none	none	none
Di-n-butylphthalate	none	none	UJ HT	none	none	UJ LS	UJ LS	UJ LL	none	none	none	none
Di-n-octyl phthalate	none	none	UJ HT	none	none	UJ LS	UJ LS	UJ LC	none	none	none	none
Fluoranthene	none	none	J HT	none	none	UJ LS	UJ LS	UJ LL	none	none	none	none
Fluorene	none	none	J HT	none	none	UJ LS	UJ LS	none	none	none	none	none
Hexachlorobenzene	UJ BC	UJ BC	UJ HT, BC	UJ BC	UJ BC	UJ LS, BC	UJ LS, BC	none	UJ BC	UJ BC	UJ BC	UJ BC
Hexachlorobutadiene	none	none	UJ HT	none	none	UJ LS	UJ LS	none	none	none	none	none
Hexachlorocyclopentadiene	R BS	none	UJ HT	none	none	UJ LS	UJ LS	UJ LL	none	none	none	none
Hexachloroethane	none	none	UJ HT	none	none	UJ LS	UJ LS	UJ LL	none	none	none	none
Indeno(1,2,3-cd)pyrene	none	none	UJ HT	none	none	UJ LS	UJ LS	none	none	none	none	none
Isophorone	none	none	UJ HT	none	none	UJ LS	UJ LS	UJ LL	none	none	none	none
Naphthalene	none	none	J HT	none	none	UJ LS	UJ LS	none	none	none	none	none
N-NITROSODIMETHYLAMINE	UJ LL, LC	UJ LL	UJ HT, LL	UJ LL	UJ LL	UJ LS, LL	UJ LS, LL	UJ LL	UJ LL	UJ LL	UJ LL	R MS
N-Nitrosodi-n-propyl amine	none	none	UJ HT	none	none	UJ LS	UJ LS	UJ LL	none	none	none	none
N-Nitrosodiphenylamine	none	none	UJ HT	none	none	UJ LS	UJ LS	none	none	none	none	none
Pentachlorophenol	UJ LS	UJ LS	UJ HT, LS	none	UJ LS	UJ LS	UJ LS	UJ LL	none	none	none	UJ LS
Phenanthrene	none	none	J HT	none	none	UJ LS	UJ LS	none	none	none	none	none
Phenol	UJ LL, LS	UJ LL, LS	UJ HT, LL, LS	UJ LL, LM	UJ LL, LS	UJ LL, LS	UJ LS, LL	none	UJ LL	UJ LL	UJ LL	UJ LL, LM, LS
Pyrene	none	none	J HT	none	none	UJ LS	UJ LS	J LI	none	none	none	none

TABLE 8
Data Qualifiers for SVOCs by EPA Method 8270C
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	065-01 (ARK-02-GW-80)	066-01 (ARK-02-GW-40)	067-01 (ARK-03-GW-80)	069-01 (ARK-03-SO-6-0)	071-01 (ARK-03-GW-26)	072-01 (ARK-03-GW-58)	073-01 (ARK-09-GW-97-5)	074-01 (ARK-06-GW-97-5)	075-01 (ARK-05-GW-67-5)	076-01 (ARK-03-GW-102-5)	077-01 (RP-08-SO-88)	078-01 (RP-08-SO-93)
1,2,4-Trichlorobenzene	none	none	none	none	none	none	none	none	none	none	none	none
1,2-Dichlorobenzene	none	none	none	**UJ LL**	**J DL**	none	**UJ LL**	**J LL**	**J LL**	**J LL**	none	none
1,3-Dichlorobenzene	none	none	none	none	none	none	**UJ LL**	**J LL**	**UJ LL**	**J LL**	none	none
1,4-Dichlorobenzene	none	none	none	none	none	none	**UJ LL**	**J LL**	**J LL**	**J LL**	none	none
2,4,5-Trichlorophenol	none	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	none	none	none
2,4,6-Trichlorophenol	none	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	none	none	none
2,4-Dichlorophenol	none	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	none	none	none
2,4-Dimethylphenol	none	none	**UJ LS**	**UJ LL**	**UJ LS**	none	none	none	none	none	none	none
2,4-Dinitrophenol	none	**UJ LC**	**UJ LC, LS**	**UJ LL, LS**	**UJ LC, LS**	none	none	none	none	none	none	none
2,4-Dinitrotoluene	none	none	none	none	none	none	none	none	none	none	none	none
2,6-Dichlorophenol	none	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	none	none	none
2,6-Dinitrotoluene	none	none	none	none	none	none	none	none	none	none	none	none
2-Chloronapthalene	none	none	none	none	none	none	none	none	none	none	none	none
2-Chlorophenol	none	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	none	none	none
2-Methyl-4,6-dinitrophenol	none	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	none	none	none
2-Methylnaphthalene	none	none	none	none	none	none	none	none	none	none	none	none
2-Methylphenol	none	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	none	none	none
2-Nitroaniline	none	none	none	none	none	none	none	none	none	none	none	none
2-Nitrophenol	none	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	none	none	none
3,3'-Dichlorobenzidine	none	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	none	none	none	none	none	**UJ LL**	**UJ LL**
3-Nitroaniline	none	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	none	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**
4-Bromophenylphenyl ether	none	none	none	**UJ LC**	none	none	**UJ LC**	**UJ LC**	**UJ LC**	**UJ LC**	none	none
4-Chloro-3-methylphenol	none	none	**UJ LS**	**UJ LS**	**UJ LS**	none	none	none	none	none	none	none
4-Chloroaniline	none	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	none	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**
4-Chlorophenylphenyl ether	none	none	none	**UJ LC,LL**	none	none	**UJ LC**	**UJ LC**	**UJ LC**	**UJ LC**	none	none
4-METHYLPHENOL(P-CRESOL)	none	none	none	none	none	none	none	none	**J DL**	none	**UJ BC**	**UJ BC**
4-Nitroaniline	none	none	none	**UJ LL**	none	none	none	none	none	none	none	none
4-Nitrophenol	none	**UJ LL**	**UJ LL, LS**	**R BS**	**UJ LL, LS**	none	none	none	none	none	none	none
Acenaphthene	none	none	none	none	none	none	none	none	none	none	none	none
Acenaphthylene	none	none	none	none	none	none	none	none	none	none	none	none
Anthracene	none	none	none	none	none	none	none	none	none	none	none	none
Benzo(a)anthracene	none	none	none	none	none	none	none	none	none	none	none	none
Benzo(a)pyrene	none	none	none	none	none	none	none	none	none	none	none	none
Benzo(b)fluoranthene	none	none	none	none	none	none	none	none	none	none	**UJ BC**	**UJ BC**

TABLE 8
Data Qualifiers for SVOCs by EPA Method 8270C
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	065-01 (ARK-02-GW-80)	066-01 (ARK-02-GW-40)	067-01 (ARK-03-GW-80)	069-01 (ARK-03-SO-6-0)	071-01 (ARK-03-GW-26)	072-01 (ARK-03-GW-58)	073-01 (ARK-09-GW-97-5)	074-01 (ARK-06-GW-97-5)	075-01 (ARK-05-GW-67-5)	076-01 (ARK-03-GW-102-5)	077-01 (RP-08-SO-88)	078-01 (RP-08-SO-93)
Benzo(ghi)perylene	none	none	none	none	none	none	none	none	none	none	none	none
Benzo(k)fluoranthene	**UJ BC**	**UJ BC**	**UJ BC**	none	**UJ BC**	**UJ BC**	**UJ LC**	**UJ LC**	**UJ LC**	**UJ LC**	**UJ BC**	**UJ BC**
Benzoic acid	none	none	**UJ LL**	**UJ LL**	**UJ LL**	none	**UJ LC, LL**	**UJ LC, LL**	**J LC, LL**	**J LC, LL**	**UJ LL**	**UJ LL**
Benzyl alcohol	none	none	none	**UJ LL**	none	none	none	none	none	none	none	none
Bis(2-Chloroethoxy) methane	none	none	none	**UJ LC, LL**	none	none	**UJ LC**	**UJ LC**	**UJ LC**	**UJ LC**	none	none
Bis(2-Chloroethyl) ether	none	none	none	**UJ LC,LL**	none	none	**UJ LC**	**UJ LC**	**UJ LC**	**UJ LC**	**UJ LL**	**UJ LL**
Bis(2-Chloroisopropyl) ether	none	none	none	**UJ LC**	none	none	none	none	none	none	none	none
Bis(2-Ethylhexyl) pthalate	none	none	**J DL**	**J LC**	none	none	none	none	**J DL**	none	**J DL**	none
Butylbenzylphthalate	none	none	none	**UJ LC, LL**	none	none	**UJ LC**	**UJ LC**	**UJ LC**	**UJ LC**	none	none
Chrysene	none	none	none	none	none	none	none	none	none	none	none	none
Dibenzo(a,h)anthracene	none	none	none	none	none	none	none	none	none	none	none	none
Dibenzofuran	none	none	none	none	none	none	none	none	none	none	**UJ BC**	**UJ BC**
Diethylphthalate	none	none	none	**UJ LC, LL**	none	none	**UJ LC**	**UJ LC**	**UJ LC**	**UJ LC**	none	none
Dimethylphthalate	none	none	none	**UJ LC, LL**	none	none	**UJ LC**	**UJ LC**	**UJ LC**	**UJ LC**	none	none
Di-n-butylphthalate	none	none	none	**UJ LL, LC**	none	none	none	none	none	none	none	none
Di-n-octyl phthalate	none	none	none	**UJ LC**	none	none	**UJ LC**	**UJ LC**	**UJ LC**	**UJ LC**	none	none
Fluoranthene	none	none	none	**J LL**	none	none	none	none	none	none	none	none
Fluorene	none	none	none	none	none	none	none	none	none	none	**UJ BC**	**UJ BC**
Hexachlorobenzene	**UJ BC**	**UJ BC**	**UJ BC**	none	**UJ BC**	**UJ BC**	none	none	none	none	none	none
Hexachlorobutadiene	none	none	none	none	none	none	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	none	none
Hexachlorocyclopentadiene	none	none	none	**UJ LL**	none	none	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**
Hexachloroethane	none	none	none	**UJ LL**	none	none	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ BC**	**UJ BC**
Indeno(1,2,3-cd)pyrene	none	none	none	none	none	none	none	none	none	none	none	none
Isophorone	none	none	none	**UJ LL**	none	none	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	none	none
Naphthalene	none	none	none	none	none	none	none	none	none	none	none	none
N-NITROSODIMETHYLAMINE	none	**UJ LL**	**UJ LL**	**UJ LL, LC**	**UJ LL**	none	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**
N-Nitrosodi-n-propyl amine	none	none	none	**UJ LL**	none	none	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ BC**	**UJ BC**
N-Nitrosodiphenylamine	none	none	none	none	none	none	none	none	none	none	**UJ LL**	**UJ LL**
Pentachlorophenol	none	none	**UJ LS**	**UJ LL, LS**	**UJ LS**	none	none	none	none	none	**UJ LL**	**UJ LL**
Phenanthrene	none	none	none	none	none	none	none	none	none	none	none	none
Phenol	none	UJ LL	**UJ LL, LS**	**UJ LS**	**UJ LL, LS**	none	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	none	none
Pyrene	none	none	none	**J DL**	none	none	none	none	none	none	**UJ BC**	**UJ BC**

Notes:
BC = High %RSD in initial calibration curve. Analytical results may be biased.
BS = Blank spike recovery less than 10%. Presence of analyte could not be determined.
CH = High CCV recovery. Analytical results may be biased high.
DL = Value between RL and IDL. Result should be considered estimated.
EPA = United States Environmental Protection Agency
HT = Holding exceeded. Analytical results maybe biased low.
LC = Continuing calibration recovery is less than 80%. Analytical results may be biased low.
LI = Low internal standard recovery. Analytical results may be biased low.
LL = Laboratory control sample recovery for this analyte is lower than the QAPP-specified minimum recovery of 70%.
LM = Matrix spike recovery for this analyte is lower than the QAPP-specified minimum recovery.
LS = Low surrogate recovery. Analytical results may be biased low.
MB = Method blank contamination at a concentration more than 20% of the concentration detected in the sample.
MS = Matrix spike recovery is less than 10%. Presence of analyte could not be determined.
SVOC = Semivolatile organic compounds

TABLE 9
Data Qualifiers for OCPs by EPA Method 8081A
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	006-01 (ARK-07-GW-45)	007-01 (ARK-07-GW-14)	008-01 (ARK-07-GW-26)
4,4'-DDD	**J LS**	**UJ LS**	**J LS**
4,4'-DDE	**J LS**	**UJ LS**	**J LS**
4,4'-DDT	**J LS**	**UJ LS**	**J LS**
Aldrin	**UJ LS**	**UJ LS**	**UJ LS**
alpha-BHC	**UJ LS**	**UJ LS**	**UJ LS**
alpha-Chlordane	**UJ LS**	**UJ LS**	**UJ LS**
beta-BHC	**UJ LS**	**UJ LS**	**UJ LS**
CHLORDANE	**UJ LS**	**UJ LS**	**UJ LS**
delta-BHC	**UJ LS**	**UJ LS**	**UJ LS**
Dieldrin	**UJ LS**	**UJ LS**	**UJ LS**
Endosulfan I	**UJ LS**	**UJ LS**	**UJ LS**
Endosulfan II	**UJ LS**	**UJ LS**	**UJ LS**
Endosulfan sulfate	**UJ LS**	**UJ LS**	**UJ LS**
Endrin	**UJ LS**	**UJ LS**	**UJ LS**
Endrin aldehyde	**UJ LS**	**UJ LS**	**UJ LS**
Endrin Ketone	**UJ LS**	**UJ LS**	**UJ LS**
gamma-BHC (Lindane)	**UJ LS**	**UJ LS**	**UJ LS**
gamma-Chlordane	**UJ LS**	**UJ LS**	**UJ LS**
Heptachlor	**UJ LS**	**UJ LS**	**UJ LS**
Heptachlor epoxide	**UJ LS**	**UJ LS**	**UJ LS**
Methoxychlor	**UJ LS**	**UJ LS**	**UJ LS**
TOXAPHENE	**UJ LS**	**UJ LS**	**UJ LS**

Analyte	016-01 (ARK-08-GW-15)	023-01 (ARK-09-GW-16)	025-01 (ARK-09-GW-35)
4,4'-DDD	**UJ LS**	none	none
4,4'-DDE	**UJ LS**	none	none
4,4'-DDT	**UJ LS**	none	none
Aldrin	**UJ LS**	none	none
alpha-BHC	**UJ LS**	none	none
alpha-Chlordane	**UJ LS**	none	none
beta-BHC	**UJ LS**	none	none
CHLORDANE	**UJ LS**	none	none
delta-BHC	**UJ LS**	none	none
Dieldrin	**UJ LS**	none	none
Endosulfan I	**UJ LS**	none	none
Endosulfan II	**UJ LS**	none	none
Endosulfan sulfate	**UJ LS**	none	none
Endrin	**UJ LS**	none	none
Endrin aldehyde	**UJ LS**	none	none
Endrin Ketone	**UJ LS**	none	none
gamma-BHC (Lindane)	**UJ LS**	none	none
gamma-Chlordane	**UJ LS**	none	none
Heptachlor	**UJ LS**	none	none
Heptachlor epoxide	**UJ LS**	none	none
Methoxychlor	**UJ LS**	none	none
TOXAPHENE	**UJ LS**	none	none

Analyte	034-01 (ARK-04-GW-15)	035-01 (ARK-04-GW-36)	042-01 (ARK-01-GW-15)
4,4'-DDD	**UJ LS**	**UJ LS**	**UJ HT, LS**
4,4'-DDE	**UJ LS**	**UJ LS**	**UJ HT, LS**
4,4'-DDT	**UJ LS**	**UJ LS**	**UJ HT, LS**
Aldrin	**UJ LS**	**UJ LS**	**UJ HT, LS**
alpha-BHC	**UJ LS**	**UJ LS**	**UJ HT, LS**
alpha-Chlordane	**UJ LS**	**UJ LS**	**UJ HT, LS**
beta-BHC	**UJ LS**	**UJ LS**	**UJ HT, LS**
CHLORDANE	**UJ LS**	**UJ LS**	**UJ HT, LS**
delta-BHC	**UJ LS**	**UJ LS**	**UJ HT, LS**
Dieldrin	**UJ LS**	**UJ LS**	**UJ HT, LS**
Endosulfan I	**UJ LS**	**UJ LS**	**UJ HT, LS**
Endosulfan II	**UJ LS**	**UJ LS**	**UJ HT, LS**
Endosulfan sulfate	**UJ LS**	**UJ LS**	**UJ HT, LS**
Endrin	**UJ LS**	**UJ LS**	**UJ HT, LS**
Endrin aldehyde	**UJ LS**	**UJ LS**	**UJ HT, LS**
Endrin Ketone	**UJ LS**	**UJ LS**	**UJ HT, LS**
gamma-BHC (Lindane)	**UJ LS**	**UJ LS**	**UJ HT, LS**
gamma-Chlordane	**UJ LS**	**UJ LS**	**UJ HT, LS**
Heptachlor	**UJ LS**	**UJ LS**	**UJ HT, LS**
Heptachlor epoxide	**UJ LS**	**UJ LS**	**UJ HT, LS**
Methoxychlor	**UJ LS**	**UJ LS**	**UJ HT, LS**
TOXAPHENE	**UJ LS**	**UJ LS**	**UJ HT, LS**

TABLE 9
Data Qualifiers for OCPs by EPA Method 8081A
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	011-01 (ARK-08-SO-13-0)	015-01 (ARK-08-GW-43-5)	015-02 (ARK-08-GW-43-5)
4,4'-DDD	none	**UJ LS**	**UJ LS**
4,4'-DDE	none	**UJ LS**	**UJ LS**
4,4'-DDT	none	**UJ LS**	**UJ LS**
Aldrin	none	**UJ LS**	**UJ LS**
alpha-BHC	none	**UJ LS**	**UJ LS**
alpha-Chlordane	none	**UJ LS**	**UJ LS**
beta-BHC	none	**UJ LS**	**UJ LS**
CHLORDANE	none	**UJ LS**	**UJ LS**
delta-BHC	none	**UJ LS**	**UJ LS**
Dieldrin	none	**UJ LS**	**UJ LS**
Endosulfan I	none	**UJ LS**	**UJ LS**
Endosulfan II	none	**UJ LS**	**UJ LS**
Endosulfan sulfate	none	**UJ LS**	**UJ LS**
Endrin	none	**UJ LS**	**UJ LS**
Endrin aldehyde	**UJ LM**	**UJ LS**	**UJ LS**
Endrin Ketone	none	**UJ LS**	**UJ LS**
gamma-BHC (Lindane)	none	**UJ LS**	**UJ LS**
gamma-Chlordane	none	**UJ LS**	**UJ LS**
Heptachlor	none	**UJ LS**	**UJ LS**
Heptachlor epoxide	none	**UJ LS**	**UJ LS**
Methoxychlor	none	**UJ LS**	**UJ LS**
TOXAPHENE	none	**UJ LS**	**UJ LS**

Analyte	026-01 (ARK-09-GW-56)	029-01 (ARK-04-SO-6-0)	033-01 (ARK-04-GW-47)
4,4'-DDD	none	none	**UJ LS**
4,4'-DDE	none	**J HL**	**UJ LS**
4,4'-DDT	none	none	**UJ LS**
Aldrin	none	none	**UJ LS**
alpha-BHC	none	none	**UJ LS**
alpha-Chlordane	none	none	**UJ LS**
beta-BHC	none	none	**UJ LS**
CHLORDANE	none	none	**UJ LS**
delta-BHC	none	none	**UJ LS**
Dieldrin	none	none	**UJ LS**
Endosulfan I	none	none	**UJ LS**
Endosulfan II	none	none	**UJ LS**
Endosulfan sulfate	none	none	**UJ LS**
Endrin	none	none	**UJ LS**
Endrin aldehyde	none	none	**UJ LS**
Endrin Ketone	none	none	**UJ LS**
gamma-BHC (Lindane)	none	none	**UJ LS**
gamma-Chlordane	none	none	**UJ LS**
Heptachlor	none	none	**UJ LS**
Heptachlor epoxide	none	none	**UJ LS**
Methoxychlor	none	none	**UJ LS**
TOXAPHENE	none	none	**UJ LS**

Analyte	043-01 (ARK-01-GW-54)	044-01 (ARK-01-GW-31-5)	050-01 (ARK-05-GW-22)
4,4'-DDD	none	none	**UJ LS**
4,4'-DDE	none	none	**UJ LS**
4,4'-DDT	none	none	**UJ LS**
Aldrin	none	none	**UJ LS**
alpha-BHC	none	none	**UJ LS**
alpha-Chlordane	none	none	**UJ LS**
beta-BHC	none	none	**UJ LS**
CHLORDANE	none	none	**UJ LS**
delta-BHC	none	none	**UJ LS**
Dieldrin	none	none	**UJ LS**
Endosulfan I	none	none	**UJ LS**
Endosulfan II	none	none	**UJ LS**
Endosulfan sulfate	none	none	**UJ LS**
Endrin	none	none	**UJ LS**
Endrin aldehyde	none	none	**UJ LS**
Endrin Ketone	none	none	**UJ LS**
gamma-BHC (Lindane)	none	none	**UJ LS**
gamma-Chlordane	none	none	**UJ LS**
Heptachlor	none	none	**UJ LS**
Heptachlor epoxide	none	none	**UJ LS**
Methoxychlor	none	none	**UJ LS**
TOXAPHENE	none	none	**UJ LS**

TABLE 9
Data Qualifiers for OCPs by EPA Method 8081A
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	051-01 (ARK-05-GW-41)	053-01 (ARK-06-SO-3-0)	057-01 (ARK-06-GW-80)
4,4'-DDD	**UJ LS**	**UJ LS**	**UJ LS**
4,4'-DDE	**UJ LS**	**UJ LS**	**UJ LS**
4,4'-DDT	**UJ LS**	**UJ LS**	**UJ LS**
Aldrin	**UJ LS**	**UJ LS**	**UJ LS**
alpha-BHC	**UJ LS**	**UJ LS**	**UJ LS**
alpha-Chlordane	**UJ LS**	**UJ LS**	**UJ LS**
beta-BHC	**UJ LS**	**UJ LS**	**UJ LS**
CHLORDANE	**UJ LS**	**UJ LS**	**UJ LS**
delta-BHC	**UJ LS**	**UJ LS**	**UJ LS**
Dieldrin	**UJ LS**	**UJ LS**	**UJ LS**
Endosulfan I	**UJ LS**	**UJ LS**	**UJ LS**
Endosulfan II	**UJ LS**	**UJ LS**	**UJ LS**
Endosulfan sulfate	**UJ LS**	**UJ LS**	**UJ LS**
Endrin	**UJ LS**	**J LS**	**UJ LS**
Endrin aldehyde	**UJ LS**	**UJ LS**	**UJ LS**
Endrin Ketone	**UJ LS**	**UJ LS, LL**	**UJ LS**
gamma-BHC (Lindane)	**UJ LS**	**UJ LS**	**UJ LS**
gamma-Chlordane	**UJ LS**	**UJ LS**	**UJ LS**
Heptachlor	**UJ LS**	**UJ LS**	**UJ LS**
Heptachlor epoxide	**UJ LS**	**UJ LS**	**UJ LS**
Methoxychlor	**UJ LS**	**UJ LS**	**UJ LS**
TOXAPHENE	**UJ LS**	**UJ LS**	**UJ LS**

Analyte	065-01 (ARK-02-GW-80)	066-01 (ARK-02-GW-40)	067-01 (ARK-03-GW-80)
Endrin Ketone	none	none	none

Analyte	073-01 (ARK-09-GW-97-5)	074-01 (ARK-06-GW-97-5)	075-01 (ARK-05-GW-67-5)
4,4'-DDD	none	none	**UJ LS**
4,4'-DDE	none	none	**UJ LS**
4,4'-DDT	none	none	**UJ LS**
Aldrin	none	none	**UJ LS**
alpha-BHC	none	none	**UJ LS**
alpha-Chlordane	none	none	**UJ LS**
beta-BHC	none	none	**UJ LS**
CHLORDANE	none	none	**UJ LS**
delta-BHC	none	none	**UJ LS**
Dieldrin	none	none	**UJ LS**
Endosulfan I	none	none	**UJ LS**
Endosulfan II	none	none	**UJ LS**
Endosulfan sulfate	none	none	**UJ LS**
Endrin	none	none	**UJ LS**
Endrin aldehyde	none	none	**UJ LS**
Endrin Ketone	none	none	**UJ LS**
gamma-BHC (Lindane)	none	none	**UJ LS**
gamma-Chlordane	none	none	**UJ LS**
Heptachlor	none	none	**UJ LS**
Heptachlor epoxide	none	none	**UJ LS**
Methoxychlor	none	none	**UJ LS**
TOXAPHENE	none	none	**UJ LS**

TABLE 9
Data Qualifiers for OCPs by EPA Method 8081A
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	058-01 (ARK-06-GW-27)	058-02 (ARK-06-GW-27)	059-01 (ARK-06-GW-58)
4,4'-DDD	none	none	none
4,4'-DDE	none	none	none
4,4'-DDT	none	none	none
Aldrin	none	none	none
alpha-BHC	none	none	none
alpha-Chlordane	none	none	none
beta-BHC	none	none	none
CHLORDANE	none	none	none
delta-BHC	none	none	none
Dieldrin	none	none	none
Endosulfan I	none	none	none
Endosulfan II	none	none	none
Endosulfan sulfate	none	none	none
Endrin	none	none	none
Endrin aldehyde	none	none	none
Endrin Ketone	none	none	none
gamma-BHC (Lindane)	none	none	none
gamma-Chlordane	none	none	none
Heptachlor	none	none	none
Heptachlor epoxide	none	none	none
Methoxychlor	none	none	none
TOXAPHENE	none	none	none

Analyte	069-01 (ARK-03-SO-6-0)	071-01 (ARK-03-GW-26)	072-01 (ARK-03-GW-58)
Endrin Ketone	**UJ LL**	none	none

Analyte	076-01 (ARK-03-GW-102-5)	077-01 (RP-08-SO-88)	078-01 (RP-08-SO-93)
4,4'-DDD	none	none	none
4,4'-DDE	none	none	none
4,4'-DDT	none	none	none
Aldrin	none	none	none
alpha-BHC	none	none	none
alpha-Chlordane	none	none	none
beta-BHC	none	none	none
CHLORDANE	none	none	none
delta-BHC	none	none	none
Dieldrin	none	none	none
Endosulfan I	none	none	none
Endosulfan II	none	none	none
Endosulfan sulfate	none	none	none
Endrin	none	none	none
Endrin aldehyde	none	none	none
Endrin Ketone	none	none	none
gamma-BHC (Lindane)	none	none	none
gamma-Chlordane	**N SC**	none	none
Heptachlor	none	none	none
Heptachlor epoxide	none	none	none
Methoxychlor	none	none	none
TOXAPHENE	none	none	none

Notes:
EPA = United States Environmental Protection Agency
HL = Laboratory control sample recovery for this analyte is higher than the QAPP-specified maximum recovery limit.
HT = Holding exceeded. Analytical results maybe biased low.
LL = Laboratory control sample recovery for this analyte is lower than the QAPP-specified minimum recovery limit.
LM = Matrix spike recovery for this analyte is lower than the QAPP-specified minimum recovery.
LS = Low surrogate recovery. Analytical results may be biased low.
OCPs = organochlorine pesticides
SC = Greater than 40% RPD between analytical results from primary and secondary analytical columns.

TABLE 10
Data Qualifiers for PCBs by EPA Method 8082
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	029-01 (ARK-04-SO-6-0)	053-01 (ARK-06-SO-3-0)
AROCHLOR1016	none	**UJ LS**
AROCHLOR1221	none	**UJ LS**
AROCHLOR1232	none	**UJ LS**
AROCHLOR1242	none	**UJ LS**
AROCHLOR1248	none	**UJ LS**
AROCHLOR1254	none	**UJ LS**
AROCHLOR1260	none	**UJ LS**

Notes:
EPA = United States Environmental Protection Agency
LS = Low surrogate recovery. Analytical results may be biased low.
PCB = Polychlorinated Biphenyl

TABLE 11
Data Qualifiers for Chlorinated Herbicides by EPA Method 8151A
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	006-01 (ARK-07-GW-45)	007-01 (ARK-07-GW-14)	008-01 (ARK-07-GW-26)	011-01 (ARK-08-SO-13-0)	015-01 (ARK-08-GW-43-5)	015-02 (ARK-08-GW-43-5)	016-01 (ARK-08-GW-15)
Dalapon	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**
Dinoseb	none	none	none	**UJ LL**	none	none	none

Analyte	023-01 (ARK-09-GW-16)	025-01 (ARK-09-GW-35)	026-01 (ARK-09-GW-56)	029-01 (ARK-04-SO-6-0)	033-01 (ARK-04-GW-47)	034-01 (ARK-04-GW-15)	035-01 (ARK-04-GW-36)
Dalapon	**UJ LL**	none	none	**UJ LL**	none	none	none
Dinoseb	none	none	none	**UJ LL**	none	none	none

Analyte	042-01 (ARK-01-GW-15)	043-01 (ARK-01-GW-54)	044-01 (ARK-01-GW-31-5)	050-01 (ARK-05-GW-22)	051-01 (ARK-05-GW-41)	053-01 (ARK-06-SO-3-0)	057-01 (ARK-06-GW-80)
2,4,5-T	**UJ HT**	none	none	**UJ LS**	none	none	none
2,4,5-TP (Silvex)	**UJ HT**	none	none	**UJ LS**	none	none	none
2,4-D	**UJ HT**	none	none	**UJ LS**	none	none	none
2,4-DB	**UJ HT**	none	none	**UJ LS**	none	none	none
Bromoxynil	**UJ HT**	none	none	**UJ LS**	none	none	none
Dalapon	**UJ HT, LL**	none	none	**UJ LS, LL**	**UJ LL**	**UJ LL**	**UJ LL**
Dicamba	**UJ HT**	none	none	**UJ LS**	none	none	none
Dichlorprop	**UJ HT**	none	none	**UJ LS**	none	none	none
Dinoseb	**UJ HT**	none	none	**UJ LS**	none	**UJ LL**	none
MCPA	**UJ HT**	none	none	**UJ LS**	none	none	none
MCPP	**UJ HT**	none	none	**UJ LS**	none	none	none

TABLE 11
Data Qualifiers for Chlorinated Herbicides by EPA Method 8151A
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	058-01 (ARK-06-GW-27)	058-02 (ARK-06-GW-27)	059-01 (ARK-06-GW-58)	065-01 (ARK-02-GW-80)	066-01 (ARK-02-GW-40)	067-01 (ARK-03-GW-80)	069-01 (ARK-03-SO-6-0)
Bromoxynil	none	none	**UJ LM**	none	none	none	none
Dalapon	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**
Dinoseb	none	none	**UJ LM**	none	**UJ LL**	**UJ LL**	**UJ LL**

Analyte	071-01 (ARK-03-GW-26)	072-01 (ARK-03-GW-58)	073-01 (ARK-09-GW-97-5)	074-01 (ARK-06-GW-97-5)	075-01 (ARK-05-GW-67-5)	076-01 (ARK-03-GW-102-5)
Dalapon	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**	**UJ LL**
Dinoseb	**UJ LL**	**UJ LL**	none	none	none	none

Analyte	077-01 (RP-08-SO-88)	078-01 (RP-08-SO-93)
2,4,5-T	**UJ LS, LM**	**UJ LS**
2,4,5-TP (Silvex)	**UJ LS**	**UJ LS**
2,4-D	**UJ LS, LM**	**UJ LS**
2,4-DB	**UJ LS, LM**	**UJ LS**
Bromoxynil	**UJ LS**	**UJ LS**
Dalapon	**UJ LL, LS, LM**	**UJ LL, LS**
Dicamba	**UJ LS, LM**	**UJ LS**
Dichlorprop	**UJ LS**	**UJ LS**
Dinoseb	**UJ LL, LS, LM**	**UJ LL, LS**
MCPA	**UJ LS, LM**	**UJ LS**
MCPP	**UJ LS, LM**	**UJ LS**

Notes:
EPA = United States Environmental Protection Agency
HT = Holding exceeded. Analytical results maybe biased low.
LL = Laboratory control sample recovery for this analyte is lower than the QAPP-specified minimum recovery of 70%.
LM = Matrix spike recovery for this analyte is lower than the QAPP-specified minimum recovery.
LS = Low surrogate recovery. Analytical results may be biased low.

