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**REPORT ON**

# REMEDIAL INVESTIGATION ADDENDUM SOUTH LANDFILL CAP ASSESSMENT AND WEST END LANDFILL CONFIRMATION SAMPLING

**FOR THE**

**ANNISTON PCB SITE**
**(Docket No. CV-02-PT-0749-E)**

*Prepared for:*

*United States Environmental Protection Agency*
*Waste Management Division*
*Atlanta Federal Center*
*61 Forsyth Street SW*
*Atlanta, Georgia 30303*

*Prepared by:*

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May 28, 2010
Revision 0

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May 28, 2010

SENT VIA FEDERAL EXPRESS

Ms. Pamela J. Langston Scully, P.E.
Remedial Project Manager
United States Environmental Protection Agency, Region IV
Atlanta Federal Center
61 Forsyth Street, S.W.
Atlanta, GA 30303-3104

**Re: Remedial Investigation Addendum – South Landfill Cap Assessment and West End Landfill Confirmation Sampling**
**Remedial Investigation and Feasibility Study for Operable Unit 3**
**Anniston PCB Site (Docket No. CV-02-PT-0749-E)**
**Anniston, Alabama**

Dear Ms. Langston Scully:

On behalf of Solutia Inc. (Solutia) and Pharmacia Corporation (collectively, P/S), as parties to the Partial Consent Decrees (PCD) (Docket No. CV-02-PT-0749-E), please find enclosed eight hard copies and 10 electronic copies of P/S's Remedial Investigation (RI) Addendum for the recently completed investigation and sampling activities conducted at the South and West End Landfills. This report was prepared in accordance with a meeting that was conducted between the United States Environmental Project Agency (EPA) and P/S on March 26, 2010 to discuss finalizing the RI Report and Feasibility Study (FS) for Operable Unit 3. Pursuant to this meeting, P/S agreed to conduct additional investigations at the Site to address the final data gaps noted by the EPA in order to complete the RI and FS. The investigations were to include additional sampling activities at the South Landfill and confirmation sampling at Adjacent Area 2 of the West End Landfill. This RI Addendum Report presents the methods, procedures, and findings of the investigation and sampling activities.

Please do not hesitate to contact me at 256-231-8404 with any questions or comments that you may have regarding this matter.

Sincerely,

E. Gayle Macolly
Manager, Remedial Projects

cc: Mr. Jeffery Kitchens (ADEM)
Mr. G. Douglas Jones, Esq.
Mr. Thomas Dahl

Enclosures

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## 1.0 INTRODUCTION

On behalf of Solutia Inc. (Solutia) and Pharmacia Corporation (collectively, P/S), Golder Associates Inc. (Golder) has prepared this Remedial Investigation Addendum Report (RI Addendum Report) for Operable Unit 3 (OU-3) of the Anniston PCB Site (Site). The RI Report and associated addenda have been prepared in accordance with the requirements of the Partial Consent Decree (CD) (Docket No. CV-02-PT-0749-E) between the United States Environmental Protection Agency (EPA) and P/S (EPA, 2002). The United States District Court for the Northern District of Alabama entered the CD on August 4, 2003. The RI Report and associated addenda for OU-3 summarize the results of field investigations to characterize the Solutia plant site, the closed South Landfill, and the closed West End Landfill (collectively, Facility); describe the nature and extent of contamination; review the fate and transport of contaminants; and present a summary of the Human Health Risk Assessment (HHRA).

The OU-3 RI Report, Revision 1.0 (Golder, 2009), was submitted to the EPA on March 24, 2009. The EPA provided multiple sets of comments on the RI Report, and multiple conference calls and meetings were held between the EPA and P/S to discuss and resolve outstanding issues related to the EPA's comments. These issues were resolved during a meeting held between the EPA, P/S and the Technical Special Master on March 26, 2010. As a result of this meeting, the EPA issued its final set of comments on the RI Report, which was received by P/S on April 21, 2010. P/S responded to these comments and submitted a revised RI Report (Revision 2.0) on May 20, 2010 (Golder, 2010a).

As part of the resolution process, P/S agreed to conduct additional investigations at the Site to address the final data gaps noted by the EPA in order to complete the RI and Feasibility Study (FS). The investigations were to include additional sampling activities at the South Landfill and confirmation sampling at Adjacent Area 2 of the West End Landfill. A Work Plan for these activities dated April 6, 2010 (Golder, 2010b) was submitted to the EPA, and the EPA issued its approval of the Work Plan on April 7, 2010. The Work Plan and the EPA approval letter are included as Appendix A. P/S completed the investigation activities between April 7 and 8, 2010, in accordance with the approved Work Plan. However, P/S re-mobilized to the field on May 6, 2010 to collect a seep sample as dry conditions prevented sample collection during the April sampling event. This RI Addendum Report presents the methods, procedures, and findings of the sampling activities.

## 2.0 SCOPE OF WORK

### 2.1 South Landfill

The scope of work for the South Landfill focused on collecting data necessary to evaluate the performance of the existing cap/cover overlying the "PCB Cells" (Cells 1E, 2E, and 3E) including: 1) conducting a cap/cover thickness survey; 2) determining the permeability of the cap/cover soil materials; 3) analyzing a suspected surface water "seep" observed in the vicinity of the cells; and 4) collecting and analyzing a groundwater sample from well OWR-5D, which is located downgradient of the South Landfill. Each of these activities is described below.

Cap/Cover Thickness Survey

Prior to conducting the survey, five proposed locations at each cell (15 total) were marked in the field by surveying the center point of each cell with a global positioning system (GPS) and using a tape to measure off the other proposed locations. A stainless steel hand auger was then advanced into the existing cap/cover material to a maximum penetration depth of 24 inches below ground surface (bgs) at each of the 15 locations. Observations of cap/cover material type and thickness were recorded for each location. In some locations, auger refusal was encountered. However, prior to terminating any borings at a depth less than 24 inches bgs, additional borings were advanced offset from the original location (less than five feet from the original location). The penetrations into the cap/cover were replaced with a mixture of granular bentonite and soil cuttings. Final sampling point locations were recorded with GPS equipment. The sample locations are presented on Figure 1. The location of sample point 3E4 is shown slightly outside the boundary of Cell 3E. However, as the cell locations are approximate, all of the sample locations shown should be representative of cover soil thickness across each cell.

Cap/Cover Material Permeability Testing

Three-inch diameter, 10-inch long, thin-walled tube samplers (Shelby tubes) were used to collect three discrete and representative samples of the cap/cover material (one per cell). The samples were collected adjacent to select thickness measurement points described above at locations shown on Figure 1. In order to collect sufficient sample material for testing, the sample locations were selected from areas where the cover thickness was determined to be a minimum of 24 inches thick. The samples were collected from beneath the topsoil layer and above the waste matrix near the center of the cap/cover materials. After collecting the samples, sample locations were backfilled with granular

bentonite. The samples were submitted to a qualified geotechnical laboratory (Golder Associates Inc.) for permeability testing using American Standards for Testing Materials (ASTM) Method D5084. A confining pressure of five pounds per square inch was used while testing the samples as it is the typical value used when assessing the permeability of soils used to construct landfill covers.

Laboratory Analysis of the "Seep"

During routine inspections, Solutia personnel noticed water intermittently seeping from an area at the South Landfill just south of Cell 3E (one of the "old PCB cells") as shown on Figure 1. However, as the cell locations are approximate, it is possible that the seep is located within an area that previously received waste. Flow from the area was visually estimated to be about five gallons per minute (gpm) and appears to occur following significant precipitation events. The seep was initially presumed to be "non contact" water or surface water flowing through the landfill cover soils as the water had no visible signs of color or odor. P/S and the EPA agreed to sample the water from the seep to determine whether the water is impacted with chemical constituents.

Water exiting the seep was captured by creating a small reservoir (excavation) lined with a stainless steel bowl that was allowed to fill with water discharging from the seep area. Water was transferred from the bowl using a small in-line pump to appropriate laboratory sample containers. As water was withdrawn from the bowl through pumping, water from the seep was allowed to continuously flow into the bowl to provide sufficient liquid to fill the laboratory sample containers. An original sample and duplicate sample were collected and analyzed for the full list of Constituents of Interest (COIs) identified in the Resource Conservation and Recovery Act (RCRA) RCRA Facility Investigation (RFI) included by the EPA as Table 1 of the RI/FS Agreement for the Site (Appendix F to the Partial Consent Decree). The samples were analyzed for volatile organic compounds (VOCs) using EPA Method 8260B, semi-volatile organic compounds (SVOCs) using EPA Method 8270C, organophosphorous pesticides (OPs) using EPA Method 8141A, metals using EPA Method 6010B with mercury using EPA Method 7470A, and total polychlorinated biphenyls (PCBs) using EPA Method 8082 for Aroclor analysis and EPA Method 680 for homolog analysis. For PCBs and metals analyses, sampling included both whole water (unfiltered) and dissolved (filtered) samples. The filtered sample was collected by transferring the collected water to the sample containers using a 0.1-micron in-line filter. These samples were subject to the same Quality Assurance/Quality Control (QA/QC) protocols identified in the Site-wide Quality Assurance Project Plan (QAPP, Arcadis, 2008).

Groundwater Sampling at OWR-5D

Monitoring well OWR-5D (Figure 1) was re-developed on April 6, 2010 via surging and pumping. Approximately 24 hours following re-development, submersible pumping equipment was used to low-flow purge and sample the well. Groundwater sampling included both whole water (unfiltered) and dissolved (filtered) samples. An original sample and QA/QC samples (a field duplicate, matrix spike and matrix spike duplicate) were collected for the unfiltered sample. The filtered samples were collected using a 2.0-micron in-line filter as well as a 0.1-micron in-line filter. These samples were subject to the same QA/QC protocols identified in the Site-wide QAPP. All samples were analyzed for total PCBs by Aroclors using EPA Method 8082 as well as total PCBs by homolog groups using EPA Method 680.

## 2.3 West End Landfill

At the West End Landfill Adjacent Area 2, P/S performed confirmation soil sampling in the vicinity of the historic composite sample AA2. AA2 was collected prior to excavating and relocating PCB-containing soil from the area and capping the area with a soil cap, which was completed in 1996. The result from the original "8-point" composite sample (AA2) collected in this area was 1,940 milligrams per kilogram (mg/kg). Eight individual aliquot locations (labeled 1 through 8) were located in the field within reasonable proximity to the original composite sample aliquot locations for sample AA2; however, due to refusal at sample location No. 8 only seven aliquots could be collected. Final sampling point locations were recorded with GPS equipment and are shown on Figure 2. Pre-cleaned, stainless steel hand augers were used to advance boreholes below the existing cap/cover material at each location. Both pre- and post-cap elevation survey data were used to estimate the cap thickness. Further, observations of soil color, texture and composition were used to determine the interface between the cap/cover material and the underlying in-situ soils (where possible). A composite sample was collected with each of the individual aliquots homogenized together and submitted as a single composite sample. A primary composite sample and a field duplicate were submitted to the analytical laboratory and analyzed for total PCBs by Aroclors using EPA Method 8082 as well as total PCBs by homolog groups using EPA Method 680.

## 3.0 SUMMARY OF RESULTS

### 3.1 South Landfill

Cap/Cover Thickness Survey

Fifteen locations (five at each of the three Cells: 1E, 2E, and 3E) were investigated for cap thickness and material type. The sample locations are shown on Figure 1. Nine of the 15 locations were advanced 24 inches bgs without penetrating into the underlying waste material (i.e., the cap/cover thickness was greater than 24 inches in these areas). The cap/cover material observed was generally consistent at each location, with brown and red silty clay, clayey sand or sandy clay. Hand auger refusal was encountered at six locations. At four of these locations, the cap/cover material was observed to be greater than 12 inches bgs prior to encountering auger refusal. Hand auger refusal was generally attributed to "gravel-sized" rocks/stones intermixed within the matrix of the silty-clayey residuum materials placed as final fill over the cells. Table 1 provides a summary of the cap/cover material type and thickness encountered. Waste material was not encountered at any of the sample locations. The results indicate that the cap thickness exceeds 24 inches for the majority of the area investigated. However, in some areas, the total thickness of the cap/cover could not be confirmed due to encountering auger refusal.

Cap/Cover Material Permeability Testing

Three of the cap thickness sample locations were selected for permeability testing including sample locations: 1E-1, 2E-3 and 3E-2. The permeability results for these samples ranged from $8.4 \times 10^{-7}$ centimeters/second (cm/sec) to $1.8 \times 10^{-5}$ cm/sec, with a geometric mean of $4.14 \times 10^{-6}$ cm/sec. The soil samples were classified by the geotechnical laboratory as follows: Sample 1E-1 – low plasticity clay (CL) and Samples 2E-3 and 3E-2 – low plasticity silt (ML). The laboratory testing results are summarized on Table 1 and provided in Appendix B.

Laboratory Analysis of the "Seep"

The observed "seep" was dry at the time of the initial investigation and therefore could not be sampled. However, a few weeks following this sampling event, P/S noted that water was exiting the seep following a subsequent rainfall event. At that time, the seep provided sufficient flow to allow for sample collection. Results for the whole water (unfiltered) sample were below reporting limits or non detect for VOCs and OPs. Of the SVOCs analyzed, only 1,4-dichlorobenzene was detected at a

concentration of 1.4 "J" (estimated) micrograms per liter (µg/l) in the original sample (1.6 J µg/l for the duplicate sample). The PCB results for the unfiltered sample were 0.12 J µg/l for total Aroclors (non detect for the duplicate sample) and 0.59 J µg/l for homolog groups (0.58 J µg/l for the duplicate sample). The PCB results for the filtered sample were non detect for both total Aroclors and homolog groups. Homolog groups detected in the unfiltered sample included monochlorobiphenyl, dichlorobiphenyl, and trichlorobiphenyl, while the only Aroclor detected was Aroclor 1254. Metals results for the unfiltered sample indicate a detection of 0.13 milligrams per liter (mg/l) for barium (0.12 mg/l for the duplicate sample) and 0.19 mg/l for manganese (0.19 mg/l for the duplicate sample). The associated filtered results for this sample were 0.12 mg/l for barium and 0.17 mg/l for manganese. The laboratory results for PCBs are summarized in Table 2, while Table 3 includes results for VOCs, SVOCs, OPs, and metals. The laboratory reports are provided in Appendix C.

Groundwater Sampling at OWR-5D

Approximately 24 hours prior to sampling, monitoring well OWR-5D was re-developed using surge and pump techniques. Approximately 50 gallons of groundwater were removed resulting in a final turbidity of 185 Nephelometric Turbidity Units (NTUs). Groundwater samples were collected from OWR-5D for both whole water (unfiltered) and dissolved (filtered) samples. The well was purged prior to sampling, and the final turbidity measured after purging was less than 10 NTUs. The results for total PCBs by Aroclor were 464 J µg/l in the unfiltered sample (447 J µg/l for the duplicate sample), non detect for the 2.0-micron filtered sample, and non detect for the 0.1-micron filtered sample. Aroclors detected in the unfiltered original sample included Aroclor 1221 and Aroclor 1232. The results for total PCBs by homolog groups were 596 J µg/l for the unfiltered sample (580 µg/l for the duplicate sample), 2.6 "UJ" (estimated non detect) µg/l for the 2.0-micron filtered sample, and 0.012 UJ µg/l for the 0.1-micron filtered sample. The homolog groups detected included monochlorobiphenyl, dichlorobiphenyl, and trichlorobiphenyl. The laboratory results are summarized in Table 2, and the laboratory reports are included in Appendix C. Field sampling and instrument calibration records are provided in Appendix D.

### 3.2 West End Landfill

Seven individual aliquot samples were collected and homogenized to form a single composite sample. Observations from each aliquot sample location are provided in Table 4. Descriptions of the observed cover material were generally consistent at each location and included brownish red clayey silt material with some gravel size particles. Existing cover depths based on pre- and post-

construction surveys and visual observations were used to determine the depth of the aliquot samples. However, for several locations it was difficult to differentiate the interface based upon visual observations, so the survey information was used to determine the sample depth. The result of total PCBs by Aroclor for the original sample was 78 J mg/kg and 90 J mg/kg for the field duplicate sample. The Aroclors detected include Aroclor 1248, Aroclor 1254, Aroclor 1260, and Aroclor 1268. The result of total PCBs by homolog group for the original sample was 56 J mg/kg and 15 J mg/kg for the field duplicate. Each of the ten homolog groups were detected in the analysis. The laboratory results are summarized in Table 2, and the laboratory reports are included in Appendix C. The aliquot sample locations are shown on Figure 2.

## 4.0 DATA VALIDATION

In accordance with the Site-Wide QAPP (Arcadis, 2008), Level II data packages were requested from the laboratory for all analyses, and Level II data validation was performed for the samples analyzed. Investigation of the South Landfill included collection of groundwater samples from monitoring well OWR-5D and surface water from the seep as shown below.

| Sample ID | Description | Analyses |
|---|---|---|
| OWR-5D | Unfiltered groundwater sample | Aroclors and homolog groups |
| OWR-5D Dup | Field duplicate | Aroclors and homolog groups |
| OWR-5D 2u | Filtered groundwater sample with 2-µm filter | Aroclors and homolog groups |
| OWR-5D 0.1u | Filtered groundwater sample with 0.1-µm filter | Aroclors and homolog groups |
| SEEP-1 | Unfiltered surface water sample | Aroclors, homologs, VOCs, SVOCs, OPs, and Metals |
| SEEP-1 FD | Field duplicate | Aroclors, homologs, VOCs, SVOCs, OPs, and Metals |
| SEEP-0.1 um | Filtered surface water sample using 0.1-µm filter | Aroclors, homologs, and Metals |

Holding times for OWR-5D were met for sample preparation and analysis. Aroclor samples were analyzed at multiple dilutions for the unfiltered groundwater sample and the field duplicate (Dup). Surrogate recoveries for diluted samples could not be calculated; however, surrogate recoveries were achieved for undiluted samples and quality control samples. The results for Aroclor 1232 in the unfiltered and field duplicate groundwater samples were calculated from two analytical columns and the percent difference in these calculated results exceeded 40 percent (%). Consequently, the Aroclor 1232 results were qualified as estimated "J" values.