TABLE 12
Data Qualifiers for Semivolatile Petroleum Products by DEQ/Ecology Method NWTPH-Dx
Stage I Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland

Analyte	006-01 (ARK-07-GW-45)	007-01 (ARK-07-GW-14)	011-01 (ARK-08-SO-13-0)	015-01 (ARK-08-GW-43-5)	016-01 (ARK-08-GW-15)	029-01 (ARK-04-SO-6-0)
Diesel Range Organics	none	none	none	none	**UJ LS**	none
Residual Range Organics	none	none	none	none	**UJ LS**	none

Analyte	035-01 (ARK-04-GW-36)	042-01 (ARK-01-GW-15)	043-01 (ARK-01-GW-54)	044-01 (ARK-01-GW-31-5)	050-01 (ARK-05-GW-22)	051-01 (ARK-05-GW-41)
Diesel Range Organics	**J NP**	none	**UJ NP**	**J NP**	none	**UJ LS**
Residual Range Organics	**J NP**	none	**UJ NP**	**J NP**	none	**UJ LS**

Analyte	053-01 (ARK-06-SO-3-0)	057-01 (ARK-06-GW-80)	058-01 (ARK-06-GW-27)	059-01 (ARK-06-GW-58)	065-01 (ARK-02-GW-80)	066-01 (ARK-02-GW-40)
Diesel Range Organics	none	none	none	**UJ HT**	**UJ HT**	**J HT**
Residual Range Organics	none	none	none	**UJ HT**	**UJ HT**	**UJ HT**

Analyte	067-01 (ARK-03-GW-80)	069-01 (ARK-03-SO-6-0)	071-01 (ARK-03-GW-26)	072-01 (ARK-03-GW-58)	073-01 (ARK-09-GW-97-5)	074-01 (ARK-06-GW-97-5)
Diesel Range Organics	**UJ HT**	none	**UJ NP**	**UJ HT, NP**	none	none
Residual Range Organics	**UJ HT**	none	**UJ NP**	**UJ HT, NP**	none	none

Analyte	075-01 (ARK-05-GW-67-5)	076-01 (ARK-03-GW-102-5)	077-01 (RP-08-SO-88)	078-01 (RP-08-SO-93)
Diesel Range Organics	none	**R HT**	none	none
Residual Range Organics	none	**R HT**	none	none

Notes:
DEQ = Oregon Department of Environmental Quality
Ecology = Washington Department of Ecology
EPA = United States Environmental Protection Agency
HT = Holding grossly exceeded. Presence of target analytes could not be determined.
LS = Low surrogate recovery. Analytical results may be biased low.
NP = Sample arrived at the laboratory unpreserved.
NWTPH-Dx = Northwest Total Petroleum Hydrocarbons - Diesel

TABLE 13
Interlaboratory Split Samples Submitted to STL and CAS
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte Class	Analyte	Primary Result (STL)	Split Result (CAS)	RPD
Sample ARK-08-GW-15 (016-01 and 016-05)				
General Chemistry	Ammonia-Nitrogen	0.22	0.06	114%
	Chloride	66.5	53.3	22%
Total Metals	Total Aluminum	45700	28800	45%
	Total Arsenic	35.4	25.5	33%
	Total Cadmium	<0.40	0.28	NC
	Total Calcium	2810	2450	14%
	Total Chromium	338	376	11%
	Total Copper	136	131	4%
	Total Iron	102000	83100	20%
	Total Lead	27.3	27.6	1%
	Total Magnesium	7190	5640	24%
	Total Manganese	1310	1140	14%
	Total Mercury	0.94	0.93	1%
	Total Nickel	59.7	58.6	2%
	Total Potassium	7770	7070	9%
	Total Sodium	240000	243000	1%
	Total Vanadium	222	200	10%
	Total Zinc	118	121	3%
Dissolved Metals	Dissolved Aluminum	5000	3120	46%
	Dissolved Arsenic	9.0	9.7	7%
	Dissolved Cadmium	<0.40	0.17	NC
	Dissolved Calcium	920	718	25%
	Dissolved Chromium	163	144	12%
	Dissolved Copper	66.9	59.6	12%
	Dissolved Iron	13700	9320	38%
	Dissolved Lead	3.5	4.45	24%
	Dissolved Magnesium	925	603	42%
	Dissolved Manganese	197	151	26%
	Dissolved Mercury	0.27	<0.80	NC
	Dissolved Nickel	24.1	23.4	3%
	Dissolved Potassium	4690	4320	8%
	Dissolved Sodium	247000	230000	7%
	Dissolved Vanadium	42.8	35.7	18%
	Dissolved Zinc	28.9	25.5	13%
VOCs	Trans-1,2-Dichloroethene	0.35	<0.50	NC
	Cis-1,2-Dichloroethene	0.71	<0.50	NC
	Trichloroethene	3.9	<0.50	NC
	Tetrachloroethene	4.1	<0.50	NC
Pesticides	4,4'-DDT	<0.10	0.014	NC

TABLE 13
Interlaboratory Split Samples Submitted to STL and CAS
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte Class	Analyte	Primary Result (STL)	Split Result (CAS)	RPD
Sample ARK-03-GW-58 (071-01 and 071-05)				
General Chemistry	Ammonia-Nitrogen	4.3	3.82	12%
	Chloride	19.4	21.6	11%
Total Metals	Total Aluminum	1420	1100	25%
	Total Arsenic	<5.9	6.2	NC
	Total Cadmium	<0.30	1.26	NC
	Total Calcium	16100	16800	4%
	Total Chromium	2.6	2.4	8%
	Total Copper	7.1	2.9	84%
	Total Iron	9230	8480	8%
	Total Lead	<2.5	0.53	NC
	Total Magnesium	4110	3980	3%
	Total Manganese	714	729	2%
	Total Nickel	3.7	5.2	34%
	Total Potassium	3240	2710	18%
	Total Sodium	65500	65400	0%
	Total Vanadium	7.9	5.7	32%
	Total Zinc	12.4	4.8	88%
Dissolved Metals	Dissolved Aluminum	51.4	17.0	101%
	Dissolved Arsenic	<5.9	5.3	NC
	Dissolved Cadmium	<0.30	1.17	NC
	Dissolved Calcium	15600	15600	0%
	Dissolved Chromium	0.99	1.4	34%
	Dissolved Copper	<2.4	0.7	NC
	Dissolved Iron	6190	5770	7%
	Dissolved Lead	<2.5	0.05	NC
	Dissolved Magnesium	3730	3630	3%
	Dissolved Manganese	678	673	1%
	Dissolved Nickel	<1.9	4.0	NC
	Dissolved Potassium	3740	3010	22%
	Dissolved Sodium	68800	65500	5%
	Dissolved Vanadium	2.9	3.2	10%
	Dissolved Zinc	4.9	1.0	132%
VOCs	Chlorobenzene	0.45	0.62	32%
	1,2-Dichlorobenzene	1.3	1.3	0%
SVOCs	1,2-Dichlorobenzene	1.1	<11	NC

Notes:
RPD = Relative Percent Difference
NC = Not Calculable
NR = Not Reported
CAS = Columbia Analytical Services, Inc.
STL = Severn Trent Laboratories, Inc.
SVOCs = semivolatile organic compounds
VOCs = volatile organic compounds

TABLE 14
Performance Evaluation Sample Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte	Certified Value	Reported Concentration	Acceptance Limits	%Recovery
Pesticides				
Aldrin	2.18	2	0.998 - 2.74	92%
gamma-Chlordane	4.54	4.2	2.53 - 5.67	93%
alpha-Chlordane	5.92	5.3	3.3 - 7.53	90%
4,4'-DDD	3.84	3.9	2.13 - 5.09	102%
4,4'-DDE	3.69	3.3	2.04 - 4.62	89%
4,4'-DDT	2.01	1.7	1.05 - 2.72	85%
Dieldrin	4.91	4.9	2.86 - 6.29	100%
Heptachlor	3.69	3.1	1.64 - 4.79	84%
Heptachlor Epoxide	1.33	1.3	0.803 - 1.75	98%
alpha-BHC	12	11	6.49 - 15.3	92%
beta-BHC	9.51	8.2	5.3 - 12	86%
delta-BHC	11.4	9.9	6 - 14.5	87%
Endosulfan sulfate	7.01	7	3.81 - 9.22	100%
Endrin	3.73	3.6	2.04 - 5	97%
Endrin aldehyde	12	11	6.12 - 16.3	92%
Endrin Ketone	5.42	5.5	2.98 - 7.06	101%
gamma-BHC (Lindane)	4.24	4	2.29 - 5.26	94%
Methoxychlor	12.8	12	6.45 - 17.5	94%
Chlorinated Herbicides				
2,4-D	1.13	1.3J	0.244 - 1.57	115%
2,4,5-T	4.76	4.5	1.58 - 6.18	95%
2,4,5-TP (Silvex)	8.77	7.9	3.49 - 11.4	90%
Dicamba	8.31	8.3	3.07 - 11.4	100%

TABLE 14
Performance Evaluation Sample Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte	Certified Value	Reported Concentration	Acceptance Limits		%Recovery
Semivolatile Organic Compounds					
Acenaphthene	67.2	57	31.4	74.7	85%
Acenaphthylene	18.3	17	8.1	21.6	93%
Anthracene	93.6	50	49.2	108	53%
Benzo(a)pyrene	53.1	27	24.4	64.3	51%
Benzo(b)fluoranthene	40.8	24	21.2	49.6	59%
Benzo(k)fluoranthene	66.6	33	33.5	84.1	**50%**
Benzo(ghi)perylene	61.8	24	31.4	75.6	**39%**
Bis(2-Chloroethyl)Ether	63.4	59	23.2	68.4	93%
Bis(2-Chloroethoxy)methane	28.8	31	13.2	32.1	108%
Bis(2-Ethylhexyl)phthalate	117	220	55.8	147	**188%**
4-Bromophenyl-phenylether	59.3	43	29.7	70.3	73%
Butylbenzylphthalate	141	140	58.6	173	99%
2-Chlorophenol	88.4	73	33	99.7	83%
2-Chloronaphthalene	134	120	54.6	146	90%
2,2-oxybis(1-Chloropropane)	-	110	-	- -	**False Positive**
4-Chloro-3-methylphenol	192	210	90.7	221	109%
4-Chlorophenyl-phenylether	146	130	65.9	166	89%
Dibenzofuran	49.3	43	24	55	87%
1,2-Dichlorobenzene	81.7	61	19.1	87.4	75%
1,3-Dichlorobenzene	65.3	53	10.1	69.1	81%
1,4-Dichlorobenzene	124	110	18.2	130	89%
2,4-Dichlorophenol	158	150	69.4	180	95%
2,6-Dichlorophenol	98.6	110	44.1	117	112%
2,4-Dimethylphenol	78.6	120	28.8	90.7	**153%**
Diethylphthalate	124	130	42	152	105%
Dimethylphthalate	169	160	20.9	216	95%
Di-n-butylphthalate	97.6	96	46.9	117	98%
2,4-Dinitrophenol	153	69	27.5	181	45%
2,4-Dinitrotoluene	182	180	89.6	206	99%
2,6-Dinitrotoluene	139	130	74.4	157	94%
4,6-Dinitro-2-methylphenol	128	97	52.3	161	76%
Fluoranthene	77.2	53	42.00	91.3	69%
Fluorene	61.6	48	30.7	69.9	78%
Hexachlorobutadiene	56.9	40	2.4	64.9	70%
Hexachloroethane	96.8	88	2.4	107	91%
Indeno(1,2,3-cd)pyrene	57.8	17	24.1	68.6	**29%**
Isophorone	74.7	80	34.2	87.1	107%
2-Methylphenol	73.2	55	24.4	79.4	75%
4-Methylphenol	124	110	31.4	139	89%
2-Methylnaphthalene	113	120	38.6	127	106%
Naphthalene	142	130	49.90	154	92%
N-Nitrosodimethylamine	160	110	6.96	177	69%
N-Nitrososdi-n-propylamine	123	140	52.20	145	114%
2-Ntrophenol	98.7	77	40.60	113	78%
4-Nitrophenol	137	57	10.00	155	42%
Pentachlorophenol	128	100	51.90	155	78%
Phenanthrene	35.4	31.0	19.6	40.9	88%
Phenol	133	51.0	10	137	38%
Pyrene	34.4	24.0	18.2	41.5	70%
1,2,4-Trichlorobenzene	114	98.0	28.7	123	86%
2,4,6-Trichlorophenol	64.9	61.0	29.8	74	94%
2,4,5-Trichlorophenol	89.6	100.0	40.5	105	112%

TABLE 14
Performance Evaluation Sample Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte	Certified Value	Reported Concentration	Acceptance Limits	%Recovery
Volatile Organic Compounds				
Bromomethane	20.7	24	7.13 - 30.1	116%
Benzene	46.8	49	35.7 - 56.4	105%
Bromodichloromethane	10	11	7.88 - 12.8	110%
Bromoform	61.3	57	44.5 - 79.3	93%
Carbon Tetrachloride	32.5	33	20.9 - 40.6	102%
Chlorobenzene	14.7	14	11.5 - 17.6	95%
Chloroform	27	29	20.6 - 33.4	107%
Dibromochloromethane	27.9	27	21.2 - 34.8	97%
1,2-Dichlorobenzene	41.5	41	31.6 - 50.8	99%
1,3-Dichlorobenzene	19.7	19	14.4 - 23.8	96%
1,4-Dichlorobenzene	20.3	20	15.3 - 24.9	99%
1,1-Dichloroethane	137	140	102 - 170	102%
1,2-Dichloroethane	16.6	19	12.9 - 20.7	114%
cis-1,2-Dichloroethene	63	67	47.8 - 77.9	106%
1,2-Dichloropropane	86.7	92	65.6 - 106	106%
cis-1,3-Dichloropropene	15.9	15	12.0 - 19.7	94%
trans-1,3-Dichloropropene	28	28	20.9 - 35.4	100%
Ethylbenzene	25.2	26	18.6 - 30.8	103%
2-Hexanone	63.6	68	40.2 - 84.8	107%
4-Methyl-2-pentanone	77.2	87	47.9 - 103	113%
Methylene Chloride	27.6	28	19 - 35.2	101%
Methyl Iodide	-	1.7	- - -	**False Positive**
Styrene	61.9	57	48.3 - 75.5	92%
Tetrachloroethene	54.5	42	35.3 - 65.3	77%
1,1,2,2-Tetrachloroethane	91.4	100	66.6 - 120	109%
Toluene	8.96	9.1	6.81 - 10.8	102%
1,1,1-Trichloroethane	36.8	38	26.1 - 44.8	103%
Trichloroethene	41.9	44	30 - 51.1	105%
o-Xylene	62.4	61	44.2 - 77.2	98%
m,p-Xylene	55.1	56	39.1 - 68.2	102%

C-2

APPENDIX C-2

DATA VALIDATION REPORT FOR
STAGE 1 SOURCE CONTROL EVALUATION - ARKEMA LOTS 1 AND 2
PCDD/PCDF RESULTS
RP - PORTLAND SITE

May 12, 2006

Submitted to:

Oregon Department of Environmental Quality
Northwest Region
2020 S.W. 4th Avenue
Portland, Oregon 97201

Submitted for:

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Portland, Oregon 97224

0-61M-107030/Phase 69

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1.0 INTRODUCTION

A total of 36 water samples and 6 soil samples from the Rhône Poulenc (RP) Portland site Stage 1 Source Control Evaluation (SCE) Arkema Lots 1 and 2 reconnaissance activities were submitted to Axys Analytical Services Limited (Axys) in Sidney, British Columbia, Canada for analysis of polychlorinated dioxins (PCDD) and dibenzofurans (PCDF) using United States Environmental Protection Agency (EPA) Method 1613B. The 36 water samples consisted of 30 primary samples, 2 field duplicates, 2 rinsate blanks, and 1 performance evaluation (PE) sample. Aliquots of two of the primary samples were also submitted to Analytical Perspectives (AP) in Wilmington, North Carolina as interlaboratory split samples. All of the soil samples were primary samples. A list of all samples by sample location, field sample identification (ID), sample collection date, matrix, Axys sample ID, and AP sample ID may be found in Table 1.

2.0 DATA VALIDATION METHODOLOGY

Validation of these data followed the EPA Region 10 Standard Operating Procedure (SOP) for the Validation of Polychlorinated Dioxin and Polychlorinated Dibenzofuran Data (EPA 1996) and the National Functional Guidelines for Chlorinated Dioxin/Furan Data Review (EPA 2002), with reference to EPA Method 1613B (EPA 1997), and exceeded the level of validation specified in the Department of Environmental Quality (DEQ) - approved Revised Quality Assurance Project Plan (QAPP) dated June 13, 2001.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all quality control (QC) audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3.0 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

3.1 Sample Receipt at Axys

All samples were received at Axys in good condition with compliant chain-of-custodies (COCs), except as described below.

- Samples received outside the EPA-recommended temperature range of 4 degrees Centigrade (°C) +/- 2°C may be found in Table 2. During data validation, AMEC Earth & Environmental, Inc. (AMEC) J qualified all results from samples received at temperatures greater than 6°C based on method-specified temperature

acceptance limits and EPA Contract Laboratory Program (CLP) guidelines. It should be noted that dioxins are thermally stable at ambient temperatures and it is unlikely that sample receipt temperatures greater than 6°C adversely affected data usability.

- According to the bottle labels, samples ARK-07-GW-14 (007-01) and ARK-08-GW-43.5 (015-02) were collected at 11:13 and 9:40, respectively. The sample collection times listed on the COCs were 11:15 and 9:45, respectively. Axys contacted the project chemist and was instructed to use the sampling times from the COC and not the times written on the sample labels.
- Axys received four bottles of sample ARK-06-GW-58 (059-01) instead of the two listed on the COC.
- The date written on the bottle labels for sample ARK-03-GW-80 (067-01) read 2001. Axys contacted the project chemist and was instructed to use the 2005 sampling date from the COC.

3.2 Sample Receipt at AP

All samples were received at AP in good condition with compliant COCs, except as described below.

- One of two bottles of sample ARK-08-GW-15 (016-05) arrived at AP broken. A second bottle arrived intact and the analysis was able to proceed.
- Samples ARK-08-GW-15 (016-05) and ARK-03-GW-26 (071-05) arrived at AP at the slightly elevated temperature of 7°C. AP results are used for comparative purposes only and the data do not require qualification.

4.0 HOLDING TIMES

All samples were extracted within the method-specified holding time of one year from sample collection until extraction and all extracts were analyzed within the method specified time of one year from extraction until analysis.

5.0 EXTRACTION PROCEDURES

Many of the samples contained substantial (up to approximately 200 grams per liter) amounts of particulate matter. Axys spiked the surrogate compounds into the sample containers, shook the samples well, and allowed them to settle for a couple of days before extraction. The aqueous portions underwent separatory funnel extraction and the solid portions underwent soxhlet extraction. The extracts from the two phases were then combined and spiked with cleanup standard prior to reduction.

6.0 GAS CHROMATOGRAPHY/ MASS SPECTROMETER PERFORMANCE CHECKS AND INITIAL CALIBRATION

Analysis of PCDD/PCDF in these samples on the primary DB-5 column was conducted under initial calibration (ICAL) DX52-353B, ICAL DX52-420A, ICAL DX52-449D, ICAL DX52-471A, and ICAL DX52-533C. Analysis for 2,3,7,8-TCDF on the DB-225 column was conducted under ICAL DB53-278C, ICAL DB53-297D, and ICAL DB53-319B. Ion abundance ratios and percent relation standard deviation (%RSD) for all target compounds met requirements of EPA Method 1613B.

7.0 CALIBRATION VERIFICATION

All compounds in the calibration verification standards (VER) met method requirements for percent drift in relative response (%D) and ion abundance ratios.

8.0 LABORATORY AND RINSATE BLANKS

Target analytes were not detected in the laboratory and rinsate blanks associated with the analysis of these samples, except as described in Table 3. AMEC qualified data based on detections in blank samples when the concentrations detected in the samples were less than 10 times (OCDD) or 5 times (all other congeners and homologs) the concentration detected in the associated blank. When the concentrations detected in the blanks were estimated maximum possible concentrations (EMPCs), AMEC qualified the associated results only when they were also EMPCs.

Target analytes were detected in rinsate blank 016-04 but all concentrations were less than 5 and 10 times the concentrations detected in the method blank. AMEC did not qualify data based on detections in this rinsate blank.

9.0 RECOVERY OF C 13 LABELED ISOTOPE DILUTION STANDARDS USED AS INTERNAL STANDARDS

EPA Method 1613B uses an isotope dilution procedure for calculation of analyte concentrations. A total of 18 carbon or chlorine labeled PCDD and PCDF isomers are added to the sample or extract to monitor different aspects of the procedure. Of the 18 labeled isomers added, 15 are used as internal standards (IS) for calculation of analytical results. IS recovery problems affect all analytical results that are calculated using the affected IS, and not just the corresponding nonlabeled isomer.

Qualification of data based on IS results can seem counterintuitive in that low IS recovery implies a possible high bias in the calculated result, and high IS recovery can imply a possible low bias. The reason for this lies in the fact that low recovery implies lower than expected area counts for the IS, and high recovery implies higher than expected area counts. Because the area of the internal standard appears in the denominator of the equation for calculation of results using the IS technique, low IS area counts lead to high results for any calculation based on that IS, and high IS area counts lead to low results for any calculation based on that IS.

Recovery and performance of carbon labeled isotope dilution standards used as IS in all field and QC samples were within method specified limits.

10.0 INSTRUMENT RECOVERY INTERNAL STANDARDS

The instrument recovery standards $^{13}C_{12}$-1,2,3,4-TCDD (DB-5 and DB-225 analyses) and $^{13}C_{12}$-1,2,3,7,8,9-HxCDD (DB-5 analysis only) are added to sample extracts and standards before injection into the gas chromatography mass spectrometer (GC/MS). The instrument recovery standards are used to determine the recovery efficiency of the extraction and cleanup procedures, to determine if the GC/MS sensitivity and response are stable during the analytical run, and to determine if the same amount of extract was injected into the GC/MS (EPA 1996). The $^{13}C_{12}$-1,2,3,4-TCDD recovery standard is used to calculate recoveries of the TCDD, TCDF, PeCDD, and PeCDF internal standards. The $^{13}C_{12}$-1,2,3,7,8,9-HxCDD recovery standard is used to calculate recoveries of the HxCDD, HxCDF, HpCDD, HpCDF, OCDD, and OCDF internal standards.

Recovery of the sums of the instrument recovery standards in all field and QC samples were within method requirements of 25 to 400% of initial area counts, except as described below:

- Recovery of the instrument recovery standard $^{13}C_{12}$-1,2,3,4-TCDD was slightly low at 23.6% in the primary analysis of sample ARK-06-SO-3.0 (053-01). AMEC J qualified the 2,3,7,8-TCDD, 1,2,3,7,8-PeCDD, 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF, total TCDD, total PeCDD, total TCDF, and total PeCDF results from this sample because of possible low bias in the analytical results.
- Recoveries of the instrument recovery standards $^{13}C_{12}$-1,2,3,4-TCDD and $^{13}C_{12}$-1,2,3,7,8,9-HxCDD were low at 21.4% and 19.8%, respectively in the primary analysis of sample ARK-01-GW-15 (042-01). AMEC J qualified all results, except for 2,3,7,8-TCDF, from this sample because of possible low bias in the analytical results.

11.0 ONGOING PRECISION AND RECOVERY SAMPLES

Axys extracted and analyzed an ongoing precision and recovery sample (OPR) with each extraction batch. This equates to a total of 8 OPR results for 36 primary samples, or approximately 22%, which exceeds the rate of 5% specified in the DEQ-approved QAPP. Recovery and precision in OPR samples associated with this project were acceptable.

12.0 SURROGATE RECOVERY

Because Axys includes additional labeled isomers beyond those used as IS in the spiking solution added to samples, the additional isomers can be used in a manner analogous to surrogate compounds in order to monitor extraction and cleanup efficiency. Qualification of data based on recovery of these isomers is more straightforward than qualification based on IS. When recovery of one of these isomers falls outside acceptance limits, only the result from the corresponding nonlabeled isomer is qualified. No data are qualified based on recovery of the $^{37}C_{l4}$-2,3,7,8-TCDD cleanup standard unless recoveries of other labeled compounds are also outside acceptance limits.

13.0 MATRIX SPIKES

Matrix spikes (MS) are not required QC for EPA Method 1613B. In order to evaluate MS recoveries, AMEC compared them against method-specified OPR acceptance limits.

Axys performed MS on samples ARK-04-SO-6.0 (029-01), ARK-01-GW-54 (043-01), and ARK-06-GW-58 (059-01). Analyte recoveries were within acceptance limits, except as described below.

In the MS performed on sample ARK-01-GW-54 (043-01), OCDD recovery was greater than the method-specified 78 to 144% OPR acceptance limits at 247% in the MS, but low at 55.5% in the MS duplicate (MSD). AMEC J qualified the OCDD result from this sample because of uncertainty in the OCDD quantification. The variable OCDD recoveries are most likely artifacts of various amounts of sediments present in the sample bottles, which were noted in the lab's case narrative.

14.0 PERFORMANCE EVALUATION SAMPLE

PE samples were purchased in whole volume form from Resource Technology Corporation (RTC), located in Laramie, Wyoming. AMEC submitted the PE sample to Axys labeled with the blind ID 001-06. PE results may be found in Table 4.

Analyte recoveries were within the manufacturer's acceptance limits, except for 1,2,3,7,8-PeCDD, total PeCDD, and 1,2,3,4,7,8-HxCDD. 1,2,3,7,8-PeCDD and total PeCDD recoveries were high at 176% and 179% respectively. 1,2,3,4,7,8-HxCDD recovery was low at 45%. AMEC instructed Axys to investigate the cause of the failures, but no reason could be found. All associated QC samples were within acceptance limits, as were all other analyte concentrations.

15.0 LABORATORY DUPLICATES

Axys analyzed samples ARK-08-SO-13.0 (011-01) and RP-08-SO-88 (077-01) in duplicate. RPDs between the primary and duplicate analyses are less than 25% for analytes detected at concentrations greater than sample-specific method reporting limits, indicating acceptable analytical precision. Laboratory duplicate results are summarized in Table 5.

16.0 FIELD DUPLICATES

Samples ARK-08-GW-43.5 (015-01 and 015-02) and ARK-06-GW-27 (058-01 and 058-02) were collected in duplicate. RPDs between primary and duplicate congener concentrations ranged between 6.1% and 38%. RPDs between total homolog concentrations ranged between 26% and 78%. The difference between the primary and duplicate analyses is likely an artifact of varying amounts of sediments in the individual sample bottles. Field duplicate results are summarized in Table 6.

17.0 INTERLABORATORY SPLIT SAMPLES

Samples ARK-08-GW-15 (016-01 and 016-05) and ARK-03-GW-26 (071-01 and 071 05) were submitted to both Axys and AP for analysis. The samples were labeled blindly, so that the primary laboratory (i.e., Axys) was not aware of which samples were also submitted to the QC laboratory (i.e., AP). Primary samples were coded with -01 appended to the blind sample ID, and split samples were coded with -05 appended to the blind sample ID.

RPDs between Axys' and AP's detected concentrations were generally greater than 100%. The high RPDs are likely artifacts of differences in the two lab's extraction

techniques and sample inhomogeneity. Axys filtered the samples and then extracted the aqueous and solid phases separately, combining the extracts for analysis. There is no indication in AP's extraction documentation that solids were separated from the aqueous portion before extraction. Also, laboratory sample descriptions differed. For example, Axys described sample ARK-08-GW-15 (016-01) as a "cloudy yellowish brown liquid with fine particulate throughout, while AP described ARK-08-GW-15 (016 05) as "opaque rust/brown color". Axys also reported concentrations down to lower detection limits than AP did, resulting in Axys reporting more analyte detections than AP. Interlaboratory split sample results are summarized in Table 7.

18.0 ANALYTICAL PROCEDURES

Axys modified the mass to charge (m/z) ratios used for quantifying the penta-substituted dioxins from 356/358 to 354/356 for native compounds and from 368/370 to 366/368 for surrogates. This changes the theoretical ratio from 1.55, as specified in Method 1613B, to 0.61 with the acceptance limits changed to 0.51 to 0.70. Data usability is not adversely affected.

19.0 DATA REPORTING

Axys applied a number of qualifiers to data from analysis of these samples in order to describe analytical issues. Definitions of these laboratory qualifiers, resulting validation qualifiers, and a discussion of effect on data usability may be found below.

- Axys K qualified results when all required ions for a congener were present and signal to noise requirements were met but the ion ratios were outside acceptance limits, indicating uncertainty in analyte identification. K qualified data are EMPCs and were N qualified by AMEC during validation.
- Axys B qualified results when the associated analytes were detected in the method blank. AMEC did not qualify data based on Axys' B qualifiers unless the sample concentrations were less than 10 times (OCDD only) or 5 times (all other congeners and homologs) the concentration detected in the blank.
- Axys J qualified data when the analyte concentration was less than the instrument's lowest calibration level. All of Axys' J qualifiers are appropriate and should be applied to the final data.

20.0 SUMMARY

PCDD/PCDF data generated for the Stage 1 SCE 1 are of acceptable quality and are usable with the addition of the qualifiers listed in Table 8. The majority of data were qualified because of elevated sample receipt temperatures and no data were rejected based on analytical issues.

REFERENCES

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AMEC, 2005. *Final Stage 1 Source Control Evaluation Work Plan*, *RP - Portland Site,* prepared by AMEC Earth & Environmental, Inc. submitted to Oregon Department of Environmental Quality, October 31, 2005.

EPA, 1996. EPA *Region 10 SOP for the Validation of PCDD and PCDF Data*, Revision 2.0, January 31, 1996.

EPA, 1997. *Method 1613, Revision B. Tetra- Through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS*. Federal Register, Volume 62, Number 178. September 15, 1997.

EPA, 2002. *National Functional Guidelines for Chlorinated Dioxin/Furan Data Review*, Draft Final, EPA 540-R-02-003, March 2002.

LIMITATIONS

This report was prepared exclusively for SLLI by AMEC Earth & Environmental, Inc. (AMEC). The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in AMEC services and based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This Data Validation Report for Stage 1 Source Control Evaluation Arkema Lots 1 and 2, PCDD/PCDF Results is intended to be used by SLLI for the RP - Portland Site, 6200 N.W. St. Helens Road, Portland, Oregon only, subject to the terms and conditions of its contract with AMEC. Any other use of, or reliance on, this report by any third party is at that party's sole risk.

TABLES

TABLE 1
Field Samples Submitted to Axys and AP
with Corresponding Laboratory IDs
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Sample Location	Field Sample ID	Sample Date	Sample Matrix	Axys Sample ID	AP Sample ID	Notes
PE Sample	001-06	07/21/2005	Water	L8011-1	-	
ARK-07-GW-45	006-01	08/09/2005	Water	L8096-1	-	
ARK-07-GW-14	007-01	08/09/2005	Water	L8096-2	-	
ARK-07-GW-26	008-01	08/09/2005	Water	L8096-3	-	
ARK-08-SO-13.0	011-01	08/10/2005	Soil	L8097-8	-	
ARK-08-GW-43.5	015-01	08/10/2005	Water	L8096-4	-	
ARK-08-GW-43.5	015-02	08/10/2005	Water	L8096-5	-	Field duplicate
ARK-08-GW-15	016-01	08/10/2005	Water	L8096-6	-	
Rinsate Blank	016-04	08/11/2005	Water	L8096-7	-	Rinsate
ARK-08-GW-15	016-05	08/10/2005	Water	-	P5696	Interlaboratory split
ARK-09-GW-16	023-01	08/11/2005	Water	L8096-8	-	
ARK-09-GW-35	025-01	08/12/2005	Water	L8096-9	-	
ARK-09-GW-56	026-01	08/12/2005	Water	L8096-10	-	
ARK-04-SO-6.0	029-01	08/12/2005	Soil	L8097-18	-	
ARK-04-GW-47	033-01	08/12/2005	Water	L8096-11	-	
ARK-04-GW-15	034-01	08/12/2005	Water	L8096-12	-	
ARK-04-GW-36	035-01	08/15/2005	Water	L8096-13	-	
ARK-01-GW-15	042-01	08/15/2005	Water	L8096-18	-	
ARK-01-GW-54	043-01	08/16/2005	Water	L8096-14	-	
ARK-01-GW-31.5	044-01	08/16/2005	Water	L8096-15	-	
ARK-05-GW-22	050-01	08/17/2005	Water	L8096-16	-	
ARK-05-GW-41	051-01	08/17/2005	Water	L8096-17	-	
ARK-06-SO-3.0	053-01	08/18/2005	Soil	L8097-28	-	
ARK-06-GW-80	057-01	08/18/2005	Water	L8096-19	-	
ARK-06-GW-27	058-01	08/18/2005	Water	L8096-20	-	
ARK-06-GW-27	058-02	08/18/2005	Water	L8096-21	-	Field duplicate
ARK-06-GW-58	059-01	08/19/2005	Water	L8096-22	-	
ARK-02-GW-80	065-01	08/19/2005	Water	L8096-23	-	
Rinsate Blank	065-04	08/19/2005	Water	L8096-24	-	Rinsate
ARK-02-GW-40	066-01	08/22/2005	Water	L8096-25	-	
ARK-03-GW-80	067-01	08/22/2005	Water	L8096-26	-	
ARK-03-SO-6.0	069-01	08/22/2005	Soil	L8097-38		
ARK-03-GW-26	071-01	08/23/2005	Water	L8096-27	-	
ARK-03-GW-26	071-05	08/23/2005	Water	-	P5745	Interlaboratory split
ARK-03-GW-58	072-01	08/23/2005	Water	L8096-28	-	
ARK-09-GW-94	073-01	09/06/2005	Water	L8154-1	-	
ARK-06-GW-97.5	074-01	09/07/2005	Water	L8154-2	-	
ARK-05-GW-67.5	075-01	09/08/2005	Water	L8154-3	-	
ARK-03-GW-102.5	076-01	09/09/2005	Water	L8154-4	-	
RP-08-SO-88	077-01	09/21/2005	Soil	L8217-1	-	
RP-08-SO-93	078-01	09/21/2005	Soil	L8217-2	-	
SIL-01-GW-31.5	101-01	11/01/2005	Water	L8377-1	-	
SIL-01-GW-208	109-01	11/07/2005	Water	L8392-1		
SIL-01-GW-217	114-01	11/08/2005	Water	L8392-2		

Notes:
AP = Analytical Perspectives Wilmington, North Carolina
Axys = Axys Analytical Services, Ltd.
ID = Identification

TABLE 2
Sample Receipt Temperature Exceedances
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP- Portland Site

Sample Location	Field Sample ID	Sample Receipt Temperature
ARK-02-GW-40	066-01	7°C
ARK-03-GW-80	067-01	
ARK-03-SO-6.0	069-01	
ARK-03-GW-26	071-01	
ARK-03-GW-58	072-01	
ARK-07-GW-45	006-01	8°C
ARK-08-SO-13.0	011-01	
Rinsate Blank	016-04	10°C
ARK-09-GW-16	023-01	
ARK-09-GW-35	025-01	
ARK-09-GW-56	026-01	
ARK-04-GW-47	033-01	
ARK-04-GW-15	034-01	
ARK-06-GW-58	059-01	
ARK-02-GW-80	065-01	
Rinsate Blank	065-04	
ARK-04-GW-36	035-01	15°C
ARK-01-GW-54	043-01	
ARK-01-GW-31.5	044-01	
ARK-04-SO-6.0	029-01	16°C
ARK-05-GW-22	050-01	19°C
ARK-05-GW-41	051-01	

Notes:
°C = degrees Centigrade
ID = Identification

TABLE 3
Analytes Detected in Laboratory and Rinsate Blanks
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte	Detected Concentration	U Qualify Results Below the Following Concentrations in Samples Associated with this Blank (5x or 10x Rule)	Associated Samples	
			Sample Location	Field Sample ID
Laboratory Blank WG16718-101				
1,2,3,4,6,7,8-HpCDD	0.268	1.34	ARK-08-SO-13.0	011-01
OCDD	2.77	27.7	ARK-04-SO-6.0	029-01
Total HpCDD	0.490	2.45	ARK-06-SO-3.0	053-01
			ARK-03-SO-6.0	069-01
Laboratory Blank WG16732-101				
1,2,3,7,8-PeCDD	0.563	2.82	ARK-07-GW-45	006-01
1,2,3,6,7,8-HxCDD	0.567 EMPC	2.84 EMPC	ARK-07-GW-14	007-01
1,2,3,7,8,9-HxCDD	0.736	3.68	ARK-07-GW-26	008-01
1,2,3,4,6,7,8-HpCDD	1.65	8.25	ARK-08-GW-43.5	015-01
OCDD	8.00	80.0	ARK-08-GW-43.5	015-02
1,2,3,7,8-PeCDF	0.617	3.09	ARK-08-GW-15	016-01
2,3,4,7,8-PeCDF	0.776	3.88	Rinsate Blank	016-04
1,2,3,6,7,8-HxCDF	0.552	2.76	ARK-08-GW-15	016-05
1,2,3,7,8,9-HxCDF	0.699	3.50	ARK-09-GW-16	023-01
2,3,4,6,7,8-HxCDF	0.605 EMPC	3.03 EMPC	ARK-09-GW-35	025-01
1,2,3,4,6,7,8-HpCDF	0.758	3.79	ARK-09-GW-56	026-01
1,2,3,4,7,8,9-HpCDF	0.685	3.43		
OCDF	1.54	7.70		
Total PeCDD	0.563	2.82		
Total HxCDD	0.736	3.68		
Total HpCDD	2.68	13.4		
Total PeCDF	1.39	6.95		
Total HxCDF	1.25	6.25		
Total HpCDF	1.44	7.20		
Laboratory Blank WG16733-101				
1,2,3,4,6,7,8-HpCDD	2.52	12.6	ARK-04-GW015	034-01
OCDD	18.5	185	ARK-04-GW-36	035-01
2,3,4,7,8-PeCDF	0.641	3.21	ARK-01-GW-15	042-01
OCDF	0.841 EMPC	4.21 EMPC	ARK-01-GW-54	043-01
Total HpCDD	2.52	12.6	ARK-01-GW-31.5	044-01
Total PeCDF	0.641	3.21	ARK-05-GW-22	050-01
			ARK-05-GW-41	051-01
			ARK-06-GW-27	058-01
Laboratory Blank WG16759-101				
2,3,7,8-TCDD	0.644 EMPC	3.22 EMPC	ARK-06-GW-27	058-02
1,2,3,4,6,7,8-HpCDD	1.20	6.00	ARK-06-GW-58	059-01
OCDD	1.55	15.5	ARK-02-GW-80	065-01
2,3,4,7,8-PeCDF	0.513 EMPC	2.57 EMPC	Rinsate Blank	065-04
Total HpCDD	1.20	6.00	ARK-02-GW-40	066-01
			ARK-03-GW-80	067-01
			ARK-03-GW-26	071-01
			ARK-03-GW-58	072-01

TABLE 3
Analytes Detected in Laboratory and Rinsate Blanks
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte	Detected Concentration	U Qualify Results Below the Following Concentrations in Samples Associated with this Blank (5x or 10x Rule)	Associated Samples	
			Sample Location	Field Sample ID
Laboratory Blank W16942-101				
1,2,3,4,6,7,8-HpCDD	1.06 EMPC	5.30 EMPC	ARK-04-GW-47	033-01
OCDD	2.08	20.8	ARK-06-GW-80	057-01
1,2,3,7,8-PeCDF	0.745	3.73	ARK-09-GW-94	073-01
2,3,4,7,8-PeCDF	0.653 EMPC	3.27 EMPC	ARK-06-GW-97.5	074-01
OCDF	0.683	3.42		
Total PeCDF	1.49	7.45		
Laboratory Blank WG17076-101				
1,2,3,4,6,7,8-HpCDD	0.226	1.13	RP-08-SO-93	078-01
OCDD	2.08	20.8		
OCDF	0.056	0.280		
Total HpCDD	0.389	1.95		
Laboratory Blank WG17490-101				
1,2,3,4,6,7,8-HpCDD	0.190 EMPC	0.950 EMPC	RP-08-SO-88	077-01
OCDD	2.02	20.20		
1,2,3,4,6,7,8-HpCDF	0.060 EMPC	0.300 EMPC		
OCDF	0.133	0.665		
Laboratory Blank WG17516-101				
2,3,7,8-TCDD	0.596 EMPC	2.98 EMPC	ARK-05-GW-67.5	075-01
1,2,3,7,8-PeCDD	0.651	3.26	ARK-03-GW-102.5	076-01
1,2,3,6,7,8-HxCDD	0.625 EMPC	3.13 EMPC	SIL-01-GW-31.5	101-01
1,2,3,7,8,9-HxCDD	0.520	2.60	SIL-01-GW-208	109-01
1,2,3,4,6,7,8-HpCDD	1.23	6.15	SIL-01-GW-217	114-01
OCDD	3.26	32.6		
1,2,3,7,8-PeCDF	0.817	4.09		
2,3,4,7,8-PeCDF	0.714	3.57		
1,2,3,4,7,8-HxCDF	0.634	3.17		
1,2,3,6,7,8-HxCDF	0.593	2.97		
1,2,3,7,8,9-HxCDF	0.734	3.67		
1,2,3,4,6,7,8-HpCDF	0.863	4.32		
1,2,3,4,7,8,9-HpCDF	0.778 EMPC	3.89 EMPC		
OCDF	1.67	8.35		
Total PeCDD	1.34	6.70		
Total HxCDD	0.520	2.60		
Total HpCDD	1.23	6.15		
Total PeCDF	1.53	7.65		
Total HxCDF	1.96	9.80		
Total HpCDF	0.863	4.32		