Low level results for monochlorobiphenyl and dichlorobiphenyl were reported in the equipment blank (EB) collected for OWR-5D. Dichlorobiphenyl was reported at low level concentrations (similar to that detected in the equipment blank) for both of the filtered samples, and monochlorobiphenyl was reported in the filtered sample collected using the 2-micron in-line filter. Due to the concentrations of these homologs reported in the equipment blank, the sample results were deemed suspect and qualified as undetected at estimated reporting limits. Trichlorobiphenyl was detected in the primary unfiltered sample for OWR-5D but was not detected in the field duplicate sample. The result for trichlorobiphenyl was qualified as an estimated "J" value for the primary sample and as an estimated reporting limit for the field duplicate sample.

Holding times for the seep sample were met for sample preparation and analysis for all methods. The field blanks and method blanks did not contain target constituents. Laboratory spike recoveries were met for all parameters with the exception of ethyl parathion; however, qualification of the data is not warranted. Surrogate recoveries for tetrachloro-m-xylene and decachlorobiphenyl were achieved for the undiluted samples and quality control samples. Aroclor 1254 was detected at a low level in the primary sample, but was not detected in the field duplicate sample. The positive result was qualified as an estimated "J" value.

Investigation of the West End Landfill included collection of a composite soil sample and associated QC samples as shown below.

| Sample ID | Description | Analyses |
|---|---|---|
| AA2-CON | Composite soil sample | Aroclors and homolog groups |
| AA2-CON-FD | Field duplicate | Aroclors and homolog groups |

The holding times were met for sample preparation and analysis. Surrogate recoveries for tetrachloro-m-xylene were achieved for the undiluted samples and the quality control samples, and the surrogate recovery for decachlorobiphenyl could not be determined due to the presence of Aroclor 1268 in the samples. The Aroclor 1248 results for the primary and field duplicate samples had a precision greater that 50%. Both results were qualified as estimated "J" values. PCBs were detected in the primary and the field duplicate samples. With the exception of decachlorobiphenyl, the primary result and the corresponding field duplicate result had a precision greater than 50%. The positive results were qualified as estimated "J" values and undetected results were qualified as estimated reporting limits for the primary and field duplicate samples. The result for decachlorobiphenyl in sample AA2-CON was below the laboratory reporting limit and was qualified as an estimated "J" value.

## 5.0 CONCLUSIONS

Additional investigation activities were conducted at the South Landfill and the West End Landfill in accordance with the approved Work Plan. Findings of the investigation activities conducted at the South Landfill show that the cap/cover material was generally 24 inches thick or greater, and the cover soils consisted of low plasticity silt and clay with a mean permeability of $4.14 \times 10^{-6}$ cm/sec. However, some gravel-sized material was encountered intermixed with the soil matrix that prevented a direct measurement of the cover thickness at these locations.

Analytical results of the groundwater samples (original and field duplicate) collected at OWR-5D indicated that total PCB concentrations for unfiltered samples ranged from 447 J µg/l to 596 J µg/l depending upon the method used to analyze the samples. The PCB concentrations for the filtered samples ranged from non detect to 2.6 UJ µg/l.

Results for the unfiltered seep samples were non detect for VOCs and OPs, while the SVOC 1,4-dichlorobenzene was detected at a concentration of 1.4 J µg/l for the original sample and 1.6 J µg/l for the duplicate sample. PCB results for the unfiltered samples (original and field duplicate) ranged from non detect to 0.59 J µg/l depending upon the method used to analyze the samples. The PCB results for the filtered sample were non detect for both total Aroclors and homolog groups. Metals results for the unfiltered sample indicate a detection of 0.13 mg/l for barium and 0.19 mg/l for manganese, with associated filtered results of 0.12 mg/l for barium and 0.17 mg/l for manganese.

PCB results for samples collected from the West End Landfill (original and duplicate sample) ranged from 15 J mg/kg to 90 J mg/kg depending upon the method used to analyze the samples. These results confirm that the high level PCB concentrations originally detected in soil at this location were removed prior to placing the soil cap/cover at the West End Landfill Adjacent Area 2.

This RI Report Addendum summarizes methods, procedures, and findings of the South and West End Landfill additional investigations conducted to address the final data gaps prior to completing the RI and FS. These findings will be further discussed as part of the FS for OU-3.

## 6.0 REFERENCES

Arcadis, 2008. *Site-Wide Quality Assurance Project Plan for the Anniston PCB Site (Revision 5.0)*, September 2008.

Golder, 2009. *Remedial Investigation for Operable Unit 3 for the Anniston PCB Site, Revision 1.0,* March 2009.

Golder, 2010a. *Remedial Investigation for Operable Unit 3 for the Anniston PCB Site, Revision 2.0,* May 2010.

Golder, 2010b. *Work Plan for Additional Sampling at South and West End Landfills, Remedial Investigation and Feasibility Study for Operable Unit 3, Anniston PCB Site,* April 2010.

USEPA, 2002. *United States of America v. Pharmacia Corporation (p/k/a Monsanto Company) and Solutia Inc.* Civil Action No. CV-02-PT-0749-E. October 2002.

# TABLES

TABLE 1
SOUTH LANDFILL CAP MATERIAL OBSERVATIONS
ANNISTON PCB SITE - OPERABLE UNIT 3

| Sample Identification | Total Boring Depth (inches) | Soil Type (USCS) | Permeability (cm/sec) | Sample Description |
|---|---|---|---|---|
| 1E-1 | 24 | (CL) | 1.8E-05 | 0-24" - Red/Brown Silty CLAY |
| 1E-2 | 20 | -- | -- | 0-20" - Brown SAND/CLAY, Gravel at 20" |
| 1E-3 | 6 | -- | -- | 0-6" - Gravel |
| 1E-4 | 24 | -- | -- | 0-3" - Brown Sandy CLAY, 4-24" - Red/Brown CLAY |
| 1E-5 | 24 | -- | -- | 0-24" - Red/Brown CLAY |
| 2E-1 | 24 | -- | -- | 0-6" - Brown SAND/CLAY, 7-24" - Red/Brown SILT/CLAY |
| 2E-2 | 14 | -- | -- | 0-6" - Brown SAND/CLAY, 7-14" - Red/Brown SILT/CLAY, Gravel at 14" |
| 2E-3 | 24 | (ML) | 8.4E-07 | 0-5" - Brown SAND/CLAY, 6-24" - Red/Brown CLAY |
| 2E-4 | 24 | -- | -- | 0-3" - Brown SAND/CLAY, 4-24" - Red/Brown CLAY |
| 2E-5 | 24 | -- | -- | 0-3" - Brown SAND/CLAY, 4-24" - Red/Brown CLAY |
| 3E-1 | 24 | -- | -- | 0-21" - Brown CLAY/SAND, 21-24" - Light Red/Brown Silty CLAY |
| 3E-2 | 24 | (ML) | 4.7E-06 | 0-24" - Light Red Silty CLAY |
| 3E-3 | 13 | -- | -- | 0-13" - Brown CLAY/SAND, Gravel at 13" |
| 3E-4 | 9 | -- | -- | 0-9" - Brown CLAY/SAND, Gravel at 9" |
| 3E-5 | 19 | -- | -- | 0-6" - Brown CLAY/SAND, 7-19" - Red/Brown Silty CLAY, Gravel at 19" |

Notes:
-- Samples were not collected for analysis
Refer to Figure 1 for sample locations
CL - Low Plasticity Clay
ML - Low Plasticity Silt
Sample Descriptions based on field observations

TABLE 2
SUMMARY OF LABORATORY RESULTS (PCBS)
ANNISTON PCB SITE - OPERABLE UNIT 3

| | units | AA2-CON | AA2-CON-FD | Units | OWR-5D | Dilution | OWR-5D-DUP | Dilution | OWR-5DF 2 µm | OWR-5DF 0.1 µm | SEEP-1 | SEEP-1 FD | SEEP-0.1 µm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | soil-comp | soil-comp | | water | | water | | water | water | water | water | water |
| Temperature | | -- | -- | C | 18.6 | | -- | | -- | -- | -- | -- | -- |
| pH | | -- | -- | std | 4.09 | | -- | | -- | -- | -- | -- | -- |
| Turbidity | | -- | -- | NTU | 9.81 | | -- | | -- | -- | -- | -- | -- |
| Specific Conductivity | | -- | -- | umhos/cm | 734 | | -- | | -- | -- | -- | -- | -- |
| DO | | -- | -- | mg/L | 1.74 | | -- | | -- | -- | -- | -- | -- |
| ORP | | -- | -- | mV | 117 | | -- | | -- | -- | -- | -- | -- |
| PCB Aroclor Results | | | | | | | | | | | | | |
| Aroclor 1016 | mg/kg | ND | ND | µg/L | ND | 10x | ND | 10x | ND | ND | ND | ND | ND |
| Aroclor 1221 | mg/kg | ND | ND | µg/L | 400 | 25x | 410 | 25x | ND | ND | ND | ND | ND |
| Aroclor 1232 | mg/kg | ND | ND | µg/L | 64 J | 10x | 37 J | 10x | ND | ND | ND | ND | ND |
| Aroclor 1242 | mg/kg | ND | ND | µg/L | ND | 10x | ND | 10x | ND | ND | ND | ND | ND |
| Aroclor 1248 | mg/kg | 3.3 J | 5.8 J | µg/L | ND | 10x | ND | 10x | ND | ND | ND | ND | ND |
| Aroclor 1254 | mg/kg | 24 | 31 | µg/L | ND | 10x | ND | 10x | ND | ND | 0.12 J | ND | ND |
| Aroclor 1260 | mg/kg | 23 | 29 | µg/L | ND | 10x | ND | 10x | ND | ND | ND | ND | ND |
| Aroclor 1268 | mg/kg | 28 | 24 | µg/L | ND | 10x | ND | 10x | ND | ND | ND | ND | ND |
| TOTAL | mg/kg | **78 J** | **90 J** | µg/L | **464 J** | | **447 J** | | **ND** | **ND** | **0.12 J** | **ND** | **ND** |
| PCB Homolog Results | | | | | | | | | | | | | |
| Monochlorobiphenyl | mg/kg | ND | 0.007 J | µg/L | 460 | 100x | 470 | 100x | 2.4 UJ | ND | 0.38 | 0.38 | ND |
| Dichlorobiphenyl | mg/kg | 1.3 J | 0.054 J | µg/L | 120 | 100x | 110 | 100x | 0.22 UJ | 0.012 UJ | 0.19 | 0.18 | ND |
| Trichlorobiphenyl | mg/kg | 5.5 J | 0.39 J | µg/L | 16 J | 100x | ND | 100x | ND | ND | 0.017 J | 0.015 J | ND |
| Tetrachlorobiphenyl | mg/kg | 7 J | 1.8 J | µg/L | ND | 100x | ND | 100x | ND | ND | ND | ND | ND |
| Pentachlorobiphenyl | mg/kg | 9.4 J | 3 J | µg/L | ND | 100x | ND | 100x | ND | ND | ND | ND | ND |
| Hexachlorobiphenyl | mg/kg | 13 J | 4.5 J | µg/L | ND | 100x | ND | 100x | ND | ND | ND | ND | ND |
| Heptachlorobiphenyl | mg/kg | 12 J | 3 J | µg/L | ND | 100x | ND | 100x | ND | ND | ND | ND | ND |
| Octachlorobiphenyl | mg/kg | 5.9 J | 1.4 J | µg/L | ND | 100x | ND | 100x | ND | ND | ND | ND | ND |
| Nonachlorobiphenyl | mg/kg | 0.87 J | 0.38 J | µg/L | ND | 100x | ND | 100x | ND | ND | ND | ND | ND |
| DCB Decachlorobiphenyl | mg/kg | 0.56 J | 0.33 J | µg/L | ND | 100x | ND | 100x | ND | ND | ND | ND | ND |
| TOTAL | mg/kg | **56 J** | **15 J** | µg/L | **596 J** | | **580** | | **2.6 UJ** | **0.012 UJ** | **0.59 J** | **0.58 J** | **ND** |

Notes:
ND - Non Detect
FD - Field Duplicate
DUP - Duplicate Sample
J - Estimated value
C - Celsius
NTU - Nephelometric Turbidity Units
DO - Dissolved Oxygen
ORP - Oxidation Reduction Potential
2µm - 2 micrometer filtered sample
0.1µm - 0.1 micrometer filtered sample
mg/L - milligram per liter
mg/kg - milligram per kilogram
µg/L - microgram per liter
umhos/cm - micromhos/centimeter
mV - millivolts

TABLE 3
SUMMARY OF LABORATORY RESULTS (NON-PCBS)
ANNISTON PCB SITE - OPERABLE UNIT 3

| | Units | SEEP-1 | SEEP-1 FD | SEEP-0.1 µm |
|---|---|---|---|---|
| | | water | water | water |
| ***Organophosphorous Pesticides*** | | | | |
| Ethyl Parathion | µg/L | ND | ND | -- |
| Methyl Parathion | µg/L | ND | ND | -- |
| Tetraethyldithiopyrophosphate | µg/L | ND | ND | -- |
| ***Semivolatile Organic Compounds*** | | | | |
| 1,2-Dichlorobenzene | µg/L | ND | ND | -- |
| 1,4-Dichlorobenzene | µg/L | 1.4 J | 1.6 J | -- |
| 2,4-Dichlorophenol | µg/L | ND | ND | -- |
| 4-Nitrophenol | µg/L | ND | ND | -- |
| Phenol | µg/L | ND | ND | -- |
| Pentachlorophenol | µg/L | ND | ND | -- |
| o,o,o-Triethylphosphorothioate | µg/L | ND | ND | -- |
| 2,4,5-Trichlorophenol | µg/L | ND | ND | -- |
| 2,4,6-Trichlorophenol | µg/L | ND | ND | -- |
| ***Volatile Organic Compounds*** | | | | |
| Chlorobenzene | µg/L | ND | ND | -- |
| Isopropyl Benzene (Cumene) | µg/L | ND | ND | -- |
| Methylene Chloride | µg/L | ND | ND | -- |
| 1,1,2,2-Tetrachloroethane | µg/L | ND | ND | -- |
| ***Metals*** | | | | |
| Arsenic | mg/L | ND | ND | ND |
| Barium | mg/L | 0.13 | 0.12 | 0.12 |
| Beryllium | mg/L | ND | ND | ND |
| Cadmium | mg/L | ND | ND | ND |
| Chromium | mg/L | ND | ND | ND |
| Cobalt | mg/L | ND | ND | ND |
| Lead | mg/L | ND | ND | ND |
| Manganese | mg/L | 0.19 | 0.19 | 0.17 |
| Nickel | mg/L | ND | ND | ND |
| Vanadium | mg/L | ND | ND | ND |
| Mercury | mg/L | ND | ND | ND |

Notes:

| | |
|---|---|
| ND - Non Detect | mg/L - milligrams per liter |
| FD - Field Duplicate | 0.1µm - 0.1-micron filtered sample |
| J - Estimated value | µg/L - micrograms per liter |
| µm - micrometers | -- not tested |

TABLE 4
WEST END LANDFILL ADJACENT AREA 2 (AA2) CAP MATERIAL OBSERVATIONS
ANNISTON PCB SITE - OPERABLE UNIT 3

| Sample Identification | Total Cover Thickness (feet) | Sample Description |
|---|---|---|
| AA-CONC-1 | 3.0 | 0-3" - Brownish Red Soil, 3" - Termination - Very Fine grayish white SAND |
| AA-CONC-2 | 3.5 | 0" -Termination - Brown red Clayey SILT - some Gravel |
| AA-CONC-3 | 3.8 | 0" -Termination - Brown red Clayey SILT - some Gravel |
| AA-CONC-4 | 3.1 | 0" -Termination - Brown red Clayey SILT - some Gravel |
| AA-CONC-5 | 2.0 | 0-12" - Brownish red Clayey SILT, 12" - Termination - Light Brown to Red Clayey SILT - some Gravel |
| AA-CONC-6 | 2.8 | 0" - Termination - Brownish red Clayey SILT - some Gravel |
| AA-CONC-7 | 3.3 | 0" - Termination - Brownish red Clayey SILT - some Gravel |
| AA-CONC-8 | ND | Auger Refusal - No Observations |

Notes: Cover thickness is estimated from Cover Limits map, West End Landfill, Golder Associates Inc., dated 5/09.
ND - Not Determined.

**FIGURES**

# SOUTH LANDFILL
# CAP CHARACTERIZATION INVESTIGATION

| CELL | THICKNESS VERIFICATION POINT | NORTHING | EASTING | DEPTH (IN.) | PERMEABILITY |
|---|---|---|---|---|---|
| CELL 1E | 1E1 | 1145191.752 | 650976.4288 | 24 | 1.8 E -05 |
| CELL 1E | 1E2 | 1145138.251 | 651074.671 | 20 | |
| CELL 1E | 1E3 | 1145212.077 | 651025.596 | 6 | |
| CELL 1E | 1E4 | 1145242.886 | 650895.446 | 24 | |
| CELL 1E | 1E5 | 1145179.068 | 650899.829 | 24 | |
| CELL 2E | 2E1 | 1145317.927 | 651139.2465 | 24 | |
| CELL 2E | 2E2 | 1145241.012 | 651280.888 | 14 | |
| CELL 2E | 2E3 | 1145429.817 | 651137.219 | 24 | 8.4 E -07 |
| CELL 2E | 2E4 | 1145403.863 | 650998.371 | 24 | |
| CELL 2E | 2E5 | 1145308.804 | 650935.354 | 24 | |
| CELL 3E | 3E1 | 1145500.962 | 651488.4782 | 24 | |
| CELL 3E | 3E2 | 1145468.394 | 651549.506 | 24 | 4.7 E -06 |
| CELL 3E | 3E3 | 1145574.588 | 651499.189 | 13 | |
| CELL 3E | 3E4 | 1145518.499 | 651372.656 | 9 | |
| CELL 3E | 3E5 | 1145395.531 | 651431.163 | 19 | |

OWR-05D
CELL 1W
CELL 4E
CELL 2W
CELL 2WA
CELL 3W
CELL 2E
CELL 1E
CELL 3E
3E3
3E4
3E1
3E2
3E5
2E3
2E4
2E1
2E5
2E2
1E4
1E3
1E1
1E5
1E2

SCALE
50 25 0 50 100 Feet

## LEGEND

- Trees
- Grass and Clay Cover
- Grass and HDPE Liner
- Grass and Soil Cover
- Trees and Soil Cover
- Approximate Location of Observed Seep Area
- GPS Locations of Thickness Verification
- Shelby Tube Location for Permeability Testing
- Monitoring Well

## NOTES

1) Shelby tube locations are also GPS locations for thickness testing.

2) Cell locations are approximate. Thickness verification points are representative of cover thickness over the cells.