TABLE 3
Analytes Detected in Laboratory and Rinsate Blanks
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte	Detected Concentration	U Qualify Results Below the Following Concentrations in Samples Associated with this Blank (5x or 10x Rule)	Associated Samples	
			Sample Location	Field Sample ID
Rinsate Blank 065-04				
1,2,3,7,8,9-HxCDD	0.585	2.93	ARK-06-GW-58	059-01
1,2,3,4,6,7,8-HpCDD	6.76	33.8	ARK-02-GW-80	065-01
OCDD	58.2	582		
2,3,4,7,8-PeCDF	0.583	2.92		
1,2,3,4,6,7,8-HpCDF	1.01	5.05		
OCDF	2.11	10.6		
Total HxCDD	2.90	14.5		
Total HpCDD	14.6	73.0		
Total TCDF	0.585	2.93		
Total PeCDF	0.583	2.92		
Total HpCDF	2.03	10.2		

Notes:
EMPC = estimated maximum possible concentration
ID = Identification

TABLE 4
Performance Evaluation Sample Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Congener	Certified Value	Acceptance Limits	Reported Concentration	Pass/Fail	% Recovery
Sample 001-05					
2,3,7,8-TCDD	32.6	17.9 - 47.3	24.6	Pass	75%
1,2,3,7,8-PeCDD	167	91.8 - 242	**294**	Fail High	176%
1,2,3,4,7,8-HxCDD	152	83.6 - 220	**68**	Fail Low	45%
1,2,3,6,7,8-HxCDD	45.6	25.1 - 66.1	60.4	Pass	132%
1,2,3,7,8,9-HxCDD	357	196 - 518	257	Pass	72%
1,2,3,4,6,7,8-HpCDD	172	94.8 - 250	122	Pass	71%
OCDD	76.8	42.2 - 111	49.5	Pass	64%
2,3,7,8-TCDF	81.6	44.9 - 118	57.3	Pass	70%
OCDF	52	28.6 - 75.4	33.6	Pass	65%
Total TCDD	32.6	17.9 - 47.3	24.6	Pass	75%
Total PeCDD	167	91.8 - 242	**299**	Fail High	179%
Total HxCDD	555	305 - 804	386	Pass	70%
Total HpCDD	172	94.8 - 250	122	Pass	71%
Total TCDF	81.6	44.9 - 118	50.9	Pass	62%

TABLE 5
Laboratory Duplicate Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte	Primary Sample Concentratin		Lab Duplicate Concentration		RPD
Sample ARK-08-SO-13.0 (011-01)					
2,3,7,8-TCDD	0.095	EMPC, J	0.092	EMPC, J	3%
1,2,3,7,8-PeCDD	0.193	J	0.186	J	4%
1,2,3,4,7,8-HxCDD	0.331	J	0.313	J	6%
1,2,3,6,7,8-HxCDD	0.880	J	0.837	J	5%
1,2,3,7,8,9-HxCDD	0.740	J	0.715	J	3%
1,2,3,4,6,7,8-HpCDD	15.0		14.5		3%
OCDD	132		130		2%
2,3,7,8-TCDF	1.08		1.03		5%
1,2,3,7,8-PeCDF	1.34	J	1.29	J	4%
2,3,4,7,8-PeCDF	0.879	J	0.841	J	4%
1,2,3,4,7,8-HxCDF	2.48	J	2.55	J	3%
1,2,3,6,7,8-HxCDF	1.28	J	1.32	J	3%
1,2,3,7,8,9-HxCDF	0.076	J	0.054	J	34%
2,3,4,6,7,8-HxCDF	0.734	J	0.733	J	0%
1,2,3,4,6,7,8-HpCDF	4.00	J	4.12	J	3%
1,2,3,4,7,8,9-HpCDF	0.858	J	0.877	J	2%
OCDF	7.67	J	7.42	J	3%
Total TCDD	11.7		11.7		0%
Total PeCDD	4.47		4.33		3%
Total HxCDD	7.46		7.66		3%
Total HpCDD	29.5		28.0		5%
Total TCDF	8.40		8.30		1%
Total PeCDF	29.3		28.2		4%
Total HxCDF	23.2		22.8		2%
Total HpCDF	9.85		9.65		2%
Sample RP-08-SO-88 (077-01)					
2,3,7,8-TCDD	0.070	EMPC, J	0.049	EMPC, J	35%
1,2,3,7,8-PeCDD	0.058	J	0.0478	U	NC
1,2,3,4,7,8-HxCDD	0.057	J	0.0478	U	NC
1,2,3,6,7,8-HxCDD	0.095	J	0.087	EMPC, J	9%
1,2,3,7,8,9-HxCDD	0.227	J	0.191	J	17%
1,2,3,4,6,7,8-HpCDD	1.36	J	1.21	J	12%
Total TCDD	0.129		0.102		23%
Total PeCDD	0.116		0.0478	U	NC
Total HxCDD	1.52		1.19		24%
Total HpCDD	3.36		2.84		17%
Total TCDF	0.074		0.062		18%

EMPC = Estimated maximum possible concentration
J = Analyte concentration is between the method detection limit and method reporting limit
NC = Not calculable
RPD = Relative percent difference
U = The analyte was not detected

TABLE 6
Field Duplicate Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP- Portland Site

Analyte	Primary Sample Concentratin	Field Duplicate Concentration	RPD
Sample ARK-08-GW-43.5 (015-01 and 015-02)			
1,2,3,4,7,8-HxCDD	0.588 EMPC, J	0.625 EMPC, J	6.1%
1,2,3,6,7,8-HxCDD	1.03 U	0.844 J	NC
1,2,3,4,6,7,8-HpCDD	20.4 J	15.7 J	26%
OCDD	151	141	6.8%
1,2,3,4,7,8-HxCDF	0.903 J	1.32 J	38%
2,3,4,6,7,8-HxCDF	0.492 U	0.514 J	NC
Total TCDD	0.975	0.500 U	NC
Total HxCDD	15.8	9.22	53%
Total HpCDD	45.6	35.1	26%
Total TCDF	1.09	1.94	56%
Total PeCDF	6.51 U	10.3	NC
Total HxCDF	5.42 U	10.3	NC
Sample ARK-06-GW-27 (058-01 and 058-02)			
OCDF	0.69 U	0.524 EMPC, J	NC
Total TCDF	0.638	1.46	78%

EMPC = Estimated maximum possible concentration
J = Analyte concentration is between the method detection limit and method reporting limit
NC = Not calculable
RPD = Relative percent difference
U = The analyte was not detected

TABLE 7
Interlaboratory Split Sample Results
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte	Primary Concentration (Axys)	Interlaboratory Split Concentration (AP)	RPD
Sample ARK-08-GW-15 (016-01 and 016-05)			
2,3,7,8-TCDD	0.538 EMPC, J	7.85 U	NC
1,2,3,6,7,8-HxCDD	0.663 J	15.5 U	NC
1,2,3,4,6,7,8-HpCDD	11.6 J	60.2	135%
OCDD	126 J	398	104%
2,3,7,8-TCDF	1.02 J	6.92 U	NC
1,2,3,4,7,8-HxCDF	2.57 J	4.52 U	NC
2,3,4,6,7,8-HxCDF	0.699 J	6.26 U	NC
1,2,3,4,6,7,8-HpCDF	5.08 J	17.1	108%
OCDF	8.70 J	23.5 U	NC
Total TCDD	2.14	2.38 U	NC
Total HxCDD	7.69	4.34 U	NC
Total HpCDD	26.9	118	126%
Total TCDF	11.1	2.61 U	NC
Total PeCDF	12.9	2.35 U	NC
Total HxCDF	12.2	17.7	37%
Total HpCDF	10.8	28.7	91%
Sample ARK-03-GW-26 (071-01 and 071-05)			
1,2,3,6,7,8-HxCDD	0.530 J	0.392 U	NC
1,2,3,7,8,9-HxCDD	0.781 J	0.384 U	NC
1,2,3,4,6,7,8-HpCDD	8.49 J	0.512 U	NC
OCDD	88.0 J	5.1 U	NC
1,2,3,7,8-PeCDF	0.906 J	0.865 U	NC
2,3,4,7,8-PeCDF	0.844 J	0.866 U	NC
1,2,3,4,7,8-HxCDF	1.64 J	2.55 U	NC
1,2,3,6,7,8-HxCDF	0.535 J	0.281 U	NC
1,2,3,4,6,7,8-HpCDF	2.14 J	2.55 U	NC
OCDF	4.80 J	1.83 U	NC
Total HxCDD	5.66	0.38 U	NC
Total HpCDD	18.8	0.509 U	NC
Total TCDF	0.557	0.689 U	NC
Total PeCDF	2.37	0.865 U	NC
Total HxCDF	2.84	0.728	118%
Total HpCDF	4.69	0.544	158%

Notes:

AP = Analytical Perspectives

Axys = Axys Analytical Services, Ltd.

EMPC = Estimated maximum possible concentration

NC = Not calculable

RPD = Relative percent difference

U = The analyte was not detected

TABLE 8
Summary of Data Qualifiers for PCDD/PCDF Congeners
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte	ARK-07-GW-45 006-01	ARK-07-GW-14 007-01	ARK-07-GW-26 008-01	ARK-08-SO-13.0 011-01	ARK-08-GW-43.5 015-01	ARK-08-GW-43.5 015-02
2,3,7,8-TCDD	**J**-NP/DL	**NJ**-EM/DL	**NJ**-EM/DL	**NJ**-EM/NP/DL	none	none
1,2,3,7,8-PeCDD	**J**-NP/DL	none	**U**-MB	**J**-NP/DL	none	none
1,2,3,4,7,8-HxCDD	**J**-NP/DL	**J**-DL	**J**-DL	**J**-NP/DL	**NJ**-EM/DL	**NJ**-EM/DL
1,2,3,6,7,8-HxCDD	**J**-NP/DL	**J**-DL	**J**-DL	**J**-NP/DL	**U**-MB	**J**-DL
1,2,3,7,8,9-HxCDD	**J**-NP/DL	**U**-MB	**J**-DL	**J**-NP/DL	**U**-MB	**U**-MB
1,2,3,4,6,7,8-HpCDD	**J**-NP	**J**-DL	none	**J**-NP	**J**-DL	**J**-DL
OCDD	**J**-NP	none	none	**J**-NP	none	none
2,3,7,8-TCDF	**J**-NP	none	none	**J**-NP	**J**-DL	none
1,2,3,7,8-PeCDF	**J**-NP	**J**-DL	**J**-DL	**J**-NP/DL	**U**-MB	**U**-MB
2,3,4,7,8-PeCDF	**J**-NP	**J**-DL	**J**-DL	**J**-NP/DL	**U**-MB	**U**-MB
1,2,3,4,7,8-HxCDF	**J**-NP	**J**-DL	**J**-DL	**J**-NP/DL	**J**-DL	**J**-DL
1,2,3,6,7,8-HxCDF	**J**-NP	**J**-DL	**J**-DL	**J**-NP/DL	**U**-MB	**U**-MB
1,2,3,7,8,9-HxCDF	**J**-NP/DL	**U**-MB	**J**-DL	**J**-NP/DL	none	none
2,3,4,6,7,8-HxCDF	**J**-NP/DL	**J**-DL	**J**-DL	**J**-NP/DL	none	**J**-DL
1,2,3,4,6,7,8-HpCDF	**J**-NP	**J**-DL	**J**-DL	**J**-NP/DL	**U**-MB	**U**-MB
1,2,3,4,7,8,9-HpCDF	**J**-NP	**J**-DL	**J**-DL	**J**-NP/DL	**U**-MB	**U**-MB
OCDF	**J**-NP	**J**-DL	**J**-DL	**J**-NP/DL	**U**-MB	**U**-MB
Total TCDD	**J**-NP	none	none	**J**-NP	none	none
Total PeCDD	**J**-NP	none	none	**J**-NP	**U**-MB	none
Total HxCDD	**J**-NP	none	none	**J**-NP	none	none
Total HpCDD	**J**-NP	none	none	**J**-NP	none	none
Total TCDF	**J**-NP	none	none	**J**-NP	none	none
Total PeCDF	**J**-NP	none	none	**J**-NP	**U**-MB	none
Total HxCDF	**J**-NP	none	none	**J**-NP	**U**-MB	none
Total HpCDF	**J**-NP	none	none	**J**-NP	**U**-MB	**U**-MB

TABLE 8
Summary of Data Qualifiers for PCDD/PCDF Congeners
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte	ARK-08-GW-15 016-01	ARK-09-GW-16 023-01	ARK-09-GW-35 025-01	ARK-09-GW-56 026-01	ARK-04-SO-6.0 029-01	ARK-04-GW-47 033-01
2,3,7,8-TCDD	**NJ**-EM/DL	**NJ**-EM/NP/DL	**NJ**-EM/NP/DL	**NJ**-EM/NP/DL	**NJ**-EM/NP/DL	**UJ**-NP
1,2,3,7,8-PeCDD	none	**UJ**-MB/NP	**UJ**-MB/NP	**UJ**-MB/NP	**J**-NP/DL	**UJ**-NP
1,2,3,4,7,8-HxCDD	none	**J**-NP/DL	**NJ**-EM/NP/DL	**J**-NP/DL	**J**-NP/DL	**UJ**-NP
1,2,3,6,7,8-HxCDD	**J**-DL	**UJ**-MB/NP	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL
1,2,3,7,8,9-HxCDD	**U**-MB	**UJ**-MB/NP	**UJ**-MB/NP	**J**-NP	**J**-NP/DL	**J**-NP/DL
1,2,3,4,6,7,8-HpCDD	**J**-DL	**UJ**-MB/NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP/DL
OCDD	none	**UJ**-MB/NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP
2,3,7,8-TCDF	**J**-DL	**UJ**-NP	**J**-NP/DL	**NJ**-EM/NP/DL	**J**-NP	**J**-NP/DL
1,2,3,7,8-PeCDF	**U**-MB	**UJ**-NP	**UJ**-MB/NP	**UJ**-MB/NP	**J**-NP	**UJ**-MB/NP
2,3,4,7,8-PeCDF	**U**-MB	**UJ**-MB/NP	**UJ**-MB/NP	**UJ**-MB/NP	**J**-NP	**J**-NP/DL
1,2,3,4,7,8-HxCDF	**J**-DL	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL	**J**-NP	**J**-NP/DL
1,2,3,6,7,8-HxCDF	**U**-MB	**UJ**-MB/NP	**UJ**-MB/NP	**UJ**-MB/NP	**J**-NP	**J**-NP/DL
1,2,3,7,8,9-HxCDF	none	**UJ**-MB/NP	**UJ**-MB/NP	**UJ**-NP	**J**-NP/DL	**UJ**-NP
2,3,4,6,7,8-HxCDF	**J**-DL	**J**-NP/DL	**J**-NP/DL	**UJ**-NP	**J**-NP/DL	**UJ**-NP
1,2,3,4,6,7,8-HpCDF	**J**-DL	**UJ**-MB/NP	**J**-NP/DL	**UJ**-MB/NP	**J**-NP	**J**-NP/DL
1,2,3,4,7,8,9-HpCDF	**U**-MB	**UJ**-MB/NP	**UJ**-MB/NP	**UJ**-MB/NP	**J**-NP	**J**-NP/DL
OCDF	**J**-DL	**UJ**-MB/NP	**J**-NP/DL	**UJ**-MB/NP	**J**-NP	**J**-NP/DL
Total TCDD	none	**UJ**-NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP
Total PeCDD	**U**-MB	**UJ**-MB/NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP
Total HxCDD	none	**UJ**-MB/NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP
Total HpCDD	none	**UJ**-MB/NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP
Total TCDF	none	**UJ**-NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP
Total PeCDF	none	**UJ**-NP	**J**-NP	**UJ**-MB/NP	**J**-NP	**J**-NP
Total HxCDF	none	**UJ**-MB/NP	**J**-NP	**UJ**-MB/NP	**J**-NP	**J**-NP
Total HpCDF	none	**UJ**-MB/NP	**J**-NP	**UJ**-MB/NP	**J**-NP	**J**-NP

TABLE 8
Summary of Data Qualifiers for PCDD/PCDF Congeners
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte	ARK-04-GW-15 034-01	ARK-04-GW-36 035-01	ARK-01-GW-15 042-01	ARK-01-GW-54 043-01	ARK-01-GW-31.5 044-01	ARK-05-GW-22 050-01
2,3,7,8-TCDD	**NJ**-EM/NP/DL	**UJ**-NP	**J**-DL/AS	**NJ**-EM/NP/DL	**J**-NP/DL	**NJ**-EM/NP/DL
1,2,3,7,8-PeCDD	**NJ**-EM/NP/DL	**J**-NP/DL	**J**-DL/AS	**J**-NP/DL	**NJ**-EM/NP/DL	**J**-NP/DL
1,2,3,4,7,8-HxCDD	**NJ**-EM/NP/DL	**J**-NP/DL	**J**-DL/AS	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL
1,2,3,6,7,8-HxCDD	**J**-NP/DL	**J**-NP/DL	**J**-AS	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL
1,2,3,7,8,9-HxCDD	**J**-NP/DL	**J**-NP/DL	**J**-AS	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL
1,2,3,4,6,7,8-HpCDD	**J**-NP	**J**-NP	**J**-AS	**J**-NP	**J**-NP/DL	**J**-NP/DL
OCDD	**J**-NP	**J**-NP	**J**-AS	**J**-NP/HD	**J**-NP	**J**-NP
2,3,7,8-TCDF	**J**-NP/DL	**J**-NP/DL	none	**J**-NP/DL	**UJ**-NP	**NJ**-EM/NP/DL
1,2,3,7,8-PeCDF	**J**-NP/DL	**J**-NP/DL	**J**-AS	**J**-NP/DL	**UJ**-NP	**J**-NP/DL
2,3,4,7,8-PeCDF	**UJ**-MB/NP	**J**-NP/DL	**J**-AS	**NJ**-EM/NP/DL	**UJ**-NP	**UJ**-MB/NP
1,2,3,4,7,8-HxCDF	**J**-NP/DL	**J**-NP/DL	**J**-AS	**NJ**-EM/NP/DL	**UJ**-NP	**J**-NP/DL
1,2,3,6,7,8-HxCDF	**J**-NP/DL	**J**-NP/DL	**J**-AS	**J**-NP/DL	**UJ**-NP	**J**-NP/DL
1,2,3,7,8,9-HxCDF	**UJ**-NP	**UJ**-NP	**J**-DL/AS	**UJ**-NP	**UJ**-NP	**J**-NP/DL
2,3,4,6,7,8-HxCDF	**J**-NP/DL	**J**-NP/DL	**J**-DL/AS	**UJ**-NP	**UJ**-NP	**J**-NP/DL
1,2,3,4,6,7,8-HpCDF	**J**-NP	**J**-NP/DL	**J**-AS	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL
1,2,3,4,7,8,9-HpCDF	**J**-NP/DL	**J**-NP/DL	**J**-AS	**UJ**-NP	**UJ**-NP	**J**-NP/DL
OCDF	**J**-NP	**J**-NP/DL	**J**-AS	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL
Total TCDD	**J**-NP	**J**-NP	**J**-AS	**J**-NP	**J**-NP	**J**-NP
Total PeCDD	**J**-NP	**J**-NP	**J**-AS	**J**-NP	**J**-NP	**J**-NP
Total HxCDD	**J**-NP	**J**-NP	**J**-AS	**J**-NP	**J**-NP	**J**-NP
Total HpCDD	**J**-NP	**J**-NP	**J**-AS	**J**-NP	**J**-NP	**J**-NP
Total TCDF	**J**-NP	**J**-NP	**J**-AS	**J**-NP	**UJ**-NP	**J**-NP
Total PeCDF	**J**-NP	**J**-NP	**J**-AS	**UJ**-MB/NP	**UJ**-NP	**J**-NP
Total HxCDF	**J**-NP	**J**-NP	**J**-AS	**J**-NP	**UJ**-NP	**J**-NP
Total HpCDF	**J**-NP	**J**-NP	**J**-AS	**J**-NP	**J**-NP	**J**-NP

TABLE 8
Summary of Data Qualifiers for PCDD/PCDF Congeners
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte	ARK-05-GW-41 051-01	ARK-06-SO-3.0 053-01	ARK-06-GW-80 057-01	ARK-06-GW-27 058-01	ARK-06-GW-27 058-02	ARK-06-GW-58 059-01
2,3,7,8-TCDD	**NJ**-EM/NP/DL	**J**-DL/AS	**J**-DL	none	**U**-MB	**UJ**-MB/NP
1,2,3,7,8-PeCDD	**J**-NP/DL	**J**-DL/AS	**J**-DL	none	none	**J**-NP/DL
1,2,3,4,7,8-HxCDD	**J**-NP/DL	**J**-DL	**J**-DL	none	none	**UJ**-NP
1,2,3,6,7,8-HxCDD	**J**-NP/DL	**J**-DL	**J**-DL	none	none	**J**-NP/DL
1,2,3,7,8,9-HxCDD	**J**-NP/DL	**J**-DL	**J**-DL	none	none	**UJ**-RB/NP
1,2,3,4,6,7,8-HpCDD	**J**-NP	**J**-DL	none	**U**-MB	**U**-MB	**UJ**-RB/NP
OCDD	**J**-NP	none	none	**U**-MB	**U**-MB	**UJ**-RB/NP
2,3,7,8-TCDF	**J**-NP/DL	**NJ**-EM/DL	none	none	none	**J**-NP
1,2,3,7,8-PeCDF	**J**-NP/DL	**J**-DL/AS	none	none	none	**J**-NP/DL
2,3,4,7,8-PeCDF	**J**-NP/DL	**J**-DL/AS	none	none	**U**-MB	**J**-NP/DL
1,2,3,4,7,8-HxCDF	**J**-NP/DL	**J**-DL	none	none	none	**J**-NP/DL
1,2,3,6,7,8-HxCDF	**J**-NP/DL	**J**-DL	none	none	none	**J**-NP/DL
1,2,3,7,8,9-HxCDF	**J**-NP/DL	**J**-DL	**J**-DL	none	none	**NJ**-EM/NP/DL
2,3,4,6,7,8-HxCDF	**J**-NP/DL	**J**-DL	**J**-DL	none	none	**J**-NP/DL
1,2,3,4,6,7,8-HpCDF	**J**-NP/DL	**J**-DL	none	none	none	**UJ**-RB/NP
1,2,3,4,7,8,9-HpCDF	**J**-NP/DL	**J**-DL	none	none	none	**NJ**-EM/NP/DL
OCDF	**J**-NP/DL	**J**-DL	none	**U**-MB	**N**-EM	**UJ**-RB/NP
Total TCDD	**J**-NP	**J**-AS	none	none	none	**J**-NP
Total PeCDD	**J**-NP	**J**-AS	none	none	none	**J**-NP
Total HxCDD	**J**-NP	none	none	none	none	**UJ**-RB/NP
Total HpCDD	**J**-NP	none	none	**U**-MB	**U**-MB	**UJ**-RB/NP
Total TCDF	**J**-NP	**J**-AS	none	none	none	**J**-NP
Total PeCDF	**J**-NP	**J**-AS	none	none	none	**J**-NP
Total HxCDF	**J**-NP	none	none	none	none	**J**-NP
Total HpCDF	**J**-NP	none	none	none	none	**UJ**-RB/NP

TABLE 8
Summary of Data Qualifiers for PCDD/PCDF Congeners
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte	ARK-02-GW-80 065-01	ARK-02-GW-40 066-01	ARK-03-GW-80 067-01	ARK-03-SO-6.0 069-01	ARK-03-GW-26 071-01	ARK-03-GW-58 072-01
2,3,7,8-TCDD	**UJ**-MB/NP	**UJ**-MB/NP	**J**-NP/DL	**NJ**-EM/NP/DL	**UJ**-NP	**J**-NP/DL
1,2,3,7,8-PeCDD	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL	**NJ**-EM/NP/DL	**UJ**-NP	**J**-NP/DL
1,2,3,4,7,8-HxCDD	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL	**UJ**-NP	**J**-NP/DL
1,2,3,6,7,8-HxCDD	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL
1,2,3,7,8,9-HxCDD	**J**-NP/DL	**J**-NP/DL	**J**-NP	**J**-NP/DL	**J**-NP/DL	**J**-NP
1,2,3,4,6,7,8-HpCDD	**J**-NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP/DL	**J**-NP
OCDD	**J**-NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP/DL	**J**-NP
2,3,7,8-TCDF	**J**-NP	**J**-NP/DL	**J**-NP	**J**-NP/DL	**UJ**-NP	**J**-NP/DL
1,2,3,7,8-PeCDF	**J**-NP/DL	**J**-NP/DL	**J**-NP	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL
2,3,4,7,8-PeCDF	**J**-NP/DL	**J**-NP/DL	**J**-NP	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL
1,2,3,4,7,8-HxCDF	**J**-NP	**J**-NP/DL	**J**-NP	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL
1,2,3,6,7,8-HxCDF	**J**-NP/DL	**J**-NP/DL	**J**-NP	**J**-NP/DL	**J**-NP/DL	**NJ**-EM/NP/DL
1,2,3,7,8,9-HxCDF	**J**-NP/DL	**UJ**-NP	**J**-NP/DL	**J**-NP/DL	**UJ**-NP	**UJ**-NP
2,3,4,6,7,8-HxCDF	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL	**J**-NP/DL	**UJ**-NP	**UJ**-NP
1,2,3,4,6,7,8-HpCDF	**J**-NP	**J**-NP/DL	**J**-NP	**J**-NP	**J**-NP/DL	**J**-NP/DL
1,2,3,4,7,8,9-HpCDF	**J**-NP/DL	**NJ**-EM/NP/DL	**J**-NP	**J**-NP/DL	**UJ**-NP	**UJ**-NP
OCDF	**J**-NP	**J**-NP/DL	**J**-NP	**J**-NP	**J**-NP/DL	**J**-NP/DL
Total TCDD	**J**-NP	**J**-NP	**J**-NP	**J**-NP	**UJ**-NP	**J**-NP
Total PeCDD	**J**-NP	**J**-NP	**J**-NP	**J**-NP	**UJ**-NP	**J**-NP
Total HxCDD	**J**-NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP
Total HpCDD	**J**-NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP
Total TCDF	**J**-NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP
Total PeCDF	**J**-NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP
Total HxCDF	**J**-NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP
Total HpCDF	**J**-NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP	**J**-NP

TABLE 8
Summary of Data Qualifiers for PCDD/PCDF Congeners
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte	ARK-09-GW-94 073-01	ARK-06-GW-97.5 074-01	ARK-05-GW-67.5 075-01	ARK-03-GW-102.5 076-01	RP-08-SO-88 077-01	RP-08-SO-93 078-01
2,3,7,8-TCDD	**NJ**-EM/DL	**NJ**-EM/DL	**J**-DL	**J**-DL	**N**-EM	none
1,2,3,7,8-PeCDD	**J**-DL	**J**-DL	**J**-DL	**U**-MB	**J**-DL	none
1,2,3,4,7,8-HxCDD	**J**-DL	**J**-DL	**J**-DL	**J**-DL	**J**-DL	**J**-DL
1,2,3,6,7,8-HxCDD	**J**-DL	**J**-DL	none	**J**-DL	**J**-DL	**J**-DL
1,2,3,7,8,9-HxCDD	none	**J**-DL	none	**J**-DL	**J**-DL	**J**-DL
1,2,3,4,6,7,8-HpCDD	none	none	none	none	**J**-DL	none
OCDD	none	none	none	none	**U**-MB	none
2,3,7,8-TCDF	**J**-DL	none	none	**NJ**-EM/DL	none	none
1,2,3,7,8-PeCDF	**J**-DL	none	none	**J**-DL	none	none
2,3,4,7,8-PeCDF	**J**-DL	**J**-DL	**J**-DL	**J**-DL	none	none
1,2,3,4,7,8-HxCDF	**J**-DL	none	none	**J**-DL	none	none
1,2,3,6,7,8-HxCDF	**J**-DL	**J**-DL	none	**J**-DL	none	none
1,2,3,7,8,9-HxCDF	none	**J**-DL	**J**-DL	**U**-MB	none	none
2,3,4,6,7,8-HxCDF	**J**-DL	**J**-DL	**J**-DL	**NJ**-EM/DL	none	none
1,2,3,4,6,7,8-HpCDF	none	none	none	**J**-DL	**U**-MB	none
1,2,3,4,7,8,9-HpCDF	**J**-DL	**J**-DL	**J**-DL	**J**-DL	none	none
OCDF	**J**-DL	**J**-DL	none	**J**-DL	**U**-MB	**U**-MB
Total TCDD	none	none	none	none	none	none
Total PeCDD	none	none	none	none	none	none
Total HxCDD	none	none	none	none	none	none
Total HpCDD	none	none	none	none	none	none
Total TCDF	none	none	none	none	none	none
Total PeCDF	none	none	none	none	none	none
Total HxCDF	none	none	none	none	none	none
Total HpCDF	none	none	none	none	none	none

TABLE 8
Summary of Data Qualifiers for PCDD/PCDF Congeners
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Analyte	SIL-01-GW-31.5 101-01	SIL-01-GW-208 109-01	SIL-01-GW-217 114-01
2,3,7,8-TCDD	**U**-MB	none	**J**-DL
1,2,3,7,8-PeCDD	**U**-MB	none	**U**-MB
1,2,3,4,7,8-HxCDD	**J**-DL	none	**J**-DL
1,2,3,6,7,8-HxCDD	**J**-DL	none	**J**-DL
1,2,3,7,8,9-HxCDD	**J**-DL	none	**U**-MB
1,2,3,4,6,7,8-HpCDD	none	**U**-MB	**J**-DL
OCDD	none	**U**-MB	none
2,3,7,8-TCDF	**J**-DL	none	none
1,2,3,7,8-PeCDF	**J**-DL	none	**U**-MB
2,3,4,7,8-PeCDF	**U**-MB	none	**U**-MB
1,2,3,4,7,8-HxCDF	**J**-DL	none	**U**-MB
1,2,3,6,7,8-HxCDF	**U**-MB	none	none
1,2,3,7,8,9-HxCDF	none	none	none
2,3,4,6,7,8-HxCDF	none	none	none
1,2,3,4,6,7,8-HpCDF	**J**-DL	none	**U**-MB
1,2,3,4,7,8,9-HpCDF	**J**-DL	none	none
OCDF	**J**-DL	none	**U**-MB
Total TCDD	none	none	none
Total PeCDD	none	none	none
Total HxCDD	none	none	none
Total HpCDD	none	**U**-MB	none
Total TCDF	none	none	none
Total PeCDF	none	**U**-MB	none
Total HxCDF	none	none	**U**-MB
Total HpCDF	none	none	none

PCDD/PCDF = polychlorinated dioxin/polychlorinated dibenzofuran

TABLE 8
Summary of Data Qualifiers for PCDD/PCDF Congeners
Stage 1 Source Control Evaluation - Arkema Lots 1 and 2
RP - Portland Site

Data Qualifiers

U The U qualifier indicates that the analyte must be considered to be nondetected at the concentration listed. U qualifiers added during validation are typically a result of detections of target analytes in rinsate or laboratory blanks.

J The J qualifier indicates that the associated result is quantitatively uncertain. J qualifiers added during validation may indicate a data limitation related to a quality control element that exceeds required acceptance limits.

N The N qualifier indicates that an analyte has been presumptively identified. Presumptive detection means that a chromatographic peak was detected at the correct retention time for an analyte but that not all required identification criteria were met. The associated result is both qualitatively and quantitatively uncertain.

UJ The analyte was not detected at a concentration above the method reporting limit. However, the reporting limit is approximate and may be inaccurate or imprecise.

NJ The analyse indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

Qualification Rationale Abbreviations

AS An instrument recovery internal standard was outside the 25% to 400% acceptance limits.
DL Analyte concentration is between the MDL and MRL.
EM Estimated maximum possible concentration.
HD High laboratory duplicate RPD.
MB Analyte was detected in a method blank at a concentration greater than 10% or 20% of the concentration detected in the sample.
NP Sample arrived at the laboratory at a temperature greater than 6°C.
RB Analyte was detected in a rinsate blank at a concentration greater than 10% or 20% of the concentration detected in the sample.

C-3

APPENDIX C-3

DATA VALIDATION REPORT FOR
STAGE 1 SOURCE CONTROL EVALUATION - SILTRONIC RIVERBANK
EXCLUDING PCDD/PCDF
RP - PORTLAND SITE

May 12, 2006

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Table 10 Interlaboratory Split Samples Submitted to STL and CAS

ACRONYMS

%D	percent deviation or percent drift in relative response
%RSD	percent relative standard deviation
^{o}C	Degrees Celsius
2,4-DCAA	2,4-dichlorophenylacene
µg/kg	microgram per kilogram
µg/L	microgram per Liter
AMEC	AMEC Earth & Environmental, Inc.
BS	blank spike
BSD	blank spike duplicate
CAR	certified analytical report
CAS	Columbia Analytical Services, Inc.
CCAL	continuing calibration
CCB	continuing calibration blank
CCV	continuing calibration verification
CLP	EPA Contract Laboratory Program
COC	chain of custody
CRI	reporting limit check standard
DEQ	Oregon Department of Environmental Quality
DQI	data quality indicators
DRO	diesel range organics
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
GC/ms	gas chromatography/mass spectrum
ICAL	initial calibration
ICS	interference check sample
ICV	initial calibration verification
ID	identification

IDL	instrument detection limit
IS	internal standard
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
MEK	2-butanone
mg/kg	milligrams per kilogram
MIBK	4-methyl-2-pentanone
MRL	method reporting limit
MS	matrix spike
MSD	matrix spike duplicate
NCA	North Creek Analytical, Inc.
NWTPH-Dx	Northwest Total Petroleum Hydrocarbons-Diesel Range
OCP	organochlorine pesticide
OSWER	EPA Office of Solid Waste and Emergency Response
PCE	tetrachloroethene
PQL	practical quantitation limit
QAPP	quality assurance project plan
QC	quality control
RL	reporting limit
RF	response factor
RP	Rhône Poulenc
RPD	relative percent difference
RRF	relative response factor
RRO	residual range organics
SCE	source control evaluation
SOP	standard operating procedure
STL	Severn Trent Laboratories, Inc.
SVOC	semivolatile organic compound
VOC	volatile organic compound

1.0 INTRODUCTION

Fifty-three groundwater samples and two soil samples were collected from the Rhône-Poulenc (RP) Portland Site Stage 1 Source Control Evaluation (SCE) Siltronic Riverbank reconnaissance activities. The samples included 30 primary samples, 2 field duplicate, 1 interlaboratory split sample, 8 trip blanks, 14 rinsate blanks, which were submitted to Severn Trent Laboratories, Inc. (STL) in Colchester, Vermont; Columbia Analytical Services, Inc. (CAS) in Kelso, Washington; and North Creek Analytical, Inc. (NCA) in Beaverton, Oregon for analysis. STL analyzed the samples for metals by United States Environmental Protection Agency (EPA) Method 6010B; mercury by EPA Method 7470A; organochlorine insecticides by EPA Method 8081A; chlorinated herbicides by EPA Method 8151A; volatile organic compounds (VOCs) by EPA Method 8260B; and semivolatile organic compounds (SVOCs) by EPA Method 8270C. CAS analyzed the samples for semivolatile petroleum products by Oregon Department of Environmental Quality (DEQ)/ Washington Department of Ecology (Ecology) Method NWTPH-Dx and also analyzed the interlaboratory split sample. NCA analyzed 10 rinsate blanks, which were special samples not specifically associated with the field samples, for VOCs. A list of these samples by sample location, field sample identification (ID), and laboratory sample ID is presented in Table 1.

2.0 DATA VALIDATION METHODOLOGY

This data validation has been performed with reference to EPA guidelines as given in the April 1992 final version of Guidance for Data Usability in Risk Assessment, the current EPA functional guidelines for organic and inorganic data review, and the EPA Office of Solid Waste and Emergency Response (OSWER) standard operating procedures (SOPs) for inorganic and organic data review (EPA 1999 and 2002). The EPA guidelines listed above were written specifically for the Contract Laboratory Program (CLP), and have been modified for the purposes of this data validation where they differ from EPA Method SW-846 quality control requirements.

Data from the 10 rinsate blank samples submitted to NCA were not validated.