**SOURCE** USGS 1:2,400 Quad Maps; Golder Associates (on-site base map)

**ZONE** Alabama East 101

**MAP PROJECTION** US State Plane

**DATUM** NAD83

**LOCATION MAP**


SOLUTIA

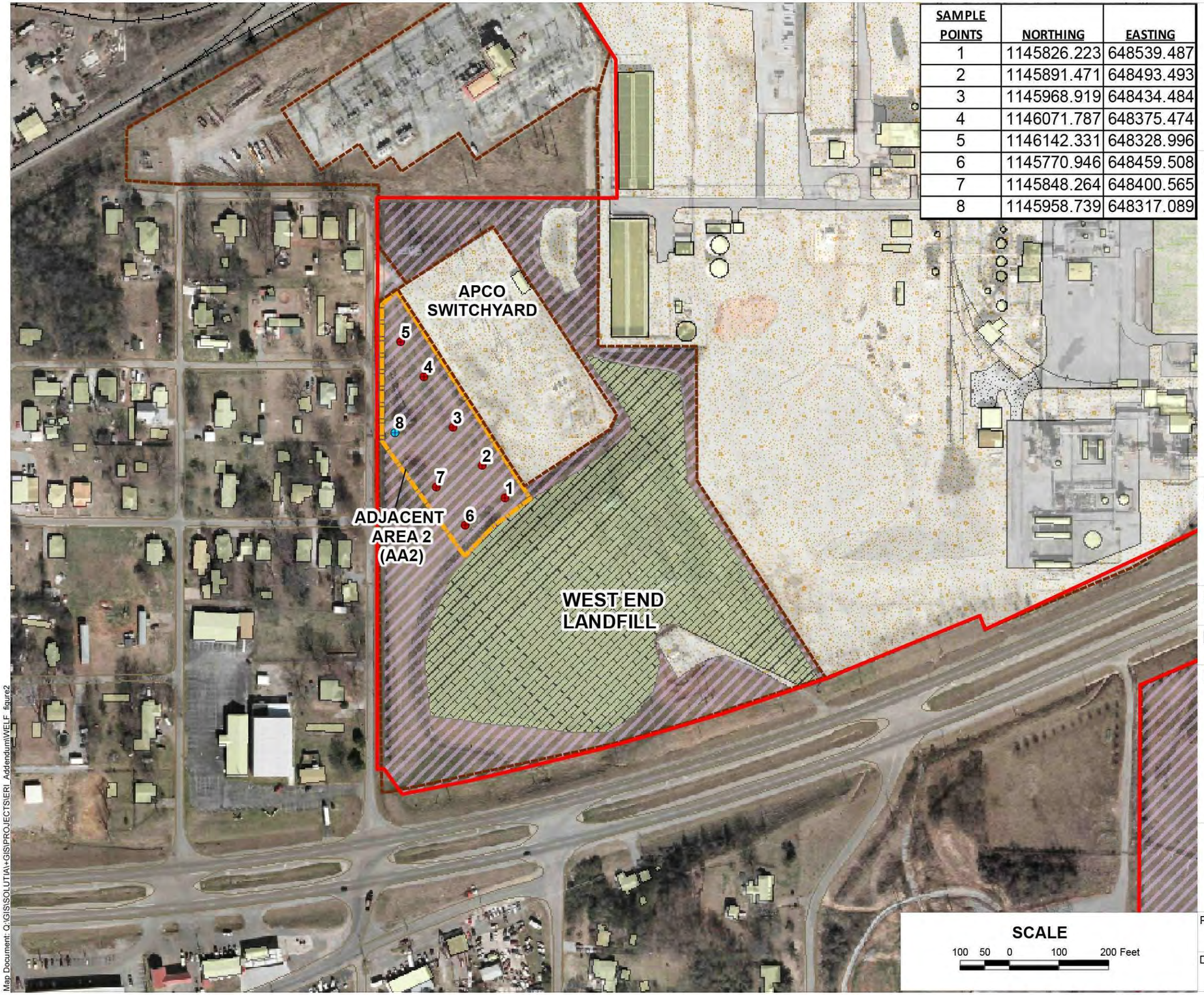
Golder Associates

| PRODUCED BY: | CHECKED BY: | REVIEWED BY: |
|---|---|---|
| AMA | TIR | SJM |
| DATE: 05/24/10 | PROJECT NO: 0433746OU3 | FIGURE NO. 1 |

Map Document: Q:\GIS\SOLUTIA\r-GIS\PROJECTS\RI_Addendum\SLF_Figure1

# WEST END LANDFILL CONFIRMATION SAMPLING ADJACENT AREA 2

| SAMPLE POINTS | NORTHING | EASTING |
|---|---|---|
| 1 | 1145826.223 | 648539.487 |
| 2 | 1145891.471 | 648493.493 |
| 3 | 1145968.919 | 648434.484 |
| 4 | 1146071.787 | 648375.474 |
| 5 | 1146142.331 | 648328.996 |
| 6 | 1145770.946 | 648459.508 |
| 7 | 1145848.264 | 648400.565 |
| 8 | 1145958.739 | 648317.089 |




## LEGEND

- OU-3 Area
- Approximate Boundary Line
- Railroad
- Roads
- Buildings
- Paved Areas
- GPS location of Confirmation Sampling
- GPS location of Intended Confirmation Sample
- Grass
- Grass and HDPE Liner
- Grass and Soil Cover
- Gravel
- Gravel-Covered Asphalt

## NOTES

1) Refusal was encountered for sample location No. 8. It was therefore not used for the composite sample.

**SOURCE** USGS 1:2,400 Quad Maps; Golder Associates (on-site base map)

**ZONE** Alabama East 101

**MAP PROJECTION** US State Plane

**DATUM** NAD83

**LOCATION MAP**



**SCALE**

100 50 0 100 200 Feet

| PRODUCED BY: | CHECKED BY: | REVIEWED BY: |
|---|---|---|
| AMA | TIR | SJM |
| DATE: 5/24/10 | PROJECT NO: 0433746OU3 | FIGURE NO. 2 |

Map Document: Q:\GIS\SOLUTIA\+GIS\PROJECTS\ER\ Addendum\WELF figure2

# Appendix A: Work Plan for Additional Sampling at the South and West End Landfills and Approval letter from the EPA

Solutia Inc.
702 Clydesdale Avenue
Anniston, Alabama 36201-5328
Tel 256-231-8400

April 6, 2010

SENT VIA EMAIL AND FEDERAL EXPRESS

Ms. Pamela J. Langston Scully, P.E.
Remedial Project Manager
United States Environmental Protection Agency
Atlanta Federal Center
61 Forsyth Street, S.W.
Atlanta, GA 30303-3104

**Re: Work Plan for Additional Sampling at the South and West End Landfills**
**Remedial Investigation and Feasibility Study for Operable Unit 3**
**Anniston PCB Site (Docket No. CV-02-PT-0749-E)**
**Anniston, Alabama**

Dear Ms. Langston Scully:

Please find enclosed the work plan for conducting additional investigations at the Anniston PCB Site (Site) for Operable Unit 3 (OU-3). This work plan was prepared in accordance with a meeting that was conducted between the United States Environmental Protection Agency (EPA) and Pharmacia Corporation / Solutia Inc. (collectively, P/S) on March 26, 2010 to discuss finalizing the Remedial Investigation (RI) Report and Feasibility Study (FS) for OU-3. Pursuant to this meeting, P/S propose to conduct additional investigations at the Site to address the final data gaps noted by the EPA in order to complete the RI and FS. The scope of work includes conducting sampling activities at the South Landfill and the West End Landfill.

Please do not hesitate to contact me at 256-231-8404 with any questions or comments that you may have regarding this matter. Please let us know if this work plan is acceptable to the EPA.

Sincerely,

E. Gayle Macolly
Manager, Remedial Projects

cc: Mr. Jeffery W. Kitchens (ADEM)
Mr. G. Douglas Jones, Esq.
Mr. Thomas Dahl

# Work Plan for Additional Sampling at the South and West End Landfills

## Introduction

A meeting was conducted between the United States Environmental Protection Agency (EPA) and Pharmacia Corporation / Solutia Inc. (collectively, P/S) on March 26, 2010 to discuss finalizing the Remedial Investigation (RI) Report and Feasibility Study (FS) for Operable Unit 3 (OU-3) at the Anniston PCB Site (Site). Pursuant to this meeting, P/S propose to conduct additional investigations at the Site to address the final data gaps noted by the EPA in order to complete the RI and FS. The scope of work includes conducting sampling activities at the South Landfill "PCB Cells" (cells 1E, 2E, and 3E) and in the vicinity of sample AA2 at the West End Landfill Adjacent Area 2. A description of the proposed work is included below, and locations of the proposed work are shown on Figures 1 and 2, respectively.

## South Landfill

At the South Landfill, P/S will evaluate the performance of the existing cap/cover overlying the "PCB Cells" (cells 1E, 2E, and 3E) as follows: 1) conduct a cap/cover thickness survey; 2) determine the permeability of the cap/cover soil materials; 3) analyze suspected surface water "seep" as observed in the vicinity of the cells; and 4) collect and analyze a groundwater sample from well OWR-5D downgradient of the South Landfill.

- Cap/cover thickness survey – stainless steel hand auger equipment will be advanced to a maximum penetration of 24 inches into the existing cap/cover material at fifteen (15) locations (five at each of the three cells: 1E, 2E, and 3E). The proposed sample locations are shown on Figure 1. This frequency is equivalent to over one test location per acre. If waste material is encountered in any boring, the hand auger will be decontaminated prior to advancing to the next location. Observations of cap/cover material type (using the Unified Soil Classification System) and thickness will be recorded for each location. If a hole is advanced to 24 inches below ground surface and has not penetrated the cap/cover material, the thickness will be denoted as greater than 24 inches. The penetrations in the cap/cover will be replaced with a bentonite/soil mixture and tamped in place. The cuttings from the auger holes will be used in the backfill bentonite/soil mixture.

- Cap/cover material permeability testing – three-inch diameter, 10-inch long, thin-walled tube samplers (Shelby tubes) will be used to collect three (3) discrete and representative samples of the cap/cover material (one per cell). The samples will be collected adjacent to select thickness survey points indicated above. The samples will be collected from beneath the topsoil layer and above the waste matrix near the center of the cap/cover materials. Samples will be submitted to a qualified geotechnical laboratory (Golder Associates Inc.) for permeability testing using American Standards for Testing Materials (ASTM) Method D5084. A confining pressure of five (5) pounds per square inch will be used while testing the samples, as the samples will be collected from an existing cover overlain with minimal soil cover. The penetrations in the cap/cover will be replaced with a bentonite/soil mixture and tamped in place.

- Laboratory analysis of the "seep" – in order to collect water directly from the "seep" (approximate location shown on Figure 1), a small reservoir will be created, lined with a stainless steel bowl and allowed to fill with water discharging from the seep area. Once adequate water is collected, water will be transferred using a small in-line pump to the appropriate laboratory sample containers. As water is withdrawn from the bowl through pumping, water from the seep will be allowed to flow into the bowl to provide sufficient liquid to fill all of the laboratory containers. An

**Golder Associates Inc.**
9428 Baymeadows Road, Suite 400
Jacksonville, FL 32256 USA
Tel: (904) 363-3430 Fax: (904) 363-3445 www.golder.com

original sample and duplicate sample will be collected at this location and analyzed for the full list of Constituents of Interest (COIs) identified in the Resource Conservation and Recovery Act (RCRA) RCRA Facility Investigation (RFI) included by the EPA as Table 1 of the RI/FS Agreement for the Site (Appendix F to the Partial Consent Decree). Table 1 of the RI/FS Agreement is attached for reference. For PCBs and metals analyses, sampling will include both whole water (unfiltered) and dissolved (filtered) samples. The filtered sample will be collected by transferring the collected water to the sample containers using a filtering transfer vessel (QED FF8500) equipped with a 0.1-micron filter. The samples will be analyzed for total PCBs by Aroclors using EPA Method 8082 as well as total PCBs by homolog groups using EPA Method 680. These samples will be subject to the same quality assurance and quality control (QA/QC) protocols identified in the Site-wide QAPP. Level II data packages will be provided for each sample.

- Groundwater Sampling at OWR-5D – The well will be developed via surging and pumping prior to sampling. Approximately 24 hours following development, submersible pumping equipment will be used to low-flow purge and sample the well. Groundwater sampling will include both whole water (unfiltered) and dissolved (filtered) samples. An original sample and duplicate sample will be collected for the unfiltered sample. Filtering of samples will be conducted using a 2.0-micron filter as well as a 0.1-micron filter. These samples will be subject to the same QA/QC protocols identified in the Site-wide QAPP. The samples will be analyzed for total PCBs by Aroclors using EPA Method 8082 as well as total PCBs by homolog groups using EPA Method 680. A level II data package will be provided for this sample.

**West End Landfill**

At the West End Landfill Adjacent Area 2, P/S will perform composite soil sampling in the vicinity of the historic composite sample AA2 to collect a confirmation sample following the prior excavation and capping of PCB-containing soil in this area. The result from the original sample collected in this area was 1,940 milligrams per kilogram (mg/kg). The eight individual aliquot locations from the composite sample (shown on Figure 2) will be located in the field within reasonable proximity to the original locations of the sampling points for AA2. Care will be taken to assure samples are collected from soils below the existing cap/cover material. Both pre- and post-cap elevation survey data are available and will be used to estimate the cap thickness at each of the sample locations. Further, observations of soil color, texture and composition will be used to determine the interface between the cap/cover material and the underlying in-situ soils. A composite sample of the area will be collected with each of the individual aliquots homogenized together and submitted as a single composite sample. The composite sample (original and duplicate) will be submitted to an analytical laboratory and analyzed for total PCBs by Aroclors using EPA Method 8082 as well as total PCBs by homolog groups using EPA Method 680. A level II data package will be provided for this sample.

**General**

While implementing the above characterization activities the following general provisions will be adhered to as applicable to each of the activities:

- The Site-wide Quality Assurance Project Plan, Revision 5.0, will be adhered to throughout the field effort (September 2008).
- The OU-3 Field Sampling Plan, Revision 2.0, will be adhered to throughout the field effort (October 2005).
- The Site-wide Health and Safety (H&S) Plan will be adhered to throughout the field effort. H&S meetings will be held daily for all members of the field team (June 2004).
- Proper personal protective equipment (PPE) (e.g., nitrile gloves) will be worn to limit the potential of direct contact with impacted media during the above-described intrusive activities.

- All equipment (i.e., mechanized or hand tools) will be decontaminated following contact with potential impacted media.

- Generation of soil investigation derived waste (IDW) is not anticipated. Purge water IDW will be contained during well purging/sampling and transported to the carbon treatment area. Water will be treated through the carbon and discharged to the on-Site waste water discharge system.

**Schedule and Reporting**

Characterization investigation field work is scheduled to commence Wednesday, April 7th and continue through Thursday, April 8, 2010. Prior to completing this work, representatives of P/S will be on Site Tuesday, April 6th to develop well OWR-5D in advance of the sampling to be conducted on April 7th. P/S will coordinate EPA oversight as required during the activities. As per the Site-Wide QAPP, level II data packages will be requested from the laboratory for all analyses, and level II data validation will be performed for the samples analyzed as described herein. Upon completion of the data validation, a report will be prepared presenting the findings of the characterization investigation and will be provided to EPA as a RI Report Addendum. The report will include a description of the work performed, tabulated cap thickness summary and analytical results, a summary of the data validation, an interpretation of the results, and recommendations for further action, if necessary. The RI Report Addendum will be submitted to the Agency no later than 30 days following receipt of the validated laboratory reports. P/S intend to analyze the samples using a rush turn-around schedule such that P/S can conduct a conference call with the EPA as soon as practical following completion of the field work to reach agreement regarding completion of the above-described work activities and technical approach for completing the FS Report in accordance with the schedule previously established by the EPA.