AMEC Earth & Environmental, Inc.'s (AMEC's) methodology exceeded the validation procedures specified in the DEQ -approved Revised Quality Assurance Project Plan (QAPP), dated June 13, 2001 (AMEC, 2001) and the QAPP Addendum No. 1 dated August 1, 2002 (AMEC, 2002). The laboratory's certified analytical report (CAR) and supporting documentation were reviewed to assess the following: chain of custody (COC) compliance; holding time compliance; presence or absence of laboratory contamination as demonstrated by method and field blanks; accuracy and bias as demonstrated by recovery of surrogate spikes, laboratory control samples (LCS), and matrix spikes (MS); analytical precision as relative percent difference (RPD) of analyte

concentration between replicate samples (i.e., laboratory duplicates) or MS and matrix spike duplicates (MSD); sampling precision as RPD of analyte concentration between field duplicates; calibration performance; and insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all quality control (QC) audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3.0 EXPLANATION OF DATA QUALITY INDICATORS

LCS Recoveries

LCS and laboratory control sample duplicates (LCSD), also known as blank spike (BS) and blank spike duplicates (BSD), are aliquots of analyte-free water or Ottawa sand that are spiked with the analytes of interest for an analytical method or a representative subset of those analytes. The spiked water or sand is then processed through the same extraction, concentration, cleanup, and analytical procedures as the samples they accompany. LCS recovery and precision are indications of a laboratory's ability to successfully perform an analytical method in an interference-free matrix. LCS recoveries should generally be within 70 to 130% acceptance limits for organic analytes and 80 to 120% for inorganic analytes.

MS Recoveries

MS and MSD are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are indications of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related. MS recoveries should generally be within 60 to 140% acceptance limits for organic analytes and 75 to 125% acceptance limits for inorganic analytes.

Internal Standard Recoveries

Internal Standards (IS) are compounds that are added to a sample extract after all preparatory steps are completed and before instrumental analysis. These compounds serve as standards for qualitative analysis using relative retention time and quantitative

analysis using relative response factors (RFs). Methods that use IS calibration include requirements for changes in response to the IS relative to the initial calibration (ICAL).

For EPA Methods 8260B and 8270C, IS response must fall between 50 and 200% of the response in the ICAL. Because the area of the IS is used in the denominator of the equation for calculation of results using internal standardization, a response below 50% may indicate a possible positive bias, and a response above 200% may indicate a possible negative bias.

Surrogate Spike Recoveries

Surrogate spikes are used to evaluate accuracy, method performance, and extraction efficiency in each individual sample. Surrogate compounds are compounds not normally found in environmental samples, but which are similar to target analytes in chemical composition and behavior in the analytical process. Surrogate recoveries generally should be within 70 to 130% acceptance limits in interference-free matrices (blanks, LCS/LCSD) and 60 to 140% acceptance limits in field samples.

Field Duplicate Results

Field duplicates are replicate samples collected at the same location and submitted in blind form to the laboratory. Field duplicates provide an indication of the reproducibility of the sampling and analysis procedures for a given sample matrix, including heterogeneity of the sample itself. RPDs between aqueous field duplicate results should be less than 30% and for soil samples less than 50% for analytes with concentrations greater than 5 times the method reporting limit (MRL) and the difference between analyte concentrations less than 5 times the MRL should be less than or equal to the corresponding MRL. A summary of field duplicate detections may be found in Table 2.

Blank Concentrations

Blank samples are aliquots of analyte free water or Ottawa sand that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results. The three types of blanks employed for this project are:

- Laboratory blanks are aliquots of analyte free water or Ottawa sand that are processed by the laboratory using exactly the same procedures as the field samples. Laboratory blanks are used to monitor for contamination introduced by the laboratory during sample preparation and analysis.
- Trip blanks are aliquots of analyte free water that are placed in sample containers at the analytical laboratory and are then sent into the field with the sample

containers that are used to collect field samples. Trip blanks are not opened in the field, but accompany the field samples back to the laboratory where they are analyzed as samples. Trip blanks are used to monitor for contamination that result from sample shipping and storage. For the purpose of this project, trip blanks are prepared and analyzed for VOCs only.

- Rinsate blanks are prepared by passing analyte-free water through or over sample collection equipment and collecting the water in sample containers. Rinsate blanks are analyzed for the analytical suite required for the project. Rinsate blanks are used to monitor for possible sample contamination during the sample collection process and serve as a check on the effectiveness of field documentation procedures.

4.0 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

4.1 Sample Receipt at STL

All samples were received by STL in good condition. Specific details of sample receipt condition and COC anomalies are described below.

Sample Receipt Date	Receipt Issue(s)	Affected Sample(s)	Effects on Data Usability
November 11, 2005	According to the associated case narrative, sample vials contained air bubbles.	SIL-01-GW-100 (115-01) SIL-01-GW-130 (116-01) SIL-01-GW-160 (117-01)	AMEC UJ qualified the nondetected VOC results and J qualified the detected VOC results from these samples because of a possible low bias in the analytical results.
November 18, 2005	Cooler temperature not recorded on COC	SIL-03-GW-35 (125-01) Trip Blank (125-03) SIL-03-GW-99 (126-01)	Sample receipt conditions could not be fully evaluated.
November 22, 2005	Two of four cooler temperatures were recorded at 1°C and 2°C.	SIL-02-GW-32 (127-01) RP-11-SO-8 (128-01) SIL-02-GW-100 (131-01) SIL-02-GW-130 (132-01) SIL-02-GW-160 (133-01) SIL-02-GW-160 (133-02) RP-11-GW-190 (135-01) SIL-04-GW-30 (136-01) SIL-04-GW-74 (137-01)	The laboratory did not indicate that any samples were frozen or damaged; therefore, data usability is not adversely affected.
December 9, 2005	Laboratory reported air bubbles in sample vials.	Trip Blank (143-01)	Trip Blank (143-01) results may be biased low.

Note: °C = degrees Celsius

4.2 Sample Receipt at CAS

All samples were received at CAS in good condition. Specific details of sample receipt condition and COC anomalies are described below.

Sample Receipt Date	Receipt Issues	Affected Sample(s)	Effects on Data Usability
November 4, 2005	Cooler temperature recorded at 0.1°C	SIL-01-GW-31.5 (101-01)	The laboratory did not indicate that samples were frozen or damaged; therefore, data usability is not adversely affected.
November 16, 2005		SIL-02-GW-216 (119-01) SIL-02-GW-216 (119-05) RP-11-GW-31 (120-01) RP-11-GW-100 (122-01) RP-11-GW-100 (122-02)	
November 16, 2005	Cooler temperature recorded at 1.7°C and temperature blank recorded at 0.9°C	SIL-01-GW-100 (115-01)	
December 2, 2005	Cooler temperature recorded at 1.2°C	RP-11-GW-216 (139-01)	
December 13, 2005	Cooler temperature recorded at 0.9°C	SIL-04-GW-89 (144-01)	
November 9, 2005	Temperature blank recorded at 6.8°C	SIL-01-GW-208 (109-01) SIL-01-GW-217 (114-01)	AMEC J qualified the detected DRO and RRO results from sample SIL-01-GW-217 (114-01) and UJ qualified the nondetected DRO and RRO results from sample SIL-01-GW-208 (109-01) because of the elevated sample receipt temperature.
November 17, 2005	Cooler temperature recorded at 7.1°C	SIL-03-GW-35 (125-01) and SIL-03-GW-99 (126-01)	Because the cooler temperature was slightly outside the 6°C upper limit and the associated temperature blank was recorded at 5.8°C in AMEC's professional opinion the cooler temperature exceedance does not impact data usability.

5.0 SPECIFIC DATA VALIDATION FINDINGS FOR EACH ANALYTICAL METHOD

Sections 5.1 to 5.6 of this Data Validation Report contain narrative descriptions of data validation findings and data quality limitations. Definitions of data qualifiers added during validation may be found in Table 3. Summaries of specific qualifiers added to each affected sample as a result of the data validation findings are presented in Tables 4 through 9.

5.1 Metals by EPA 6010B and EPA 7470A/7471A

Metals data from the Stage 1 SCE Siltronic Riverbank reconnaissance activities may be considered usable with the limitations and exceptions described below. Summaries of qualified metals results may be found in Table 4.

5.1.1 Holding Times

All samples were analyzed for mercury within the recommended technical holding time of 28 days and for all other metals within the recommended technical holding time of 180 days.

5.1.2 Initial Calibration

All ICALs associated with the analysis of these samples for metals were acceptable.

5.1.3 Initial Calibration Verification

EPA acceptance limits for metals initial calibration verifications (ICVs) are 90 to 110%. ICVs associated with the analysis of these samples were acceptable.

5.1.4 Continuing Calibration Verification

EPA acceptance limits for metals continuing calibration verifications (CCVs) are 90 to 110%. CCVs associated with reported data from the analysis of these samples were acceptable.

5.1.5 Inductively Coupled Plasma Interference Check Sample

All interference check samples (ICS) exhibited recoveries within the method-specified 80 to 120% acceptance limits.

5.1.6 Reporting Limit Check Standard

CLP lead reporting limit check standards (CRI) are 50 to 150% and 70 to 130% and all other metals. All CRIs associated with reported data from the analysis of these samples for metals were acceptable, except as described below.

QC Exceedance	Affected Samples	Effects on Data Usability
Aluminum and iron recoveries were high at 495% and 439%, respectively in CRI analyzed on December 10, 2005 on instrument TJA ICAP 6.	SIL-01-GW-217 (114-01)	AMEC J qualified the detected dissolved aluminum result because of possible high bias in the analytical results.
Aluminum and iron recoveries were high at 206% and 172%, respectively in CRI analyzed on December 11, 2005 on instrument TJA ICAP 4	SIL-01-GW-31.5 (101-01)	
Aluminum and iron recoveries were high at 292% and 271%, respectively in CRI analyzed on December 13, 2005 on instrument TJA ICAP 4	SIL-01-GW-100 (115-01) SIL-02-GW-216 (119-01) RP-11-GW-31 (120-01) RP-11-GW-100 (122-01) RP-11-GW-100 (122-02) SIL-03-GW-35 (125-01) SIL-03-GW-99 (126-01)	AMEC J qualified the detected dissolved aluminum results from samples SIL-01-GW-100 (115-01), RP-11-GW-100 (122-01), and SIL-03-GW-99 (126-01) because of possible high bias in the analytical results.
Mercury recovery was low at 65% in CRI analyzed on November 29, 2005 at 12:26	-	Project samples were not associated with this CRI and data usability is not adversely affected.
Mercury recovery was low at 65% in CRI analyzed on November 29, 2005 at 16:58	SIL-03-GW-35 (125-01) SIL-03-GW-99 (126-01)	AMEC UJ qualified the nondetected total and dissolved mercury results from these samples because of possible low bias in the analytical results.
Aluminum recovery was high at 133% in CRI analyzed on December 19, 2005 on instrument TJA ICAP 4.	SIL-02-GW-32 (127-01) RP-11-SO-8 (128-01) SIL-02-GW-100 (131-01) SIL-04-GW-30 (136-01) SIL-04-GW-74 (137-01) RP-11-GW-216 (139-01)	The analytes were either not detected or the concentrations in the associated samples were greater than 2 times the CRDL, data usability is not adversely affected.
Aluminum and iron recoveries were high at 149% and 131%, respectively in CRI analyzed on December 21, 2005 on instrument TJA ICAP 4.	SIL-03-GW-130 (142-01) SIL-04-GW-89 (144-01)	
Aluminum and iron recoveries were high at 371% and 318%, respectively in CRI analyzed on January 6, 2006 on instrument TJA ICAP 6.	SIL-03-GW-130 (142-01)	

5.1.7 Blanks

Target analytes should not be found in blank samples. When the concentration detected in the blank is less than the MRL, concentrations in associated samples greater than the MRL but less than 5 times the concentration detected in the blank have been U qualified by AMEC. When the absolute concentration detected in the blank is greater than the MRL, concentrations in associated samples greater than the MRL but less than 10 times the concentration detected in the blank have been U qualified by AMEC. In both cases, sample concentrations between the instrument

detection limit (IDL) and MRL, and less than 5 or 10 times the concentration detected in the blank have been U qualified at the MRL concentration.

Laboratory Blanks

Target analyte concentrations in laboratory blanks associated with analysis of these samples for metals are described below.

Blank ID	Detected Analytes	Concentration	Affected Samples	U Qualified Analytes
PBW112805B	Zinc	2.501µg/L	SIL-01-GW-208 (109-01)	Dissolved zinc
PBW111605G	Calcium Iron Zinc	326.1µg/L 190.9 µg/L 8.062 µg/L	SIL-01-GW-31.5 (101-01)	
PBW113005B	Calcium Chromium Copper Lead Magnesium Vanadium Zinc	550.5 µg/L 2.559 µg/L 7.294 µg/L 7.485 µg/L 296 µg/L 3.042 µg/L 7.843 µg/L	SIL-01-GW-100 (115-01)	Total lead, dissolved chromium, dissolved copper, dissolved lead, dissolved vanadium and dissolved zinc
PBW120205B	Calcium Copper Magnesium Zinc Iron Manganese	565 µg/L 3.495 µg/L 312.2 µg/L 9.161 µg/L 58.07 µg/L 1.121 µg/L	RP-11-GW-31 (120-01) SIL-03-GW-35 (125-01)	total copper
			RP-11-GW-31 (120-01)	total zinc
			SIL-02-GW-216 (119-01) RP-11-GW-31 (120-01) RP-11-GW-100 (122-01) SIL-03-GW-35 (125-01)	dissolved copper
			SIL-02-GW-216 (119-01) RP-11-GW-31 (120-01) RP-11-GW-100 (122-01) RP-11-GW-100 (122-02) SIL-03-GW-99 (126-01)	dissolved zinc
PBS112505C	Copper	0.202 mg/kg	RP-11-SO-8 (128-01)	Analyte concentrations in the associated samples were more than 5 times the concentrations detected in the blanks, data usability is not adversely affected.
PBW120105C	Iron	71.6 µg/L	SIL-02-GW-32 (127-01) SIL-02-GW-100 (131-01) SIL-04-GW-30 (136-01) SIL-04-GW-74 (137-01)	
PBW120605B	Chromium	1.509 µg/L	RP-11-GW-216 (139-01)	
PBW121405B	Manganese	2.071 µg/L	SIL-03-GW-130 (142-01)	
PBW121405B	Calcium Manganese	785.7 µg/L 1.414 µg/L	SIL-04-GW-89 (144-01)	
PBW121405B	Chromium	-2.591 µg/L	SIL-04-GW-89 (144-01)	AMEC UJ qualified the nondetected total and dissolved chromium results from this sample because of possible low bias in the analytical results.

Notes:
µg/L = micrograms per Liter
mg/kg = milligrams per kilogram

Initial and Continuing Calibration Blanks

Target analyte concentrations greater than the IDL in initial and continuing calibration blanks associated with analysis of these samples for metals and samples that required

qualification because sample concentrations were less than 5 times the concentration detected in the associated blanks are listed in the table below.

Blank ID	Detected Analytes	Concentration	Affected Samples	U Qualified Analytes
ICB December 10, 2005	Cadmium	0.9 µg/L	SIL-01-GW-208 (109-01) SIL-01-GW-217 (114-01)	The analytes either were not detected in the associated samples or the concentrations detected in the samples were more than 5 times the concentration detected in the blanks, data usability is not adversely affected.
CCB2 December 10, 2005	Aluminum	77.9 µg/L		
CCB3 December 10, 2005	Aluminum	68.6 µg/L		
ICB December 11, 2005	Chromium	1.0 µg/L	SIL-01-GW-31.5 (101-01)	Dissolved chromium
CCB3 December 11, 2005	Chromium Iron Manganese	1.0 µg/L 164.9 µg/L 1.5 µg/L		
CCB4 December 11, 2005	Iron Manganese	173.4 µg/L 2.6 µg/L		
ICB December 12, 2005	Chromium Copper Lead	1.6 µg/L 2.4 µg/L 7.4 µg/L	SIL-01-GW-100 (115-01) SIL-02-GW-216 (119-01) SIL-03-GW-35 (125-01) SIL-03-GW-99 (126-01)	Dissolved chromium
			SIL-02-GW-216 (119-01) RP-11-GW-31 (120-01) RP-11-GW-100 (122-02)	Dissolved copper
			SIL-01-GW-100 (115-01) SIL-02-GW-216 (119-01) RP-11-GW-100 (122-02)	Dissolved lead
			RP-11-GW-31 (120-01) SIL-03-GW-35 (125-01)	Total chromium
			SIL-03-GW-35 (125-01)	Total copper
			SIL-02-GW-216 (119-01) RP-11-GW-31 (120-01) RP-11-GW-100 (122-01) RP-11-GW-100 (122-02)	Total lead
CCB1 December 12, 2005	Calcium Copper Lead Zinc	432.5 µg/L 3.0 µg/L 7.4 µg/L 8.1 µg/L	SIL-01-GW-100 (115-01)	Dissolved copper, dissolved lead and dissolved zinc
CCB2 December 12, 2005	Calcium Copper Lead Vanadium Zinc	1.9 µg/L 2.4 µg/L 9.5 µg/L 2.8 µg/L 5.6 µg/L	RP-11-GW-31 (120-01)	Total copper
			SIL-01-GW-100 (115-01) SIL-02-GW-216 (119-01) RP-11-GW-31 (120-01) RP-11-GW-100 (122-01) RP-11-GW-100 (122-02)	Total lead
			RP-11-GW-31 (120-01) SIL-03-GW-35 (125-01)	Total vanadium

Blank ID	Detected Analytes	Concentration	Affected Samples	U Qualified Analytes
			RP-11-GW-31 (120-01)	Total zinc
			SIL-02-GW-216 (119-01) RP-11-GW-31 (120-01) RP-11-GW-100 (122-01) SIL-03-GW-35 (125-01)	Dissolved copper
			SIL-01-GW-100 (115-01) SIL-02-GW-216 (119-01) RP-11-GW-100 (122-02)	Dissolved lead
			SIL-01-GW-100 (115-01) SIL-02-GW-216 (119-01) RP-11-GW-31 (120-01) RP-11-GW-100 (122-01) RP-11-GW-100 (122-02) SIL-03-GW-35 (125-01)	Dissolved vanadium
			SIL-02-GW-216 (119-01) RP-11-GW-31 (120-01) RP-11-GW-100 (122-01) RP-11-GW-100 (122-02)	Dissolved zinc
CCB3 December 12, 2005	Potassium	851.9 µg/L	RP-11-GW-31 (120-01) SIL-03-GW-35 (125-01)	Total potassium
			SIL-01-GW-100 (115-01) RP-11-GW-31 (120-01) SIL-03-GW-35 (125-01)	Dissolved potassium
CCB4 December 12, 2005	Potassium	892.5 µg/L	SIL-03-GW-35 (125-01)	Total and dissolved potassium
ICB December 13, 2005	Iron Manganese	44.1 µg/L 2.6 µg/L	SIL-01-GW-100 (115-01) SIL-02-GW-216 (119-01) RP-11-GW-31 (120-01) RP-11-GW-100 (122-01) RP-11-GW-100 (122-02) SIL-03-GW-35 (125-01) SIL-03-GW-99 (126-01)	Iron and manganese concentrations in the samples were more than 5 times the concentrations detected in the blank and data usability is not adversely affected.
CCB1 December 13, 2005	Aluminum Iron	125.1 µg/L 70.8 µg/L	SIL-01-GW-100 (115-01)	Dissolved aluminum
CCB3 December 13, 20055	Iron Manganese	86.8 µg/L 3.5 µg/L	SIL-02-GW-216 (119-01) RP-11-GW-31 (120-01) RP-11-GW-100 (122-01) RP-11-GW-100 (122-02) SIL-03-GW-35 (125-01) SIL-03-GW-99 (126-01)	Iron and manganese concentrations in the samples were more than 5 times the concentrations detected in the blank and data usability is not adversely affected.
CCB4 December 13, 2005	Iron Manganese	55.1 µg/L 1.0 µg/L	RP-11-GW-100 (122-01) RP-11-GW-100 (122-02) SIL-03-GW-35 (125-01) SIL-03-GW-99 (126-01)	Iron and manganese concentrations in the samples were more than 5 times the concentrations detected in the blank and data usability is not adversely affected.
ICB December 19, 2005 TJA4	Lead	2.2 µg/L	SIL-02-GW-32 (127-01) RP-11-SO-8 (128-01) SIL-02-GW-100 (131-01) SIL-04-GW-30 (136-01)	AMEC U qualified the total lead results from samples SIL-02-GW-100 (131-01) and RP-11-GW-216 (139-01)

Blank ID	Detected Analytes	Concentration	Affected Samples	U Qualified Analytes
			SIL-04-GW-74 (137-01) RP-11-GW-216 (139-01)	because the concentrations detected in the samples were less than five times the concentrations detected in the blanks.
CCB3 December 19, 2005	Lead	2.3 µg/L	SIL-02-GW-32 (127-01) SIL-02-GW-100 (131-01) SIL-04-GW-30 (136-01) SIL-04-GW-74 (137-01) RP-11-GW-216 (139-01)	
CCB2 December 19, 2005	Iron	58.1 µg/L	RP-11-SO-8 (128-01) RP-11-GW-216 (139-01)	Iron concentrations in the associated samples were more than 5 times the concentration detected in the blank and data usability is not adversely affected.
CCB3 November 25, 2005	Mercury	0.1 µg/L	RP-11-SO-8 (128-01)	AMEC U qualified the detected mercury result from this sample because the concentration detected in the sample was less than five times the concentration detected in the blank.
ICB December 21, 2005 TJA6	Cadmium Chromium Manganese	2.1 µg/L 2.5 µg/L 2.4 µg/L	SIL-03-GW-130 (142-01)	These analytes either were not detected or the concentrations detected in the associated samples were more than 5 times the concentration detected in the blank, data usability is not adversely affected.
ICB December 21, 2005 TJA4	Chromium	-2.8 µg/L	SIL-04-GW-89 (144-01)	AMEC UJ qualified the nondetected total and dissolved results because of possible low bias in the analytical results.
CCB1 December 21, 2005		-2.9 µg/L		
CCB2 December 21, 2005		-2.8 µg/L		
CCB3 December 21, 2005		-2.9 µg/L		
CCB4 December 21, 2005	Chromium Copper	-3.3 µg/L -2.1 µg/L		
ICB January 6, 2006 TJA6	Aluminum Iron	57.1 µg/L 63.6 µg/L	SIL-03-GW-130 (142-01)	Aluminum and iron concentrations in the associated sample were more than 5 times the concentration detected in the blank and data usability is not adversely affected.
CCB1 January 6, 2006	Iron	129.9 µg/L		
CCB2 January 6, 2006	Aluminum Iron	112.8 µg/L 84.2 µg/L		

Blank ID	Detected Analytes	Concentration	Affected Samples	U Qualified Analytes
CCB6 December 19, 2005	Mercury	-0.2 µg/L	SIL-03-GW-130 (142-01) SIL-04-GW-89 (144-01)	AMEC UJ qualified the nondetected total and dissolved mercury results because of possible low bias in the analytical results.
ICB December 21, 2005 TJA6	Cadmium Chromium Manganese	2.1 µg/L 2.5 µg/L 2.4 µg/L	SIL-03-GW-130 (142-01)	These analytes were either not detected or the concentrations detected in the associated samples were more than 5 times the concentration detected in the blank, data usability is not adversely affected.

Rinsate Blanks

Target analyte concentrations greater than the MDL in the rinsate blanks associated with analysis of these samples for metals are described below.

Blank ID	Detected Analytes	Concentration (µg/L)	Affected Samples	U qualified analytes
Rinsate blank 129-04	Total Iron Total Manganese Total Zinc Dissolved Iron Dissolved Manganese Dissolved Zinc	267 4.1 8.9 86.6 3.0 6.5	SIL-02-GW-32 (127-01) RP-11-SO-8 (128-01) SIL-02-GW-100 (131-01)	dissolved zinc results from samples SIL-02-GW-32 (127-01) and SIL-02-GW-100 (131-01

5.1.8 LCS Recovery

Recoveries were acceptable in all LCS associated with analysis of these samples for metals.

5.1.9 MS/MSD Recovery and Precision

The method-specified acceptance limits for metals MS recoveries are 75 to 125%. However, spike recovery limits are not applicable when the sample concentration exceeds the spike concentration by a factor of four or more.

Precision and recovery were acceptable in all MS associated with analysis of these samples for metals, except as described below.

Spiked Sample ID	Analytes outside acceptance limits	% Recovery	Effects on Data Usability
RP-11-SO-8 (128-01)	Aluminum Arsenic Cadmium Iron Lead Manganese	316.7 71.2 75.2 1,365.9 31.6 129.3	The background aluminum (8,780 mg/kg), iron (20,800 mg/kg), and lead (13 mg/kg) concentrations in the unspiked sample were more than 4 times the spike concentrations and data usability is not adversely affected.
			AMEC J qualified the detected arsenic result and UJ qualified the nondetected cadmium result from sample RP-11-SO-8 (128-01) because of possible low bias in the analytical results.
			AMEC J qualified the detected manganese result from sample RP-11-SO-8 (128-01) because of a possible high bias in the analytical result.
RP-11-GW-216 (139-01)	Aluminum Iron	385.5 349	The background aluminum (13,900 µg/L) and iron (19,860 µg/L) concentrations in the unspiked sample were more the 4 times the spike concentrations, data usability is not adversely affected.

5.1.10 Serial Dilutions

EPA acceptance limits for metals serial dilutions are ≤10% difference for analyte concentrations greater than 50 times the IDL in the original sample. Percent differences were acceptable in all serial dilutions associated with analysis of these samples for metals, except as described below.

Sample ID	Analytes outside acceptance limits	Effects on Data Usability
SIL-01-GW-100 (115-01)	Total calcium, total chromium, total copper, total zinc, dissolved iron, dissolved manganese	AMEC J qualified the detected results for these analytes from sample SIL-01-GW-100 (115-01) because of possible matrix interference.
RP-11-SO-8 (128-01)	Lead, magnesium, zinc	AMEC J qualified the detected results for these analytes from sample RP-11-SO-8 (128-01) because of possible matrix interference.
SIL-04-GW-89 (144-01)	Dissolved Calcium, dissolved Magnesium, dissolved Manganese	AMEC J qualified the detected results for these analytes from sample SIL-04-GW-89 (144-01) because of possible matrix interference.

5.1.11 Laboratory Duplicates

CLP acceptance limits for duplicate sample analyses are ±20% RPD for sample concentrations greater than or equal to (≤) 5 times the MRL. A control limit of ± MRL is used if either the sample or duplicate result is less than 5 times the MRL.

The laboratory duplicates exhibited acceptable precision, except as described below.

Sample Analyzed in Duplicate	Analytes outside acceptance limits	Effects on Data Usability
RP-11-GW-216 (139-01)	Dissolved copper was not detected above the MRL of 2 µg/L in the primary analysis but was detected at a concentration of 8.381 µg/L in the laboratory duplicate.	AMEC UJ qualified the nondetected dissolved copper result from sample RP-11-GW-216 (139-01) because of possible bias in the analytical result.

5.1.12 Data Reporting and Analytical Procedures

The laboratory B qualified detected results with concentrations between the reporting limit (RL) and IDL. AMEC concurs that these results are quantitative estimates and qualified these results J on the data tables.

5.2 Volatile Organic Compounds by EPA Method 8260B

VOC data from the Stage 1 SCE Siltronic Riverbank reconnaissance activities may be considered usable with the limitations and exceptions described below. Summaries of qualified VOC results are presented in Table 5.

5.2.1 Holding Times

All samples from this event were analyzed for VOCs within the recommended maximum holding time of 7 days for unpreserved aqueous samples and 14 days for preserved aqueous samples and soil samples, except as described below.

Sample RP-11-SO-8 (128-01) was reanalyzed 2 days beyond the technical holding time of 14 days due to a high naphthalene concentration in the original analysis. Naphthalene was the only analyte reported from the secondary dilution of this sample and AMEC J qualified the naphthalene result because of the exceeded holding time.

5.2.2 Initial Calibration

All criteria were met for the initial calibrations associated with analysis of samples from this sampling event for VOCs, except as described below.

ICAL ID	Analytes with %RSDs Greater than 15%	Effects on Data Usability
ICAL analyzed on November 16, 2005 on instrument L.	Chloroethane tert-Butylbenzene 1,2-dibromo-3-chloropropane	AMEC UJ qualified the nondetected results for these analytes from samples SIL-01-GW-31.5 (101-01) and DI Water (105-01) because of a possible bias in the analytical results.
ICAL analyzed on November 17, 2005 on instrument L.	Chloroethane	AMEC UJ qualified the nondetected chloroethane results from samples SIL-01-GW-208 (109-01), SIL-01-GW-217 (114-01), SIL-01-GW-100 (115-01), SIL-01-GW-130 (116-01), SIL-01-GW-160(117-01), SIL-01-GW-188 (118-01), SIL-02-GW-216 (119-01), RP-11-GW-31 (120-01), RP-11-GW-100 (122-01), RP-11-GW-100 (122-02), RP-11-GW-130 (123-01), and RP-11-GW-152 (124-01) because of a possible bias in the analytical results.
ICAL analyzed on November 28, 2005 on instrument L.	Chloromethane Chloroethane Acetone 1,2-dibromo-3-chloropropane	AMEC UJ qualified the nondetected results for these analytes from samples SIL-03-GW-35 (125-01) and SIL-03-GW-99 (126-01) because of a possible bias in the analytical results.
ICAL analyzed on November 28, 2005 on instrument L.	Chloromethane Bromomethane Chloroethane Acetone 1,2-dibromo-3-chloropropane	AMEC UJ qualified the nondetected chloromethane, chloroethane, and 1,2-dibromo-3-chloropropane results from samples SIL-02-GW-32 (127-01), SIL-02-GW-100 (131-01), SIL-02-GW-130 (132-01), SIL-02-GW-160 (133-01), SIL-02-GW-160 (133-02), SIL-02-GW-190 (134-01), RP-11-GW-190 (135-01), SIL-04-GW-30 (136-01), SIL-04-GW-74 (137-01), and RP-11-GW-216 (139-01) because of possible bias in the analytical results.
		AMEC UJ qualified the nondetected acetone results from samples SIL-02-GW-190 (134-01), SIL-04-GW-74 (137-01), and RP-11-GW-216 (139-01) because of possible bias in the analytical results.
		AMEC J qualified the detected acetone results from samples SIL-02-GW-32 (127-01), SIL-02-GW-100 (131-01), SIL-02-GW-130 (132-01), SIL-02-GW-160 (133-01), SIL-02-GW-160 (133-02), RP-11-GW-190 (135-01), and SIL-04-GW-30 (136-01) because of possible bias in the analytical results.
ICAL analyzed on November 21, 2005 on instrument M.	Bromomethane Acetone Methyl iodide 2-butanone (MEK) 4-methyl-2-pentanone (MIBK) 2-hexanone	AMEC UJ qualified the nondetected results for these analyte from sample RP-11-SO-8 (128-01) because of possible bias in the analytical results.
	Isobutyl alcohol	AMEC R qualified and rejected the nondetected isobutyl alcohol result from sample RP-11-SO-8 (128-01) because the presence of this analyte could not be confirmed due to the very low RRF.
ICAL analyzed on December 12, 2005 on instrument L.	Chloroethane methylene chloride trans-1,2-dichloroethene 1,2-dichloroethane Dibromomethane 2-chlorotoluene 1,2-dibromo-3-chloropropane	AMEC UJ qualified the nondetected results for these analytes from samples SIL-03-GW-130 (142-01) because of possible bias in the analytical results.
ICAL analyzed on December 20, 2005 on instrument L.	Isobutyl alcohol	AMEC UJ qualified the nondetected result for this analyte from sample SIL-04-GW-89 (144-01) because of a possible bias in the analytical results.

5.2.3 Continuing Calibration

Continuing calibration (CCAL) performance is evaluated in terms of percent deviation (%D), which corresponds to %D (average RF models) or percent drift (regression fit models) from the average ICAL response. To facilitate understanding of CCAL effects on data quality to the end user, %D has been expressed as percent recovery in this narrative.

Compounds with CCAL recoveries greater than 120% and detected results were J qualified by AMEC in all associated samples to indicate a possible high bias in the results. AMEC J qualified detected results or UJ qualified nondetected results associated with compounds with CCAL recoveries less than 80% to indicate possible low bias in the sample results.

All criteria were met for the CCAL associated with analysis of samples from this sampling event for VOCs except as described below:

CCAL ID	Analyte/Problem	Effects on Data Usability
VSTD010, analyzed on November 17, 2005.	Tetrachloroethene (PCE) recovery was low at 77%	AMEC UJ qualified the nondetected PCE results from samples SIL-01-GW-208 (109-01), SIL-01-GW-217 (114-01), SIL-01-GW-100 (115-01), SIL-01-GW-130 (116-01), and SIL-01-GW-160 (117-01) because of possible low bias in the analytical results.
VSTD010, analyzed on November 21, 2005.	Acetone recovery was low at 78%	AMEC J qualified the detected acetone results from samples SIL-01-GW-188 (118-01), RP-11-GW-31 (120-01), RP-11-GW-100 (122-01), RP-11-GW-130 (123-01), and RP-11-GW-152 (124-01) because of possible low bias in the analytical results AMEC UJ qualified the nondetected acetone results from samples SIL-02-GW-216 (119-01) and RP-11-GW-100 (122-02) because of possible low bias in the analytical results
VSTD010, analyzed on November 21, 2005.	Dichlorodifluoromethane recovery was high at 134% and tetrachloroethene (PCE) recovery was low at 78%	AMEC UJ qualified the nondetected PCE result from sample RP-11-SO-8 (128-01) because of a possible low bias in the analytical result. Dichlorodifluoromethane recovery was high and this analyte was not detected in the associated sample, data usability is not adversely affected.
VSTD010, analyzed on December 2, 2005.	Trichlorofluoromethane (78%), acetone (72%), and PCE (76%) recoveries were low.	These analytes were not reported from this analysis date, data usability is not adversely affected.
VSTD010, analyzed on December 14, 2005.	Acetone recovery low at 78%	AMEC UJ qualified the nondetected acetone result from sample SIL-03-GW-130 (142-01) because of a possible low bias in the analytical result.
VSTD010, analyzed on December 20, 2005.	Bromomethane (69%) and methyl iodide (63%) recoveries were low.	AMEC UJ qualified the nondetected results for these analytes from sample SIL-04-GW-89 (144-01) because of possible low bias in the analytical results.

5.2.4 Blanks

Target analytes should not be found in blank samples. Results greater than the MRL but less than 5 times the concentration found in the blank, or 10 times the amount found in the blank for methylene chloride, acetone, and MEK, have been U qualified. Results between the IDL and MRL, and less than 5 or 10 times the amount found in the blank have been U qualified at the MRL concentration.

Laboratory Blanks

No target analytes were detected in the laboratory blanks associated with the analysis of these samples for VOCs, except as described in the below.

Blank ID	Detected Analytes	Analyte Concentration (µg/L)	Affected Samples	Effects on Data Usability
Laboratory blank MBLK1116 05LA	Naphthalene	0.29	DI Water (105-01)	AMEC U qualified the naphthalene result from this sample because the sample concentration was less than 5 times the concentration detected in the blank.
Laboratory blank MBLK1129 05LA	Naphthalene 1,2,3-Trichlorobenzene	0.29 0.21	SIL-02-GW-100 (131-01) SIL-02-GW-130 (132-01) SIL-02-GW-160 (133-01) SIL-02-GW-160 (133-02) SIL-02-GW-190 (134-01) RP-11-GW-190 (135-01) SIL-04-GW-30 (136-01)	AMEC U qualified the naphthalene results from samples SIL-02-GW-160 (133-02), SIL-02-GW-190 (134-01), and RP-11-GW-190 (135-01) because the naphthalene concentrations in the samples were less than 5 times the associated blank contamination.
Laboratory blank MBLK1202 05D	Naphthalene 1,2,3-Trichlorobenzene	0.33 0.24	RP-11-GW-216 (139-01)	These analytes were not detected in the associated sample, data usability is not adversely affected.
Laboratory blank MBLK1202 05MA	Isobutyl alcohol 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene	30 1.0 1.1 1.7 1.3	RP-11-SO-8 (128-01)	These analytes were either not detected or the detected concentrations in the associated samples were more than 5 times the concentration detected in the blank, data usability is not adversely affected.
Laboratory blank MBLK1214 05LB	Naphthalene 1,2,3-Trichlorobenzene	0.32 0.22	SIL-03-GW-130 (142-01)	These analytes were not detected in the associated samples, data usability is not adversely affected.
Laboratory blank MBLK1220 05LB	Naphthalene	0.25	SIL-04-GW-89 (144-01)	

Trip Blanks

No target analytes were detected in the trip blanks associated with the analysis of these samples for VOCs, except as described in the below.

Blank ID	Detected Analytes	Analyte Concentration (µg/L)	Affected Samples	Effects on Data Usability
Trip Blank (101-03)	Naphthalene	0.89	DI Water (105-01)	AMEC U qualified the detected naphthalene result from this sample because the concentration detected in the sample was less than 5 times the concentration detected in the blank.
Trip Blank (115-03)	Naphthalene	0.26	SIL-01-GW-60 (117-01)	
Trip Blank (137-03)	Acetone	2.3	SIL-04-GW-74 (137-01)	Acetone was not detected in the associated sample, data usability is not adversely affected.
Trip Blank (139-03)	Methylene Chloride 1,2-Dichlorobenzene Naphthalene 1,2,3-Trichlorobenzene	0.41 0.39 0.30 0.21	RP-11-GW-216 (139-01)	These analytes were either not detected in the associated sample or were detected at concentrations greater than 5 times the concentration detected in the blank, data usability is not adversely affected.
Trip Blank (142-03)	Chloromethane Acetone	0.22 7.2	SIL-03-GW-130 (142-01)	These analytes were not detected in the associated sample, data usability is not adversely affected.