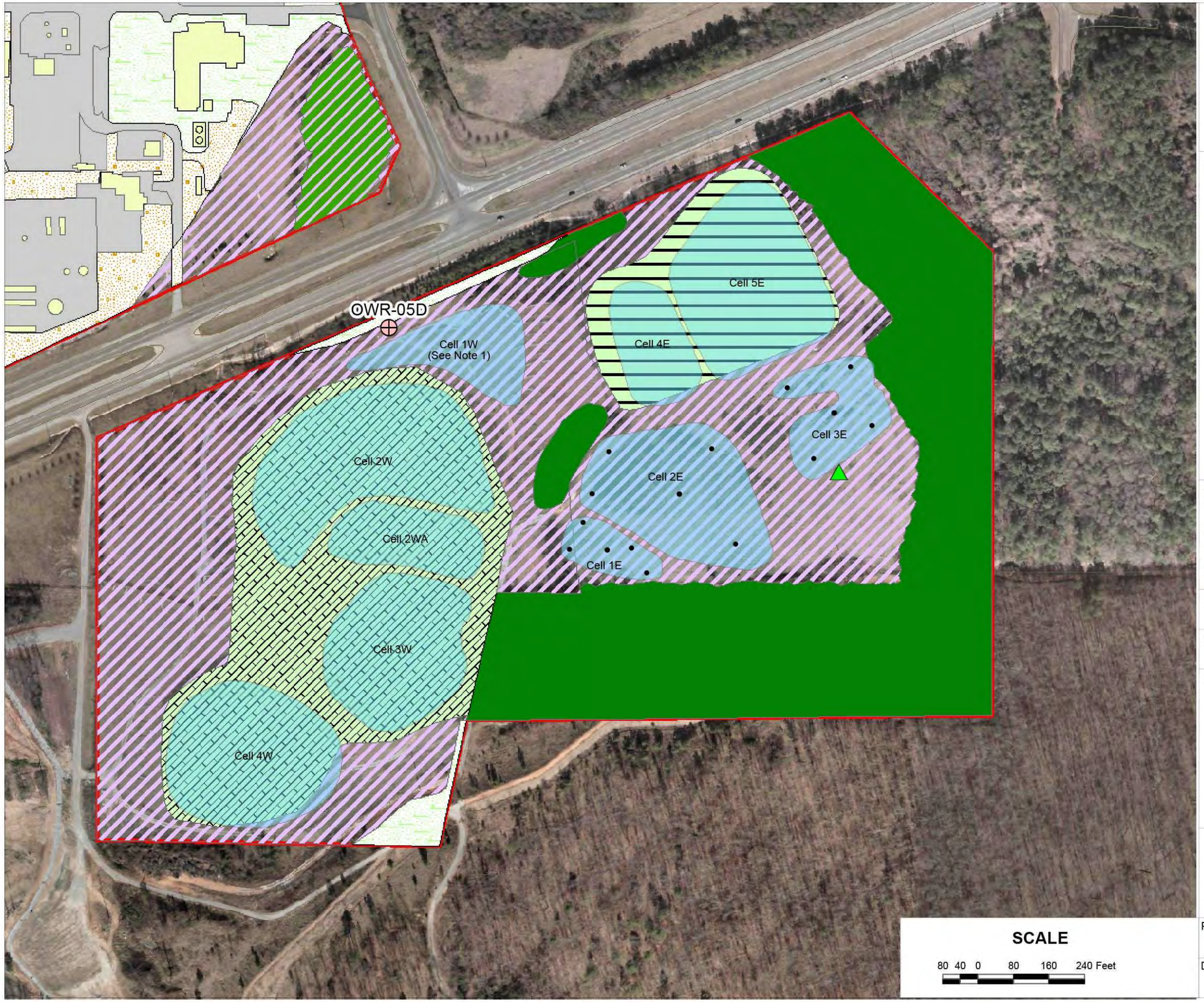
# TABLE 1
# POTENTIAL CONSTITUENTS OF CONCERN

Organophosphorous Pesticides
- Parathion
- Methyl parathion
- Tetraethyldithiopyrophosphate (Sulfotepp)

Semivolatile Organic Compounds
- 1,2-Dichlorobenzene (o-Dichlorobenzene)
- 1,4-Dichlorobenzene (p-Dichlorobenzene)
- 2,4-Dichlorophenol
- Para-nitrophenol (4-Nitrophenol or PNP)
- Polychlorinated biphenyls (PCBs)
- Phenol
- Pentachlorophenol
- 2,4,5-Trichlorophenol
- 2,4,6-Trichlorophenol
- o,o,o-Triethylphosphorothioate

Volatile Organic Compounds
- Chlorobenzene
- Isopropyl benzene (Cumene)
- Methylene chloride
- 1,1,2,2-Tetrachloroethane

Metals
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Lead
- Manganese
- Mercury
- Nickel
- Vanadium




# SOUTH LANDFILL CAP CHARACTERIZATION INVESTIGATION

## LEGEND

- OU-3 Area
- Railroad
- Roads
- Buildings
- Paved Areas
- Trees
- Grass
- Grass and Clay Cover
- Grass and HDPE Liner
- Grass and Soil Cover
- Trees and Soil Cover
- Gravel
- Gravel-Covered Asphalt
- Monitoring Well
- Approximate Seep Location
- Thickness Verification

## NOTES

1) This is the former location of Cell 1W as its contents were relocated to Cell 4E during relocation of Hwy 202.
2) Sample locations are approximate.

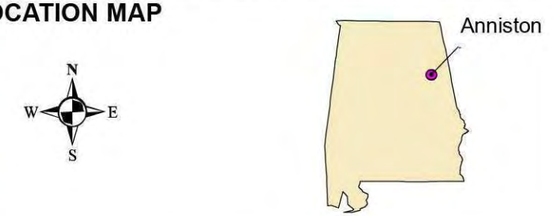
**SOURCE** USGS 1:2,400 Quad Maps; Golder Associates (on-site base map)

**ZONE** Alabama East 101

**MAP PROJECTION** US State Plane

**DATUM** NAD83

**LOCATION MAP**



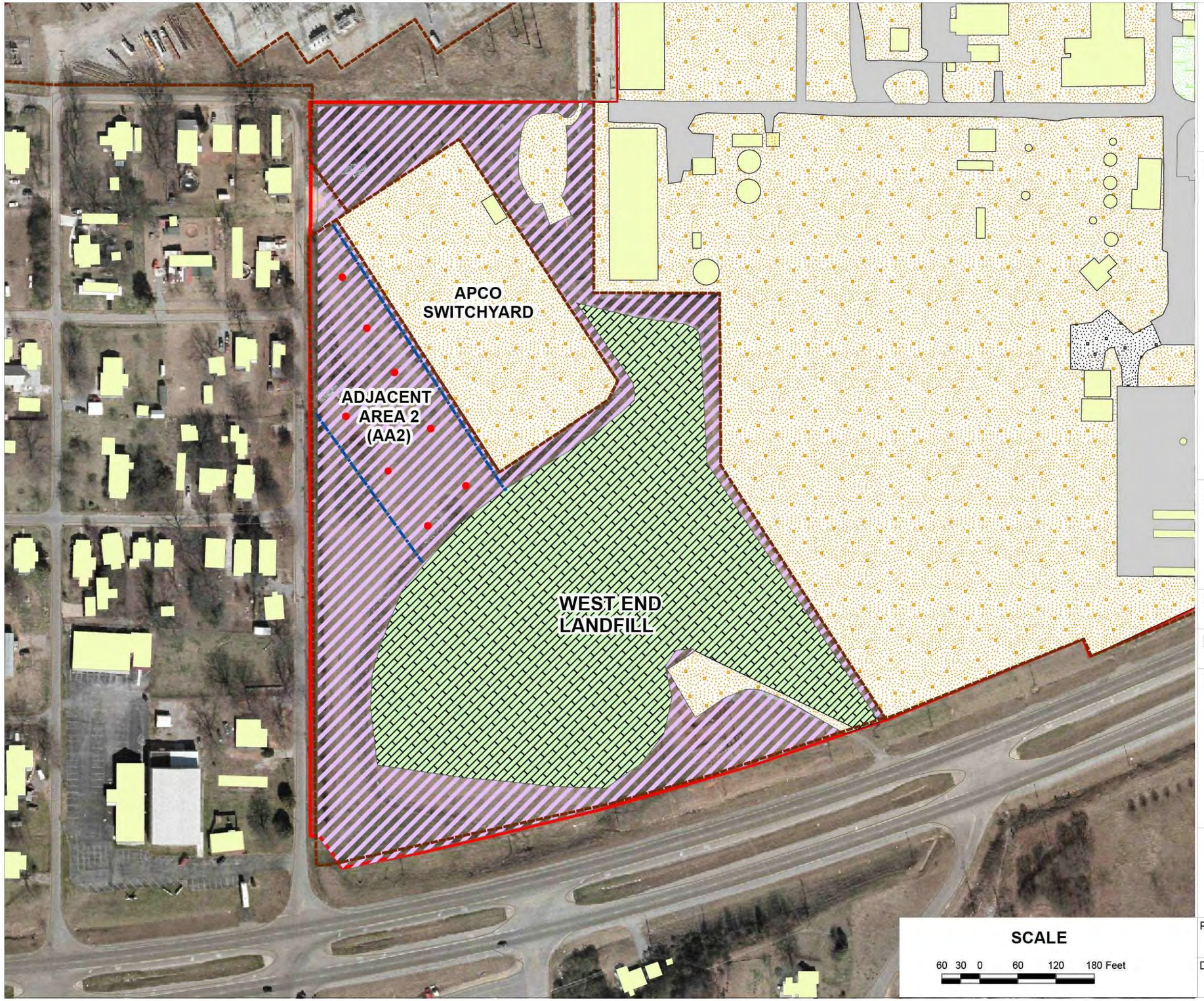

**SCALE**

80 40 0 80 160 240 Feet

| PRODUCED BY: | CHECKED BY: | REVIEWED BY: |
|---|---|---|
| AMA | TIR | SJM |
| DATE: | PROJECT NO: | FIGURE NO. |
| 04/01/10 | 0433746OU3 | 1 |

FILE: Q:\GIS\SOLUTIA\+GIS\PROJECTS\Dispute_Cells

# WEST END LANDFILL
# CONFIRMATION SAMPLING
# ADJACENT AREA 2




## LEGEND

- OU-3 Area
- Railroad
- Roads
- Buildings
- Paved Areas
- Trees
- Grass
- Approximate Boundary Line
- Grass and Clay Cover
- Grass and HDPE Liner
- Grass and Soil Cover
- Trees and Soil Cover
- Gravel
- Gravel-Covered Asphalt
- Estimated Surface Soil Composite Sample Locations

## NOTES

| | |
|---|---|
| **SOURCE** USGS 1:2,400 Quad Maps; Golder Associates (on-site base map) | **ZONE** Alabama East 101 |
| **MAP PROJECTION** US State Plane | **DATUM** NAD83 |

**LOCATION MAP**


**SCALE**

60 30 0 60 120 180 Feet

| PRODUCED BY: | CHECKED BY: | REVIEWED BY: |
|---|---|---|
| RJC | TIR | SJM |
| **DATE:** | **PROJECT NO:** | **FIGURE NO.** |
| 04/01/10 | 0433746OU3 | 2 |

FILE: Q:\GIS\SOLUTIA\+GIS\PROJECTS\DISPUTE_WESTENDLF.MXD

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

April 7, 2010

4SD-SRB

Ms. E. Gayle Macolly
Manager, Remedial Projects
Solutia, Inc.
702 Clydesdale Avenue
Anniston, Alabama 36201-5328

SUBJ: Work Plan for Additional Sampling at the South and West End Landfills
Remedial Investigation/Feasibility Study Reports
Operable Unit 3, Anniston PCB Site, Anniston, Alabama

EPA CERCLA ID # ALD000400123
EPA RCRA ID # ALD004019048

Dear Ms. Macolly:

The U.S. Environmental Protection Agency (EPA) approves of the Work Plan for Additional Sampling at the South and West End Landfills dated April 6, 2010, required to complete the Remedial Investigation and Feasibility Study for Operable Unit 3 at the Anniston PCB Site, Anniston, Alabama. If you have any questions or concerns, please contact me at (404)562-8935.

Sincerely,

Pamela J. Langston Scully, P.E.
Remedial Project Manager
Superfund Remedial Branch

cc: Ms. Julie Peshkin, Monsanto
Mr. G. Douglas Jones, Esq.
Mr. Thomas Dahl
Mr. Bertrand Thomas, TA
Mr. David Baker, CAG
Mr. William Weinischke, USDOJ

# Appendix B: Soil Permeability Data

# SOLUTIA/OU-3 FEASIBILITY STUDY/AL
## SUMMARY OF SOIL DATA

| Sample Identification | Sample Type | Sample Depth | Soil Classification | Natural Moisture % | Atterberg Limits | | | | Grain Size Distribution | | | Compaction | | Gs | Unit Weight | | Permeability (cm/sec) | Additional Tests Conducted (See Notes) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | L.L. | P.L. | P.I. | L.I. | % Finer No. 4 Sieve | % Finer No. 200 Sieve | % Finer .005 mm | Maximum Dry Density (lb/cuft) | Optimum Moisture % | | Moisture % | Dry (lb/cuft) | | |
| 1E-1 | UD | 4"-14" | (CL) | 19.5 | - | - | - | - | - | - | - | - | - | 2.80 | 19.5 | 107.2 | 1.8E-05 | - |
| 2E-3 | UD | 4"-14" | (ML) | 28.9 | - | - | - | - | - | - | - | - | - | 2.80 | 28.9 | 93.0 | 8.4E-07 | - |
| 3E-2 | UD | 4"-14" | (ML) | 13.7 | - | - | - | - | - | - | - | - | - | 2.78 | 13.7 | 113.5 | 4.7E-06 | - |
| | | | | | | | | | | | | | | | | | | |
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ABBREVIATIONS: LIQUID LIMIT (LL)
PLASTIC LIMIT (PL)
PLASTICITY INDEX (PI)
LIQUIDITY INDEX (LI)
SPECIFIC GRAVITY (Gs)
MOISTURE (Mc)

NOTES: T = TRIAXIAL TEST
U = UNCONFINED COMPRESSION TEST
C = CONSOLIDATION TEST
DS = DIRECT SHEAR TEST
O = ORGANIC CONTENT
P = pH
* = Un-testable

**FLEXIBLE WALL PERMEABILITY**
**ASTM D 5084**
**METHOD D, CONSTANT RATE OF FLOW**

| | | | | | |
|---|---|---|---|---|---|
| PROJECT TITLE | SOLUTIA/OU-3 FEASIBILITY STUDY/AL | | Board # | 4 | COMMENTS |
| PROJECT NUMBER | 043-3746-OU3 | | Flow Pump | 1 | |
| SAMPLE ID | 1E-1 | 4" | Flow Pump Speed | 2 | |
| SAMPLE TYPE | UD | | Technician | TW | |

| Sample Data, Initial | | | | Sample Data, Final | |
|---|---|---|---|---|---|
| Height, inches | 2.929 | B-Value, f | 0.97 | Height, inches | 2.918 |
| Diameter, inches | 2.852 | Cell Pres. | 85.0 | Diameter, inches | 2.863 |
| Area, cm² | 41.22 | Bot. Pres. | 80.0 | Area, cm² | 41.53 |
| Volume, cm³ | 306.63 | Top Pres. | 80.0 | Volume, cm³ | 307.84 |
| Mass, g | 629.14 | Tot. B.P. | 80.0 | Mass, g | 642.80 |
| Moisture Content, % | 19.49 | Head, max. | 95.66 | Moisture Content, % | 22.08 |
| Dry Density, pcf | 107.15 | Head, min. | 95.66 | Dry Density, pcf | 106.73 |
| Spec. Gravity | 2.803 | Max. Grad. | 12.91 | Volume Solids, cm³ | 187.84 |
| Volume Solids, cm³ | 187.84 | Min. Grad. | 12.91 | Volume Voids, cm³ | 119.99 |
| Volume Voids, cm³ | 118.78 | | | Void Ratio | 0.64 |
| Void Ratio | 0.63 | | | Saturation, % | 96.9% |
| Saturation, % | 86.4% | | | | |

| WATER CONTENTS | | Sample Initial | Sample Final |
|---|---|---|---|
| Wt Soil & Tare, i | g | 629.14 | 650.80 |
| Wt Soil & Tare, f | g | 526.52 | 534.59 |
| Wt Tare | g | 0.00 | 8.36 |
| Wt Moisture Lost | g | 102.62 | 116.21 |
| Wt Dry Soil | g | 526.52 | 526.23 |
| Water Content | % | 19.49% | 22.08% |

DESCRIPTION: Reddish Brown, SILTY CLAY, and medium to fine sand, little fine gravel.

Flow Pump Rate: 9.99E-03 cm³/sec

USCS: (CL)

| TIME FUNCTIONS, SECONDS | | | | | | | | dP | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | DAY | HOUR | MIN | TEMP (°C) | dt (min) | dt,acc (min) | dt (sec) | dt,acc (sec) | Reading (psi) | Head (cm) | Gradient | Permeability (cm/sec) |
| 04/09/10 | 40277 | 9 | 45 | 21.3 | 0 | 0 | 0 | 0 | 1.36 | 95.66 | 12.91 | 1.8E-05 |
| 04/09/10 | 40277 | 9 | 50 | 21.3 | 5 | 5 | 300 | 300 | 1.36 | 95.66 | 12.91 | 1.8E-05 |
| 04/09/10 | 40277 | 9 | 55 | 21.3 | 5 | 10 | 300 | 600 | 1.36 | 95.66 | 12.91 | 1.8E-05 |
| 04/09/10 | 40277 | 10 | 0 | 21.3 | 5 | 15 | 300 | 900 | 1.36 | 95.66 | 12.91 | 1.8E-05 * |
| 04/09/10 | 40277 | 10 | 5 | 21.3 | 5 | 20 | 300 | 1200 | 1.36 | 95.66 | 12.91 | 1.8E-05 * |
| 04/09/10 | 40277 | 10 | 10 | 21.3 | 5 | 25 | 300 | 1500 | 1.36 | 95.66 | 12.91 | 1.8E-05 * |
| 04/09/10 | 40277 | 10 | 15 | 21.3 | 5 | 30 | 300 | 1800 | 1.36 | 95.66 | 12.91 | 1.8E-05 * |

*TRANSCRIBED FROM ORIGINAL DATA SHEETS

PERMEABILITY REPORTED AS ** 1.8E-05 cm/sec **

PERMEANT: Deaired Tap Water

DATE 4/9/10
CHECK
REVIEW

*Golder Associates Inc.*

# FLEXIBLE WALL TRIAXIAL PERMEABILITY
## ASTM D 5084
## METHOD C, FALLING HEAD W/INCREASING TAIL WATER PRESSURE

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **PROJECT TITLE** | SOLUTIA/OU-3 FEASIBILITY STUDY/AL | | **Using Pipettes Only** | YES | **COMMENTS** | Possible PCB contamination. |
| **PROJECT NUMBER** | 043-3746-OU3 | | **Using Pipettes & Burettes** | NO | | |
| **SAMPLE ID** | 2E-3 | - | **BOARD#** 10 | **TECH** TW | | |
| **SAMPLE TYPE** | UD | | **CELL #** 10 | **DATE** 4/16/10 | | |

**Sample Data, Initial**

| | |
|---|---|
| Height, inches | 2.920 |
| Diameter, inches | 2.849 |
| Area, cm^2 | 41.13 |
| Volume, cm^3 | 305.04 |
| Mass, g | 586.02 |
| Moisture Content, % | 28.93 |
| Dry Density, pcf | 92.98 |
| Spec. Gravity | 2.804 |
| Volume Solids, cm^3 | 162.10 |
| Volume Voids, cm^3 | 142.94 |
| Void Ratio | 0.88 |
| Saturation | 92.0% |

| | |
|---|---|
| B-Value,f | 1.00 |
| Cell Pres | 85.0 |
| Bot. Pres. | 82.0 |
| Top Pres. | 80.0 |
| Head, cm | 140.68 |
| Max. Grad. | 21.86 |
| Min. Grad. | 18.67 |
| Max. E.S. | 5.00 |
| Min. E.S. | 3.00 |

**Sample Data, Final**

| | |
|---|---|
| Height, inches | 2.974 |
| Diameter, inches | 2.858 |
| Area, cm^2 | 41.39 |
| Volume, cm^3 | 312.65 |
| Mass, g | 604.88 |
| Moisture Content % | 33.08 |
| Dry Density, pcf | 90.72 |
| Saturation | 99.9% |
| Inflow Volume per (1 cc) | 1.00 |
| Outflow Volume per (1 cc) | 1.00 |

PERMEANT: Deaired Tap Water

| **Water Contents** | **Initial** | **Final** |
|---|---|---|
| Wt soil&tare, i | 586.02 | 612.83 |
| Wt soil&tare, f | 454.53 | 462.56 |
| Wt Tare | 0.00 | 8.26 |
| Wt Moisture Lost | 131.49 | 150.27 |
| Wt Dry Soil | 454.53 | 454.30 |
| Water Content | 28.93% | 33.08% |

**DESCRIPTION** Yellowish and Reddish Brown, CLAYEY SILT, and medium to fine sand.

**USCS** (ML)

| TIME FUNCTION | | | READINGS | | | TIME IN MINUTES & SECONDS | | | | | | VOLUME | | PERMEABILITY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | HOUR | MIN | Inflow (cc) | Outflow (cc) | Temp. | dt (min) | dt (sec) | dt, acc (sec) | Head (cm) | (H1/H2) (inc.) | Gradient | Inflow (cc) | Outflow (cc) | @ 20 Degrees C (cm/sec) |
| 04/16/10 | 10 | 6 | 0.0 | 25.0 | 21.3 | 0.0 | 0.0 | 0 | 165.10 | | 21.86 | 0.00 | 0.00 | 0.0 |
| 04/16/10 | 10 | 38 | 1.8 | 23.2 | 21.3 | 32.0 | 1920 | 1920 | 161.59 | 1.02 | 21.39 | 1.80 | 1.80 | 1.0E-06 |
| 04/16/10 | 11 | 34 | 4.5 | 20.4 | 21.3 | 56.0 | 3360 | 5280 | 156.23 | 1.03 | 20.68 | 2.70 | 2.80 | 8.9E-07 * |
| 04/16/10 | 12 | 20 | 6.6 | 18.3 | 21.3 | 46.0 | 2760 | 8040 | 152.14 | 1.03 | 20.14 | 2.10 | 2.10 | 8.6E-07 * |
| 04/16/10 | 13 | 54 | 10.6 | 14.3 | 21.3 | 94.0 | 5640 | 13680 | 144.34 | 1.05 | 19.11 | 4.00 | 4.00 | 8.3E-07 * |
| 04/16/10 | 14 | 39 | 12.3 | 12.6 | 21.3 | 45.0 | 2700 | 16380 | 141.02 | 1.02 | 18.67 | 1.70 | 1.70 | 7.7E-07 * |

| | |
|---|---|
| **Inflow Rate** | 0.0008 |
| **Outflow Rate** | 0.0008 |
| **Outflow/Inflow Ratio** | 1.01 |

**PERMEABILITY REPORTED AS** 8.4E-07 cm/sec

**DATE** 4/16/10
**CHECK**
**REVIEW**

***TRANSCRIBED FROM ORIGINAL DATA SHEETS**

**FLEXIBLE WALL PERMEABILITY**
**ASTM D 5084**
**METHOD D, CONSTANT RATE OF FLOW**

| | | | | | |
|---|---|---|---|---|---|
| PROJECT TITLE | SOLUTIA/OU-3 FEASIBILITY STUDY/AL | | Board # | 5 | COMMENTS |
| PROJECT NUMBER | 043-3746-OU3 | | Flow Pump | 2 | |
| SAMPLE ID | 3E-2 | 4" | Flow Pump Speed | 4 | |
| SAMPLE TYPE | UD | | Technician | TW | |

| Sample Data, Initial | | | | Sample Data, Final | |
|---|---|---|---|---|---|
| Height, inches | 2.949 | B-Value, f | 0.97 | Height, inches | 2.956 |
| Diameter, inches | 2.858 | Cell Pres. | 85.0 | Diameter, inches | 2.846 |
| Area, cm² | 41.39 | Bot. Pres. | 80.0 | Area, cm² | 41.04 |
| Volume, cm³ | 310.02 | Top Pres. | 80.0 | Volume, cm³ | 308.15 |
| Mass, g | 641.08 | Tot. B.P. | 80.0 | Mass, g | 658.63 |
| Moisture Content, % | 13.69 | Head, max. | 89.33 | Moisture Content, % | 16.80 |
| Dry Density, pcf | 113.50 | Head, min. | 89.33 | Dry Density, pcf | 114.18 |
| Spec. Gravity | 2.777 | Max. Grad. | 11.90 | Volume Solids, cm³ | 203.05 |
| Volume Solids, cm³ | 203.05 | Min. Grad. | 11.90 | Volume Voids, cm³ | 105.10 |
| Volume Voids, cm³ | 106.97 | | | Void Ratio | 0.52 |
| Void Ratio | 0.53 | | | Saturation, % | 90.2% |
| Saturation, % | 72.2% | | | | |

| WATER CONTENTS | | Sample Initial | Sample Final |
|---|---|---|---|
| Wt Soil & Tare, i | g | 641.08 | 666.47 |
| Wt Soil & Tare, f | g | 563.88 | 571.79 |
| Wt Tare | g | 0.00 | 8.31 |
| Wt Moisture Lost | g | 77.20 | 94.68 |
| Wt Dry Soil | g | 563.88 | 563.48 |
| Water Content | % | 13.69% | 16.80% |

Flow Pump Rate: 2.35E-03 cm³/sec

USCS: (ML)

DESCRIPTION: Yellowish and Reddish Brown, CLAYEY SILT, and medium to fine sand, little fine gravel.

| TIME FUNCTIONS, SECONDS | | | | | | | | dP | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | DAY | HOUR | MIN | TEMP (°C) | dt (min) | dt,acc (min) | dt (sec) | dt,acc (sec) | Reading (psi) | Head (cm) | Gradient | Permeability (cm/sec) |
| 04/09/10 | 40277 | 9 | 55 | 21.3 | 0 | 0 | 0 | 0 | 1.27 | 89.33 | 11.90 | 4.7E-06 |
| 04/09/10 | 40277 | 10 | 0 | 21.3 | 5 | 5 | 300 | 300 | 1.27 | 89.33 | 11.90 | 4.7E-06 |
| 04/09/10 | 40277 | 10 | 5 | 21.3 | 5 | 10 | 300 | 600 | 1.27 | 89.33 | 11.90 | 4.7E-06 |
| 04/09/10 | 40277 | 10 | 10 | 21.3 | 5 | 15 | 300 | 900 | 1.27 | 89.33 | 11.90 | 4.7E-06 * |
| 04/09/10 | 40277 | 10 | 15 | 21.3 | 5 | 20 | 300 | 1200 | 1.27 | 89.33 | 11.90 | 4.7E-06 * |
| 04/09/10 | 40277 | 10 | 20 | 21.3 | 5 | 25 | 300 | 1500 | 1.27 | 89.33 | 11.90 | 4.7E-06 * |
| 04/09/10 | 40277 | 10 | 25 | 21.3 | 5 | 30 | 300 | 1800 | 1.27 | 89.33 | 11.90 | 4.7E-06 * |

*TRANSCRIBED FROM ORIGINAL DATA SHEETS

PERMEABILITY REPORTED AS ** 4.7E-06 cm/sec **

PERMEANT: Deaired Tap Water

DATE 4/9/10
CHECK
REVIEW

*Golder Associates Inc.*

**Golder Associates**

TEST

| Sample type | Water Content | Atterberg Limits | Sieve (3" through #200) | - #200 Sieve | Hydrometer & Sieve | Unit Weight | Specific Gravity | Proctor (Standard) | Proctor (Modified) | Unconfined Compression* | Triaxial U/U* | Triaxial C/U* | Direct Shear* | Permeability * (Flex Wall) | Permeability* (Rigid Wall) | Consolidation* | Swell* | Expansion Index | pH Level | Organic Content | Resistivity | Carbonate Content |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TEST METHOD | | | | | | | | | | | | | | | | | | | | | | |

LOG IN/ LOG OUT

| IN DATE | IN BY | OUT DATE | OUT BY | SAMPLE NUMBER | * DEPTH | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4/8 | AR | 4/12 | JB | 1E-1 | 4" bgs | T | ⊘ | | | | | | | | | | | ⊘ | | | | | | | |
| | | | | ~~2E-1~~ | | F | ~~⊘~~ | NOT TESTED | | | | | | | | | | | | | | | | | |
| 4/8 | AR | 4/12 | JB | 3E-2 | 4" bgs | T | ⊘ | | | | | | | | | | | ⊘ | | | | | | | |
| 4/14 | DA | 4/19 | RF | 2E-3 | 1 | T | ⊘ | | | | | | | | | | | ⊘ | | | | | | | |

Q=5psi
Handle with caution, Return
All Samples
samples 2E-1 defective.

Job Number 043-3746-OU3
Job Name SOLUTIA ~~IOU / RESIDENTIAL / AL~~
OU-3 FEASIBILITY STUDY/AL

* DEPTH OF SAMPLE — 4" TO 14" BGS

Golder Associates, Inc.
3730 Chamblee Tucker Road
Atlanta, Georgia 30341
Telephone: (770) 493-4280
Fax: (770) 492-8233

/ Test to be performed
X Test Completed
⊘ Results sent to client

Labsch

# Appendix C: Laboratory Data

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

Job Number: 680-56559-1

Job Description: Anniston Landfill Site

For:
Golder Associates Inc.
3730 Chamblee Tucker Road
Atlanta, GA 30341

Attention: Mr. Tim Richards

Approved for release.
Lidya Gulizia
Project Manager I
4/20/2010 5:37 PM

Lidya Gulizia
Project Manager I
lidya.gulizia@testamericainc.com
04/20/2010
Revision: 1

cc: Mr. Steve Moeller

The test results in this report meet NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted. Results pertain only to samples listed in this report. This report may not be reproduced, except in full, without the written approval of the laboratory. Questions should be directed to the person who signed this report.

Savannah Certifications and ID #s: A2LA: 0399.01; AL: 41450; ARDEQ: 88-0692; ARDOH; CA: 03217CA; CO; CT: PH0161; DE; FL: E87052; GA: 803; Guam; HI; IL: 200022; IN; IA: 353; KS: E-10322; KY EPPC: 90084; KY UST; LA DEQ: 30690; LA DHH: LA080008; ME: 2008022; MD: 250; MA: M-GA006; MI: 9925; MS; NFESC: 249; NV: GA00006; NJ: GA769; NM; NY: 10842; NC DWQ: 269; NC DHHS: 13701; PA: 68-00474; PR: GA00006; RI: LAO00244; SC: 98001001; TN: TN0296; TX: T104704185; USEPA: GA00006; VT: VT-87052; VA: 00302; WA; WV DEP: 094; WV DHHR: 9950 C; WI DNR: 999819810; WY/EPAR8: 8TMS-Q

**TestAmerica Laboratories, Inc.**
TestAmerica Savannah 5102 LaRoche Avenue, Savannah, GA 31404
Tel (912) 354-7858 Fax (912) 352-0165 www.testamericainc.com

ACCREDITED IN ACCORDANCE WITH nelac

**Receipt**
All samples were received in good condition within temperature requirements.

**GC Semi VOA**
Method(s) 8081A_8082: Two surrogates are used for this analysis. The laboratory's SOP allows one of these surrogates to be outside acceptance criteria without performing re-extraction/re-analysis. The following sample(s) contained an allowable number of surrogate compounds outside limits: Field Blank-1 (680-56559-6). These results have been reported and qualified.

Method(s) 8081A_8082: Sample OWR-5D (680-56559-1 MS), OWR-5D (680-56559-1 MSD) was diluted due to the abundance of target analyte. As such, surrogate and spike recoveries are not reported.

No other analytical or quality issues were noted.

**Organic Prep**
No analytical or quality issues were noted.

**Comments**
The report was revised on April 14, 2010 to report addtional dilutions for samples OWR-5D (680-56559-1) and OWR-5D-DUP (680-56559-4) for PCB-1221 results estimated (flagged E) in the initial analysis of the samples.

The report was further revised on April 14, 2010 to correct the PCB reporting limits on the aqeuous samples which were erroneously reported at an incorrect reporting limit based on the final sample volume.

The report was again revised on April 20, 2010 per client request to add Arochlor 1268 to the target reporting list for Method 8082.

Results for Method 680 PCB Homolog results will be submitted following completion in the report for job series 680-56559-2 .

# METHOD SUMMARY

Client: Golder Associates Inc. Job Number: 680-56559-1

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix: Water** | | | |
| Organochlorine Pesticides & PCBs (GC) | TAL SAV | SW846 8081A_8082 | |
| Liquid-Liquid Extraction (Continuous) | TAL SAV | | SW846 3520C |

**Lab References:**

TAL SAV = TestAmerica Savannah

**Method References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Golder Associates Inc. Job Number: 680-56559-1

| Method | Analyst | Analyst ID |
|---|---|---|
| SW846 8081A_8082 | Smith, Crystal | CAS |

## SAMPLE SUMMARY

Client: Golder Associates Inc. Job Number: 680-56559-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 680-56559-1 | OWR-5D | Water | 04/07/2010 1650 | 04/08/2010 1020 |
| 680-56559-1MS | OWR-5D | Water | 04/07/2010 1650 | 04/08/2010 1020 |
| 680-56559-1MSD | OWR-5D | Water | 04/07/2010 1650 | 04/08/2010 1020 |
| 680-56559-2 | OWR-5DF 2u | Water | 04/07/2010 1650 | 04/08/2010 1020 |
| 680-56559-3 | OWR-5DF 0.1u | Water | 04/07/2010 1650 | 04/08/2010 1020 |
| 680-56559-4 | OWR-5D-DUP | Water | 04/07/2010 1650 | 04/08/2010 1020 |
| 680-56559-5 | EB-1 | Water | 04/07/2010 1430 | 04/08/2010 1020 |
| 680-56559-6 | Field Blank-1 | Water | 04/07/2010 1600 | 04/08/2010 1020 |

# SAMPLE RESULTS

Client: Golder Associates Inc.

Job Number: 680-56559-1

**Client Sample ID:** **OWR-5D**

Lab Sample ID: 680-56559-1
Client Matrix: Water

Date Sampled: 04/07/2010 1650
Date Received: 04/08/2010 1020

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165500 | Instrument ID: SGJ |
| Preparation: | 3520C | Prep Batch: 680-165308 | Initial Weight/Volume: 1010 mL |
| Dilution: | 10 | | Final Weight/Volume: 10 mL |
| Date Analyzed: | 04/12/2010 2144 | | Injection Volume: 2 uL |
| Date Prepared: | 04/09/2010 1703 | | Result Type: PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <9.9 | | 0.70 | 9.9 |
| PCB-1221 | 200 | E p | 2.8 | 20 |
| PCB-1232 | 64 | | 1.1 | 9.9 |
| PCB-1242 | <9.9 | | 1.8 | 9.9 |
| PCB-1248 | <9.9 | | 3.6 | 9.9 |
| PCB-1254 | <9.9 | | 2.6 | 9.9 |
| PCB-1260 | <9.9 | | 2.0 | 9.9 |
| PCB-1268 | <9.9 | | 2.6 | 9.9 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| *Tetrachloro-m-xylene* | *0* | *D* | *35 - 120* |
| DCB Decachlorobiphenyl | 0 | D | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-56559-1

**Client Sample ID:** **OWR-5D**

Lab Sample ID: 680-56559-1
Client Matrix: Water

Date Sampled: 04/07/2010 1650
Date Received: 04/08/2010 1020

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165500 | Instrument ID: SGJ |
| Preparation: | 3520C | Prep Batch: 680-165308 | Initial Weight/Volume: 1010 mL |
| Dilution: | 10 | | Final Weight/Volume: 10 mL |
| Date Analyzed: | 04/12/2010 2144 | | Injection Volume: 2 uL |
| Date Prepared: | 04/09/2010 1703 | | Result Type: SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 0 | D | 35 - 120 |
| DCB Decachlorobiphenyl | 0 | D | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-56559-1

**Client Sample ID:** **OWR-5D**

Lab Sample ID: 680-56559-1
Client Matrix: Water

Date Sampled: 04/07/2010 1650
Date Received: 04/08/2010 1020

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165572 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-165308 | | Initial Weight/Volume: | 1010 mL |
| Dilution: | 25 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 04/13/2010 1328 | Run Type: | DL | Injection Volume: | 2 uL |
| Date Prepared: | 04/09/2010 1703 | | | Result Type: | SECONDARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <25 | | 1.8 | 25 |
| PCB-1221 | 400 | D | 6.9 | 50 |
| PCB-1232 | 26 | D p | 2.7 | 25 |
| PCB-1242 | <25 | | 4.5 | 25 |
| PCB-1248 | <25 | | 8.9 | 25 |
| PCB-1254 | <25 | | 6.4 | 25 |
| PCB-1260 | <25 | | 5.0 | 25 |
| PCB-1268 | <25 | | 6.4 | 25 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| *Tetrachloro-m-xylene* | *0* | *D* | *35 - 120* |
| Tetrachloro-m-xylene | 0 | D | 35 - 120 |
| DCB Decachlorobiphenyl | 0 | D | 14 - 115 |
| DCB Decachlorobiphenyl | 0 | D | 14 - 115 |

Client: Golder Associates Inc. Job Number: 680-56559-1

**Client Sample ID:** **OWR-5DF 2u**

Lab Sample ID: 680-56559-2 Date Sampled: 04/07/2010 1650
Client Matrix: Water Date Received: 04/08/2010 1020

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165500 | | Instrument ID: | SGJ |
| Preparation: | 3520C | Prep Batch: 680-165308 | | Initial Weight/Volume: | 1030 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 04/12/2010 2207 | | | Injection Volume: | 2 uL |
| Date Prepared: | 04/09/2010 1703 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <0.97 | | 0.069 | 0.97 |
| PCB-1221 | <1.9 | | 0.27 | 1.9 |
| PCB-1232 | <0.97 | | 0.11 | 0.97 |
| PCB-1242 | <0.97 | | 0.17 | 0.97 |
| PCB-1248 | <0.97 | | 0.35 | 0.97 |
| PCB-1254 | <0.97 | | 0.25 | 0.97 |
| PCB-1260 | <0.97 | | 0.19 | 0.97 |
| PCB-1268 | <0.97 | | 0.25 | 0.97 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 115 | p | 35 - 120 |
| DCB Decachlorobiphenyl | 94 | | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-56559-1

**Client Sample ID:** **OWR-5DF 2u**

Lab Sample ID: 680-56559-2
Client Matrix: Water

Date Sampled: 04/07/2010 1650
Date Received: 04/08/2010 1020

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165500 | Instrument ID: SGJ |
| Preparation: | 3520C | Prep Batch: 680-165308 | Initial Weight/Volume: 1030 mL |
| Dilution: | 1.0 | | Final Weight/Volume: 10 mL |
| Date Analyzed: | 04/12/2010 2207 | | Injection Volume: 2 uL |
| Date Prepared: | 04/09/2010 1703 | | Result Type: SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 248 | X | 35 - 120 |
| DCB Decachlorobiphenyl | 76 | | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-56559-1