Rinsate Blanks

No target analytes were detected in the rinsate blanks associated with the analysis of these samples for VOCs, except as described below.

Blank ID	Detected Analytes	Analyte Concentration (µg/L)	Affected Samples	Effects on Data Usability
Rinsate Blank (129-04)	Chloromethane Vinyl Chloride Carbon Disulfide Chloroform Toluene	0.22 0.30 2.6 0.43 1.7	SIL-02-GW-32 (127-01) RP-11-SO-8 (128-01) SIL-02-GW-100 (131-01) SIL-02-GW-130 (132-01)	AMEC U qualified the detected toluene result from sample SIL-02-GW-32 (127-01) and the detected carbon disulfide results from samples SIL-02-GW-100 (131-01) and SIL-02-GW-130 (132-01) because the concentrations of these analytes detected in the samples were less than 5 times the concentrations detected in the blank.
Rinsate Blank (130-04)	Chloromethane Vinyl Chloride Carbon Disulfide Chloroform Toluene 1,4-Dichlorobenzene 1,2-Dichlorobenzene Naphthalene	0.21 0.22 0.27 0.64 1.4 0.30 0.86 0.23	SIL-02-GW-32 (127-01) RP-11-SO-8 (128-01) SIL-02-GW-100 (131-01) SIL-02-GW-130 (132-01)	AMEC U qualified the detected toluene and naphthalene results from sample SIL-02-GW-32 (127-01); the detected carbon disulfide results from samples SIL-02-GW-100 (131-01) and SIL-02-GW-130 (132-01) because the concentrations of these analytes detected in the samples were less than 5 times the concentration detected in the blank.

5.2.5 LCS Recovery

All LCS recoveries associated with analysis of samples from this project for VOCs were within the QAPP-specified 70 to 130% acceptance limits, except as described below.

- Isobutyl alcohol recovery was high at 132% in LCS LJBE analyzed on December 2, 2005. Because the isobutyl alcohol recovery was high and this analyte was not detected in the associated sample, data usability is not adversely affected.
- Methyl iodide recovery was low at 68% in LCS LJEA analyzed on December 20, 2005. AMEC UJ qualified the nondetected methyl iodide result from sample SIL-04-GW-89 (144-01) because of a possible low bias in the analytical result.

5.2.6 Surrogate Standard Recoveries

Recovery of all surrogates associated with analysis of samples from this event for VOCs were acceptable.

5.2.7 Internal Standard Recoveries

Recovery of all IS associated with analysis of samples from this event for VOCs were between 50 and 200% of the response in the associated CCAL standard.

5.2.8 MS/MSD Recovery and Precision

All MS/MSD recoveries associated with analysis of samples from this project for VOCs were within the QAPP-specified 60 to 140% acceptance limits.

5.2.9 Data Reporting and Analytical Procedures

The laboratory J qualified detected results with concentrations between the RL and MDL. AMEC concurs that these results are quantitative estimates and qualified these results J on the data tables.

The laboratory did not employ alternate calibration procedures for target compounds in several ICALs that exhibited %RSDs greater than 15%. According to EPA Method 8260B (Section 7.3.8.2), if the %RSD of any target analyte is greater than 15%, additional calibration options must be applied to gas chromatography/mass spectrum (GC/MS) calibration or a new ICAL must be performed. Effects on data usability are discussed in Section 5.2.2 of this report.

The laboratory reported a detected isobutyl alcohol result from laboratory blank MBLK112905LA. According to the raw data, the mass spectrum for this analyte did not meet method requirements and should be considered not detected in laboratory blank MBLK112905LA. This analyte was not detected in the associated samples; therefore, data usability is not adversely affected.

The laboratory reanalyzed sample RP-11-SO-8 (128-01) at a secondary dilution because the naphthalene concentration in the initial analysis was above the calibration range of the instrument. The reanalysis of this sample took place two days beyond the holding time. AMEC chose to report the naphthalene result from this secondary dilution because it represents a “best case” result. Effects on data usability are addressed in Section 5.2.1.

The laboratory analyzed Trip Blank (144-03) at a 7.3-fold dilution due to high concentrations of target analytes in the initial undiluted analysis. The reported Trip Blank (144-03) results correspond with the results from the associated field sample SIL-04-GW-89 (144-01). It appears the vials for sample SIL-04-GW-89 (144-01) were inadvertently used for analysis of Trip Blank (144-03) and the trip blank results are not a consequence of storage contamination; therefore, AMEC rejected Trip Blank (144-03) results and did not apply these results for data usability purposes.

5.3 Semivolatile Organic Compounds by EPA Method 8270C

SVOC results data from the Stage 1 SCE Sampling Event may be considered usable with the limitations described below. Summaries of qualified SVOC results are presented in Table 6.

5.3.1 Holding Times

All samples were extracted within the EPA recommended maximum holding time of 7 days for waters and 14 days for soils and analyzed within 45 days from extraction.

5.3.2 Initial Calibration

All criteria were met for the initial calibrations associated with analysis of samples from this sampling event for SVOCs, except as described below.

ICAL ID	Analytes with %RSDs greater than 15%	Effects on Data Usability
ICAL analyzed on October 17, 2005 on instrument U.	Hexachloroethane, n-nitroso-di-n-propylamine 4-methylphenol Fluorene Pyrene benzo(b)fluoranthene benzo(k)fluoranthene	AMEC UJ qualified the nondetected hexachloroethane, n-nitroso-di-n-propylamine, and 4-methylphenol results from sample SIL-01-GW-31.5 (101-01) because of possible bias in the analytical results.
		AMEC J qualified the detected fluorene, pyrene, benzo(b)fluoranthene, and benzo(k)fluoranthene results from sample SIL-01-GW-31.5 (101-01) because of possible bias in the analytical results.
ICAL analyzed on November 16, 2005 on instrument U.	Acenaphthylene Acenaphthene diethylphthalate 4-chlorophenyl-phenylether 4-nitroaniline pyrene chrysene benzo(b)fluoranthene benzo(k)fluoranthene	AMEC UJ qualified the nondetected results for these analytes from samples SIL-01-GW-208 (109-01), SIL-01-GW-217 (114-01), and SIL-01-GW-100 (115-01) because of possible bias in the analytical results.
		AMEC J qualified the detected acenaphthene and diethylphthalate results from sample SIL-01-GW-100 (115-01) because of a possible bias in the analytical result.
ICAL analyzed on December 20, 2005 on instrument U.	Hexachloroethane n-nitroso-di-n-propylamine 4-methylphenol benzoic acid benzo(k)fluoranthene	AMEC UJ qualified the nondetected results for these analytes from samples SIL-02-GW-216 (119-01), RP-11-GW-31 (120-01), RP-11-GW-100 (122-01), RP-11-GW-100 (122-02), SIL-03-GW-35 (125-01), and SIL-03-GW-99 (126-01) because of possible bias in the analytical results.
		AMEC J qualified the detected benzoic acid results from samples SIL-03-GW-35 (125-01) and SIL-03-GW-99 (126-01) because of possible bias in the analytical results.

ICAL ID	Analytes with %RSDs greater than 15%	Effects on Data Usability
ICAL analyzed on December 6, 2005 on instrument U.	Hexachloroethane n-nitroso-di-n-propylamine 2,4-dimethylphenol 2,4-dichlorophenol 4-chlorophenyl-phenylether benzo(k)fluoranthene	Because only method blank and LCS samples were associated with this CCAL, data usability is not adversely affected.
ICAL analyzed on December 20, 2005 on instrument U.	Hexachloroethane n-nitroso-di-n-propylamine 4-methylphenol benzoic acid benzo(k)fluoranthene	AMEC UJ qualified the nondetected results for these analytes from samples SIL-02-GW-32 (127-01), RP-11-SO-8 (128-01), SIL-02-GW-100 (131-01), SIL-04-GW-30 (136-01), SIL-04-GW-74 (137-01), and RP-11-GW-216 (139-01) because of possible bias in the analytical results.
		AMEC J qualified the detected benzoic acid results from samples SIL-02-GW-32 (127-01), SIL-02-GW-100 (131-01), and SIL-04-GW-30 (136-01) and benzo(k)fluoranthene from sample RP-11-SO-8 (128-01) because of possible bias in the analytical results.
ICAL analyzed on December 20, 2005 on instrument U.	Hexachloroethane n-nitroso-di-n-propylamine 4-methylphenol benzoic acid benzo(k)fluoranthene	AMEC J qualified the benzoic acid results and UJ qualified the rest of these analytes from samples SIL-03-GW-130 (142-01) and SIL-04-GW-89 (144-01) because of possible bias in the analytical results.

5.3.3 Continuing Calibration

CCAL performance is evaluated in terms of %D, which corresponds to %D (average RF models) or percent drift (regression fit models) from the average ICAL response. To facilitate understanding of CCAL effects on data quality to the end user, %D has been expressed as percent recovery in this narrative. CCAL performance is evaluated in terms of percent recovery for linear and quadratic calibration models.

CCAL recoveries should fall within 80 to 120% acceptance limits. AMEC J qualified all detected results associated with CCAL recoveries greater than 120% due to a possible high bias in the analytical results. AMEC has J qualified all detected results and UJ qualified all nondetected results associated with CCAL recoveries less than 80% due to a possible low bias in the analytical results.

CCAL ID	Analyte/Problem	Effects on Data Usability
CCAL SSTD050 analyzed on November 10, 2005.	Pyrene (76%) benzo(b)fluoranthene (76%)	AMEC J qualified the detected pyrene and benzo(b)fluoranthene results from sample SIL-01-GW-31.5 (101-01) because of a possible low bias in the analytical result.
	benzo(g,h,i)perylene (122%)	AMEC J qualified the detected benzo(g,h,i)perylene result from sample SIL-01-GW-31.5 (101-01) because of a possible high bias in the analytical result.

CCAL ID	Analyte/Problem	Effects on Data Usability
CCAL SSTD050 analyzed on November 17, 2005.	Benzoic acid (74%) 2,4-dinitrophenol (64%) 4-nitrophenol (70%)	Method blank and LCS samples were the only samples associated with these CCALs and data usability is not adversely affected.
	benzo(k)fluoranthene (124%)	
CCAL SSTD050 analyzed on November 18, 2005.	Benzoic acid (72%) 2,4-dinitrophenol (60%) 4-nitrophenol (62%) 4-nitroaniline (76%)	
	3,3′-dichlorobenzidine (126%) chrysene (124%) benzo(k)fluoranthene (132%)	
CCAL SSTD050 analyzed on November 20, 2005.	N-nitrosodimethylamine (74%) 2,4-dinitrophenol (48%) 4-nitrophenol (66%) 4,6-dinotro-2-methylphenol (76%), and were outside acceptance limits	AMEC UJ qualified the nondetected n-nitrosodimethylamine, 2,4-dinitrophenol, 4-nitrophenol, 4,6-dinotro-2-methylphenol results from samples SIL-01-GW-208 (109-01), SIL-01-GW-217 (114-01), and SIL-01-GW-100 (115-01) because of possible low bias in the analytical results.
	benzoic acid (62%)	AMEC J qualified the detected benzoic acid result from sample SIL-01-GW-100 (115-01) and UJ qualified the nondetected benzoic acid results from samples SIL-01-GW-208 (109-01), and SIL-01-GW-217 (114-01) because of a possible low bias in the analytical result.
	pyrene (132%) 3,3′-dichlorobenzidine (124%) chrysene (130%)	Recoveries were high and these analytes were not detected in the associated samples, data usability is not adversely affected.
CCAL SSTD050 analyzed on December 20, 2005.	4-methyphenol (125%) hexachloroethane (122%)	
CCAL SSTD050 analyzed on December 21, 2005.	Hexachloroethane (122%) 4-methylphenol (121%)	
CCAL SSTD050 analyzed on December 22, 2005	Pyrene (138%) indeno(1,2,3-cd)pyrene (121%) dibenzo(a,h)anthracene (123%) benzo(g,h,i)perylene (124%)	
CCAL SSTD050 analyzed on December 6, 2005.	2,2-oxybis(1-chloropropane) (122%) 4-methylphenol (130%) 2,4-dimethylphenol (148%) 2,6-dichlorophenol (124%) pyrene (126%) butylbenzylphthalate (128%) bis(2-ethylhexyl)phthalate (128%) benzo(k)fluoranthene (126%)	Method blank and LCS samples were the only samples associated with this CCAL, data usability is not adversely affected.
	2,4-dinitrophenol recovery was low at 72%	

CCAL ID	Analyte/Problem	Effects on Data Usability
CCAL SSTD050 analyzed on December 23, 2005.	Hexachloroethane (72%) 4-nitroaniline (76%)	Hexachloroethane and 4-nitroaniline results from the associated sample were not reported from this CCAL, data usability is not adversely affected.
	pyrene (125%) benzo(g,h,i)perylene (125%)	AMEC J qualified the detected pyrene and benzo(g,h,i)perylene results from sample RP-11-SO-8 (128-01) because of possible high bias in the analytical results.
	fluorene (79%)	AMEC J qualified the detected fluorene result from sample RP-11-SO-8 (128-01) because of a possible low bias in the analytical result.
CCAL SSTD050 analyzed on January 4, 2006.	Hexachlorocyclopentadiene (123%) 2,4,5-trichlorophenol (124%) 4-nitrophenol (121%)	1,2-Dichlorobenzene was the only analyte reported from the associated sample, data usability is not adversely affected.
CCAL SSTD050 analyzed on December 22, 2005.	Pyrene (138%) indeno(1,2,3-cd)pyrene (121%) dibenzo(a,h)anthracene (123%) benzo(g,h,i)perylene (124%)	Recoveries were high and these analytes were not detected in the associated samples, data usability is not adversely affected.
CCAL SSTD050 analyzed on December 23, 2005.	Hexachloroethane (72%) fluorene (79%), 4-nitroaniline (76%)	AMEC UJ qualified the nondetected results for these analytes from sample SIL-04-GW-89 (144-01) because of possible low bias in the analytical results.
	pyrene (125%) benzo(g,h,i)perylene (125%)	Recoveries were high and these analytes were not detected in the associated sample, data usability is not adversely affected.

5.3.4 Blanks

Target analytes should not be found in blank samples. Results greater than the MRL but less than 5 times the concentration found in the blank have been U qualified. Results between the IDL and MRL, and less than 5 times the amount found in the blank have been U qualified at the MRL concentration.

Laboratory Blanks

No SVOCs were detected in the laboratory blanks associated with these samples, except as described below.

- Bis(2-ethylhexyl)phthalate was detected at a concentration of 0.48 µg/L in method blank MBLK111605L. AMEC U qualified the detected bis(2-ethylhexyl)phthalate result from sample SIL-01-GW-100 (115-01) because the concentration in the sample was less than 5 times the blank concentration.
- Bis(2-ethylhexyl)phthalate was detected at a concentration of 3.7 µg/L in method blank MBLK112205J. AMEC U qualified the detected bis(2-ethylhexyl)phthalate results from samples SIL-02-GW-32 (127-01), SIL-02-GW-100 (131-01),

SIL-04-GW-30 (136-01), and SIL-04-GW-74 (137-01) because the concentrations in the samples were less than 5 times the blank concentration.

- Phenol (19 micrograms per kilogram [µg/kg]), benzoic acid (17 µg/kg), and bis(2-ethylhexyl)phthalate (22 µg/kg) were detected in method blank MBLK112905B. These analytes were not detected in the associated sample and data usability is not adversely affected.
- Bis(2-ethylhexyl)phthalate was detected at a concentration of 15 µg/L in method blank MBLK120305A. AMEC U qualified the detected bis(2-ethylhexyl)phthalate result from sample RP-11-GW-216 (139-01) because the concentration in the sample was less than 5 times the concentration detected in the blank.
- Bis(2-ethylhexyl)phthalate was detected at a concentration of 1.8 µg/L in method blank MBLK121005C. AMEC U qualified the detected bis(2-ethylhexyl)phthalate result from sample SIL-03-GW-130 (142-01) because the concentration in the sample was less than 5 times the concentration detected in the blank.
- Bis(2-ethylhexyl)phthalate was detected at a concentration of 0.89 µg/L in method blank MBLK121405L. AMEC U qualified the detected bis(2-ethylhexyl)phthalate result from sample SIL-04-GW-89 (144-01) because the concentration in the sample was less than 5 times the concentration detected in the blank.

Rinsate Blanks

No SVOCs were detected in the rinsate blanks associated with these samples, except as described below.

- 1,2-Dichlorobenzene (0.89 µg/L), diethylphthalate (0.73 µg/L), and bis(2-ethylhexyl)phthalate (0.95 µg/L) were detected in Rinsate Blank 129-04. AMEC U qualified the detected bis(2-ethylhexyl)phthalate results from samples SIL-02-GW-32 (127-01) and SIL-02-GW-100 (131-01) because the concentrations in the samples were less than 5 times the blank concentration.

5.3.5 LCS Recovery

2,6-Dichlorophenol and 2,3,4,6-tetrachlorophenol were not present in the solution used for LCS and MS spiking. AMEC elected to use 2,4-dichlorophenol as a surrogate for 2,6-dichlorophenol and 2,4,6-trichlorophenol as a surrogate for 2,3,4,6-tetrachlorophenol. 2,4-Dichlorophenol and 2,4,6-trichlorophenol share similar analytical properties with 2,6-dichlorophenol and 2,3,4,6-tetrachlorophenol.

AMEC applied the QAPP-specified 70 to 130% data quality indicator (DQI) goals for LCS recoveries. Non detected analytes with LCS recoveries less than 10% were R qualified and rejected by AMEC.

Recoveries for LCS associated with analysis of samples from this project for SVOCs were acceptable, except as described below.

LCS ID	Affected Samples	Analytes With Recoveries Outside Acceptance Limits	Effects on Data Usability
LCS A110705	SIL-01-GW-31.5 (101-01)	N-Nitrosodimethylamine (47%) phenol (40%) bis(2-chloroethyl)ether (60%) benzoic acid (25%) 4-chloroaniline (52%) hexachlorocyclopentadiene (60%) 3-nitroaniline (47%) 4-nitrophenol (58%) n-nitrosodiphenylamine (67%) 3,3′-dichlorobenzidine (52%)	AMEC J qualified detected results and UJ qualified nondetected for these analytes in the associated samples because of possible low bias in the analytical results.
LCS E111405	SIL-01-GW-208 (109-01) SIL-01-GW-217 (114-01)	N-Nitrosodimethylamine (57%) Phenol (53%) 4-chloroaniline (67%) hexachlorocyclopentadiene (68%) 2,4-dinitrophenol (52%) 4-nitrophenol (40%)	AMEC UJ qualified the nondetected results for these analytes in the associated samples because of possible low bias in the analytical results.
		Benzoic acid (2%)	AMEC R qualified and rejected this analyte in the associated samples because the recovery was less than 10%.
LCS L111605	SIL-01-GW-100 (115-01)	Phenol (57%) 4-chloroaniline (28%) hexachlorocyclopentadiene (68%) 3-nitroaniline (40%) 2,4-dinitrophenol (55%) 4-nitrophenol (47%) 3,3-dichlorobenzidine (48%)	AMEC J qualified detected results and UJ qualified nondetected for these analytes in the associated sample because of possible low bias in the analytical results.
		Benzoic acid (2%)	AMEC J qualified the detected results for this analyte in the associated sample because of possible very low bias in the analytical results.
		Pyrene (137%)	Because the recovery was high and pyrene was not detected in the associated sample, data usability is not adversely affected.
LCS F112105	SIL-02-GW-216 (119-01) RP-11-GW-31 (120-01) RP-11-GW-100 (122-01) RP-11-GW-100 (122-02)	Benzoic acid (4%)	AMEC R qualified and rejected this analyte in the associated samples because the recovery was less than 10%.
	SIL-03-GW-35 (125-01) SIL-03-GW-99 (126-01)		AMEC J qualified the detected results for this analyte from these samples.
	SIL-02-GW-216 (119-01) RP-11-GW-31(120-01) RP-11-GW-100 (122-01) RP-11-GW-100 (122-02) SIL-03-GW-35 (125-01)	Bis(2-ethylhexyl)phthalate (133%)	AMEC J qualified the detected results for this analyte from the associated samples because of possible high bias in the analytical results.

LCS ID	Affected Samples	Analytes With Recoveries Outside Acceptance Limits	Effects on Data Usability
	SIL-03-GW-99 (126-01)	4-methylphenol (135%) 4-chloro-3-methylphenol (147%)	Recoveries were high and these analytes were not detected in the associated samples. Data usability is not adversely affected.
		Phenol (67%) 4-chloroaniline (68%) hexachlorocyclopentadiene (68%) 3-nitroaniline (68%) 3,3-dichlorobenzidine (48%)	AMEC UJ qualified the nondetected results for these analytes from the associated samples because of possible low bias in the analytical results.
	RP-11-GW-31 (120-01)	Pyrene (147%)	AMEC J qualified the detected results for this analyte from the associated sample because of a possible high bias in the analytical results
LCS A120305	RP-11-GW-216 (139-01)	Benzoic acid (2%)	AMEC R qualified and rejected the nondetected benzoic acid result from this sample because of the extremely low recovery.
		N-nitrosodimethylamine (60%) Phenol (67%) 4-Chloroaniline (45%) 3-Nitroaniline (67%) 2,4-Dinitrophenol (32%) 4-Nitrophenol (67%)	AMEC UJ qualified the nondetected results for these analytes from this sample because of possible low bias in the analytical results.
		4-Methylphenol (132%) 4-Chloro-3-methylphenol (140%) 2,4,5-Trichlorophenol (145%) 4-Bromophenyl-phenylether (137%)	Recoveries were high and these analytes were not detected in the associated samples, data usability is not adversely affected.
LCS B112905	RP-11-SO-8 (128-01)	Benzoic acid (12%) 4-Chloroaniline (50%) Hexachlorocyclopentadiene (65%) 2,4-Dinitrophenol (33%) 4,6-dinotro-2-methylphenol (65%) Pentachlorophenol (65%) 3,3′-dichlorobenzidine (65%)	AMEC UJ qualified the nondetected results for these analytes from this sample because of possible low bias in the analytical results.
		4-Methylphenol (140%)	Recovery was high and this analyte was not detected in the associated sample, data usability is not adversely affected.
LCS J112205	SIL-02-GW-32 (127-01) SIL-02-GW-100 (131-01) SIL-04-GW-30 (136-01) SIL-04-GW-74 (137-01)	Benzoic acid (42%)	AMEC J qualified the detected benzoic acid results from samples SIL-02-GW-32 (127-01), SIL-02-GW-100 (131-01), and SIL-04-GW-30 (136-01) because of possible low bias in the analytical results.
LCS J112205	SIL-02-GW-32 (127-01) SIL-02-GW-100 (131-01) SIL-04-GW-30 (136-01) SIL-04-GW-74 (137-01)	Pyrene (150%) 4-Methylphenol (132%) 4-Chloro-3-methylphenol (147%) 2,4,5-Trichlorophenol (137%) Bis(2-ethylhexyl)phthalate (140%)	AMEC J qualified the detected pyrene results from samples SIL-02-GW-32 (127-01), SIL-02-GW-100 (131-01), and SIL-04-GW-30 (136-01) because of possible high bias in the analytical results.

LCS ID	Affected Samples	Analytes With Recoveries Outside Acceptance Limits	Effects on Data Usability
		Phenol (67%)	AMEC UJ qualified the nondetected phenol results from these samples because of possible low bias in the analytical results.
LCS C121005	SIL-03-GW-130 (142-01)	Benzoic acid (33%)	AMEC J qualified the detected benzoic acid result from this sample because of a possible low bias in the analytical results.
		4-Methylphenol (135%) 4-Chloro-3-methylphenol (143%) 2,4,5-Trichlorophenol (132%) 2,4,5-Trichlorophenol (152%) 2-Chloronaphthalene (133%) Pyrene (160%) Butylbenzylphthalate (150%) Benzo(a)anthracene (140%)	Recoveries were high and these analytes were not detected in the associated samples, data usability is not adversely affected.
LCS L121405	SIL-04-GW-89 (144-01)	Benzoic acid (43%)	AMEC J qualified the detected benzoic acid result from this sample because of possible low bias in the analytical results.
		N-nitrosodimethylamine (67%) 4-Chloroaniline (50%) 3-Nitroaniline (55%) 3,3′-Dichlorobenzidine (39%)	AMEC UJ qualified the nondetected results for these analytes from this sample because of possible low bias in the analytical results.
		4-Chloro-3-methylphenol (153%) 2,4,5-Trichlorophenol (133%) Pyrene (160%) Butylbenzylphthalate (143%) Dibenzo(a,h)anthracene (133%) Benzo(g,h,i)perylene (133%)	Recoveries were high and these analytes were not detected in the associated samples, data usability is not adversely affected.
		Bis(2-ethylhexyl)phthalate (147%)	The detected bis(2-ethylhexyl)phthalate result has been previously blank qualified and does not require further qualification.

5.3.6 MS/MSD Recovery and Precision

AMEC applied the QAPP-specified 60 to 140% acceptance limits for MS recoveries. Non detected analytes with MS recoveries less than 10% were R qualified and rejected by AMEC.

Precision and recoveries were acceptable in the MS/MSDs associated with the analysis of samples from this project for SVOCs, except as described below:

Spiked Sample	Analytes with recoveries outside acceptance limits	Effect on Data Usability
RP-11-GW-216 (139-01)	Benzoic acid (5%/1%)	AMEC R qualified and rejected the nondetected benzoic acid result from this sample because of possible matrix interference. It should be noted a similar low recovery was observed in the associated LCS which may indicate problems in the analytical system rather than matrix interference contributed to the very low MS recoveries
	4-chloroaniline (49%/71%)	AMEC UJ qualified the nondetected 4-chloroaniline result from the spiked sample because of possible matrix interference.
	4-chloro-3-methylphenol (152%/148%) 2,4,5-trichlorophenol (141%/134%) pyrene (158%/161%) butylbenzylphthalate (148%/142%)	Recoveries were high and these analytes were not detected in the unspiked sample, data usability is not adversely affected.

5.3.7 Internal Standard Recoveries

IS recoveries were within the method-specified 50 to 200% acceptance limits, except as described below.

- Recovery of the IS naphthalene-d8, was slightly less than 50% in the undiluted analysis of sample SIL-01-GW-31.5 (101-01). AMEC J qualified the detected benzoic acid result from sample SIL-01-GW-31.5 (101-01) because a response below 50% may indicate a possible positive bias in the analytical result.
- IS recoveries for naphthalene-d8, phenanthrene-d10, and perylene-d12 were less than 50% of the associated responses from the associated CCAL in the initial 10-fold dilution analysis of sample RP-11-SO-8 (128-01). AMEC J qualified the detected indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene results from this sample because a response below 50% may indicate a possible positive bias in the analytical results.

5.3.8 Surrogate Recoveries

AMEC applied the QAPP-specified DQI goals of 60 to 140% for surrogate compounds in sample matrices. Up to one surrogate from each extraction fraction may be outside of acceptance limits without affecting data usability.

Surrogate recoveries associated with analysis of these samples for SVOCs were acceptable, except as described below.

Sample ID	Surrogates outside acceptance limits	Recovery	Effects on Data Usability
SIL-01-GW-31.5 (101-01)	Nitrobenzene-d_5 Terphenyl-d_{14} 2-Fluorophenol Phenol-d_5 (undiluted analysis)	265% 51% 56% 40%	The high concentration of naphthalene in this sample apparently interfered with the nitrobenzene-d_5 recovery and this surrogate could not be fully evaluated. Because only one surrogate from the remaining base neutral surrogate standards was outside of acceptance limits, in AMEC's professional opinion data usability is not adversely affected.
			AMEC J qualified all detected results and UJ qualified all nondetected results for the acid extractable compounds (phenols).
	Terphenyl-d_{14} Phenol-d_5 2-Fluorophenol (33-fold dilution)	53% 33% 54%	AMEC J qualified all detected results and UJ qualified all nondetected results for the acid extractable compounds (phenols).
SIL-01-GW-208 (109-01)	Phenol-d_5 2-Fluorophenol	39% 57%	
SIL-01-GW-217 (114-01)	Phenol-d_5 2-Fluorophenol	41% 55%	
SIL-01-GW-100 (115-01)	Phenol-d_5 2-Fluorophenol	41% 58%	
SIL-02-GW-216 (119-01)	Phenol-d_5 2-Fluorophenol	42% 56%	
RP-11-GW-31 (120-01)	Phenol-d_5 2-Fluorophenol 2,4,6-Tribromophenol	40% 55% 118%	
RP-11-GW-100 (122-01)	Phenol-d_5 2,4,6-Tribromophenol	48% 124%	
RP-11-GW-100 (122-02)	Phenol-d_5 2,4,6-Tribromophenol	45% 116%	
SIL-03-GW-35 (125-01)	Phenol-d_5	50%	Up to one surrogate from the each fraction may be outside of acceptance limits and in AMEC's professional opinion data usability is not adversely affected.
SIL-03-GW-99 (126-01)	Phenol-d_5	59%	
SIL-02-GW-32 (127-01) SIL-02-GW-100 (131-01) SIL-04-GW-30 (136-01)	Phenol-d_5	56% 52% 46%	
RP-11-GW-216 (139-01)	2-Fluorophenol Phenol-d_5	59% 47%	AMEC UJ qualified all nondetected results for the acid extractable compounds (phenols).
SIL-04-GW-74 (137-01)	2-Fluorophenol Phenol-d_5	56% 48%	AMEC UJ qualified all nondetected results for the acid extractable compounds (phenols).

Sample ID	Surrogates outside acceptance limits	Recovery	Effects on Data Usability
RP-11-GW-216 (139-01) 2.5-fold dilution	Phenol-d_5 2,4,6-Tribromophenol	47% 145%	Acid extractable compounds (phenols) were not reported from the diluted analysis, data usability is not adversely affected.
RP-11-SO-8 (128-01) 10-fold dilution	2-Fluorophenol Phenol-d_5 2-Chlorophenol-d_4 1,2-Dichlorobenzene-d_4 Nitrobenzene-d_5 2,4,6-Tribromophenol	46% 58% 51% 58% 169% 41%	Surrogates were diluted to concentrations below the instrument calibration range and surrogate recoveries could not be fully evaluated.
RP-11-SO-8 (128-01) 333-fold dilution	All surrogates	0%	
SIL-03-GW-130 (142-01) undiluted	Phenol-d_5	52%	Up to one surrogate from each extraction fraction may be outside of acceptance limits and data usability is not adversely affected
SIL-03-GW-130 (142-01) 3.3-fold dilution	2-Fluorophenol Phenol-d_5	41% 52%	Acid extractable compounds (phenols) were not reported from the diluted analysis, data usability is not adversely affected.
SIL-04-GW-89 (144-01) undiluted	2-Fluorophenol Phenol-d_5	58% 45%	AMEC UJ qualified the nondetected acid extractable compound results from this sample because of possible low bias in the analytical results.
SIL-04-GW-89 (144-01) two-fold dilution	Phenol-d_5	46%	Up to one surrogate from each extraction fraction may be outside of acceptance limits and data usability is not adversely affected

5.3.9 Data Reporting and Analytical Procedures

The laboratory J qualified detected results with concentrations between the RL and MDL. AMEC concurs that these results are quantitative estimates and qualified these results J on the data tables.

The laboratory did not employ alternate calibration procedures for the target compounds which exhibited %RSDs greater than 15% in several ICALs. According to EPA Method 8270C (Section 7.3.7.1), if the %RSD of any target analyte is greater than 15%, additional calibration options must be applied to GC/MS calibration or a new initial calibration must be performed. Effects on data usability are discussed in Section 5.3.2 of this report.

The laboratory reanalyzed the samples at the dilutions listed in the table below because one or more target compound results exceeded the instrument calibration range in the original analysis.

Sample ID	Dilution (s)	Analyte(s) Reported from Dilution
SIL-01-GW-31.5 (101-01)	33.3	Naphthalene 2-Methylnaphthalene Acenaphthene Phenanthrene Fluoranthene Pyrene
RP-11-GW-216 (139-01)	2.5	1,2-dichlorobenzene
RP-11-SO-8 (128-01)	333	Naphthalene 2-Methylnaphthalene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo(a)anthracene Chrysene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Benzo(g,h,i)perylene
	10	All other SVOCs
SIL-03-GW-130 (142-01)	3.3	1,2-dichlorobenzene
SIL-04-GW-89 (144-01)	2	1,2-dichlorobenzene

Low-level bis(2-ethylhexyl)phthalate results were observed in several samples. Bis(2-ethylhexyl)phthalate is a common laboratory contaminant; therefore, these results should be used with caution.

5.4 Organochlorine Pesticides by EPA Method 8081A

Organochlorine pesticides (OCPs) data from the Stage 1 SCE Siltronic Riverbank reconnaissance activities may be considered usable with the limitations and exceptions described below. Summaries of qualified OCP results are presented in Table 7.

5.4.1 Holding Times

All samples were extracted within the EPA recommended maximum holding times of 7 days for waters and 14 days for soils and analyzed within 45 days from extraction, except as described below.

- Sample SIL-01-GW-31.5 (101-01) was reextracted 13 days beyond the 7 day holding time from sample collection because of low surrogate recoveries in the initial extraction. The laboratory reported results from both the initial extraction and

the reextraction. AMEC chose to report all results, except for alpha-BHC and gamma-chlordane from the initial extraction of this sample. Alpha-BHC and gamma-chlordane results were reported from the reextraction because these analytes were not detected in the initial analysis. AMEC J qualified the detected gamma-chlordane and alpha-BHC results from this sample due to the exceeded holding time.

5.4.2 DDT/Endrin Breakdown

Breakdown is a measure of the amount of decomposition that 4,4′-DDT and endrin undergo when analyzed on the GC column. Excessive breakdown is an indication that the chromatographic system is contaminated, chemically active, or too hot. Breakdown is measured by injecting a mixture of 4,4'-DDT and endrin into the GC and dividing the sum of the areas of the breakdown products (4,4'-DDE and 4,4'-DDD for 4,4'-DDT, and endrin aldehyde and endrin ketone for endrin) by the sums of the areas of the breakdown products and the parent compounds. Breakdown must be less than 15% for analysis to proceed and data to be fully useable. 4,4′-DDT and endrin breakdown was less than 15% each day that samples from this project were analyzed for OCPs.

5.4.3 Initial Calibration

All ICALs associated with analysis of these samples for OCPs were acceptable.

5.4.4 Continuing Calibration

CCAL performance is evaluated in terms of %D from the average ICAL response. To facilitate understanding of CCAL effects on data quality to the end user, %D has been expressed as percent recovery in this narrative.

CCAL recoveries should fall within 85 to 115% acceptance limits. AMEC J qualified all detected results associated with CCAL recoveries greater than 115% due to a possible high bias in the analytical results. AMEC J qualified all positive results and UJ qualified all nondetected results associated with CCAL recoveries less than 85% due to a possible low bias in the analytical results.

All CCALs associated with analysis of these samples for OCPs were acceptable.

5.4.5 Blanks

Target analytes should not be found in blank samples. Results greater than the MRL but less than 5 times the concentration found in the blank have been U qualified. Results between the IDL and MRL, and less than 5 or 10 times the amount found in the blank have been U qualified at the MRL concentration.

Laboratory and Rinsate Blanks

No target analytes were detected in the laboratory or rinsate blanks associated with the analysis of these samples for OCP.

5.4.6 LCS Recovery

Target analyte recoveries were within the QAPP-specified 70 to 130% acceptance limits in the LCSs associated with the analysis of these samples for OCPs, except as described below.

- 4,4′-DDT recovery was low at 68% in LCS F111405. AMEC UJ qualified the nondetected 4,4′-DDT results from samples SIL-01-GW-208 (109-01) and SIL-01-GW-217 (114-01) because of possible low bias in the analytical results.

5.4.7 Surrogate Recoveries

Surrogate recoveries associated with analysis of these samples for OCPs were within the QAPP-specified 60 to 140% acceptance limits, except as described below.

Sample ID	Surrogates outside acceptance limits	Recovery	Effects on Data Usability
SIL-01-GW-31.5 (101-01) Initial Analysis	Decachlorobiphenyl (DBC) Tetrachloro-m-xylene (TCMX)	35%/37% 58% on primary column	AMEC J qualified the detected beta-BHC and gamma-BHC (Lindane) results and UJ qualified all other OCP results from this sample because of a possible low bias in the analytical results.
SIL-01-GW-31.5 (101-01)RE	DBC TCMX	27%/28% 59% on secondary column	AMEC J qualified the detected alpha-BHC and gamma-chlordane results and UJ qualified the all other OCP results from this sample because of possible low bias in the analytical results.
SIL-01-GW-100 (115-01) SIL-02-GW-216 (119-01) RP-11-GW-31 (120-01) RP-11-GW-100 (122-01) RP-11-GW-100 (122-02) SIL-03-GW-35 (125-01) SIL-03-GW-99 (126-01) SIL-02-GW-32 (127-01) SIL-02-GW-100 (131-01) SIL-04-GW-30 (136-01) SIL-04-GW-74 (137-01) RP-11-GW-216 (139-01) SIL-03-GW-130 (142-01) SIL-04-GW-89 (144-01)	DBC	26%/31% 23%/23% 45%/44% 42%/42% 23%/23% 41%/40% 42%/40% 50%/48% 32%/33% 35%/35% 29%/30% 31%/33% 28%/29% 44%/46%	AMEC UJ qualified all OCP results from these samples because of a possible low bias in the analytical results.