**Client Sample ID:** **OWR-5DF 0.1u**

Lab Sample ID: 680-56559-3
Client Matrix: Water

Date Sampled: 04/07/2010 1650
Date Received: 04/08/2010 1020

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165500 | Instrument ID: SGJ |
| Preparation: | 3520C | Prep Batch: 680-165308 | Initial Weight/Volume: 1000 mL |
| Dilution: | 1.0 | | Final Weight/Volume: 10 mL |
| Date Analyzed: | 04/12/2010 2256 | | Injection Volume: 2 uL |
| Date Prepared: | 04/09/2010 1703 | | Result Type: PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <1.0 | | 0.071 | 1.0 |
| PCB-1221 | <2.0 | | 0.28 | 2.0 |
| PCB-1232 | <1.0 | | 0.11 | 1.0 |
| PCB-1242 | <1.0 | | 0.18 | 1.0 |
| PCB-1248 | <1.0 | | 0.36 | 1.0 |
| PCB-1254 | <1.0 | | 0.26 | 1.0 |
| PCB-1260 | <1.0 | | 0.20 | 1.0 |
| PCB-1268 | <1.0 | | 0.26 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 36 | p | 35 - 120 |
| DCB Decachlorobiphenyl | 28 | p | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-56559-1

**Client Sample ID:** **OWR-5DF 0.1u**

Lab Sample ID: 680-56559-3
Client Matrix: Water

Date Sampled: 04/07/2010 1650
Date Received: 04/08/2010 1020

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165500 | Instrument ID: SGJ |
| Preparation: | 3520C | Prep Batch: 680-165308 | Initial Weight/Volume: 1000 mL |
| Dilution: | 1.0 | | Final Weight/Volume: 10 mL |
| Date Analyzed: | 04/12/2010 2256 | | Injection Volume: 2 uL |
| Date Prepared: | 04/09/2010 1703 | | Result Type: SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 60 | | 35 - 120 |
| DCB Decachlorobiphenyl | 56 | | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-56559-1

**Client Sample ID:** **OWR-5D-DUP**

Lab Sample ID: 680-56559-4
Client Matrix: Water

Date Sampled: 04/07/2010 1650
Date Received: 04/08/2010 1020

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165500 | Instrument ID: SGJ |
| Preparation: | 3520C | Prep Batch: 680-165308 | Initial Weight/Volume: 1020 mL |
| Dilution: | 10 | | Final Weight/Volume: 10 mL |
| Date Analyzed: | 04/13/2010 0010 | | Injection Volume: 2 uL |
| Date Prepared: | 04/09/2010 1703 | | Result Type: PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <9.8 | | 0.70 | 9.8 |
| PCB-1221 | 220 | E p | 2.7 | 20 |
| PCB-1232 | 37 | p | 1.1 | 9.8 |
| PCB-1242 | <9.8 | | 1.8 | 9.8 |
| PCB-1248 | <9.8 | | 3.5 | 9.8 |
| PCB-1254 | <9.8 | | 2.5 | 9.8 |
| PCB-1260 | <9.8 | | 2.0 | 9.8 |
| PCB-1268 | <9.8 | | 2.5 | 9.8 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| *Tetrachloro-m-xylene* | *0* | *D* | *35 - 120* |
| DCB Decachlorobiphenyl | 0 | D | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-56559-1

**Client Sample ID:** **OWR-5D-DUP**

Lab Sample ID: 680-56559-4
Client Matrix: Water

Date Sampled: 04/07/2010 1650
Date Received: 04/08/2010 1020

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165500 | Instrument ID: SGJ |
| Preparation: | 3520C | Prep Batch: 680-165308 | Initial Weight/Volume: 1020 mL |
| Dilution: | 10 | | Final Weight/Volume: 10 mL |
| Date Analyzed: | 04/13/2010 0010 | | Injection Volume: 2 uL |
| Date Prepared: | 04/09/2010 1703 | | Result Type: SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 0 | D | 35 - 120 |
| DCB Decachlorobiphenyl | 0 | D | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-56559-1

**Client Sample ID:** **OWR-5D-DUP**

Lab Sample ID: 680-56559-4
Client Matrix: Water

Date Sampled: 04/07/2010 1650
Date Received: 04/08/2010 1020

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165572 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-165308 | | Initial Weight/Volume: | 1020 mL |
| Dilution: | 25 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 04/13/2010 1347 | Run Type: | DL | Injection Volume: | 2 uL |
| Date Prepared: | 04/09/2010 1703 | | | Result Type: | SECONDARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <25 | | 1.7 | 25 |
| PCB-1221 | 410 | D | 6.9 | 49 |
| PCB-1232 | 35 | D p | 2.7 | 25 |
| PCB-1242 | <25 | | 4.4 | 25 |
| PCB-1248 | <25 | | 8.8 | 25 |
| PCB-1254 | <25 | | 6.4 | 25 |
| PCB-1260 | <25 | | 4.9 | 25 |
| PCB-1268 | <25 | | 6.4 | 25 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| *Tetrachloro-m-xylene* | *0* | *D* | *35 - 120* |
| Tetrachloro-m-xylene | 0 | D | 35 - 120 |
| DCB Decachlorobiphenyl | 0 | D | 14 - 115 |
| DCB Decachlorobiphenyl | 0 | D | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-56559-1

**Client Sample ID:** **EB-1**

Lab Sample ID: 680-56559-5
Client Matrix: Water

Date Sampled: 04/07/2010 1430
Date Received: 04/08/2010 1020

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165500 | Instrument ID: SGJ |
| Preparation: | 3520C | Prep Batch: 680-165308 | Initial Weight/Volume: 1030 mL |
| Dilution: | 1.0 | | Final Weight/Volume: 10 mL |
| Date Analyzed: | 04/13/2010 0034 | | Injection Volume: 2 uL |
| Date Prepared: | 04/09/2010 1703 | | Result Type: PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <0.97 | | 0.069 | 0.97 |
| PCB-1221 | <1.9 | | 0.27 | 1.9 |
| PCB-1232 | <0.97 | | 0.11 | 0.97 |
| PCB-1242 | <0.97 | | 0.17 | 0.97 |
| PCB-1248 | <0.97 | | 0.35 | 0.97 |
| PCB-1254 | <0.97 | | 0.25 | 0.97 |
| PCB-1260 | <0.97 | | 0.19 | 0.97 |
| PCB-1268 | <0.97 | | 0.25 | 0.97 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 59 | | 35 - 120 |
| DCB Decachlorobiphenyl | 65 | | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-56559-1

**Client Sample ID:** **EB-1**

Lab Sample ID: 680-56559-5
Client Matrix: Water

Date Sampled: 04/07/2010 1430
Date Received: 04/08/2010 1020

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165500 | Instrument ID: SGJ |
| Preparation: | 3520C | Prep Batch: 680-165308 | Initial Weight/Volume: 1030 mL |
| Dilution: | 1.0 | | Final Weight/Volume: 10 mL |
| Date Analyzed: | 04/13/2010 0034 | | Injection Volume: 2 uL |
| Date Prepared: | 04/09/2010 1703 | | Result Type: SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 57 | | 35 - 120 |
| DCB Decachlorobiphenyl | 44 | | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-56559-1

**Client Sample ID:** **Field Blank-1**

Lab Sample ID: 680-56559-6
Client Matrix: Water

Date Sampled: 04/07/2010 1600
Date Received: 04/08/2010 1020

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165500 | Instrument ID: SGJ |
| Preparation: | 3520C | Prep Batch: 680-165308 | Initial Weight/Volume: 1010 mL |
| Dilution: | 1.0 | | Final Weight/Volume: 10 mL |
| Date Analyzed: | 04/13/2010 0057 | | Injection Volume: 2 uL |
| Date Prepared: | 04/09/2010 1703 | | Result Type: PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <0.99 | | 0.070 | 0.99 |
| PCB-1221 | <2.0 | | 0.28 | 2.0 |
| PCB-1232 | <0.99 | | 0.11 | 0.99 |
| PCB-1242 | <0.99 | | 0.18 | 0.99 |
| PCB-1248 | <0.99 | | 0.36 | 0.99 |
| PCB-1254 | <0.99 | | 0.26 | 0.99 |
| PCB-1260 | <0.99 | | 0.20 | 0.99 |
| PCB-1268 | <0.99 | | 0.26 | 0.99 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| *Tetrachloro-m-xylene* | *26* | *X* | *35 - 120* |
| DCB Decachlorobiphenyl | 45 | | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-56559-1

**Client Sample ID:** **Field Blank-1**

Lab Sample ID: 680-56559-6
Client Matrix: Water

Date Sampled: 04/07/2010 1600
Date Received: 04/08/2010 1020

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165500 | Instrument ID: SGJ |
| Preparation: | 3520C | Prep Batch: 680-165308 | Initial Weight/Volume: 1010 mL |
| Dilution: | 1.0 | | Final Weight/Volume: 10 mL |
| Date Analyzed: | 04/13/2010 0057 | | Injection Volume: 2 uL |
| Date Prepared: | 04/09/2010 1703 | | Result Type: SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 26 | X | 35 - 120 |
| DCB Decachlorobiphenyl | 34 | | 14 - 115 |

## DATA REPORTING QUALIFIERS

Client: Golder Associates Inc. Job Number: 680-56559-1

| Lab Section | Qualifier | Description |
|---|---|---|
| GC Semi VOA | | |
| | F | MS or MSD exceeds the control limits |
| | E | Result exceeded calibration range. |
| | X | Surrogate is outside control limits |
| | D | Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D. |
| | p | The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported. |

# QUALITY CONTROL RESULTS

Client: Golder Associates Inc. Job Number: 680-56559-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC Semi VOA** | | | | | |
| **Prep Batch: 680-165308** | | | | | |
| LCS 680-165308/22-A | Lab Control Sample | T | Water | 3520C | |
| MB 680-165308/21-A | Method Blank | T | Water | 3520C | |
| 680-56559-1 | OWR-5D | T | Water | 3520C | |
| 680-56559-1DL | OWR-5D | T | Water | 3520C | |
| 680-56559-1MS | Matrix Spike | T | Water | 3520C | |
| 680-56559-1MSD | Matrix Spike Duplicate | T | Water | 3520C | |
| 680-56559-2 | OWR-5DF 2u | T | Water | 3520C | |
| 680-56559-3 | OWR-5DF 0.1u | T | Water | 3520C | |
| 680-56559-4 | OWR-5D-DUP | T | Water | 3520C | |
| 680-56559-4DL | OWR-5D-DUP | T | Water | 3520C | |
| 680-56559-5 | EB-1 | T | Water | 3520C | |
| 680-56559-6 | Field Blank-1 | T | Water | 3520C | |
| **Analysis Batch:680-165500** | | | | | |
| LCS 680-165308/22-A | Lab Control Sample | T | Water | 8081A_8082 | 680-165308 |
| MB 680-165308/21-A | Method Blank | T | Water | 8081A_8082 | 680-165308 |
| 680-56559-1 | OWR-5D | T | Water | 8081A_8082 | 680-165308 |
| 680-56559-1MS | Matrix Spike | T | Water | 8081A_8082 | 680-165308 |
| 680-56559-1MSD | Matrix Spike Duplicate | T | Water | 8081A_8082 | 680-165308 |
| 680-56559-2 | OWR-5DF 2u | T | Water | 8081A_8082 | 680-165308 |
| 680-56559-3 | OWR-5DF 0.1u | T | Water | 8081A_8082 | 680-165308 |
| 680-56559-4 | OWR-5D-DUP | T | Water | 8081A_8082 | 680-165308 |
| 680-56559-5 | EB-1 | T | Water | 8081A_8082 | 680-165308 |
| 680-56559-6 | Field Blank-1 | T | Water | 8081A_8082 | 680-165308 |
| **Analysis Batch:680-165572** | | | | | |
| 680-56559-1DL | OWR-5D | T | Water | 8081A_8082 | 680-165308 |
| 680-56559-4DL | OWR-5D-DUP | T | Water | 8081A_8082 | 680-165308 |

**Report Basis**
T = Total

Client: Golder Associates Inc.

Job Number: 680-56559-1

## Surrogate Recovery Report

**8081A_8082_Organochlorine Pesticides & PCBs (GC)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | TCX1 %Rec | TCX2 %Rec | DCB1 %Rec | DCB2 %Rec |
|---|---|---|---|---|---|
| 680-56559-1 | OWR-5D | 0D | 0D | 0D | 0D |
| 680-56559-1 DL | OWR-5D DL | 0D | 0D | 0D | 0D |
| 680-56559-2 | OWR-5DF 2u | 248X | 115p | 76 | 94 |
| 680-56559-3 | OWR-5DF 0.1u | 60 | 36p | 56 | 28p |
| 680-56559-4 | OWR-5D-DUP | 0D | 0D | 0D | 0D |
| 680-56559-4 DL | OWR-5D-DUP DL | 0D | 0D | 0D | 0D |
| 680-56559-5 | EB-1 | 57 | 59 | 65 | 44 |
| 680-56559-6 | Field Blank-1 | 26X | 26X | 45 | 34 |
| MB 680-165308/21-A | | 56 | 54 | 50 | 48 |
| LCS 680-165308/22-A | | 31X | 32X | 53 | 52 |
| 680-56559-1 MS | OWR-5D MS | 0D | 0D | 0D | 0D |
| 680-56559-1 MSD | OWR-5D MSD | 0D | 0D | 0D | 0D |

| Surrogate | Acceptance Limits |
|---|---|
| TCX = Tetrachloro-m-xylene | 35-120 |
| DCB = DCB Decachlorobiphenyl | 14-115 |

Client: Golder Associates Inc.

Job Number: 680-56559-1

**Method Blank - Batch: 680-165308**

**Method: 8081A_8082**
**Preparation: 3520C**

Lab Sample ID: MB 680-165308/21-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 04/12/2010 1805
Date Prepared: 04/09/2010 1703

Analysis Batch: 680-165500
Prep Batch: 680-165308
Units: ug/L

Instrument ID: SGJ
Lab File ID: jd12014.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <1.0 | | 0.071 | 1.0 |
| PCB-1221 | <2.0 | | 0.28 | 2.0 |
| PCB-1232 | <1.0 | | 0.11 | 1.0 |
| PCB-1242 | <1.0 | | 0.18 | 1.0 |
| PCB-1248 | <1.0 | | 0.36 | 1.0 |
| PCB-1254 | <1.0 | | 0.26 | 1.0 |
| PCB-1260 | <1.0 | | 0.20 | 1.0 |
| PCB-1268 | <1.0 | | 0.26 | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 56 | 35 - 120 |
| DCB Decachlorobiphenyl | 50 | 14 - 115 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 54 | 35 - 120 |
| DCB Decachlorobiphenyl | 48 | 14 - 115 |

**Lab Control Sample - Batch: 680-165308**

**Method: 8081A_8082**
**Preparation: 3520C**

Lab Sample ID: LCS 680-165308/22-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 04/12/2010 1830
Date Prepared: 04/09/2010 1703

Analysis Batch: 680-165500
Prep Batch: 680-165308
Units: ug/L

Instrument ID: SGJ
Lab File ID: jd12015.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| PCB-1016 | 10.0 | 6.63 | 66 | 57 - 124 | |
| PCB-1260 | 10.0 | 8.22 | 82 | 58 - 124 | |

| Surrogate | % Rec | | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 32 | X | 35 - 120 |
| DCB Decachlorobiphenyl | 53 | | 14 - 115 |

| Surrogate | % Rec | | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 31 | X | 35 - 120 |
| DCB Decachlorobiphenyl | 52 | | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-56559-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-165308**

**Method: 8081A_8082**
**Preparation: 3520C**

| | | | |
|---|---|---|---|
| MS Lab Sample ID: | 680-56559-1 | Analysis Batch: 680-165500 | Instrument ID: SGJ |
| Client Matrix: | Water | Prep Batch: 680-165308 | Lab File ID: jd12034.d |
| Dilution: | 10 | | Initial Weight/Volume: 1000 mL |
| Date Analyzed: | 04/13/2010 0209 | | Final Weight/Volume: 10 mL |
| Date Prepared: | 04/09/2010 1703 | | Injection Volume: 2 uL |
| | | | Column ID: PRIMARY |
| MSD Lab Sample ID: | 680-56559-1 | Analysis Batch: 680-165500 | Instrument ID: SGJ |
| Client Matrix: | Water | Prep Batch: 680-165308 | Lab File ID: jd12036.d |
| Dilution: | 10 | | Initial Weight/Volume: 1000 mL |
| Date Analyzed: | 04/13/2010 0258 | | Final Weight/Volume: 10 mL |
| Date Prepared: | 04/09/2010 1703 | | Injection Volume: 2 uL |
| | | | Column ID: PRIMARY |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| PCB-1016 | 0 | 0 | 57 - 124 | NC | 40 | F | F |
| PCB-1260 | 0 | 0 | 58 - 124 | NC | 40 | F | F |

| Surrogate | MS % Rec | | MSD % Rec | | Acceptance Limits |
|---|---|---|---|---|---|
| Tetrachloro-m-xylene | 0 | D | 0 | D | 35 - 120 |
| DCB Decachlorobiphenyl | 0 | D | 0 | D | 14 - 115 |

| Surrogate | MS % Rec | | MSD % Rec | | Acceptance Limits |
|---|---|---|---|---|---|
| Tetrachloro-m-xylene | 0 | D | 0 | D | 35 - 120 |
| DCB Decachlorobiphenyl | 0 | D | 0 | D | 14 - 115 |

Serial Number 009041

# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING


✓ TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

○ Alternate Laboratory Name/Location
Phone:
Fax:


| PROJECT REFERENCE | PROJECT NO. | PROJECT LOCATION (STATE) |
|---|---|---|
| SOWTIA | | AL |
| TAL (LAB) PROJECT MANAGER | P.O. NUMBER | CONTRACT NO. |
| CLIENT (SITE) PM: Tim Richards / Steve Mueller | CLIENT PHONE | CLIENT FAX |
| CLIENT NAME: Golder Associates | CLIENT E-MAIL: jking@golder.com | |
| CLIENT ADDRESS: 9428 Baymeadows Rd Suite 400 Jacksonville FL 32256 | | |
| COMPANY CONTRACTING THIS WORK (if applicable) | | |

PAGE 27 OF 30

STANDARD REPORT DELIVERY ○
DATE DUE
EXPEDITED REPORT DELIVERY (SURCHARGE) ○
DATE DUE
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

| SAMPLE DATE | SAMPLE TIME | SAMPLE IDENTIFICATION | MATRIX: COMPOSITE (C) OR GRAB (G) INDICATE | AQUEOUS (WATER) | SOLID OR SEMISOLID | AIR | NONAQUEOUS LIQUID (OIL, SOLVENT, ...) | REQUIRED ANALYSIS: PCBs Aroclor | PCBs Homologs | NUMBER OF CONTAINERS SUBMITTED: 1 | 1 PRESERVATIVE | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4/7/10 | 1650 | OWR-5D | G | | | | ✓ | 1/2 | 1/2 | | | |
| | 1650 | OWR-5DF 2µ | G | | | | ✓ | 1/2 | 1/2 | | | |
| | 1650 | OWR-5DF 0.1µ | G | | | | ✓ | 1/2 | 1/2 | | | |
| | 1650 | OWR-5D-DUP | G | | | | ✓ | 1 | 1 | | | |
| | 1430 | EB-1 | G | | | | ✓ | 1 | 1 | | | |
| | 1600 | FIELD BLANK-1 | G | | | | ✓ | 1 | 1 | | | |
| | 1650 | MS | G | | | | ✓ | 1 | 1 | | | |
| | 1650 | MSD | G | | | | ✓ | 1 | 1 | | | |

| RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME |
|---|---|---|---|---|---|---|---|---|
| | 4/8/10 | 1020 | | | | | | |
| RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME |
| | | | | | | | | |

LABORATORY USE ONLY

| RECEIVED FOR LABORATORY BY: (SIGNATURE) | DATE | TIME | CUSTODY INTACT | CUSTODY SEAL NO. | SAVANNAH LOG NO. | LABORATORY REMARKS |
|---|---|---|---|---|---|---|
| Ruth A Oughtry | 4/8/10 | 1020 | YES ○ NO ○ | | 680-56559 | Temp 0.6/0.8/0.6 |

TAL8240-680 (1207)

# Login Sample Receipt Check List

Client: Golder Associates Inc.