5.4.8 Data Reporting and Analytical Procedures

The laboratory reported results from the initial extraction and reextraction of sample SIL-01-GW-31.5 (101-01). AMEC chose to report all results, except for alpha-BHC and gamma-chlordane from the initial extraction. Alpha-BHC and gamma-chlordane results were reported from the reextraction of this sample because these analytes were not detected in the initial analysis. The effects on data usability are addressed in Section 5.4.1.

The %D between the beta-BHC results from sample SIL-01-GW-31.5 (101-01) and the gamma-chlordane and alpha-BHC results from sample SIL-01-GW-31.5 (101-01)RE reported on the primary and secondary GC columns were greater than 40%. AMEC N qualified the beta-BHC result from sample SIL-01-GW-31.5 (101-01) and the gamma-chlordane and alpha-BHC results from sample SIL-01-GW-31.5 (101-01)RE because their presence in the sample is uncertain.

5.5 Chlorophenoxy Acid Herbicides by EPA Method 8151A

Herbicides data from the Stage 1 SCE Siltronic Riverbank reconnaissance activities may be considered usable with the limitations and exceptions described below. Summaries of qualified herbicide results are presented in Table 8.

5.5.1 Holding Times

All samples were extracted within the EPA recommended maximum holding times of 7 days for waters and 14 days for soils and analyzed within 45 days from extraction.

5.5.2 Initial Calibration

All ICALs associated with analysis of samples from this event for herbicides were acceptable and met all method criteria.

5.5.3 Continuing Calibration

CCAL performance is evaluated in terms of %D from the average ICAL response. To facilitate understanding of CCAL effects on data quality to the end user, %D has been expressed as percent recovery in this narrative.

CCAL recoveries should fall within 85 to 115% acceptance limits. AMEC J qualified all detected results associated with CCAL recoveries greater than 115% due to a possible high bias in the analytical results. AMEC J qualified all detected results and UJ qualified all nondetected results associated with CCAL recoveries less than 85% due to a possible low bias in the analytical results.

All CCALs associated with analysis of these samples for herbicides were within acceptance limits.

5.5.4 Laboratory and Rinsate Blanks

No target analytes were detected in the laboratory and rinsate blanks associated with analysis of samples from this event for herbicides.

5.5.5 LCS Recovery

LCS recoveries were within the QAPP-specified 70 to 130% acceptance limits except as described below.

LCS ID	Analytes with Recoveries Outside Acceptance Limits	Effects on Data Usability
LCS K110705	Dalapon (54%) 2,4,5-TP (Silvex) (65%) Dinoseb (9%) Bromoxynil (48%)	AMEC UJ qualified the nondetected dalapon, 2,4,5-TP (Silvex), and bromoxynil results from sample SIL-01-GW-31.5 (101-01) because of possible low bias in the analytical results.
		AMEC R qualified and rejected the nondetected dinoseb result from sample SIL-01-GW-31.5 (101-01) because the presence or absence of this analyte could not be determined.
LCS H111405	Dalapon (64%) Dinoseb (58%)	AMEC UJ qualified the nondetected dalapon and dinoseb results from samples SIL-01-GW-208 (109-01) and SIL-01-GW-217 (114-01) because of possible low bias in the analytical results.
LCS J111705	Dalapon (59%) dinoseb (52%) bromoxynil (52%)	AMEC UJ qualified the nondetected dalapon, dinoseb, and bromoxynil results from sample SIL-01-GW-100 (115-01) because of possible low bias in the analytical results.
LCS J112105	Dalapon (59%) Dinoseb (28%)	AMEC UJ qualified the nondetected dalapon and dinoseb results from samples SIL-02-GW-216 (119-01), RP-11-GW-31 (120-01), RP-11-GW-100 (122-01), RP-11-GW-100 (122-02), SIL-03-GW-35 (125-01), and SIL-03-GW-99 (126-01) because of possible low bias in the analytical results.
LCS H120105	Dichloroprop (145%) 2,4,5-T (132%) 2,4-DB (135%)	The recoveries were high and these analytes were not detected in the associated samples, data usability is not adversely affected.
LCS I112305	Dinoseb (65%)	AMEC UJ qualified the nondetected dinoseb result from sample RP-11-GW-216 (139-01) because of a possible low bias in the analytical results.
LCS L120905	Dalapon (60%) Dinoseb (13%)	AMEC UJ qualified the nondetected dalapon and dinoseb results from these samples SIL-03-GW-130

LCS ID	Analytes with Recoveries Outside Acceptance Limits	Effects on Data Usability
LCS O121405	Dalapon (53%) Dinoseb (40%)	(142-01) and SIL-04-GW-89 (144-01) because of possible low bias in the analytical results.

5.5.6 Surrogate Recoveries

All surrogate recoveries associated with analysis of these samples for herbicides were within the QAPP-specified 70 to 130% acceptance limits for analyte-free matrices and 60 to 140% acceptance limits for field sample matrices, except as described below.

- Recoveries of the surrogate compound 2,4-dichlorophenylacetic acid (2,4-DCAA) were high on both columns in the 20-fold dilution of sample SIL-03-GW-99 (126-01) at 148% and 144%, respectively. AMEC J qualified the detected 2,4,5-TP (Silvex) result from this sample because of possible high bias in the analytical results.
- Recoveries of the surrogate compound 2,4-DCAA were high on both columns for the 20-fold dilution analysis of sample RP-11-GW-216 (139-01) at 138% and 135%, respectively. The surrogates were diluted to concentrations below the instrument calibration range and surrogate recoveries could not be fully evaluated.
- Recovery of the surrogate compound 2,4-DCAA was high on the primary column for the 20-fold dilution analysis of sample SIL-03-GW-130 (142-01) at 135%. The surrogates were diluted to concentrations below the instrument calibration range and surrogate recoveries could not be fully evaluated.
- Recoveries of the surrogate compound 2,4-DCAA were high on both columns for the 25-fold dilution analysis of sample SIL-04-GW-89 (144-01) at 140% and 138%, respectively. The surrogates were diluted to concentrations below the instrument calibration range and surrogate recoveries could not be fully evaluated.

5.5.7 MS/MSD Recovery and Precision

Precision and recovery were within the QAPP-specified 60 to 140% acceptance limits in all MS associated with analysis of these samples for herbicides, except as described below.

Spiked Sample	Analytes with recoveries outside acceptance limits	Effect on Data Usability
RP-11-GW-216 (139-01)	Dicamba (54%/75%)	AMEC J qualified the detected dicamba result from this sample because of possible matrix interference.
	MCPA (54%/92%) 2,4,5-T(58%/128%) Dinoseb (51%/60%) 2,4-DB (36%/132%) Bromoxynil (56%/82%)	AMEC UJ qualified the nondetected MCPA , 2,4,5-T, dinoseb, 2,4-DB, and bromoxynil results from the spiked sample because of possible matrix interference.
	2,4,5-TP (Silvex) (0%/0%)	The 2,4,5-TP (Silvex) concentration in the unspiked sample (4.2 µg/L) was more than 4 times the spike concentration of 0.41 µg/L, matrix effects on this analyte could not be fully evaluated.

5.5.8 Data Reporting and Analytical Procedures

The laboratory analyzed samples SIL-03-GW-99 (126-01), RP-11-GW-216 (139-01) and SIL-03-GW-130 (142-01) at 20-fold dilutions, sample SIL-02-GW-216 (119-01) at a three-fold dilution, and sample SIL-04-GW-89 (144-01) at a 25-fold dilution because the 2,4 5-TP (Silvex) concentration was above the calibration range of the instrument in the initial undiluted analyses of these samples. The laboratory reported the 2,4 5-TP (Silvex) results from the dilutions of these samples.

5.6 Semivolatile Petroleum Products by DEQ/Ecology Method NWTPH-Dx with Silica Gel Cleanup

Diesel-range organics (DRO) and residual-range organics (RRO) data from the Stage 1 SCE Siltronic Riverbank reconnaissance activities may be considered usable with the limitations and exceptions described below. Summaries of qualified DRO and RRO results are presented in Table 9.

5.6.1 Holding Times

All samples were extracted within the EPA recommended maximum holding times of 7 days for waters and 14 days for soils and analyzed within 45 days from extraction.

5.6.2 Initial Calibration

All criteria were met for the initial calibrations associated with analysis of samples from this sampling event for DRO and RRO.

5.6.3 Continuing Calibration

All criteria were met for the continuing calibrations associated with analysis of samples from this sampling event for DRO and RRO.

5.6.4 Laboratory and Rinsate Blanks

DRO and RRO were not detected in the laboratory and rinsate blanks associated with these samples.

5.6.5 LCS/LCSD Recovery and Precision

Recovery and precision for LCS/LCSDs associated with analysis of samples from this project for DRO and RRO were acceptable.

5.6.6 Laboratory Duplicates

Acceptance limits for duplicate sample analyses are ±30% RPD for sample concentrations ≤ to 5 times the MRL. A control limit of ± MRL is used if either the sample or duplicate result is less than 5 times the MRL.

The laboratory analyzed samples RP-11-SO-8 (128-01), SIL-02-GW-100 (131-01), and RP-11-GW-216 (139-01) in duplicate. The laboratory duplicates exhibited acceptable precision.

5.6.7 Surrogate Recoveries

Surrogate recoveries associated with analysis of these samples for DRO and RRO were within the method-specified 50 to 150% acceptance limits, except as described below.

- Recovery of the surrogate compound *n*-triacontane was low at 43% in sample SIL-01-GW-31.5 (101-01). AMEC J qualified the detected DRO and RRO results from this sample because of possible low bias in the analytical results.
- Recovery of the surrogate compound *o*-terphenyl was very high at 815% and n-triacontane was not recovered in sample RP-11-SO-8 (128-01). This sample was analyzed at a 10-fold dilution and surrogate recoveries could not be fully evaluated.

5.6.8 Analytical Procedures

The laboratory did not add surrogate compounds to the instrument blanks. Surrogate compounds would allow the data user to determine instrument conditions at the time of analysis. The instrument blank results; therefore, could not be fully evaluated.

6.0 FIELD DUPLICATE RESULTS

Two field duplicate pairs out of 26 field samples were submitted to STL. The samples were labeled blindly, so that the laboratory was not aware which samples were submitted in duplicate. Primary samples were coded with -01 appended to the blind sample ID, and duplicate samples were coded with -02 appended to the blind sample ID. Detected results for each set of field duplicates are summarized in Table 2 at the end of this document.

Precision values met the QAPP-specified acceptance limits, with RPDs for aqueous samples less than 30% and for soil samples less than 50% for analytes with concentrations more than 5 times their practical quantitation limit (PQLs), and concentrations within one MRL for analytes with concentrations less than 5 times their PQLs, except as described below.

- A field duplicate was collected at RP-11-GW-100 (122-01) and (122-02). The RPDs between the detected dissolved copper and dissolved zinc results were high at 112 and 36%, respectively. The concentrations in these samples were less than 5 times their associated PQLs and the differences between the concentrations were less than the MRL; therefore, data usability is not adversely affected.
- A field duplicate was collected at SIL-02-GW-130 (132-01) and (132-02). The RPDs between the detected results for toluene was high at 37%. Because the concentrations in these samples were less than 5 times their associated PQLs and the differences between the concentrations were less than the MRL, data usability is not adversely affected.

7.0 INTERLABORATORY SPLIT SAMPLE RESULTS

Field samples SIL-02-GW-216 and SIL-02-GW-190 were submitted to both STL and CAS. The samples were labeled blindly, so that the primary laboratory (i.e., STL) was not aware which samples were also submitted to the QC laboratory (i.e., CAS). Primary samples were coded with -01 appended to the blind sample ID, and split samples were coded with -05 appended to the blind sample ID. A summary of split sample results may be found in Table 10.

CAS MRLs are generally lower than STL's. STL reports analyte concentrations down to the MDL or IDL; therefore, low-level concentrations comparisons could be made between reported laboratory results.

Analyte concentrations from sample SIL-02-GW-216 reported by both laboratories were generally comparable (greater than 50% RPD), except for the total arsenic, total copper, total zinc, dissolved copper, and dissolved lead analyses performed. In all cases, STL reported much higher concentrations.

For sample SIL-02-GW-190, STL detected naphthalene at a concentration of 0.21 µg/L. CAS reported naphthalene as nondetected above the MRL of 0.50 µg/L. Because the concentrations in these samples were less than 5 times their associated PQLs and the differences between the concentrations were less than the CAS MRL, the results are acceptable.

8.0 SUMMARY AND CONCLUSIONS

The data are generally usable and of good quality, with the exceptions listed below.

- A number of low-level (less than the RL) metals results from this sampling event were U qualified due to low-level laboratory contamination.
- Mercury and/or chromium reporting limits in a few samples may be higher than reported due to low-level negative concentrations observed in the associated laboratory blanks.
- The low-level (greater than 2-times the RL) detected dissolved aluminum results from several samples may be biased high due to potential instrument bias near the RL as demonstrated by very high CRI recoveries.
- The mercury RLs from samples SIL-03-GW-35 (125-01) and SIL-03-GW-99 (126-01) may be higher than reported due to potential instrument insensitivity near the RL as demonstrated by a low CRI recovery.
- The detected total calcium, chromium, copper, zinc, and dissolved iron and manganese results from sample SIL-01-GW-100 (115-01), the detected lead, magnesium, and zinc results from sample RP-11-SO-8 (128-01), and the detected dissolved calcium, magnesium, and manganese results from sample SIL-04-GW-89 (144-01) may be biased due to potential physical or chemical interferences as demonstrated by high percent differences observed in the associated serial dilution results. The direction of the bias could not be determined.
- The detected arsenic result may be biased low, the detected manganese result may be biased high, and the nondetected cadmium result from sample RP-11-SO-8 (128-01) may be higher than reported due to potential matrix interference. The associated MS recoveries were outside acceptance limits.
- The detected dissolved copper result in sample RP-11-GW-216 (139-01) may be biased due to analytical imprecision as demonstrated by a high relative percent difference in the associated laboratory duplicate results. The direction of the bias could not be determined.
- Several VOC results from this sampling event were U qualified due to low-level laboratory, rinsate, and/or trip blank contamination.

- The naphthalene (VOC) result from sample RP-11-SO-8 (128-01) may be biased low. The naphthalene result was reported from the sample that was analyzed 2 days beyond the technical holding time of 14 days for soil samples.
- The detected VOC results may be biased low and the VOC RLs may be higher than reported in samples SIL-01-GW-100 (115-01), SIL-01-GW-130 (116-01), and SIL-01-GW-160(117-01). The laboratory indicated on the associated case narrative that the vials for these samples contained air bubbles; therefore, potential volatilization may have occurred.
- The isobutyl alcohol result from sample RP-11-SO-8 (128-01) was rejected due to very low relative response factors (RRF) in the associated CCAL. Because this analyte is not a primary constituent of concern, the rejected result may not impact overall data usability.
- The RL for methyl iodide in sample SIL-04-GW-89 (144-01) may be higher than reported because of potential low bias in the analytical system demonstrated by a low recovery in the associated LCS.
- The detected VOC and SVOC results from a number of samples may be biased and the RLs for the nondetected results may be higher than reported because of potential instrument instability demonstrated by %RSD above method limits in the associated ICAL curves. Because the direction of the bias could not be determined, the RLs may be acceptable as reported.
- The detected VOC and SVOC results from a number of samples may be biased low or high and the RLs for the nondetected results may be higher than reported because of potential instrument instability demonstrated by recoveries outside acceptance limits in the associated CCALs.
- The bis(2-ethylhexyl)phthalate results from samples SIL-01-GW-100 (115-01), SIL-02-GW-32 (127-01), SIL-02-GW-100 (131-01), SIL-04-GW-30 (136-01), SIL-04-GW-74 (137-01), RP-11-GW-216 (129-01), SIL-03-GW-130 (142-01), and SIL-04-GW-89 (144-01) was U qualified due to low-level laboratory and/or field blank contamination.
- The benzoic acid results from several samples were R qualified and rejected by AMEC because of very low recoveries in the associated LCS and/or MS/MSD. Because this analyte is not primary a constituent of concern, the rejected results may not impact overall data usability.
- A number of detected SVOC results may be biased low or high and SVOC RLs may be higher than reported due to low or high bias in the analytical system as demonstrated by associated LCS recoveries outside acceptance limits.
- The detected acid extractable compound (phenols) results and RLs from several samples may be biased low as demonstrated by low acid extractable surrogate

compound recoveries. The low recoveries may be indicative of laboratory performance or matrix interference.

- The detected benzoic acid results from sample SIL-01-GW-31.5 (101-01) and the detected indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene results from sample RP-11-SO-8 (128-01) may be biased high due to low responses of the associated IS. The low IS responses may be indicative of matrix interference.
- A number of detected OCP results may be biased low and OCP RLs may be higher than reported due to the potential low bias demonstrated by surrogate recoveries below acceptance limits.
- The detected gamma-chlordane and alpha-BHC results from sample SIL-01-GW-31.5 (101-01) may be biased low because the sample was extracted 13 days beyond the technical holding time of 7 days.
- The detected beta-BHC, gamma-chlordane, and alpha-BHC results from sample SIL-01-GW-31.5 (101-01) should be considered quantitatively and qualitatively uncertain. A high percent difference was observed between the dual-column analyses of this sample.
- The detected 4,4′-DDT results from samples SIL-01-GW-208 (109-01) and SIL-01-GW-217 (114-01) may be biased low and the dinoseb RL from sample RP-11-GW-216 (139-01) may be higher than reported due to a low bias in the analytical system as demonstrated by an associated LCS recovery below acceptance limits.
- The nondetected dinoseb result from sample SIL-01-GW-31.5 (101-01) was R qualified and rejected by AMEC because of a very low recovery in the associated LCS.
- Herbicide RLs from a number of samples may be higher than reported due to a potential low bias demonstrated by associated LCS recoveries below acceptance limits.
- The detected 2,4,5-TP (Silvex) result from sample SIL-03-GW-99 (126-01) may be biased high due to a potential high bias demonstrated by an associated LCS recovery above acceptance limits.
- The detected dicamba result may be biased low and the MCPA, 2,4,5-T, dinoseb, and 2,4-DB RLs from sample RP-11-GW-216 (139-01) may be higher than reported due to potential matrix interference demonstrated by associated MS recoveries below acceptance limits.
- The cooler temperature upon laboratory receipt associated with the NWTPH-Dx analysis of samples SIL-01-GW-217 (114-01) and SIL-01-GW-208 (109-01) were reported at elevated temperature of 6.8°C. The detected results from these

samples may be biased low and the reporting limits from these samples may be higher than reported due to potential volatilization of the lower boiling constituents.

- The laboratory J qualified detected results with concentrations between the RL and MDL/IDL. AMEC concurs that these results are quantitative estimates and qualified these results J on the data tables.

No metals, OCP, DRO, and RRO results were rejected by AMEC due to data quality issues.

REFERENCES

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LIMITATIONS

This report was prepared exclusively for SLLI by AMEC Earth & Environmental, Inc. (AMEC). The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in AMEC services and based on:
i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This Data Validation Report is intended to be used by SLLI for the RP - Portland Site, 6200 N.W. St. Helens Road, Portland, Oregon only, subject to the terms and conditions of its contract with AMEC. Any other use of, or reliance on, this report by any third party is at that party's sole risk.

TABLES

TABLE 1
Field Samples Submitted to STL, CAS, and NCA with Corresponding Laboratory IDs
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Field Sample ID	Collection Date	Matrix	STL Sample ID	CAS Sample ID	NCA Sample ID	Notes
SIL-01-GW-31.5	101-01	11/01/2005	Water	646251	K0505564-001	-	
SIL-01-GW-31.5	101-01F	11/01/2006	Water	646252	-	-	Filtered
Trip Blank	101-03	11/01/2005	Water	646253	-	-	Trip Blank
Rinsate Blank	102-04	11/01/2005	Water	-	-	P5K0043-01	
Rinsate Blank	103-04	11/01/2005	Water	-	-	P5K0043-02	
Rinsate Blank	104-04	11/03/2005	Water	-	-	P5K0183-01	
DI Water	105-01	11/02/2006	Water	646254	-	-	
Rinsate Blank	105-04	11/02/2005	Water	-	-	-	
Rinsate Blank	106-04	11/03/2005	Water	-	-	P5K0183-02	
Rinsate Blank	107-04	11/07/2005	Water	-	-	P5K0405-06	
Rinsate Blank	108-04	11/07/2005	Water	-	-	P5K0405-01	
SIL-01-GW-208	109-01	11/07/2005	Water	647579	K0505697-001	-	
SIL-01-GW-208	109-01F	11/07/2006	Water	647580	-	-	Filtered
Rinsate Blank	110-04	11/08/2005	Water	-	-	P5K0405-02	
Rinsate Blank	111-04	11/08/2005	Water	-	-	P5K0405-03	
Rinsate Blank	112-04	11/08/2005	Water	-	-	P5K0405-04	
Rinsate Blank	113-04	11/08/2005	Water	-	-	P5K0405-05	
SIL-01-GW-217	114-01	11/08/2005	Water	647581	K0505697-002	-	
SIL-01-GW-217	114-01F	11/08/2006	Water	647582	-	-	Filtered
SIL-01-GW-100	115-01	11/11/2005	Water	647895	K0505913-001	-	
SIL-01-GW-100	115-01F	11/11/2005	Water	647896	-	-	Filtered
Trip Blank	115-03	11/11/2005	Water	647897	-	-	Trip Blank
SIL-01-GW-130	116-01	11/11/2005	Water	647898	-	-	
SIL-01-GW-160	117-01	11/11/2005	Water	647899	-	-	
SIL-01-GW-188	118-01	11/14/2005	Water	648427	-	-	
Trip Blank	118-03	11/14/2005	Water	648428	-	-	Trip Blank
SIL-02-GW-216	119-01	11/14/2005	Water	648429	K0505913-001	-	
SIL-02-GW-216	119-01F	11/14/2005	Water	648430	-	-	Filtered
SIL-02-GW-216	119-05	11/14/2005	Water	-	K0505913-002	-	Split Sample
RP-11-GW-31	120-01	11/15/2005	Water	648431	K0505913-003	-	
RP-11-GW-31	120-01F	11/15/2005	Water	648432	-	-	Filtered
RP-11-GW-100	122-01	11/15/2005	Water	648433	K0505913-004	-	
RP-11-GW-100	122-01F	11/15/2005	Water	648434	-	-	Filtered
RP-11-GW-100	122-02	11/15/2005	Water	648435	K0505913-005	-	Field Duplicate
RP-11-GW-100	122-02F	11/15/2005	Water	648436	-	-	Filtered
RP-11-GW-130	123-01	11/15/2005	Water	648437	-	-	
RP-11-GW-130	123-01F	11/15/2005	Water	648438	-	-	Filtered
RP-11-GW-152	124-01	11/15/2005	Water	648438	-	-	
SIL-03-GW-35	125-01	11/16/2005	Water	648619	K0505946-001	-	
SIL-03-GW-35	125-01F	11/16/2005	Water	648620	-	-	Filtered
Trip Blank	125-03	11/16/2005	Water	648621	-	-	Trip Blank
SIL-03-GW-99	126-01	11/16/2005	Water	648622	K0505946-002	-	
SIL-03-GW-99	126-01F	11/16/2005	Water	648623	-	-	Filtered

TABLE 1
Field Samples Submitted to STL, CAS, and NCA with Corresponding Laboratory IDs
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Field Sample ID	Collection Date	Matrix	STL Sample ID	CAS Sample ID	NCA Sample ID	Notes
SIL-02-GW-32	127-01	11/17/2005	Water	648901	K0506063-002	-	
SIL-02-GW-32	127-01F	11/17/2005	Water	648902	-	-	Filtered
Trip Blank	127-03	11/17/2005	Water	648903	-	-	
Rinsate Blank	127-04	11/17/2005	Water	648904	-	-	
RP-11-SO-8	128-01	11/17/2005	Soil	648920	K0506063-001	-	
Rinsate Blank	129-04	11/17/2005	Water	648905	K0506063-003	-	Rinsate Blank
Rinsate Blank	129-04F	11/17/2005	Water	648906	-	-	Filtered
Rinsate Blank	130-04	11/17/2005	Water	648907	-	-	
SIL-02-GW-100	131-01	11/17/2005	Water	648908	K0506063-004	-	
SIL-02-GW-100	131-01F	11/17/2005	Water	648909	-	-	Filtered
SIL-02-GW-130	132-01	11/17/2005	Water	648910	-	-	
SIL-02-GW-160	133-01	11/18/2005	Water	648911	-	-	
SIL-02-GW-160	133-02	11/18/2005	Water	648912	-	-	Field duplicate
SIL-02-GW-190	134-01	11/18/2005	Water	648913	-	-	
SIL-02-GW-190	134-05	11/18/2005	Water	-	K0506063-006	-	Split Sample
RP-11-GW-190	135-01	11/18/2005	Water	648914	-	-	
SIL-04-GW-30	136-01	11/18/2005	Water	648915	K0506063-005	-	
SIL-04-GW-30	136-01F	11/18/2005	Water	648916	-	-	Filtered
SIL-04-GW-74	137-01	11/21/2005	Water	648917	K0506063-007	-	
SIL-04-GW-74	137-01F	11/21/2005	Water	648918	-	-	Filtered
Trip Blank	137-03	11/21/2005	Water	648919	-	-	
RP-11-SO-210	138-01	11/28/2005	Soil	649871	-	-	
RP-11-GW-216	139-01	11/28/2005	Water	649868	K0506275-001	-	
RP-11-GW-216	139-01F	11/28/2005	Water	649869	-	-	Filtered
Trip Blank	139-03	11/28/2005	Water	649870	-	-	
SIL-03-GW-130	142-01	12/06/2006	Water	651210	K0506473-001	-	
SIL-03-GW-130	142-01F	12/06/2006	Water	651211	-	-	Filtered
Trip Blank	142-03	12/06/2006	Water	651212	-	-	
SIL-04-GW-89	144-01	12/09/2006	Water	651539	K0506598-001	-	
SIL-04-GW-89	144-01F	12/09/2006	Water	651540	-	-	Filtered
Trip Blank	144-03	12/09/2006	Water	651541	-	-	

Note:
CAS = Columbia Analytical Services, Inc.
ID = Identification
NCA = North Creek Analytical, Inc.
STL = Severn Trent Laboratories, Inc.

TABLE 2
Summary of Field Duplicate Detections
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analytical Method	Analyte	MRL	Primary Result	Duplicate Result	RPD
Sample (122-01 and 122-02)					
Total Metals	Aluminum	200	110,000	142,000	25%
	Arsenic	10	20.6	22.1	7%
	Calcium	5,000	322,000	313,000	3%
	Chromium	10	159	191	18%
	Copper	25	163	198	19%
	Iron	200	325,000	361,000	10%
	Lead	10	22.4	26.4	16%
	Magnesium	5,000	159,000	160,000	1%
	Manganese	15	18,200	17,500	4%
	Nickel	40	145	172	17%
	Potassium	5,000	11,000	11,600	5%
	Sodium	5,000	25,200	24,100	4%
	Vanadium	50	387	496	25%
	Zinc	20	337	408	19%
Dissolved Metals	Aluminum	200	66.7	<200	NC
	Calcium	5000	301,000	290,000	4%
	Chromium	10	<10	6.2	NC
	Copper	25	6.6	23.4	**112%**
	Iron	200	176,000	170,000	3%
	Lead	10	<10	2.2	NC
	Magnesium	5000	136,000	131,000	4%
	Manganese	15	13,900	13,800	1%
	Nickel	40	4.5	4.0	12%
	Potassium	5000	6,840	6,470	6%
	Sodium	5000	23,100	21,900	5%
	Vanadium	50	4.3	4.5	5%
	Zinc	20	22.3	15.5	**36%**
VOCs	Acetone	5	6.6	<5	NC
	Carbon Disulfide	1	0.78	0.35	76%
	Chloroform	1	0.30	<1	NC
	Toluene	1	0.27	<1	NC
	Naphthalene	1	0.32	<1	NC
SVOCs	Bis(2-ethylhexyl)phthalate	10	2.5	2.2	NC
Sample (133-01 and 133-02)					
VOCs	Acetone	1	7.6	8	5%
	Carbon Disulfide	1.0	0.5	0.61	20%
	Toluene	1.0	0.24	0.35	37%
	Naphthalene	1.0	1.7	1.4	19%
	m&p-Xylene	2.0	<2.0	0.2	NC

Notes:
MRL = method reporting limit
NC = not calculable
RPD = relative percent difference
SVOCs = semivolatile organic compounds
VOCs = volatile organic compounds

TABLE 3
Definitions of Data Qualifiers Added as a Result of Data Validation Findings
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

U	The U qualifier indicates that the analyte must be considered to be nondetected at the concentration listed. U qualifiers added during validation are typically a result of detection of target analytes in field, trip, or laboratory blanks.
J	The J qualifier indicates that the associated result is quantitatively uncertain. J qualifiers added during validation may indicate a concentration between the method detection limit (MDL) and the method reporting limit (MRL) or sample reporting limit (SRL), or a data limitation related to a QC element that exceeds required acceptance limits.
N	The N qualifier indicates an analyte has been presumptively identified. Presumptive detection means that a chromatographic peak was detected at the correct retention time for an analyte, but that not all required identification criteria were met. The associated result is both qualitatively and quantitatively uncertain.
R	The R qualifier indicates that a result has been rejected due to serious QC problems. It is not possible to definitively determine whether the analyte is present or absent in the sample.
UJ	The UJ qualifier indicates the reported quantitation limit is approx-imate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

TABLE 4
Data Qualifiers for Metals by EPA 6000/7000 Series Methods
Stage I Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	101-01 (SIL-01-GW-31_5)	109-01 (SIL-01-GW-208)	114-01 (SIL-01-GW-217)	115-01 (SIL-01-GW-100)	119-01 (SIL-02-GW-216)	120-01 (RP-11-GW-31)	122-01 (RP-11-GW-100)	122-02 (RP-11-GW-100)	125-01 (SIL-03-GW-35)
Dissolved Aluminum	J CR, DL	(none)	J CR	U CB	(none)	(none)	J CR	(none)	(none)
Dissolved Arsenic	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Dissolved Calcium	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Dissolved Chromium	U CB	(none)	(none)	U MB, CB	U CB	(none)	(none)	J DL	U CB
Dissolved Copper	J DL	J DL	(none)	U MB, CB	U MB, CB	U MB, CB	U MB, CB	U CB	U MB, CB
Dissolved Iron	(none)	(none)	(none)	J MI	(none)	(none)	(none)	(none)	(none)
Dissolved Lead	J DL	(none)	(none)	U MB, CB	U CB	(none)	(none)	U CB	(none)
Dissolved Magnesium	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Dissolved Manganese	(none)	(none)	(none)	J MI	(none)	(none)	(none)	(none)	(none)
Dissolved Mercury	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	UJ CR
Dissolved Nickel	J DL	(none)	J DL	(none)	J DL	J DL	J DL	J DL	UJ CR
Dissolved Potassium	(none)	(none)	(none)	U CB	(none)	U CB	(none)	(none)	U CB
Dissolved Vanadium	J DL	J DL	J DL	U MB, CB	U CB	U CB	U CB	U CB	U CB
Dissolved Zinc	U MB	U MB	(none)	U MB, CB	U MB, CB	U MB, CB	U MB, CB	U MB, CB	(none)
Total Arsenic	(none)	J DL	(none)	(none)	J DL	J DL	(none)	(none)	(none)
Total Cadmium	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Total Calcium	(none)	(none)	(none)	J MI	(none)	(none)	(none)	(none)	(none)
Total Chromium	(none)	(none)	(none)	J MI	(none)	U CB	(none)	(none)	U CB
Total Copper	(none)	J DL	(none)	J MI	(none)	U MB, CB	(none)	(none)	U MB, CB
Total Lead	(none)	(none)	(none)	U MB, CB	U CB	U CB	U CB	U CB	(none)
Total Magnesium	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Total Manganese	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Total Mercury	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	UJ CR
Total Nickel	J DL	J DL	(none)	(none)	(none)	J DL	(none)	(none)	J DL
Total Potassium	(none)	(none)	(none)	(none)	(none)	U CB	(none)	(none)	U CB
Total Sodium	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Total Vanadium	(none)	J DL	(none)	(none)	(none)	U CB	(none)	(none)	U CB
Total Zinc	(none)	J DL	(none)	J MI	(none)	U MB, CB	(none)	(none)	(none)

TABLE 4
Data Qualifiers for Metals by EPA 6000/7000 Series Methods
Stage I Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	126-01 (SIL-03-GW-99)	127-01 (SIL-02-GW-32)	128-01 (RP-11-SO-8)	131-01 (SIL-02-GW-100)	136-01 (SIL-04-GW-30)	137-01 (SIL-04-GW-74)	139-01 (RP-11-GW-216)	142-01 (SIL-03-GW-130)	144-01 (SIL-04-GW-89)
Dissolved Aluminum	J CR	(none)	NA	(none)	(none)	(none)	(none)	(none)	(none)
Dissolved Arsenic	(none)	(none)	NA	J DL	(none)	(none)	(none)	(none)	(none)
Dissolved Calcium	(none)	(none)	NA	(none)	(none)	(none)	(none)	(none)	J MI
Dissolved Chromium	U CB	J DL	NA	J DL	(none)	(none)	(none)	(none)	UJ MB, CB
Dissolved Copper	(none)	J DL	NA	J DL	J DL	J DL	UJ HD	(none)	UJ CB
Dissolved Iron	(none)	(none)	NA	(none)	(none)	(none)	(none)	(none)	(none)
Dissolved Lead	(none)	(none)	NA	(none)	(none)	(none)	(none)	(none)	(none)
Dissolved Magnesium	(none)	(none)	NA	(none)	(none)	(none)	(none)	(none)	J MI
Dissolved Manganese	(none)	(none)	NA	(none)	(none)	(none)	(none)	(none)	J MI
Dissolved Mercury	UJ CR	(none)	NA	(none)	(none)	(none)	(none)	UJ CB	UJ CB
Dissolved Nickel	UJ CR	J DL	NA	J DL	(none)	J DL	(none)	J DL	(none)
Dissolved Potassium	(none)	J DL	NA	J DL	(none)	(none)	(none)	(none)	(none)
Dissolved Vanadium	J DL	J DL	NA	(none)	(none)	J DL	(none)	J DL	J DL
Dissolved Zinc	U MB	U RB	NA	U RB	J DL	(none)	(none)	J DL	(none)
Total Arsenic	(none)	(none)	J LM	J DL	J DL	(none)	(none)	(none)	(none)
Total Cadmium	(none)	(none)	UJ LM	(none)	(none)	(none)	(none)	(none)	(none)
Total Calcium	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Total Chromium	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	UJ MB, CB
Total Copper	(none)	(none)	(none)	(none)	(none)	(none)	J DL	(none)	UJ CB
Total Lead	(none)	(none)	J MI	U CB	(none)	(none)	U CB	J DL	(none)
Total Magnesium	(none)	(none)	J MI	(none)	(none)	(none)	(none)	(none)	(none)
Total Manganese	(none)	(none)	J HM	(none)	(none)	(none)	(none)	(none)	(none)
Total Mercury	UJ CR	(none)	U CB	(none)	(none)	(none)	(none)	UJ CB	UJ CB
Total Nickel	(none)	(none)	(none)	(none)	J DL	(none)	J DL	J DL	(none)
Total Potassium	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Total Sodium	(none)	(none)	J DL	(none)	(none)	(none)	(none)	(none)	(none)
Total Vanadium	(none)	(none)	(none)	(none)	(none)	(none)	J DL	(none)	J DL
Total Zinc	(none)	(none)	J MI	(none)	(none)	(none)	(none)	(none)	(none)

Notes:
CB = Contaminated blank
CR = CRI recovery is outside acceptance limits
DL = Value was between the Method Detection Limit and the Method Reporting Limit
EPA = U.S. Environmental Protection Agency
HM = High matrix spike recovery
LM = Low MS/MSD recovery
MB = Method blank contamination
MI = Matrix interference
RB = Rinasate blank contamination

TABLE 5
Data Qualifiers for VOCs by EPA Method 8260B
Stage I Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	101-01 (SIL-01-GW-31_5)	109-01 (SIL-01-GW-208)	114-01 (SIL-01-GW-217)	115-01 (SIL-01-GW-100)	116-01 (SIL-01-GW-130)	117-01 (SIL-01-GW-160)	118-01 (SIL-01-GW-188)	119-01 (SIL-02-GW-216)
1,1,1,2-Tetrachloroethane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
1,1,1-Trichloroethane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
1,1,2,2-Tetrachloroethane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
1,1,2-Trichloroethane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
1,1-Dichloroethane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
1,1-Dichloroethene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
1,1-Dichloropropene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
1,2,3-Trichlorobenzene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
1,2,3-Trichloropropane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
1,2,4-Trichlorobenzene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
1,2,4-Trimethylbenzene	(none)	(none)	(none)	J DL, AB	UJ AB	UJ AB	(none)	(none)
1,2-Dibromo-3-chloropropane	UJ BC	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
1,2-Dibromoethane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
1,2-Dichlorobenzene	(none)	(none)	(none)	UJ AB	UJ AB	J AB, DL	J DL	(none)
1,2-Dichloroethane	(none)	(none)	(none)	UJ AB	UJ AB	J AB, DL	(none)	(none)
1,2-Dichloropropane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
1,3,5-Trimethylbenzene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
1,3-Dichlorobenzene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
1,3-Dichloropropane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
1,4-Dichlorobenzene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	J DL	(none)
2,2-Dichloropropane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
2-Butanone (MEK)	(none)	(none)	(none)	UJ AB	J AB, DL	J AB, DL	(none)	(none)
2-Chlorotoluene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
2-Hexanone	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
4-Chlorotoluene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
4-Isopropyltoluene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
4-methyl-2-pentanone (MIBK)	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Acetone	(none)	(none)	J DL	J DL, AB	J AB, DL	J AB, DL	J LC	UJ LC
Benzene	(none)	(none)	(none)	J AB	J AB, DL	J AB, DL	J DL	(none)
Bromobenzene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Bromochloromethane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Bromodichloromethane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Bromoform	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)

TABLE 5
Data Qualifiers for VOCs by EPA Method 8260B
Stage I Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	101-01 (SIL-01-GW-31_5)	109-01 (SIL-01-GW-208)	114-01 (SIL-01-GW-217)	115-01 (SIL-01-GW-100)	116-01 (SIL-01-GW-130)	117-01 (SIL-01-GW-160)	118-01 (SIL-01-GW-188)	119-01 (SIL-02-GW-216)
Bromomethane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Carbon disulfide	(none)	(none)	(none)	J AB	J AB,DL	J AB, DL	J DL	(none)
Carbon tetrachloride	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Chlorobenzene	(none)	(none)	(none)	UJ AB	UJ AB	J AB, DL	(none)	(none)
Chloroethane	UJ BC	UJ BC	UJ BC	UJ AB, BC	UJ AB, BC	UJ AB, BC	UJ BC	UJ BC
Chloroform	(none)	J DL	(none)	J AB	J AB, DL	J AB, DL	J DL	(none)
Chloromethane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
cis-1,2-Dichloroethene	(none)	J DL	J DL	J AB	J AB, DL	J AB, DL	J DL	(none)
cis-1,3-Dichloropropene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Dibromochloromethane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Dibromomethane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Dichlorodifluoromethane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Ethylbenzene	(none)	(none)	(none)	J DL, AB	J AB, DL	UJ AB	(none)	(none)
Hexachlorobutadiene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Iodomethane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Isobutylalcohol	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Isopropylbenzene	(none)	(none)	(none)	J DL AB	UJ AB	UJ AB	(none)	(none)
m,p-Xylene	(none)	(none)	(none)	J DL, AB	J AB, DL	J AB, DL	J DL	(none)
Methylene chloride	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Naphthalene	(none)	(none)	(none)	J AB	J AB, DL	UJ TB, AB	(none)	(none)
n-Butylbenzene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
n-Propylbenzene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
o-Xylene	(none)	(none)	(none)	J DL, AB	J AB, DL	J AB, DL	(none)	(none)
sec-Butylbenzene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Styrene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
tert-Butylbenzene	UJ BC	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Tetrachloroethene	(none)	UJ LC	UJ LC	UJ AB, LC	UJ AB, LC	UJ AB, LC	(none)	(none)
Toluene	(none)	(none)	(none)	J DL, AB	J AB, DL	J AB, DL	J DL	(none)
trans-1,2-Dichloroethene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
trans-1,3-Dichloropropene	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Trichloroethene	(none)	J DL	(none)	J DL, AB	J AB, DL	J AB, DL	J DL	J DL
Trichlorofluoromethane	(none)	(none)	(none)	UJ AB	UJ AB	UJ AB	(none)	(none)
Vinyl chloride	(none)	(none)	(none)	J AB	J AB, DL	J AB, DL	(none)	(none)

TABLE 5
Data Qualifiers for VOCs by EPA Method 8260B
Stage I Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	120-01 (RP-11-GW-31)	122-01 (RP-11-GW-100)	122-02 (RP-11-GW-100)	123-01 (RP-11-GW-130)	124-01 (RP-11-GW-152)	125-01 (SIL-03-GW-35)	126-01 (SIL-03-GW-99)	127-01 (SIL-02-GW-32)
1,1,1,2-Tetrachloroethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,1,1-Trichloroethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,1,2,2-Tetrachloroethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,1,2-Trichloroethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,1-Dichloroethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,1-Dichloroethene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,1-Dichloropropene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,2,3-Trichlorobenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,2,3-Trichloropropane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,2,4-Trichlorobenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,2,4-Trimethylbenzene	J DL	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,2-Dibromo-3-chloropropane	(none)	(none)	(none)	(none)	(none)	UJ BC	UJ BC	UJ BC
1,2-Dibromoethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,2-Dichlorobenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,2-Dichloroethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,2-Dichloropropane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,3,5-Trimethylbenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,3-Dichlorobenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,3-Dichloropropane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,4-Dichlorobenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
2,2-Dichloropropane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
2-Butanone (MEK)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
2-Chlorotoluene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
2-Hexanone	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
4-Chlorotoluene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
4-Isopropyltoluene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
4-methyl-2-pentanone (MIBK)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Acetone	J LC	J LC	UJ LC	J LC	J LC	UJ BC	UJ BC	J BC
Benzene	(none)	(none)	(none)	(none)	J DL	(none)	(none)	(none)
Bromobenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Bromochloromethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Bromodichloromethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Bromoform	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)

TABLE 5
Data Qualifiers for VOCs by EPA Method 8260B
Stage I Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	120-01 (RP-11-GW-31)	122-01 (RP-11-GW-100)	122-02 (RP-11-GW-100)	123-01 (RP-11-GW-130)	124-01 (RP-11-GW-152)	125-01 (SIL-03-GW-35)	126-01 (SIL-03-GW-99)	127-01 (SIL-02-GW-32)
Bromomethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	UJ BC
Carbon disulfide	(none)	J DL	J DL	(none)	J DL	(none)	(none)	(none)
Carbon tetrachloride	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Chlorobenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Chloroethane	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC
Chloroform	(none)	J DL	(none)	(none)	J DL	(none)	(none)	(none)
Chloromethane	J DL	(none)	(none)	(none)	(none)	UJ BC	UJ BC	UJ BC
cis-1,2-Dichloroethene	(none)	(none)	(none)	(none)	(none)	(none)	J DL	(none)
cis-1,3-Dichloropropene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Dibromochloromethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Dibromomethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Dichlorodifluoromethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Ethylbenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	J DL
Hexachlorobutadiene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Iodomethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Isobutylalcohol	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Isopropylbenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
m,p-Xylene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	J DL
Methylene chloride	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Naphthalene	J DL	J DL	(none)	(none)	J DL	J DL	(none)	U RB
n-Butylbenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
n-Propylbenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
o-Xylene	J DL	(none)	(none)	(none)	(none)	(none)	(none)	J DL
sec-Butylbenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Styrene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
tert-Butylbenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Tetrachloroethene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Toluene	(none)	J DL	(none)	(none)	J DL	(none)	(none)	U RB
trans-1,2-Dichloroethene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
trans-1,3-Dichloropropene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Trichloroethene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Trichlorofluoromethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Vinyl chloride	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)

TABLE 5
Data Qualifiers for VOCs by EPA Method 8260B
Stage I Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	128-01 (RP-11-SO-8)	131-01 (SIL-02-GW-100)	132-01 (SIL-02-GW-130)	133-01 (SIL-02-GW-160)	133-02 (SIL-02-GW-160)	134-01 (SIL-02-GW-190)	135-01 (RP-11-GW-190)	136-01 (SIL-04-GW-30)
1,1,1,2-Tetrachloroethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,1,1-Trichloroethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,1,2,2-Tetrachloroethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,1,2-Trichloroethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,1-Dichloroethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,1-Dichloroethene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,1-Dichloropropene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,2,3-Trichlorobenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,2,3-Trichloropropane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,2,4-Trichlorobenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,2,4-Trimethylbenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,2-Dibromo-3-chloropropane	(none)	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC
1,2-Dibromoethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,2-Dichlorobenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,2-Dichloroethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,2-Dichloropropane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,3,5-Trimethylbenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,3-Dichlorobenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,3-Dichloropropane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
1,4-Dichlorobenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
2,2-Dichloropropane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
2-Butanone (MEK)	UJ BC	(none)	(none)	(none)	(none)	(none)	(none)	(none)
2-Chlorotoluene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
2-Hexanone	UJ BC	(none)	(none)	(none)	(none)	(none)	(none)	(none)
4-Chlorotoluene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
4-Isopropyltoluene	J DL	(none)	(none)	(none)	(none)	(none)	(none)	(none)
4-methyl-2-pentanone (MIBK)	UJ BC	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Acetone	UJ BC	J BC	J BC	J BC	J BC	UJ BC	J BC	J BC
Benzene	(none)	J	(none)	(none)	(none)	(none)	(none)	(none)
Bromobenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Bromochloromethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Bromodichloromethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Bromoform	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)

TABLE 5
Data Qualifiers for VOCs by EPA Method 8260B
Stage I Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	128-01 (RP-11-SO-8)	131-01 (SIL-02-GW-100)	132-01 (SIL-02-GW-130)	133-01 (SIL-02-GW-160)	133-02 (SIL-02-GW-160)	134-01 (SIL-02-GW-190)	135-01 (RP-11-GW-190)	136-01 (SIL-04-GW-30)
Bromomethane	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC
Carbon disulfide	(none)	U RB	U RB	J DL	J DL	(none)	(none)	J DL
Carbon tetrachloride	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Chlorobenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Chloroethane	(none)	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC
Chloroform	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Chloromethane	(none)	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC
cis-1,2-Dichloroethene	(none)	(none)	(none)	(none)	(none)	(none)	J DL	(none)
cis-1,3-Dichloropropene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Dibromochloromethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Dibromomethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Dichlorodifluoromethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Ethylbenzene	J DL	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Hexachlorobutadiene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Iodomethane	UJ BC	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Isobutylalcohol	R RF	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Isopropylbenzene	J DL	(none)	(none)	(none)	(none)	(none)	(none)	(none)
m,p-Xylene	(none)	(none)	(none)	(none)	J DL	(none)	(none)	(none)
Methylene chloride	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Naphthalene	J HT	(none)	(none)	(none)	U MB	U MB	U MB	(none)
n-Butylbenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
n-Propylbenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
o-Xylene	J DL	(none)	(none)	(none)	(none)	(none)	(none)	(none)
sec-Butylbenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Styrene	(none)	(none)	(none)	(none)	(none)	(none)	J DL	(none)
tert-Butylbenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Tetrachloroethene	UJ LC	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Toluene	(none)	(none)	(none)	J DL	J DL	(none)	J DL	(none)
trans-1,2-Dichloroethene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
trans-1,3-Dichloropropene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Trichloroethene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Trichlorofluoromethane	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Vinyl chloride	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)

TABLE 5
Data Qualifiers for VOCs by EPA Method 8260B
Stage I Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	137-01 (SIL-04-GW-74)	139-01 (RP-11-GW-216)	142-01 (SIL-03-GW-130)	144-01 (SIL-04-GW-89)
1,1,1,2-Tetrachloroethane	(none)	(none)	(none)	(none)
1,1,1-Trichloroethane	(none)	(none)	(none)	(none)
1,1,2,2-Tetrachloroethane	(none)	(none)	(none)	(none)
1,1,2-Trichloroethane	(none)	(none)	(none)	(none)
1,1-Dichloroethane	(none)	(none)	(none)	(none)
1,1-Dichloroethene	(none)	(none)	(none)	(none)
1,1-Dichloropropene	(none)	(none)	(none)	(none)
1,2,3-Trichlorobenzene	(none)	(none)	(none)	(none)
1,2,3-Trichloropropane	(none)	(none)	(none)	(none)
1,2,4-Trichlorobenzene	(none)	(none)	(none)	(none)
1,2,4-Trimethylbenzene	(none)	(none)	(none)	(none)
1,2-Dibromo-3-chloropropane	UJ BC	UJ BC	UJ BC	(none)
1,2-Dibromoethane	(none)	(none)	(none)	(none)
1,2-Dichlorobenzene	J DL	(none)	(none)	(none)
1,2-Dichloroethane	(none)	(none)	UJ BC	(none)
1,2-Dichloropropane	(none)	(none)	(none)	(none)
1,3,5-Trimethylbenzene	(none)	(none)	(none)	(none)
1,3-Dichlorobenzene	(none)	(none)	(none)	J DL
1,3-Dichloropropane	(none)	(none)	(none)	(none)
1,4-Dichlorobenzene	(none)	(none)	(none)	(none)
2,2-Dichloropropane	(none)	(none)	(none)	(none)
2-Butanone (MEK)	(none)	(none)	(none)	(none)
2-Chlorotoluene	(none)	(none)	UJ BC	(none)
2-Hexanone	(none)	(none)	(none)	(none)
4-Chlorotoluene	(none)	(none)	(none)	(none)
4-Isopropyltoluene	(none)	(none)	(none)	(none)
4-methyl-2-pentanone (MIBK)	(none)	(none)	(none)	(none)
Acetone	UJ BC	UJ BC	UJ LC	(none)
Benzene	(none)	J DL	(none)	(none)
Bromobenzene	(none)	(none)	(none)	(none)
Bromochloromethane	(none)	(none)	(none)	(none)
Bromodichloromethane	(none)	(none)	(none)	(none)
Bromoform	(none)	(none)	(none)	(none)

TABLE 5
Data Qualifiers for VOCs by EPA Method 8260B
Stage I Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	137-01 (SIL-04-GW-74)	139-01 (RP-11-GW-216)	142-01 (SIL-03-GW-130)	144-01 (SIL-04-GW-89)
Bromomethane	UJ BC	UJ BC	(none)	UJ LC
Carbon disulfide	(none)	(none)	(none)	(none)
Carbon tetrachloride	(none)	(none)	(none)	(none)
Chlorobenzene	(none)	(none)	(none)	(none)
Chloroethane	UJ BC	UJ BC	UJ BC	(none)
Chloroform	(none)	(none)	J DL	(none)
Chloromethane	UJ BC	UJ BC	(none)	(none)
cis-1,2-Dichloroethene	(none)	(none)	J DL	J DL
cis-1,3-Dichloropropene	(none)	(none)	(none)	(none)
Dibromochloromethane	(none)	(none)	(none)	(none)
Dibromomethane	(none)	(none)	UJ BC	(none)
Dichlorodifluoromethane	(none)	(none)	(none)	(none)
Ethylbenzene	(none)	(none)	(none)	(none)
Hexachlorobutadiene	(none)	(none)	(none)	(none)
Iodomethane	(none)	(none)	(none)	UJ LC, LL
Isobutylalcohol	(none)	(none)	(none)	UJ BC
Isopropylbenzene	(none)	(none)	(none)	(none)
m,p-Xylene	(none)	(none)	(none)	(none)
Methylene chloride	(none)	(none)	UJ BC	(none)
Naphthalene	(none)	(none)	(none)	(none)
n-Butylbenzene	(none)	(none)	(none)	(none)
n-Propylbenzene	(none)	(none)	(none)	(none)
o-Xylene	(none)	(none)	(none)	(none)
sec-Butylbenzene	(none)	(none)	(none)	(none)
Styrene	(none)	(none)	(none)	(none)
tert-Butylbenzene	(none)	(none)	(none)	(none)
Tetrachloroethene	(none)	(none)	(none)	(none)
Toluene	(none)	(none)	(none)	(none)
trans-1,2-Dichloroethene	(none)	(none)	UJ BC	(none)
trans-1,3-Dichloropropene	(none)	(none)	(none)	(none)
Trichloroethene	(none)	J DL	(none)	(none)
Trichlorofluoromethane	(none)	(none)	(none)	(none)
Vinyl chloride	(none)	J DL	(none)	J DL

Notes:
AB = Headspace in Volatile Organic Analyte vial
BC = Bad calibration curve
DL = Value was between the Method Detection Limit and the Methor Reporting Limit
EPA = U.S. Environmental Protection Agency
LC = Low continueing calibration verification
LL = Low laboratory control sample recovery
RB = Rinsate blank contamination
VOC = Volatile Organic Compound

TABLE 6
Data Qualifiers for SVOCs by EPA Method 8270C
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	101-01 (SIL-01-GW-31_5)	109-01 (SIL-01-GW-208)	114-01 (SIL-01-GW-217)	115-01 (SIL-01-GW-100)	119-01 (SIL-02-GW-216)	120-01 (RP-11-GW-31)	122-01 (RP-11-GW-100)	122-02 (RP-11-GW-100)	125-01 (SIL-03-GW-35)
1,3-Dichlorobenzene	(none)	(none)	(none)	(none)	J DL	(none)	(none)	(none)	(none)
1,4-Dichlorobenzene	(none)	(none)	(none)	(none)	J DL	(none)	(none)	(none)	(none)
2,3,4,6-TETRACHLOROPHENOL	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	(none)
2,4,5-Trichlorophenol	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	(none)
2,4,6-Trichlorophenol	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	(none)
2,4-Dichlorophenol	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	(none)
2,4-Dimethylphenol	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	(none)
2,4-Dinitrophenol	UJ LS	UJ LC, LS, LL	UJ LC, LS, LL	UJ LC, LS, LL	UJ LS	UJ LS	UJ LS	UJ LS	(none)
2,6-Dichlorophenol	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	(none)
2-Chlorophenol	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	(none)
2-Methyl-4,6-dinitrophenol	UJ LS	UJ LC, LS	UJ LC, LS	UJ LC, LS	UJ LS	UJ LS	UJ LS	UJ LS	(none)
2-Methylnaphthalene	(none)	(none)	(none)	J DL	J DL	(none)	(none)	(none)	(none)
2-Methylphenol	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	(none)
2-Nitrophenol	UJ LS	UJ LS	UJ	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	(none)
3,3'-Dichlorobenzidine	UJ LL	(none)	(none)	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL
3-Nitroaniline	UJ LL	(none)	(none)	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL
4-Chloro-3-methylphenol	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	(none)
4-Chloroaniline	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL
4-Chlorophenylphenyl ether	(none)	UJ BC	UJ BC	UJ BC	(none)	(none)	(none)	(none)	(none)
4-METHYLPHENOL(P-CRESOL)	UJ BC, LS	UJ LS	UJ LS	UJ LS	UJ BC, LS	UJ BC, LS	UJ BC, LS	UJ BC, LS	UJ BC
4-Nitroaniline	(none)	UJ BC	UJ BC	UJ BC	(none)	(none)	(none)	(none)	(none)
4-Nitrophenol	UJ LS, LL	UJ LC, LL, LS	UJ LC, LL, LS	UJ LC, LS, LL	UJ LS	UJ LS	UJ LS	UJ LS	(none)
Acenaphthene	(none)	UJ BC	UJ BC	J BC, DL	J DL	(none)	(none)	(none)	(none)
Acenaphthylene	J DL	UJ BC	UJ BC	UJ BC	(none)	(none)	(none)	(none)	(none)
Anthracene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Benzo(b)fluoranthene	J BC, LC	UJ BC	UJ BC	UJ BC	(none)	(none)	(none)	(none)	(none)
Benzo(ghi)perylene	J CH	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Benzo(k)fluoranthene	J BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC
Benzoic acid	J LL, LI, DL	R LL	R LL	J DL, LC, LL	R LL	R LL	R LL	R LL	J BC, DL, LL
Bis(2-Chloroethyl) ether	UJ LL	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Bis(2-Ethylhexyl) pthalate	J DL	(none)	J DL	U MB	J DL, HL	J HL	J DL, HL	J DL, HL	J DL, HL
Chrysene	(none)	UJ BC	UJ BC	UJ BC	(none)	(none)	(none)	(none)	(none)
Dibenzo(a,h)anthracene	J DL	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Diethylphthalate	(none)	UJ BC	UJ BC	J BC, DL	(none)	(none)	(none)	(none)	(none)
Di-n-octyl phthalate	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Fluoranthene	(none)	(none)	(none)	(none)	(none)	J DL	(none)	(none)	(none)
Fluorene	J BC	(none)	(none)	(none)	(none)	J DL	(none)	(none)	(none)
Hexachlorocyclopentadiene	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL
Hexachloroethane	UJ BC	(none)	(none)	(none)	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC
Indeno(1,2,3-cd)pyrene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Naphthalene	(none)	(none)	(none)	J DL	J DL	(none)	(none)	(none)	J DL
N-NITROSODIMETHYLAMINE	UJ LL	UJ LC, LL	UJ LC, LL	UJ LC	(none)	(none)	(none)	(none)	(none)
N-Nitrosodi-n-propyl amine	UJ BC	(none)	(none)	(none)	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC
N-Nitrosodiphenylamine	UJ LL	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Pentachlorophenol	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	(none)
Phenanthrene	(none)	(none)	(none)	J DL	J DL	J DL	(none)	(none)	J DL
Phenol	UJ LL, LS	UJ LS, LL	UJ LS	UJ LS, LL	UJ LS, LL	UJ LS, LL	UJ LS, LL	UJ LS, LL	UJ LL
Pyrene	J BC, LC	UJ BC	UJ BC	UJ BC	(none)	J HL, DL	(none)	(none)	(none)

TABLE 6
Data Qualifiers for SVOCs by EPA Method 8270C
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	126-01 (SIL-03-GW-99)	127-01 (SIL-02-GW-32)	128-01 (RP-11-SO-8)	131-01 (SIL-02-GW-100)	136-01 (SIL-04-GW-30)	137-01 (SIL-04-GW-74)	139-01 (RP-11-GW-216)	142-01 (SIL-03-GW-130)	144-01 (SIL-04-GW-89)
1,3-Dichlorobenzene	J DL	(none)	(none)	(none)	(none)	(none)	J DL	(none)	J DL
1,4-Dichlorobenzene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
2,3,4,6-TETRACHLOROPHENOL	(none)	(none)	(none)	(none)	(none)	UJ LS	UJ LS	(none)	UJ LS
2,4,5-Trichlorophenol	(none)	(none)	(none)	(none)	(none)	UJ LS	UJ LS	(none)	UJ LS
2,4,6-Trichlorophenol	(none)	(none)	(none)	(none)	(none)	UJ LS	UJ LS	(none)	UJ LS
2,4-Dichlorophenol	(none)	(none)	(none)	(none)	(none)	UJ LS	UJ LS	(none)	UJ LS
2,4-Dimethylphenol	(none)	(none)	(none)	(none)	(none)	UJ LS	UJ LS	(none)	UJ LS
2,4-Dinitrophenol	(none)	(none)	UJ LL	(none)	(none)	UJ LS	UJ LS, LL	(none)	UJ LS
2,6-Dichlorophenol	(none)	(none)	(none)	(none)	(none)	UJ LS	UJ LS	(none)	UJ LS
2-Chlorophenol	J DL	(none)	(none)	(none)	(none)	UJ LS	UJ LS	(none)	UJ LS
2-Methyl-4,6-dinitrophenol	(none)	(none)	UJ LL	(none)	(none)	UJ LS	UJ LS	(none)	UJ LS
2-Methylnaphthalene	(none)	(none)	(none)	J DL	(none)	(none)	(none)	(none)	(none)
2-Methylphenol	(none)	(none)	(none)	(none)	(none)	UJ LS	UJ LS	(none)	UJ LS
2-Nitrophenol	(none)	(none)	(none)	(none)	(none)	UJ LS	UJ LS	(none)	UJ LS
3,3'-Dichlorobenzidine	UJ LL	(none)	UJ LL	(none)	(none)	(none)	(none)	(none)	UJ LL
3-Nitroaniline	UJ LL	(none)	(none)	(none)	(none)	(none)	UJ LL	(none)	UJ LL
4-Chloro-3-methylphenol	(none)	(none)	(none)	(none)	(none)	UJ LS	UJ LS	(none)	UJ LS
4-Chloroaniline	UJ LL	(none)	UJ LL	(none)	(none)	(none)	UJ LM, LL	(none)	UJ LL
4-Chlorophenylphenyl ether	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
4-METHYLPHENOL(P-CRESOL)	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC, LS	UJ BC, LS	UJ BC	UJ BC, LS
4-Nitroaniline	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	UJ LC
4-Nitrophenol	(none)	(none)	(none)	(none)	(none)	UJ LS	UJ LL, LS	(none)	UJ LS
Acenaphthene	(none)	J DL	(none)	J DL	J DL	(none)	(none)	(none)	(none)
Acenaphthylene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Anthracene	(none)	J DL	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Benzo(b)fluoranthene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Benzo(ghi)perylene	(none)	(none)	J HC	(none)	(none)	(none)	(none)	(none)	(none)
Benzo(k)fluoranthene	UJ BC	UJ BC	J BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC
Benzoic acid	J BC, DL, LL	J BC, DL, LL	UJ BC, LL	J BC, DL, LL	J BC, DL, LL	UJ BC, LL	R LL, LM	J BC, LL	J BC, LL
Bis(2-Chloroethyl) ether	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Bis(2-Ethylhexyl) pthalate	J DL, HL	U MB, RB	(none)	U MB, RB	U MB	U MB	U MB	U MB	U MB
Chrysene	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Dibenzo(a,h)anthracene	(none)	(none)	J LI	(none)	(none)	(none)	(none)	(none)	(none)
Diethylphthalate	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Di-n-octyl phthalate	(none)	J DL	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Fluoranthene	(none)	J DL	(none)	J DL	J DL	(none)	(none)	(none)	(none)
Fluorene	(none)	J DL	J LC	(none)	(none)	(none)	(none)	(none)	UJ LC
Hexachlorocyclopentadiene	UJ LL	(none)	UJ LL	(none)	(none)	(none)	(none)	(none)	(none)
Hexachloroethane	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC, LC
Indeno(1,2,3-cd)pyrene	(none)	(none)	J LI	(none)	(none)	(none)	(none)	(none)	(none)
Naphthalene	J DL	J DL	(none)	J DL	(none)	(none)	(none)	(none)	(none)
N-NITROSODIMETHYLAMINE	(none)	(none)	(none)	(none)	(none)	(none)	UJ LL	(none)	UJ LL
N-Nitrosodi-n-propyl amine	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC	UJ BC
N-Nitrosodiphenylamine	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)	(none)
Pentachlorophenol	(none)	(none)	UJ LL	(none)	(none)	UJ LS	UJ LS	(none)	UJ LS
Phenanthrene	(none)	J DL	(none)	J DL	J DL	(none)	(none)	(none)	(none)
Phenol	UJ LL	UJ LL	(none)	UJ LL	UJ LL	UJ LL, LS	UJ LL, LS	(none)	UJ LS
Pyrene	(none)	J HL, DL	J HC	J HL, DL	J HL, DL	(none)	(none)	(none)	(none)

Notes:
BC = Bad calibration curve
DL = Value was between the Method Detection Limit and the Method Reporting Limit
EPA = U.S. Environmental Protection Agency
HC = High cleanup standard recovery
HL = High laboratory control sample recovery
LL = Low laboratory control sample recovery
LM = Low MS/MSD recovery
LS = Low surrogate recovery
MB = Method blank contamination
RB = Rinsate blank contamination
SVOC = Semivolatile Organic Compound

TABLE 7
Data Qualifiers for OCPs by EPA Method 8081A
Stage I Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	101-01 (SIL-01-GW-31_5)	109-01 (SIL-01-GW-208)	114-01 (SIL-01-GW-217)	115-01 (SIL-01-GW-100)	119-01 (SIL-02-GW-216)	120-01 (RP-11-GW-31)	122-01 (RP-11-GW-100)	122-02 (RP-11-GW-100)	125-01 (SIL-03-GW-35)
4,4'-DDD	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
4,4'-DDE	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
4,4'-DDT	UJ LS	UJ LL	UJ LL	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Aldrin	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
alpha-BHC	NJ HT, LS, SC	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
alpha-Chlordane	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
beta-BHC	NJ LS, SC	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
CHLORDANE	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
delta-BHC	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Dieldrin	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Endosulfan I	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Endosulfan II	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Endosulfan sulfate	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Endrin	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Endrin aldehyde	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Endrin Ketone	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
gamma-BHC (Lindane)	J LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
gamma-Chlordane	NJ HT, LS, SC	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Heptachlor	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Heptachlor epoxide	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Methoxychlor	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
TOXAPHENE	UJ LS	(none)	(none)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS

TABLE 7
Data Qualifiers for OCPs by EPA Method 8081A
Stage I Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	126-01 (SIL-03-GW-99)	127-01 (SIL-02-GW-32)	131-01 (SIL-02-GW-100)	136-01 (SIL-04-GW-30)	137-01 (SIL-04-GW-74)	139-01 (RP-11-GW-216)	142-01 (SIL-03-GW-130)	144-01 (SIL-04-GW-89)
4,4'-DDD	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
4,4'-DDE	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
4,4'-DDT	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Aldrin	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
alpha-BHC	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
alpha-Chlordane	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
beta-BHC	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
CHLORDANE	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
delta-BHC	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Dieldrin	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Endosulfan I	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Endosulfan II	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Endosulfan sulfate	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Endrin	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Endrin aldehyde	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Endrin Ketone	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
gamma-BHC (Lindane)	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
gamma-Chlordane	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Heptachlor	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Heptachlor epoxide	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
Methoxychlor	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS
TOXAPHENE	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS	UJ LS

Notes:
EPA = U.S. Environmental Protection Agency
HT = Holding time exceedence
LL = Low laboratory control sample recovery
LS = Low surrogate recovery
OCP = organochlorine pesticide
SC = Second column confirmation >40%

TABLE 8
Data Qualifiers for Chlorinated Herbicides by EPA Method 8151A
Stage I Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	101-01 (SIL-01-GW-31_5)	109-01 (SIL-01-GW-208)	114-01 (SIL-01-GW-217)	115-01 (SIL-01-GW-100)	119-01 (SIL-02-GW-216)
2,4,5-T	(none)	(none)	(none)	(none)	(none)
2,4,5-TP (Silvex)	UJ LL	(none)	(none)	(none)	(none)
2,4-DB	(none)	(none)	(none)	(none)	(none)
Bromoxynil	UJ LL	(none)	(none)	UJ LL	(none)
Dalapon	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL
Dicamba	(none)	(none)	(none)	(none)	(none)
Dinoseb	R LL	UJ LL	UJ LL	UJ LL	UJ LL
MCPA	(none)	(none)	(none)	(none)	(none)

Analyte	120-01 (RP-11-GW-31)	122-01 (RP-11-GW-100)	122-02 (RP-11-GW-100)	125-01 (SIL-03-GW-35)	126-01 (SIL-03-GW-99)
2,4,5-T	(none)	(none)	(none)	(none)	(none)
2,4,5-TP (Silvex)	(none)	(none)	(none)	(none)	J HS
2,4-D	(none)	(none)	(none)	(none)	(none)
2,4-DB	(none)	(none)	(none)	(none)	(none)
Bromoxynil	(none)	(none)	(none)	(none)	(none)
Dalapon	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL
Dicamba	(none)	(none)	(none)	(none)	(none)
Dichlorprop	(none)	(none)	(none)	(none)	(none)
Dinoseb	UJ LL	UJ LL	UJ LL	UJ LL	UJ LL
MCPA	(none)	(none)	(none)	(none)	(none)

TABLE 8
Data Qualifiers for Chlorinated Herbicides by EPA Method 8151A
Stage I Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	127-01 (SIL-02-GW-32)	131-01 (SIL-02-GW-100)	136-01 (SIL-04-GW-30)	137-01 (SIL-04-GW-74)	139-01 (RP-11-GW-216)
2,4,5-T	(none)	(none)	(none)	(none)	UJ LM
2,4,5-TP (Silvex)	(none)	(none)	(none)	(none)	(none)
2,4-DB	(none)	(none)	(none)	(none)	UJ LM
Bromoxynil	(none)	(none)	(none)	(none)	UJ LM
Dalapon	(none)	(none)	(none)	(none)	(none)
Dicamba	(none)	(none)	(none)	(none)	J LM
Dinoseb	(none)	(none)	(none)	(none)	UJ LL, LM
MCPA	(none)	(none)	(none)	(none)	UJ LM

Analyte	142-01 (SIL-03-GW-130)	144-01 (SIL-04-GW-89)
2,4,5-T	(none)	(none)
2,4,5-TP (Silvex)	(none)	(none)
2,4-D	(none)	(none)
2,4-DB	(none)	(none)
Bromoxynil	(none)	(none)
Dalapon	UJ LL	UJ LL
Dicamba	(none)	(none)
Dichlorprop	(none)	(none)
Dinoseb	UJ LL	UJ LL
MCPA	(none)	(none)

Note:
EPA = U.S. Environmental Protection Agency
LL = Low laboratory control sample recovery

TABLE 9
Data Qualifiers for Semivolatile Petroleum Products by DEQ/Ecology Method NWTPH-Dx
Stage I Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	101-01 (SIL-01-GW-31_5)	109-01 (SIL-01-GW-208)	114-01 (SIL-01-GW-217)	115-01 (SIL-01-GW-100)
Diesel Range Organics	J LS	UJ NP	J NP	(none)
Residual Range Organics	J LS	UJ NP	J NP	(none)

Analyte	119-01 (SIL-02-GW-216)	120-01 (RP-11-GW-31)	122-01 (RP-11-GW-100)	122-02 (RP-11-GW-100)
Diesel Range Organics	(none)	(none)	(none)	(none)
Residual Range Organics	(none)	(none)	(none)	(none)

Analyte	125-01 (SIL-03-GW-35)	126-01 (SIL-03-GW-99)	127-01 (SIL-02-GW-32)	128-01 (RP-11-SO-8)
Diesel Range Organics	(none)	(none)	(none)	(none)
Residual Range Organics	(none)	(none)	(none)	(none)

Analyte	131-01 (SIL-02-GW-100)	136-01 (SIL-04-GW-30)	137-01 (SIL-04-GW-74)	139-01 (RP-11-GW-216)
Diesel Range Organics	(none)	(none)	(none)	(none)
Residual Range Organics	(none)	(none)	(none)	(none)

Analyte	142-01 (SIL-03-GW-130)	144-01 (SIL-04-GW-89)
Diesel Range Organics	(none)	(none)
Residual Range Organics	(none)	(none)

Notes:
DEQ = Department of Environmental Quality
Ecology = Washington State Department of Ecology
LS = Low surrogate recovery
NP = Sample not preserved
NWTPH-Dx = Northwest Total Petroleum Hydrocarbons - Diesel Range

TABLE 10
Interlaboratory Split Samples Submitted to STL and CAS
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte Class	Analyte	Primary Result (STL)	Split Result (CAS)	RPD
Sample SIL-02-GW-216 (119-01 and 119-05)				
Total Metals	Total Aluminum	50,600	46,500	8%
	Total Arsenic	8.2	4.2	65%
	Total Cadmium	<0.80	0.41	NC
	Total Calcium	80,600	85,200	6%
	Total Chromium	77.7	108	33%
	Total Copper	81.5	38.9	71%
	Total Iron	114,000	115,000	1%
	Total Lead	17.2	10.4	49%
	Total Magnesium	42,000	39,200	7%
	Total Manganese	4,410	5120	15%
	Total Nickel	97.8	70.1	33%
	Total Potassium	6,750	6,510	4%
	Total Sodium	24,600	27,100	10%
	Total Vanadium	265	242	9%
	Total Zinc	211	210	0%
Dissolved Metals	Dissolved Arsenic	<4.7	1.4	NC
	Dissolved Cadmium	<0.80	0.08	NC
	Dissolved Calcium	56,500	55,600	2%
	Dissolved Chromium	2.2	<5	NC
	Dissolved Copper	5.9	0.1	193%
	Dissolved Iron	12,400	12,000	3%
	Dissolved Lead	3.8	0.03	197%
	Dissolved Magnesium	25,400	23,700	7%
	Dissolved Manganese	2,730	2,760	1%
	Dissolved Nickel	12.2	13.8	12%
	Dissolved Potassium	5,030	3,620	33%
	Dissolved Sodium	24,800	22,600	9%
	Dissolved Vanadium	3.2	<10	NC
	Dissolved Zinc	23.8	17.2	32%
Herbicides	2,4,5-TP (Silvex)	1.1	1.1	0%
VOCs	Trichloroethene	0.54	0.52	4%
	Toluene	<1.0	1.0	NC
	Naphthalene	4.7	NR	NC
	Chlorobenzene	1.1	1.2	9%
	Cis-1, 2-Dichloroethene	1.3	NR	NC
	1,3-Dichlorobenzene	<1.0	0.61	NC
	1,4-Dichlorobenzene	8.9	9.5	7%
	1,2-Dichlorobenzene	31	30	3%
SVOCs	1,2-Dichlorobenzene	21	26	21%
	1,3-Dichlorobenzene	0.54	<10	NC
	1,4-Dichlorobenzene	7.2	<10	NC
	Naphthalene	5.3	<10	NC
	2-Methylnaphthalene	1.3	<10	NC
	Acenaphthene	1.1	<10	NC
	Phenanthrene	1.5	<10	NC
	Bis(2-ethylhexyl)phthalate	0.74	<10	NC
Sample SIL-02-GW-190 (134-01 and 134-05)				
VOCs	Naphthalene	0.21	<0.50	NC

NOTES:
CAS = Columbia Analytical Services, Inc.
NC = Not Calculable
NR = Not Reported
RPD = Relative Percent Difference
STL = Severn Trent Laboratories, Inc.
SVOCs = semivolatile organic compounds
VOCs = volatile organic compounds

C-4

APPENDIX C-4

DATA VALIDATION REPORT FOR THE STAGE I SOURCE CONTROL EVALUATION - SILTRONIC RIVERBANK PCDD/PCDF RESULTS RP - PORTLAND SITE

May 12, 2006

Submitted to:

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Northwest Region
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Submitted for:

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0-61M-107030/Phase 69

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1.0 INTRODUCTION

A total of 15 water samples and 1 soil sample from the Rhône-Poulenc (RP) Portland site Stage 1 Source Control Evaluation (SCE) Siltronic Riverbank reconnaissance activities were submitted to Axys Analytical Services Limited (Axys) in Sidney, British Columbia, Canada for analysis of polychlorinated dioxins (PCDD) and dibenzofurans (PCDF) using United States Environmental Protection Agency (EPA) Method 1613B. The 15 water samples consisted of 13 primary samples, 1 field duplicate, and 1 rinsate blank. An aliquot of one of the primary samples was also submitted to Analytical Perspectives (AP) in Wilmington, North Carolina as an interlaboratory split sample. Axys sent the soil sample to Severn-Trent Laboratories, Inc. (STL) in Sacramento, California for analysis by EPA Method 8290 because of anticipated high dioxin concentrations, which may have contaminated Axys' sample preparation area or analytical instruments. A list of all samples by sample location, field sample identification (ID), sample collection date, matrix, Axys sample ID, AP sample ID, and STL sample ID may be found in Table 1.