Job Number: 680-56559-1

**Login Number: 56559**

**List Source: TestAmerica Savannah**

**Creator: Daughtry, Beth**

**List Number: 1**

| Question | T / F/ NA | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | N/A | |
| The cooler's custody seal, if present, is intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| There are no discrepancies between the sample IDs on the containers and the COC. | True | |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | N/A | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True | |
| Multiphasic samples are not present. | N/A | |
| Samples do not require splitting or compositing. | N/A | |
| Is the Field Sampler's name present on COC? | N/A | |
| Sample Preservation Verified | True | |

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

Job Number: 680-56559-2

Job Description: Anniston Landfill Site

For:
Golder Associates Inc.
3730 Chamblee Tucker Road
Atlanta, GA 30341

Attention: Mr. Tim Richards

Approved for release.
Lidya Gulizia
Project Manager I
4/20/2010 5:41 PM

Lidya Gulizia
Project Manager I
lidya.gulizia@testamericainc.com
04/20/2010

cc: Mr. Steve Moeller

The test results in this report meet NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted. Results pertain only to samples listed in this report. This report may not be reproduced, except in full, without the written approval of the laboratory. Questions should be directed to the person who signed this report.

Savannah Certifications and ID #s: A2LA: 0399.01; AL: 41450; ARDEQ: 88-0692; ARDOH; CA: 03217CA; CO; CT: PH0161; DE; FL: E87052; GA: 803; Guam; HI; IL: 200022; IN; IA: 353; KS: E-10322; KY EPPC: 90084; KY UST; LA DEQ: 30690; LA DHH: LA080008; ME: 2008022; MD: 250; MA: M-GA006; MI: 9925; MS; NFESC: 249; NV: GA00006; NJ: GA769; NM; NY: 10842; NC DWQ: 269; NC DHHS: 13701; PA: 68-00474; PR: GA00006; RI: LAO00244; SC: 98001001; TN: TN0296; TX: T104704185; USEPA: GA00006; VT: VT-87052; VA: 00302; WA; WV DEP: 094; WV DHHR: 9950 C; WI DNR: 999819810; WY/EPAR8: 8TMS-Q

**Receipt**
All samples were received in good condition within temperature requirements.

**GC/MS Semi VOA**
Method(s) 680: Sample OWR-5D (680-56559-1), OWR-5D-DUP (680-56559-4) was diluted due to the abundance of target analytes As such, surrogate recoveries are not reported, and elevated reporting limits (RLs) are provided.

Method(s) 680: Matrix spikes for batch 165312 could not be recovered due to sample target abundances which required sample dilution. The associated laboratory control sample (LCS) met acceptance criteria. The matrix spike sample analyses were cancelled based on this information.

No other analytical or quality issues were noted.

**Comments**
No additional comments.

# METHOD SUMMARY

Client: Golder Associates Inc.

Job Number: 680-56559-2

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix: Water** | | | |
| Polychlorinated Biphenyls (PCBs) (GC/MS) | TAL SAV | EPA 680 | |
| Liquid-Liquid Extraction (Separatory Funnel) | TAL SAV | | EPA 680 |

**Lab References:**

TAL SAV = TestAmerica Savannah

**Method References:**

EPA = US Environmental Protection Agency

## METHOD / ANALYST SUMMARY

Client: Golder Associates Inc. Job Number: 680-56559-2

| Method | Analyst | Analyst ID |
|---|---|---|
| EPA 680 | Chamberlain, Kim | KAC |

## SAMPLE SUMMARY

Client: Golder Associates Inc. Job Number: 680-56559-2

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 680-56559-1 | OWR-5D | Water | 04/07/2010 1650 | 04/08/2010 1020 |
| 680-56559-2 | OWR-5DF 2u | Water | 04/07/2010 1650 | 04/08/2010 1020 |
| 680-56559-3 | OWR-5DF 0.1u | Water | 04/07/2010 1650 | 04/08/2010 1020 |
| 680-56559-4 | OWR-5D-DUP | Water | 04/07/2010 1650 | 04/08/2010 1020 |
| 680-56559-5 | EB-1 | Water | 04/07/2010 1430 | 04/08/2010 1020 |
| 680-56559-6 | Field Blank-1 | Water | 04/07/2010 1600 | 04/08/2010 1020 |

# SAMPLE RESULTS

Client: Golder Associates Inc.

Job Number: 680-56559-2

**Client Sample ID:** **OWR-5D**

Lab Sample ID: 680-56559-1
Client Matrix: Water

Date Sampled: 04/07/2010 1650
Date Received: 04/08/2010 1020

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 680 | Analysis Batch: 680-165611 | | Instrument ID: | MSF |
| Preparation: | 680 | Prep Batch: 680-165312 | | Lab File ID: | N/A |
| Dilution: | 100 | | | Initial Weight/Volume: | 1020 mL |
| Date Analyzed: | 04/13/2010 2017 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 04/09/2010 1703 | | | Injection Volume: | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Monochlorobiphenyl | 460 | | 0.55 | 9.8 |
| Dichlorobiphenyl | 120 | | 0.53 | 9.8 |
| Trichlorobiphenyl | 16 | | 0.64 | 9.8 |
| Tetrachlorobiphenyl | <20 | | 1.3 | 20 |
| Pentachlorobiphenyl | <20 | | 1.4 | 20 |
| Hexachlorobiphenyl | <20 | | 1.5 | 20 |
| Heptachlorobiphenyl | <29 | | 2.9 | 29 |
| Octachlorobiphenyl | <29 | | 3.7 | 29 |
| Nonachlorobiphenyl | <49 | | 4.8 | 49 |
| DCB Decachlorobiphenyl | <49 | | 6.9 | 49 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl-13C12 | 0 | D | 25 - 113 |

Client: Golder Associates Inc.

Job Number: 680-56559-2

**Client Sample ID:** **OWR-5DF 2u**

Lab Sample ID: 680-56559-2
Client Matrix: Water

Date Sampled: 04/07/2010 1650
Date Received: 04/08/2010 1020

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

| | | | |
|---|---|---|---|
| Method: | 680 | Analysis Batch: 680-165611 | Instrument ID: MSF |
| Preparation: | 680 | Prep Batch: 680-165312 | Lab File ID: N/A |
| Dilution: | 1.0 | | Initial Weight/Volume: 1000 mL |
| Date Analyzed: | 04/13/2010 2049 | | Final Weight/Volume: 1 mL |
| Date Prepared: | 04/09/2010 1703 | | Injection Volume: |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Monochlorobiphenyl | 2.4 | | 0.0056 | 0.10 |
| Dichlorobiphenyl | 0.22 | | 0.0054 | 0.10 |
| Trichlorobiphenyl | <0.10 | | 0.0065 | 0.10 |
| Tetrachlorobiphenyl | <0.20 | | 0.013 | 0.20 |
| Pentachlorobiphenyl | <0.20 | | 0.014 | 0.20 |
| Hexachlorobiphenyl | <0.20 | | 0.015 | 0.20 |
| Heptachlorobiphenyl | <0.30 | | 0.030 | 0.30 |
| Octachlorobiphenyl | <0.30 | | 0.038 | 0.30 |
| Nonachlorobiphenyl | <0.50 | | 0.049 | 0.50 |
| DCB Decachlorobiphenyl | <0.50 | | 0.070 | 0.50 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl-13C12 | 82 | | 25 - 113 |

Client: Golder Associates Inc.

Job Number: 680-56559-2

**Client Sample ID:** **OWR-5DF 0.1u**

Lab Sample ID: 680-56559-3
Client Matrix: Water

Date Sampled: 04/07/2010 1650
Date Received: 04/08/2010 1020

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

| | | | |
|---|---|---|---|
| Method: | 680 | Analysis Batch: 680-165611 | Instrument ID: MSF |
| Preparation: | 680 | Prep Batch: 680-165312 | Lab File ID: N/A |
| Dilution: | 1.0 | | Initial Weight/Volume: 1010 mL |
| Date Analyzed: | 04/13/2010 2122 | | Final Weight/Volume: 1 mL |
| Date Prepared: | 04/09/2010 1703 | | Injection Volume: |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Monochlorobiphenyl | <0.099 | | 0.0055 | 0.099 |
| Dichlorobiphenyl | 0.012 | J | 0.0053 | 0.099 |
| Trichlorobiphenyl | <0.099 | | 0.0064 | 0.099 |
| Tetrachlorobiphenyl | <0.20 | | 0.013 | 0.20 |
| Pentachlorobiphenyl | <0.20 | | 0.014 | 0.20 |
| Hexachlorobiphenyl | <0.20 | | 0.015 | 0.20 |
| Heptachlorobiphenyl | <0.30 | | 0.030 | 0.30 |
| Octachlorobiphenyl | <0.30 | | 0.038 | 0.30 |
| Nonachlorobiphenyl | <0.50 | | 0.049 | 0.50 |
| DCB Decachlorobiphenyl | <0.50 | | 0.069 | 0.50 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl-13C12 | 76 | | 25 - 113 |

Client: Golder Associates Inc. Job Number: 680-56559-2

**Client Sample ID:** **OWR-5D-DUP**

Lab Sample ID: 680-56559-4 Date Sampled: 04/07/2010 1650
Client Matrix: Water Date Received: 04/08/2010 1020

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 680 | Analysis Batch: 680-165611 | | Instrument ID: | MSF |
| Preparation: | 680 | Prep Batch: 680-165312 | | Lab File ID: | N/A |
| Dilution: | 100 | | | Initial Weight/Volume: | 1015 mL |
| Date Analyzed: | 04/13/2010 2154 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 04/09/2010 1703 | | | Injection Volume: | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Monochlorobiphenyl | 470 | | 0.55 | 9.9 |
| Dichlorobiphenyl | 110 | | 0.53 | 9.9 |
| Trichlorobiphenyl | <9.9 | | 0.64 | 9.9 |
| Tetrachlorobiphenyl | <20 | | 1.3 | 20 |
| Pentachlorobiphenyl | <20 | | 1.4 | 20 |
| Hexachlorobiphenyl | <20 | | 1.5 | 20 |
| Heptachlorobiphenyl | <30 | | 3.0 | 30 |
| Octachlorobiphenyl | <30 | | 3.7 | 30 |
| Nonachlorobiphenyl | <49 | | 4.8 | 49 |
| DCB Decachlorobiphenyl | <49 | | 6.9 | 49 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl-13C12 | 0 | D | 25 - 113 |

Client: Golder Associates Inc.

Job Number: 680-56559-2

**Client Sample ID:** **EB-1**

Lab Sample ID: 680-56559-5
Client Matrix: Water

Date Sampled: 04/07/2010 1430
Date Received: 04/08/2010 1020

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

| | | | |
|---|---|---|---|
| Method: | 680 | Analysis Batch: 680-165611 | Instrument ID: | MSF |
| Preparation: | 680 | Prep Batch: 680-165312 | Lab File ID: | N/A |
| Dilution: | 1.0 | | Initial Weight/Volume: | 1030 mL |
| Date Analyzed: | 04/13/2010 2226 | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 04/09/2010 1703 | | Injection Volume: | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Monochlorobiphenyl | 0.54 | | 0.0054 | 0.097 |
| Dichlorobiphenyl | 0.11 | | 0.0052 | 0.097 |
| Trichlorobiphenyl | <0.097 | | 0.0063 | 0.097 |
| Tetrachlorobiphenyl | <0.19 | | 0.013 | 0.19 |
| Pentachlorobiphenyl | <0.19 | | 0.014 | 0.19 |
| Hexachlorobiphenyl | <0.19 | | 0.015 | 0.19 |
| Heptachlorobiphenyl | <0.29 | | 0.029 | 0.29 |
| Octachlorobiphenyl | <0.29 | | 0.037 | 0.29 |
| Nonachlorobiphenyl | <0.49 | | 0.048 | 0.49 |
| DCB Decachlorobiphenyl | <0.49 | | 0.068 | 0.49 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl-13C12 | 80 | | 25 - 113 |

Client: Golder Associates Inc.

Job Number: 680-56559-2

**Client Sample ID:** **Field Blank-1**

Lab Sample ID: 680-56559-6
Client Matrix: Water

Date Sampled: 04/07/2010 1600
Date Received: 04/08/2010 1020

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 680 | Analysis Batch: 680-165611 | | Instrument ID: | MSF |
| Preparation: | 680 | Prep Batch: 680-165312 | | Lab File ID: | N/A |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1040 mL |
| Date Analyzed: | 04/13/2010 2259 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 04/09/2010 1703 | | | Injection Volume: | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Monochlorobiphenyl | <0.096 | | 0.0054 | 0.096 |
| Dichlorobiphenyl | <0.096 | | 0.0052 | 0.096 |
| Trichlorobiphenyl | <0.096 | | 0.0062 | 0.096 |
| Tetrachlorobiphenyl | <0.19 | | 0.012 | 0.19 |
| Pentachlorobiphenyl | <0.19 | | 0.013 | 0.19 |
| Hexachlorobiphenyl | <0.19 | | 0.014 | 0.19 |
| Heptachlorobiphenyl | <0.29 | | 0.029 | 0.29 |
| Octachlorobiphenyl | <0.29 | | 0.037 | 0.29 |
| Nonachlorobiphenyl | <0.48 | | 0.047 | 0.48 |
| DCB Decachlorobiphenyl | <0.48 | | 0.067 | 0.48 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl-13C12 | 73 | | 25 - 113 |

## DATA REPORTING QUALIFIERS

Client: Golder Associates Inc. Job Number: 680-56559-2

| Lab Section | Qualifier | Description |
|---|---|---|
| GC/MS Semi VOA | | |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| | D | Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D. |

# QUALITY CONTROL RESULTS

Client: Golder Associates Inc.

Job Number: 680-56559-2

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC/MS Semi VOA** | | | | | |
| **Prep Batch: 680-165312** | | | | | |
| LCS 680-165312/10-A | Lab Control Sample | T | Water | 680 | |
| MB 680-165312/9-A | Method Blank | T | Water | 680 | |
| 680-56559-1 | OWR-5D | T | Water | 680 | |
| 680-56559-2 | OWR-5DF 2u | T | Water | 680 | |
| 680-56559-3 | OWR-5DF 0.1u | T | Water | 680 | |
| 680-56559-4 | OWR-5D-DUP | T | Water | 680 | |
| 680-56559-5 | EB-1 | T | Water | 680 | |
| 680-56559-6 | Field Blank-1 | T | Water | 680 | |
| **Analysis Batch:680-165611** | | | | | |
| LCS 680-165312/10-A | Lab Control Sample | T | Water | 680 | 680-165312 |
| MB 680-165312/9-A | Method Blank | T | Water | 680 | 680-165312 |
| 680-56559-1 | OWR-5D | T | Water | 680 | 680-165312 |
| 680-56559-2 | OWR-5DF 2u | T | Water | 680 | 680-165312 |
| 680-56559-3 | OWR-5DF 0.1u | T | Water | 680 | 680-165312 |
| 680-56559-4 | OWR-5D-DUP | T | Water | 680 | 680-165312 |
| 680-56559-5 | EB-1 | T | Water | 680 | 680-165312 |
| 680-56559-6 | Field Blank-1 | T | Water | 680 | 680-165312 |

**Report Basis**
T = Total

Client: Golder Associates Inc.

Job Number: 680-56559-2

## Surrogate Recovery Report

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | 13DCB %Rec |
|---|---|---|
| 680-56559-1 | OWR-5D | 0D |
| 680-56559-2 | OWR-5DF 2u | 82 |
| 680-56559-3 | OWR-5DF 0.1u | 76 |
| 680-56559-4 | OWR-5D-DUP | 0D |
| 680-56559-5 | EB-1 | 80 |
| 680-56559-6 | Field Blank-1 | 73 |
| MB 680-165312/9-A | | 100 |
| LCS 680-165312/10-A | | 109 |

| Surrogate | Acceptance Limits |
|---|---|
| 13DCB = Decachlorobiphenyl-13C12 | 25-113 |

Client: Golder Associates Inc.