2.0 DATA VALIDATION METHODOLOGY

Validation of these data followed the EPA Region 10 Standard Operating Procedure (SOP) for the Validation of Polychlorinated Dioxin and Polychlorinated Dibenzofuran Data (EPA, 1996) and the National Functional Guidelines for Chlorinated Dioxin/Furan Data Review (EPA, 2002), with reference to EPA Method 1613B (EPA, 1997) and EPA Method 8290 (EPA, 1994), and exceeded the level of validation specified in the Oregon Department of Environmental Quality (DEQ)-approved Revised Quality Assurance Project Plan (QAPP) dated June 13, 2001.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all quality control (QC) audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3.0 CHAIN OF CUSTODY AND SAMPLE RECEIPT CONDITION DOCUMENTATION

3.1 Sample Receipt at Axys

All samples were received at Axys in good condition with compliant chain-of-custody (COC), except as described below.

A single bottle of sample SIL-04-GW-30 (136-01) broke in transit. A second bottle arrived in acceptable condition and data usability is not adversely affected.

One out of six bottles of sample RP-11-GW-216 (139-01) broke in transit. Sufficient sample remained to perform the analysis, matrix spike (MS), and matrix spike duplicate (MSD). Data usability is not adversely affected.

One of the two bottles from sample SIL-03-GW-130 (142-01) arrived at Axys with an extra label, which did not match the COC. Axys contacted AMEC Earth & Environmental, Inc. (AMEC) and was instructed to use the data from the label that matched the COC.

3.2 Sample Receipt at AP

All samples were received at AP in good condition with compliant COCs, except as described below.

Sample SIL-02-GW-116 (119-05) arrived at AP at the slightly elevated temperature of 6 degrees Celsius (°C). AP results are used for comparative purposes only and the data do not require qualification.

3.3 Sample Receipt at STL

Sample RP-11-SO-8 (128-01) was received at the recorded temperature of -2°C. There is no indication that the sample container was broken due to the sample freezing and data usability is not adversely affected. Also, according to the case narrative, the sample was not relinquished on the COC. The sample was shipped directly from Axys to STL and data usability is not adversely affected.

4.0 EPA METHOD 8290

STL analyzed sample RP-11-SO-8 (128-01) using EPA Method 8290. AMEC, along with STL made the decision to use EPA Method 8290 instead of EPA Method 1613B based on the possibility that the sample contained manufactured gas plant waste that may have contained high dioxin concentrations, which would have made EPA Method 1613B analysis impractical. The data are usable with the exceptions described below.

4.1 Holding Times

Sample RP-11-SO-8 (128-01) was extracted within the maximum recommended holding time of 30 days from collection until extraction and analyzed within the maximum recommended holding time of 45 days from extraction until analysis.

4.2 Gas Chromatography Mass Spectrometer Performance Checks and Initial Calibration

Analysis of PCDD/PCDF in these samples on the primary DB-5 column was conducted under initial calibration (ICAL) 82901005058D5. Ion abundance ratios and percent relation standard deviation (%RSD) for all target compounds met EPA Method 8290 requirements.

5.0 CONTINUING CALIBRATION

All compounds in the opening and closing continuing calibration evaluation standards (CCAL) met method requirements for percent drift in relative response (%D) and ion abundance ratios.

5.1 Laboratory Blank

Target analytes were not detected in the laboratory blank associated with the analysis of sample RP-11-SO-8 (128-01).

5.2 Recovery of C-13 Labeled Isotope Dilution Standards Used as Internal Standards

EPA Method 8290 uses an isotope dilution procedure for calculation of analyte concentrations. A total of 12 carbon or chlorine labeled PCDD and PCDF isomers are added to the sample or extract to monitor different aspects of the procedure. Of the 12 labeled isomers added, 9 are used as internal standards (IS) for calculation of analytical results. IS recovery problems affect all analytical results that are calculated using the affected IS, and not just the corresponding nonlabeled isomer.

Qualification of data based on IS results can seem counterintuitive in that low IS recovery implies a possible high bias in the calculated result, and high IS recovery can imply a possible low bias. The reason for this lies in the fact that low recovery implies lower than expected area counts for the IS, and high recovery implies higher than expected area counts. Because the area of the IS appears in the denominator of the equation for calculation of results using the IS technique, low IS area counts lead to high results for any calculation based on that IS, and high IS area counts lead to low results for any calculation based on that IS.

Recovery and performance of carbon labeled isotope dilution standards used as IS in all field and QC samples were within the method-specified 40 to 135% acceptance limits.

5.3 Instrument Recovery Internal Standards

The instrument recovery standards $^{13}C_{12}$-1,2,3,4-TCDD (DB-5 and DB-225 analyses) and $^{13}C_{12}$-1,2,3,7,8,9-HxCDD (DB-5 analysis only) are added to sample extracts and standards before injection into the gas chromatography mass spectrometer (GC/MS). The instrument recovery standards are used to determine the recovery efficiency of the extraction and cleanup procedures, to determine if the GC/MS sensitivity and response are stable during the analytical run, and to determine if the same amount of extract was injected into the GC/MS (EPA, 1996). The $^{13}C_{12}$-1,2,3,4-TCDD recovery standard is used to calculate recoveries of the TCDD, TCDF, PeCDD, and PeCDF IS. The $^{13}C_{12}$-1,2,3,7,8,9-HxCDD recovery standard is used to calculate recoveries of the HxCDD, HxCDF, HpCDD, HpCDF, OCDD, and OCDF IS.

Recoveries of the sums of the instrument recovery standards in all field and QC samples met the method requirements of 25 to 400% of initial area counts, except as described below.

- Recovery of the instrument recovery IS $^{13}C_{12}$-1,2,3,7,8,9-HxCDD was low at 13% in the laboratory blank and laboratory control sample (LCS) associated with sample RP-11-SO-8 (128-01). Usability of the data set, as a whole, is not adversely affected.
- Recovery of the instrument recovery IS $^{13}C_{12}$-1,2,3,7,8,9-HxCDD was low at 17% in sample RP-11-SO-8 (128-01). AMEC J qualified detected 1,2,3,6,7,8-HxCDD, total HxCDD, 1,2,3,4,6,7,8-HpCDD, total HpCDD, OCDD, total HxCDF, 1,2,3,4,6,7,8-HpCDF, total HpCDF, and OCDF results and UJ qualified all other HxCDD, HxCDF, and HpCDF data from this sample because of a possible low bias in the analytical results.

5.4 Laboratory Control Samples

STL extracted and analyzed a LCS with sample RP-11-SO-8 (128-01). All analyte recoveries were within EPA-recommended 70 to 130% acceptance limits for organic analytes and data usability is not adversely affected.

5.5 Surrogate Recovery

Because STL includes additional labeled isomers beyond those used as IS in the spiking solution added to samples, the additional isomers can be used in a manner analogous to surrogate compounds in order to monitor extraction and cleanup efficiency. Qualification of data based on recovery of these isomers is more straight forward than qualification based on IS. When recovery of one of these isomers falls outside acceptance limits, only the result from the corresponding nonlabeled isomer is

qualified. No data are qualified based on recovery of the $^{37}Cl_4$-2,3,7,8-TCDD cleanup standard unless recoveries of other labeled compounds are also outside acceptance limits.

Recovery and performance of carbon labeled isotope dilution standards used as IS in all field and QC samples were within method-specified 40 to 135% acceptance limits.

5.6 Ion Abundance Ratios

Ion abundance ratios must meet method-specified criteria before a peak can be positively identified. Ion abundance ratios for all PCDDs and PCDFs were within method-specified acceptance limits.

5.7 Data Reporting

STL J qualified data when the analyte concentration was less than the instrument's lowest calibration level. STL's J qualifiers are appropriate and should be applied to the final data.

The DB-5 column is used as the primary column for PCDD/PCDF analysis for all congeners except 2,3,7,8-TCDF, which is not adequately resolved from other TCDF congeners on the DB-5 column.

Review of compound identification by AMEC did not reveal any problems with proper application of required compound identification criteria by STL. Selection of data qualifiers by STL was complete and accurate, and reported values without qualifiers meet all required criteria for identification and quantification.

6.0 EPA METHOD 1613B

6.1 Holding Times

All samples were extracted within the method-specified holding time of one year from sample collection until extraction and all extracts were analyzed within the method specified time of one year from extraction until analysis.

6.2 Extraction Procedures

Many of the samples contained particulate matter (up to 1 centimeter [cm] of sediment located in the bottom of the sample bottle). Axys spiked the surrogate compounds into the sample containers, shook the samples well, and allowed them to settle for a couple of days before extraction. The aqueous portions underwent separatory funnel extraction and the solid portions underwent soxhlet extraction. The extracts from the two phases were then combined and spiked with cleanup standard prior to reduction.

6.3 Gas Chromatography/Mass Spectrometer Performance Checks and Initial Calibration

Analysis of PCDD/PCDF in these samples on the primary DB-5 column was conducted under ICAL DX52-533C and ICAL DX62_026E. Analysis for 2,3,7,8-TCDF on the DB-225 column was conducted under ICAL DB53-319B and ICAL DX62_026E. Ion abundance ratios and %RSD for all target compounds met requirements of EPA Method 1613B.

6.4 Calibration Verification

All compounds in the calibration verification standards (VER) met method requirements for percent drift in relative response (%D) and ion abundance ratios.

6.5 Laboratory and Rinsate Blanks

Target analytes were not detected in the laboratory and rinsate blanks associated with the analysis of these samples, except as described in Table 2. AMEC qualified data based on detections in blank samples when the concentrations detected in the samples were less than 10 times (OCDD) or 5 times (all other congeners and homologs) the concentration detected in the associated blank. When the concentrations detected in the blanks were estimated maximum possible concentrations (EMPCs), AMEC qualified the associated results only when they were also EMPCs.

6.6 Recovery of C-13 Labeled Isotope Dilution Standards Used as Internal Standards

EPA Method 1613B uses an isotope dilution procedure for calculation of analyte concentrations. A total of 18 carbon or chlorine labeled PCDD and PCDF isomers are added to the sample or extract to monitor different aspects of the procedure. Of the 18 labeled isomers added, 15 are used as IS for calculation of analytical results. IS recovery problems affect all analytical results that are calculated using the affected IS, and not just the corresponding nonlabeled isomer.

Qualification of data based on IS results can seem counterintuitive in that low IS recovery implies a possible high bias in the calculated result, and high IS recovery can imply a possible low bias. The reason for this lies in the fact that low recovery implies lower than expected area counts for the IS, and high recovery implies higher than expected area counts. Because the area of the IS appears in the denominator of the equation for calculation of results using the IS technique, low IS area counts lead to high results for any calculation based on that IS, and high IS area counts lead to low results for any calculation based on that IS.

Recovery and performance of carbon labeled isotope dilution standards used as IS in all field and QC samples were within method-specified limits.

6.7 Instrument Recovery Internal Standards

The instrument recovery standards $^{13}C_{12}$-1,2,3,4-TCDD (DB-5 and DB-225 analyses) and $^{13}C_{12}$-1,2,3,7,8,9-HxCDD (DB-5 analysis only) are added to sample extracts and standards before injection into the GC/MS. The instrument recovery standards are used to determine the recovery efficiency of the extraction and cleanup procedures, to determine if the GC/MS sensitivity and response are stable during the analytical run, and to determine if the same amount of extract was injected into the GC/MS (EPA, 1996). The $^{13}C_{12}$-1,2,3,4-TCDD recovery standard is used to calculate recoveries of the TCDD, TCDF, PeCDD, and PeCDF IS. The $^{13}C_{12}$-1,2,3,7,8,9-HxCDD recovery standard is used to calculate recoveries of the HxCDD, HxCDF, HpCDD, HpCDF, OCDD, and OCDF IS.

Recovery of the sums of the instrument recovery standards in all field and QC samples were within method requirements of 25 to 400% of initial area counts.

6.8 Ongoing Precision and Recovery Samples

Axys extracted and analyzed an ongoing precision and recovery sample (OPR) with each extraction batch. This equates to a total of 3 OPR results for 13 primary samples, or approximately 23%, which exceeds the rate of 5% specified in the DEQ-approved QAPP. Recovery and precision in OPR samples associated with this project were acceptable.

6.9 Surrogate Recovery

Because Axys includes additional labeled isomers beyond those used as IS in the spiking solution added to samples, the additional isomers can be used in a manner analogous to surrogate compounds in order to monitor extraction and cleanup efficiency. Qualification of data based on recovery of these isomers is more straightforward than qualification based on IS. When recovery of one of these isomers falls outside acceptance limits, only the result from the corresponding nonlabeled isomer is qualified. No data are qualified based on recovery of the $^{37}Cl_4$-2,3,7,8-TCDD cleanup standard unless recoveries of other labeled compounds are also outside acceptance limits.

6.10 Matrix Spikes

MS are not required QC for EPA Method 1613B. In order to evaluate MS recoveries, AMEC compared them against method-specified OPR acceptance limits.

Axys performed MS on sample RP-11-GW-216 (139-01). Analyte recoveries were within acceptance limits, except as described in Table 3.

In all cases, MS recoveries were high while MSD recoveries were acceptable. Average MS/MSD recoveries were within OPR acceptance limits and in AMEC's professional opinion data usability is not adversely affected.

6.11 Analytical Procedures

Axys modified the mass to charge (m/z) ratios used for quantifying the penta-substituted dioxins from 356/358 to 354/356 for native compounds and from 368/370 to 366/368 for surrogates. This changes the theoretical ratio from 1.55, as specified in EPA Method 1613B, to 0.61 with the acceptance limits changed to 0.51 to 0.70. Data usability is not adversely affected.

6.12 Data Reporting

Axys applied a number of qualifiers to data from analysis of these samples in order to describe analytical issues. Definitions of these laboratory qualifiers, resulting validation qualifiers, and a discussion of effect on data usability may be found below.

- Axys K qualified results when all required ions for a congener were present and signal to noise requirements were met but the ion ratios were outside acceptance limits, indicating uncertainty in analyte identification. K qualified data are EMPCs and were N qualified by AMEC during validation.
- Axys B qualified results when the associated analytes were detected in the method blank. AMEC did not qualify data based on Axys' B qualifiers unless the sample concentrations were less than 10 times (OCDD only) or 5 times (all other congeners and homologs) the concentration detected in the blank.
- Axys J qualified data when the analyte concentration was less than the instrument's lowest calibration level. All of Axys' J qualifiers are appropriate and should be applied to the final data.

AMEC did not retain the K qualifier on the 1,2,3,6,7,8-HpCDF result from sample SIL-02-GW-216 (119-01). The ion abundance ratio, at 0.88, is within the 0.88 to 1.20 method-specified acceptance limits.

AMEC does not agree with the reported total TCDD result from sample SIL-02-GW-216 (119-01). The concentration should be 8.06 picograms per liter (pg/L), not 8.213 pg/L.

AMEC did not retain the U qualifier on the total HpCDD result from sample RP-11-GW-31 (120-01). The U qualifier appears to be a reporting error.

7.0 FIELD DUPLICATES

Sample RP-11-GW-100 (122-01 and 122-02) was collected in duplicate. RPDs between primary and duplicate congener concentrations were generally less than the QAPP-specified maximum 30% RPD for aqueous samples. Analytes with RPDs greater than 30% were detected at concentrations less than the MRL, and RPD limits were not applicable. Field duplicate results are summarized in Table 4.

8.0 INTERLABORATORY SPLIT SAMPLES

Sample SIL-02-GW-216 (119-01 and 119-05) was submitted to both Axys and AP for analysis. The sample was labeled blindly, so that the primary laboratory (i.e., Axys) was not aware which sample was also submitted to the QC laboratory (i.e., AP). Primary samples were coded with -01 appended to the blind sample ID, and split samples were coded with -05 appended to the blind sample ID.

RPDs between Axys' and AP's detected concentrations were generally greater than 50%. The high RPDs are likely artifacts of differences in the two lab's extraction techniques and sample inhomogeneity. Axys filtered the samples and then extracted the aqueous and solid phases separately, performing liquid-liquid extraction on the filtrate and soxhlet extraction on the solids then combining the extracts for analysis. AP filtered the samples through glass fiber filters and solid phase extraction (SPE) disks and then extracted the filters and SPE disks using soxhlet/Dean-Stark extractors. Also, laboratory sample descriptions differed. For example, Axys described the sample as "aqueous, with suspended particulate, thin layer of sediment on the bottom of the jar. Grey sand particulate, clear colorless liquid" while AP described the sample as "cloudy, dark brown, grit". Axys also reported concentrations down to lower detection limits than AP did, resulting in Axys reporting more analyte detections than AP. Interlaboratory split sample results are summarized in Table 5.

9.0 SUMMARY

PCDD/PCDF data generated for the Siltronic Riverbank Stage 1 SCE sampling event are of acceptable quality and are usable with the addition of the qualifiers listed in Table 6. Most data were qualified because of analyte detections in the method blanks, analyte detections below the instrument's lowest calibration level, or ion ratios outside method-specified acceptance limits. No data were rejected based on analytical issues.

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LIMITATIONS

This report was prepared exclusively for SLLI by AMEC Earth & Environmental, Inc. (AMEC). The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in AMEC services and based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This Data Validation Report for the Stage 1 Source Control Evaluation, PCDD/PCDF Results, Siltronic Riverbank is intended to be used by SLLI for the RP - Portland Site, 6200 N.W. St. Helens Road, Portland, Oregon only, subject to the terms and conditions of its contract with AMEC. Any other use of, or reliance on, this report by any third party is at that party's sole risk.

TABLES

TABLE 1
Field Samples Submitted to Axys
with Corresponding Laboratory IDs
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Sample Location	Field Sample ID	Sample Date	Sample Matrix	Axys Sample ID	AP Sample ID	STL Sample ID	Notes
SIL-01-GW-100	115-01	11/11/2005	Water	L8417-5	-	-	
SIL-02-GW-216	119-01	11/14/2005	Water	L8417-1	-	-	
SIL-02-GW-216	119-05	11/14/2005	Water	-	P6091	-	Interlaboratory split
RP-11-GW-31	120-01	11/15/2005	Water	L8417-2	-	-	
RP-11-GW-100	122-01	11/15/2005	Water	L8417-3	-	-	
RP-11-GW-100	122-02	11/15/2005	Water	L8417-4	-	-	Field dup
SIL-03-GW-35	125-01	11/16/2005	Water	L8423-1	-	-	
SIL-03-GW-99	126-01	11/16/2005	Water	L8423-2	-	-	
SIL-02-GW-32	127-01	11/17/2005	Water	L8441-1	-	-	
RP-11-SO-8	128-01	11/17/2005	Soil	L8441-6	-	G5L080321-001	Analyzed by 8290
Rinsate Blank	129-04	11/17/2005	Water	L8441-2	-	-	Rinsate
SIL-02-GW-100	131-01	11/17/2005	Water	L8441-3	-	-	
SIL-04-GW-30	136-01	11/18/2005	Water	L8441-5	-	-	
SIL-04-GW-74	137-01	11/21/2005	Water	L8441-4	-	-	
RP-11-GW-216	139-01	11/28/2005	Water	L8460-1	-	-	
SIL-03-GW-130	142-01	L8495-1	Water	L8495-1	-	-	
SIL-04-GW-89	144-01	L8505-1	Water	L8505-1			

AP = Analytical Perspectives
STL = Severn-Trent Laboratories, Inc.
Axys = Axys Analytical Services, Ltd
ID = Identification

TABLE 2
Analytes Detected in Laboratory and Rinsate Blanks
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	Detected Concentration	U Qualify Results Below the Following Concentrations in Samples Associated with this Blank (5x or 10x Rule)	Associated Samples	
			Sample Location	Field Sample ID
Laboratory Blank WG17611-101				
1,2,3,4,7,8-HxCDD	0.504	2.52	SIL-01-GW-100	115-01
1,2,3,7,8,9-HxCDD	0.579	2.90	SIL-02-GW-216	119-01
1,2,3,4,6,7,8-HpCDD	0.993 EMPC	4.97 EMPC	RP-11-GW-31	120-01
OCDD	2.30	23.0	RP-11-GW-100	122-01
2,3,4,7,8-PeCDF	0.692 EMPC	3.46 EMPC	RP-11-GW-100	122-02
1,2,3,4,7,8-HxCDF	0.509 EMPC	2.55 EMPC	SIL-03-GW-35	125-01
1,2,3,6,7,8-HxCDF	0.590	2.95	SIL-03-GW-99	126-01
1,2,3,7,8,9-HxCDF	0.563	2.82	SIL-02-GW-32	127-01
2,3,4,6,7,8-HxCDF	0.563	2.82	SIL-02-GW-100	131-01
1,2,3,4,6,7,8-HpCDF	0.742 EMPC	3.71 EMPC	SIL-04-GW-30	136-01
OCDF	0.930	4.65	SIL-04-GW-74	137-01
Total HxCDD	1.08	5.40		
Total HxCDF	1.72	8.60		
Laboratory Blank WG17823-101				
1,2,3,4,6,7,8-HpCDD	0.756	3.78	RP-11-GW-216	139-01
OCDD	1.61	16.1		
2,3,4,7,8-PeCDF	0.546 EMPC	2.73 EMPC		
Total HpCDD	0.756	3.78		
Laboratory Blank WG18006-101				
1,2,3,7,8,9-HxCDD	0.524	2.62	SIL-03-GW-130	142-01
1,2,3,4,6,7,8-HpCDD	0.650	3.25	SIL-04-GW-89	144-01
OCDD	2.08 EMPC	20.8 EMPC		
2,3,4,7,8-PeCDF	0.705	3.53		
1,2,3,7,8,9-HxCDF	0.592 EMPC	2.96 EMPC		
1,2,3,4,7,8,9-HpCDF	0.534	2.67		
OCDF	1.12 EMPC	5.60 EMPC		
Total HxCDD	0.524	2.62		
Total HpCDD	0.650	3.25		
Total PeCDF	0.705	3.53		
Total HpCDF	0.534	2.67		
Rinsate Blank 129-04				
2,3,7,8-TCDD	0.511 EMPC	2.56 EMPC	SIL-02-GW-32	127-01
1,2,3,7,8-PeCDD	0.491 EMPC	2.46 EMPC	SIL-02-GW-100	131-01
1,2,3,6,7,8-HxCDD	0.564 EMPC	2.82 EMPC		
1,2,3,7,8-PeCDF	0.549	2.75		
1,2,3,4,6,7,8-HpCDF	0.632	3.16		
1,2,3,4,7,8,9-HpCDF	0.480 EMPC	2.40 EMPC		
Total PeCDF	0.549	2.75		
Total HpCDF	0.632	3.16		

EMPC = estimated maximum possible concentration
ID = identification

TABLE 3
Matrix Spike Exceedances
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	OPR Limits	MS Recovery	MSD Recovery	Average Recovery
MS/MSD Performed on Sample RP-11-GW-216 (139-01)				
1,2,3,7,8-PeCDD	70% - 140%	149%	96.70%	123%
1,2,3,6,7,8-HxCDD	76% - 134%	148%	96.70%	122%
2,3,7,8-TCDF	75% - 158%	164%	110%	137%
1,2,3,7,8-PeCDF	80% - 134%	146%	99.30%	123%
1,2,3,4,7,8-HxCDF	72% - 134%	141%	99.10%	120%
1,2,3,6,7,8-HxCDF	84% - 130%	143%	97.40%	120%
1,2,3,7,8,9-HxCDF	78% - 130%	136%	96.50%	116%
1,2,3,4,6,7,8-HpCDF	82% - 122%	138%	98.30%	118%

MS = matrix spike
MSD = matrix spike duplicate
ORP = ongoing precision and recovery sample

TABLE 4
Field Duplicate Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	Primary Sample Concentration	Field Duplicate Concentration	RPD
Sample RP-11-GW-100 (122-01 and 122-02)			
2,3,7,8-TCDD	0.476 U	0.732 EMPC, J	NC
1,2,3,6,7,8-HxCDD	0.476 U	0.628 EMPC, J	NC
1,2,3,4,6,7,8-HpCDD	3.48 J	7.47 J	73%
OCDD	27.0 J	62.1 J	79%
2,3,4,7,8-PeCDF	0.515 J	0.612 U	NC
1,2,3,4,6,7,8-HpCDF	0.614 J	0.690 J	12%
Total HpCDD	8.13	7.47	8%
Total HpCDF	0.614	0.690	12%

EMPC = Estimated maximum possible concentration
J = Analyte concentration is between the method detection limit and method reporting limit
NC = Not calculable
RPD = Relative percent difference
U = The analyte was not detected

TABLE 5
Interlaboratory Split Sample Results
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	Primary Concentration (Axys)	Interlaboratory Split Concentration (AP)	RPD
Sample SIL-02-GW-216 (119-01 and 119-05)			
2,3,7,8-TCDD	0.949 EMPC, J	2.71 U	NC
1,2,3,6,7,8-HxCDD	0.937 EMPC, J	5.69 U	NC
1,2,3,4,6,7,8-HpCDD	17.8 J	10.7 J	50%
OCDD	143	86	50%
2,3,7,8-TCDF	0.622 EMPC, J	2.17 U	NC
1,2,3,7,8-PeCDF	1.24 EMPC, J	2.23 U	NC
1,2,3,4,7,8-HxCDF	1.69 J	2.5 U	NC
1,2,3,4,7,8,9-HpCDF	0.763 J	3.83 U	NC
Total TCDD	8.21	U	NC
Total HxCDD	9.02	3.4 EMPC	90%
Total HpCDD	41.3	25.1	49%
Total TCDF	10.3	110	166%
Total PeCDF	2.54	12.6	133%
Total HpCDF	3.68	U	NC

Axys = Axys Analytical Services Ltd

AP = Analytical Perspectives

EMPC = Estimated maximum possible concentration

J = Analyte concentration is between the method detection limit and method reporting limit

NC = Not calculable

RPD = Relative percent difference

U = The analyte was not detected

TABLE 6
Summary of Data Qualifiers for PCDD/PCDF Congeners
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	SIL-01-GW-100 115-01	SIL-02-GW-216 119-01	RP-11-GW-31 120-01	RP-11-GW-100 122-01	RP-11-GW-100 122-02	SIL-03-GW-35 125-01
2,3,7,8-TCDD	**NJ**-EM/DL	**NJ**-EM/DL	none	none	**NJ**-EM/DL	**NJ**-EM/DL
1,2,3,7,8-PeCDD	none	none	none	none	none	none
1,2,3,4,7,8-HxCDD	none	**U**-MB	none	none	**U**-MB	none
1,2,3,6,7,8-HxCDD	**J**-DL	**NJ**-EM/DL	none	none	**NJ**-EM/DL	none
1,2,3,7,8,9-HxCDD	**U**-MB	**U**-MB	none	**U**-MB	**U**-MB	none
1,2,3,4,6,7,8-HpCDD	**J**-DL	**J**-DL	**U**-MB	**J**-DL	**J**-DL	**J**-DL
OCDD	none	none	**U**-MB	**J**-DL	**J**-DL	**U**-MB
2,3,7,8-TCDF	none	**NJ**-EM/DL	none	none	none	none
1,2,3,7,8-PeCDF	none	**NJ**-EM/DL	**J**-DL	none	none	**J**-DL
2,3,4,7,8-PeCDF	**J**-DL	**U**-MB	**J**-DL	**J**-DL	**U**-MB	**U**-MB
1,2,3,4,7,8-HxCDF	**J**-DL	**J**-DL	**U**-MB	none	**U**-MB	**J**-DL
1,2,3,6,7,8-HxCDF	none	**U**-MB	none	none	**U**-MB	none
1,2,3,7,8,9-HxCDF	none	none	none	none	none	none
2,3,4,6,7,8-HxCDF	none	none	none	none	none	none
1,2,3,4,6,7,8-HpCDF	**U**-MB	**J**-DL	**U**-MB	**J**-DL	**J**-DL	**U**-MB
1,2,3,4,7,8,9-HpCDF	none	**J**-DL	none	none	none	none
OCDF	**U**-MB	**U**-MB	**U**-MB	**U**-MB	**U**-MB	**U**-MB
Total TCDD	none	**8.06**	none	none	none	none
Total PeCDD	none	none	none	none	none	none
Total HxCDD	none	none	none	**U**-MB	**U**-MB	**U**-MB
Total HpCDD	none	none	**none**	none	none	none
Total TCDF	none	none	none	none	none	none
Total PeCDF	none	none	none	none	none	none
Total HxCDF	**U**-MB	**U**-MB	none	none	**U**-MB	**U**-MB
Total HpCDF	none	none	none	none	none	none

TABLE 6
Summary of Data Qualifiers for PCDD/PCDF Congeners
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	SIL-03-GW-99 126-01	SIL-02-GW-32 127-01	RP-11-SO-8 128-01	SIL-02-GW-100 131-01	SIL-04-GW-30 136-01	SIL-04-GW-74 137-01
2,3,7,8-TCDD	**J**-DL	**U**-RB	none	**U**-RB	**NJ**-EM/DL	**NJ**-EM/DL
1,2,3,7,8-PeCDD	**NJ**-EM/DL	**U**-RB	none	**J**-DL	**NJ**-EM/DL	none
1,2,3,4,7,8-HxCDD	**U**-MB	**J**-DL	**UJ**-AS	**U**-MB	**J**-DL	none
1,2,3,6,7,8-HxCDD	**J**-DL	**J**-DL	**J**-DL/AS	**J**-DL	**J**-DL	**J**-DL
1,2,3,7,8,9-HxCDD	**J**-DL	**J**-DL	**UJ**-AS	**U**-MB	**J**-DL	**U**-MB
1,2,3,4,6,7,8-HpCDD	none	none	**J**-AS	**J**-DL	none	**J**-DL
OCDD	none	none	**J**-AS	none	none	none
2,3,7,8-TCDF	none	none	none	none	none	none
1,2,3,7,8-PeCDF	**J**-DL	none	none	**U**-RB	**J**-DL	**NJ**-EM/DL
2,3,4,7,8-PeCDF	**U**-MB	none	none	**J**-DL	**J**-DL	**J**-DL
1,2,3,4,7,8-HxCDF	**J**-DL	none	**UJ**-AS	**J**-DL	**J**-DL	**J**-DL
1,2,3,6,7,8-HxCDF	**U**-MB	none	**UJ**-AS	**U**-MB	**J**-DL	**U**-MB
1,2,3,7,8,9-HxCDF	none	**J**-DL	**UJ**-AS	none	**U**-MB	none
2,3,4,6,7,8-HxCDF	**U**-MB	**J**-DL	**UJ**-AS	**U**-MB	**J**-DL	none
1,2,3,4,6,7,8-HpCDF	**J**-DL	none	**J**-AS	**U**-RB	none	**J**-DL
1,2,3,4,7,8,9-HpCDF	**J**-DL	none	**UJ**-AS	**J**-DL	**J**-DL	**J**-DL
OCDF	**U**-MB	none	**J**-AS	**U**-MB	none	**J**-DL
Total TCDD	none	none	none	none	none	none
Total PeCDD	none	none	none	none	none	none
Total HxCDD	none	none	**J**-AS	none	none	**U**-MB
Total HpCDD	none	none	**J**-AS	none	none	none
Total TCDF	none	none	none	none	none	none
Total PeCDF	none	none	none	**U**-RB	none	none
Total HxCDF	**U**-MB	none	**J**-AS	**U**-MB	none	**U**-MB
Total HpCDF	none	none	**J**-AS	none	none	none

TABLE 6
Summary of Data Qualifiers for PCDD/PCDF Congeners
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Analyte	RP-11-GW-216 139-01	SIL-03-GW-130 142-01	SIL-04-GW-89 144-01
2,3,7,8-TCDD	**NJ**-EM/DL	**NJ**-EM/DL	none
1,2,3,7,8-PeCDD	none	none	none
1,2,3,4,7,8-HxCDD	none	none	none
1,2,3,6,7,8-HxCDD	**NJ**-EM/DL	none	none
1,2,3,7,8,9-HxCDD	**J**-DL	**U**-MB	none
1,2,3,4,6,7,8-HpCDD	**J**-DL	**J**-DL	**U**-MB
OCDD	**J**-DL	**J**-DL	**J**-DL
2,3,7,8-TCDF	none	**NJ**-EM/DL	none
1,2,3,7,8-PeCDF	none	**NJ**-EM/DL	none
2,3,4,7,8-PeCDF	none	**U**-MB	none
1,2,3,4,7,8-HxCDF	none	**J**-DL	none
1,2,3,6,7,8-HxCDF	none	none	none
1,2,3,7,8,9-HxCDF	none	none	none
2,3,4,6,7,8-HxCDF	none	none	none
1,2,3,4,6,7,8-HpCDF	**NJ**-EM/DL	**J**-DL	none
1,2,3,4,7,8,9-HpCDF	none	**U**-MB	none
OCDF	none	**U**-MB	**U**-MB
Total TCDD	none	none	none
Total PeCDD	none	none	none
Total HxCDD	none	**U**-MB	none
Total HpCDD	none	none	**U**-MB
Total TCDF	none	none	none
Total PeCDF	none	none	none
Total HxCDF	none	none	none
Total HpCDF	none	none	none

PCDD/PCDF = polychlorinated dioxins/dibenzofurans

TABLE 6
Summary of Data Qualifiers for PCDD/PCDF Congeners
Stage 1 Source Control Evaluation - Siltronic Riverbank
RP - Portland Site

Data Qualifiers

U The U qualifier indicates that the analyte must be considered to be nondetected at the concentration listed. U qualifiers added during validation are typically a result of detections of target analytes in rinsate or laboratory blanks.

J The J qualifier indicates that the associated result is quantitatively uncertain. J qualifiers added during validation may indicate a data limitation related to a quality control element that exceeds required acceptance limits.

N The N qualifier indicates that an analyte has been presumptively identified. Presumptive detection means that a chromatographic peak was detected at the correct retention time for an analyte but that not all required identification criteria were met. The associated result is both qualitatively and quantitatively uncertain.

UJ The analyte was not detected at a concentration above the method reporting limit. However, the reporting limit is approximate and may be inaccurate or imprecise.

NJ The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

Qualification Rationale Abbreviations

AS An instrument recovery internal standard was outside the 25% to 400% acceptance limits.
DL Analyte concentration is between the MDL and MRL.
EM Estimated maximum possible concentration.
MB Analyte was detected in a method blank at a concentration greater than 10% or 20% of the concentration detected in the sample.
RB Analyte was detected in a rinsate blank at a concentration greater than 10% or 20% of the concentration detected in the sample.

APPENDIX D

Laboratory Data Reports

(Provided on Attached Compact Disk)