Job Number: 680-56559-2

**Method Blank - Batch: 680-165312**

**Method: 680**
**Preparation: 680**

Lab Sample ID: MB 680-165312/9-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 04/13/2010 1410
Date Prepared: 04/09/2010 1703

Analysis Batch: 680-165611
Prep Batch: 680-165312
Units: ug/L

Instrument ID: MSF
Lab File ID: N/A
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 1 mL
Injection Volume:

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Monochlorobiphenyl | <0.10 | | 0.0056 | 0.10 |
| Dichlorobiphenyl | <0.10 | | 0.0054 | 0.10 |
| Trichlorobiphenyl | <0.10 | | 0.0065 | 0.10 |
| Tetrachlorobiphenyl | <0.20 | | 0.013 | 0.20 |
| Pentachlorobiphenyl | <0.20 | | 0.014 | 0.20 |
| Hexachlorobiphenyl | <0.20 | | 0.015 | 0.20 |
| Heptachlorobiphenyl | <0.30 | | 0.030 | 0.30 |
| Octachlorobiphenyl | <0.30 | | 0.038 | 0.30 |
| Nonachlorobiphenyl | <0.50 | | 0.049 | 0.50 |
| DCB Decachlorobiphenyl | <0.50 | | 0.070 | 0.50 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Decachlorobiphenyl-13C12 | 100 | 25 - 113 |

**Lab Control Sample - Batch: 680-165312**

**Method: 680**
**Preparation: 680**

Lab Sample ID: LCS 680-165312/10-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 04/13/2010 1515
Date Prepared: 04/09/2010 1703

Analysis Batch: 680-165611
Prep Batch: 680-165312
Units: ug/L

Instrument ID: MSF
Lab File ID: N/A
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 1 mL
Injection Volume:

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Monochlorobiphenyl | 2.00 | 1.55 | 77 | 10 - 125 | |
| Dichlorobiphenyl | 2.00 | 1.75 | 88 | 10 - 110 | |
| Trichlorobiphenyl | 2.00 | 1.82 | 91 | 17 - 110 | |
| Tetrachlorobiphenyl | 4.00 | 3.63 | 91 | 18 - 110 | |
| Pentachlorobiphenyl | 4.00 | 3.95 | 99 | 34 - 110 | |
| Hexachlorobiphenyl | 4.00 | 3.85 | 96 | 31 - 110 | |
| Heptachlorobiphenyl | 6.00 | 5.92 | 99 | 33 - 110 | |
| Octachlorobiphenyl | 6.00 | 6.16 | 103 | 33 - 110 | |
| DCB Decachlorobiphenyl | 10.0 | 9.86 | 99 | 26 - 115 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Decachlorobiphenyl-13C12 | 109 | 25 - 113 |

Serial Number 009041

# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING


✓ TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

○ Alternate Laboratory Name/Location
Phone:
Fax:


| PROJECT REFERENCE | PROJECT NO. | PROJECT LOCATION (STATE) |
|---|---|---|
| SOWTIA | | AL |
| TAL (LAB) PROJECT MANAGER | P.O. NUMBER | CONTRACT NO. |
| CLIENT (SITE) PM: Tim Richards / Steve Mueller | CLIENT PHONE | CLIENT FAX |
| CLIENT NAME: Golder Associates | CLIENT E-MAIL: jking@golder.com | |
| CLIENT ADDRESS: 9428 Baymeadows Rd Suite 400 Jacksonville FL 32256 | | |
| COMPANY CONTRACTING THIS WORK (if applicable) | | |

PAGE 1 OF 1

STANDARD REPORT DELIVERY ○
DATE DUE
EXPEDITED REPORT DELIVERY (SURCHARGE) ○
DATE DUE

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

| SAMPLE DATE | SAMPLE TIME | SAMPLE IDENTIFICATION | MATRIX: COMPOSITE (C) OR GRAB (G) INDICATE | AQUEOUS (WATER) | SOLID OR SEMISOLID | AIR | NONAQUEOUS LIQUID (OIL, SOLVENT, ...) | REQUIRED ANALYSIS: PCBs Aroclor | PCBs Homologs | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | NUMBER OF CONTAINERS SUBMITTED | | | | | | 1 | 1 PRESERVATIVE | |
| 4/7/10 | 1650 | OWR-5D | G | | | | ✓ | 1/2 | 1/2 | |
| | 1650 | OWR-5DF 2µ | G | | | | ✓ | 1/2 | 1/2 | |
| | 1650 | OWR-5DF 0.1µ | G | | | | ✓ | 1/2 | 1/2 | |
| | 1650 | OWR-5D-DUP | G | | | | ✓ | 1 | 1 | |
| | 1430 | EB-1 | G | | | | ✓ | 1 | 1 | |
| | 1600 | FIELD BLANK-1 | G | | | | ✓ | 1 | 1 | |
| | 1650 | MS | G | | | | ✓ | 1 | 1 | |
| | 1650 | MSD | G | | | | ✓ | 1 | 1 | |

| RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME |
|---|---|---|---|---|---|---|---|---|
| | 4/8/10 | 1020 | | | | | | |
| RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME |
| | | | | | | | | |

LABORATORY USE ONLY

| RECEIVED FOR LABORATORY BY: (SIGNATURE) | DATE | TIME | CUSTODY INTACT | CUSTODY SEAL NO. | SAVANNAH LOG NO. | LABORATORY REMARKS |
|---|---|---|---|---|---|---|
| Ruth A Quigley | 4/8/10 | 1020 | YES ○ NO ○ | | 680-56559 | Temp 0.6/0.8/0.6 |

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TAL8240-680 (1207)

# Login Sample Receipt Check List

Client: Golder Associates Inc.

Job Number: 680-56559-2

**Login Number: 56559**

**List Source: TestAmerica Savannah**

**Creator: Daughtry, Beth**

**List Number: 1**

| Question | T / F/ NA | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | N/A | |
| The cooler's custody seal, if present, is intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| There are no discrepancies between the sample IDs on the containers and the COC. | True | |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | N/A | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True | |
| Multiphasic samples are not present. | N/A | |
| Samples do not require splitting or compositing. | N/A | |
| Is the Field Sampler's name present on COC? | N/A | |
| Sample Preservation Verified | True | |

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

Job Number: 680-56602-1

Job Description: Anniston Landfill Site

For:
Golder Associates Inc.
3730 Chamblee Tucker Road
Atlanta, GA 30341

Attention: Mr. Tim Richards

Approved for release.
Lidya Gulizia
Project Manager I
4/20/2010 5:27 PM

Lidya Gulizia
Project Manager I
lidya.gulizia@testamericainc.com
04/20/2010

cc: Mr. Steve Moeller

The test results in this report meet NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted. Results pertain only to samples listed in this report. This report may not be reproduced, except in full, without the written approval of the laboratory. Questions should be directed to the person who signed this report.

Savannah Certifications and ID #s: A2LA: 0399.01; AL: 41450; ARDEQ: 88-0692; ARDOH; CA: 03217CA; CO; CT: PH0161; DE; FL: E87052; GA: 803; Guam; HI; IL: 200022; IN; IA: 353; KS: E-10322; KY EPPC: 90084; KY UST; LA DEQ: 30690; LA DHH: LA080008; ME: 2008022; MD: 250; MA: M-GA006; MI: 9925; MS; NFESC: 249; NV: GA00006; NJ: GA769; NM; NY: 10842; NC DWQ: 269; NC DHHS: 13701; PA: 68-00474; PR: GA00006; RI: LAO00244; SC: 98001001; TN: TN0296; TX: T104704185; USEPA: GA00006; VT: VT-87052; VA: 00302; WA; WV DEP: 094; WV DHHR: 9950 C; WI DNR: 999819810; WY/EPAR8: 8TMS-Q

**TestAmerica Laboratories, Inc.**
TestAmerica Savannah 5102 LaRoche Avenue, Savannah, GA 31404
Tel (912) 354-7858 Fax (912) 352-0165 www.testamericainc.com

ACCREDITED IN ACCORDANCE WITH nelac

**Job Narrative**
**680-56602-1 (Revised; 4-14-10)**

**Receipt**
All samples were received in good condition within temperature requirements.

**GC Semi VOA**
Method(s) 3550B: The following sample(s) required a sulfuric acid clean-up to reduce matrix interferences: AA2-CON (680-56602-3) and the associated MS/MSD (680-56602-3 MS and 680-56602-3 MSD), AA2-CON-FD (680-56602-4), SSR1-11-E-5 (680-56602-7), SSR1-11-N-10 (680-56602-5), SSR1-11-S-10 (680-56602-6), SSR1-11-W-10-3 (680-56602-9), SSR1-11-W-15 (680-56602-8).

Method(s) 8081A_8082: Due to the level of dilution required for the following sample(s), surrogate recoveries are not reported: AA2-CON (680-56602-3), AA2-CON-FD (680-56602-4), SSR1-11-E-5 (680-56602-7), SSR1-11-N-10 (680-56602-5), SSR1-11-S-10 (680-56602-6).

Method(s) 8081A_8082: The matrix spike samples for sample AA2-CON (680-56602-3) were diluted due to the abundance of target analytes. As such, surrogate and spike recoveries are not reported.

Method(s) 8081A_8082: Two surrogates are used for this analysis. The laboratory's SOP allows one of these surrogates to be outside acceptance criteria without performing re-extraction/re-analysis. The following sample(s) contained an allowable number of surrogate compounds outside limits: SSR1-11-W-15 (680-56602-8). These results have been reported and qualified. The results for DCB were further qualified as estimated (flag E) due to positive interference from a non-target compound.

Method(s) 8081A_8082: This method incorporates the use of second column confirmation. Corrective action for unacceptable percent recovery is not taken for surrogate or spike compounds unless the results from both columns are outside criteria. Any results which fall outside criteria are qualified and reported.

No other analytical or quality issues were noted.

**General Chemistry**
No analytical or quality issues were noted.

**Comments**
A revised report was issued on april 14, 2010 to correct the PCB reporting limits on the aqeuous field QC samples which were erroneously reported at an incorrect reporting limit based on the final sample volume.

The report was again revised on April 20, 2010 per client request to add Arochlor 1268 to the target reporting list for Method 8082.

Results for Method 680 PCB Homolog results will be submitted following completion in the report for job series 680-56602-2 .

No additional comments.

# METHOD SUMMARY

Client: Golder Associates Inc. Job Number: 680-56602-1

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix: Solid** | | | |
| Organochlorine Pesticides & PCBs (GC) | TAL SAV | SW846 8081A_8082 | |
| Ultrasonic Extraction | TAL SAV | | SW846 3550B |
| **Matrix: Water** | | | |
| Organochlorine Pesticides & PCBs (GC) | TAL SAV | SW846 8081A_8082 | |
| Liquid-Liquid Extraction (Continuous) | TAL SAV | | SW846 3520C |

**Lab References:**

TAL SAV = TestAmerica Savannah

**Method References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Golder Associates Inc. Job Number: 680-56602-1

| Method | Analyst | Analyst ID |
|---|---|---|
| SW846 8081A_8082 | Kellar, Joshua | JK |
| SW846 8081A_8082 | Smith, Crystal | CAS |

## SAMPLE SUMMARY

Client: Golder Associates Inc. Job Number: 680-56602-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 680-56602-1 | RB-AA2-CON | Water | 04/07/2010 1845 | 04/09/2010 0927 |
| 680-56602-2 | FB-AA2-CON | Water | 04/07/2010 1850 | 04/09/2010 0927 |
| 680-56602-3 | AA2-CON | Solid | 04/07/2010 1730 | 04/09/2010 0927 |
| 680-56602-4 | AA2-CON-FD | Solid | 04/07/2010 1730 | 04/09/2010 0927 |

# SAMPLE RESULTS

Client: Golder Associates Inc. Job Number: 680-56602-1

**Client Sample ID:** **RB-AA2-CON**

Lab Sample ID: 680-56602-1 Date Sampled: 04/07/2010 1845
Client Matrix: Water Date Received: 04/09/2010 0927

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165593 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-165426 | | Initial Weight/Volume: | 1000 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 04/13/2010 2051 | | | Injection Volume: | 2 uL |
| Date Prepared: | 04/12/2010 1730 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <1.0 | | 0.071 | 1.0 |
| PCB-1221 | <2.0 | | 0.28 | 2.0 |
| PCB-1232 | <1.0 | | 0.11 | 1.0 |
| PCB-1242 | <1.0 | | 0.18 | 1.0 |
| PCB-1248 | <1.0 | | 0.36 | 1.0 |
| PCB-1254 | <1.0 | | 0.26 | 1.0 |
| PCB-1260 | <1.0 | | 0.20 | 1.0 |
| PCB-1268 | <1.0 | | 0.26 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| *Tetrachloro-m-xylene* | *71* | | *35 - 120* |
| DCB Decachlorobiphenyl | 18 | | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-56602-1

**Client Sample ID:** **RB-AA2-CON**

Lab Sample ID: 680-56602-1
Client Matrix: Water

Date Sampled: 04/07/2010 1845
Date Received: 04/09/2010 0927

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165593 | Instrument ID: SGM |
| Preparation: | 3520C | Prep Batch: 680-165426 | Initial Weight/Volume: 1000 mL |
| Dilution: | 1.0 | | Final Weight/Volume: 10 mL |
| Date Analyzed: | 04/13/2010 2051 | | Injection Volume: 2 uL |
| Date Prepared: | 04/12/2010 1730 | | Result Type: SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 70 | | 35 - 120 |
| DCB Decachlorobiphenyl | 15 | | 14 - 115 |

Client: Golder Associates Inc. Job Number: 680-56602-1

**Client Sample ID:** **FB-AA2-CON**

Lab Sample ID: 680-56602-2 Date Sampled: 04/07/2010 1850
Client Matrix: Water Date Received: 04/09/2010 0927

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165593 | | Instrument ID: | SGM |
| Preparation: | 3520C | Prep Batch: 680-165426 | | Initial Weight/Volume: | 1020 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 10 mL |
| Date Analyzed: | 04/13/2010 2110 | | | Injection Volume: | 2 uL |
| Date Prepared: | 04/12/2010 1730 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <0.98 | | 0.070 | 0.98 |
| PCB-1221 | <2.0 | | 0.27 | 2.0 |
| PCB-1232 | <0.98 | | 0.11 | 0.98 |
| PCB-1242 | <0.98 | | 0.18 | 0.98 |
| PCB-1248 | <0.98 | | 0.35 | 0.98 |
| PCB-1254 | <0.98 | | 0.25 | 0.98 |
| PCB-1260 | <0.98 | | 0.20 | 0.98 |
| PCB-1268 | <0.98 | | 0.25 | 0.98 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 73 | | 35 - 120 |
| DCB Decachlorobiphenyl | 58 | | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-56602-1

**Client Sample ID:** **FB-AA2-CON**

Lab Sample ID: 680-56602-2
Client Matrix: Water

Date Sampled: 04/07/2010 1850
Date Received: 04/09/2010 0927

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165593 | Instrument ID: SGM |
| Preparation: | 3520C | Prep Batch: 680-165426 | Initial Weight/Volume: 1020 mL |
| Dilution: | 1.0 | | Final Weight/Volume: 10 mL |
| Date Analyzed: | 04/13/2010 2110 | | Injection Volume: 2 uL |
| Date Prepared: | 04/12/2010 1730 | | Result Type: SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 70 | | 35 - 120 |
| DCB Decachlorobiphenyl | 49 | | 14 - 115 |

Client: Golder Associates Inc. Job Number: 680-56602-1

**Client Sample ID:** **AA2-CON**

Lab Sample ID: 680-56602-3 Date Sampled: 04/07/2010 1730
Client Matrix: Solid % Moisture: 14.4 Date Received: 04/09/2010 0927

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165591 | | Instrument ID: | SGM |
| Preparation: | 3550B | Prep Batch: 680-165424 | | Initial Weight/Volume: | 15.10 g |
| Dilution: | 100 | | | Final Weight/Volume: | 5.0 mL |
| Date Analyzed: | 04/13/2010 0935 | | | Injection Volume: | 2 uL |
| Date Prepared: | 04/12/2010 1438 | | | Result Type: | PRIMARY |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| PCB-1016 | | <3800 | | 340 | 3800 |
| PCB-1221 | | <7800 | | 560 | 7800 |
| PCB-1232 | | <3800 | | 380 | 3800 |
| PCB-1242 | | <3800 | | 330 | 3800 |
| PCB-1248 | | 3300 | J | 840 | 3800 |
| PCB-1254 | | 24000 | | 270 | 3800 |
| PCB-1260 | | 23000 | | 780 | 3800 |
| PCB-1268 | | 28000 | | 200 | 3800 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| *Tetrachloro-m-xylene* | *0* | *D* | *26 - 140* |
| DCB Decachlorobiphenyl | 0 | D | 50 - 129 |

Client: Golder Associates Inc. Job Number: 680-56602-1

**Client Sample ID:** **AA2-CON**

Lab Sample ID: 680-56602-3 Date Sampled: 04/07/2010 1730
Client Matrix: Solid % Moisture: 14.4 Date Received: 04/09/2010 0927

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165591 | | Instrument ID: | SGM |
| Preparation: | 3550B | Prep Batch: 680-165424 | | Initial Weight/Volume: | 15.10 g |
| Dilution: | 100 | | | Final Weight/Volume: | 5.0 mL |
| Date Analyzed: | 04/13/2010 0935 | | | Injection Volume: | 2 uL |
| Date Prepared: | 04/12/2010 1438 | | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 0 | D | 26 - 140 |
| DCB Decachlorobiphenyl | 0 | D | 50 - 129 |

Client: Golder Associates Inc. Job Number: 680-56602-1

**Client Sample ID:** **AA2-CON-FD**

Lab Sample ID: 680-56602-4 Date Sampled: 04/07/2010 1730
Client Matrix: Solid % Moisture: 12.8 Date Received: 04/09/2010 0927

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165591 | | Instrument ID: | SGM |
| Preparation: | 3550B | Prep Batch: 680-165424 | | Initial Weight/Volume: | 15.05 g |
| Dilution: | 100 | | | Final Weight/Volume: | 5.0 mL |
| Date Analyzed: | 04/13/2010 0954 | | | Injection Volume: | 2 uL |
| Date Prepared: | 04/12/2010 1438 | | | Result Type: | PRIMARY |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| PCB-1016 | | <3800 | | 330 | 3800 |
| PCB-1221 | | <7700 | | 550 | 7700 |
| PCB-1232 | | <3800 | | 380 | 3800 |
| PCB-1242 | | <3800 | | 320 | 3800 |
| PCB-1248 | | 5800 | | 820 | 3800 |
| PCB-1254 | | 31000 | | 260 | 3800 |
| PCB-1260 | | 29000 | | 770 | 3800 |
| PCB-1268 | | 24000 | | 190 | 3800 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 0 | D | 26 - 140 |
| DCB Decachlorobiphenyl | 0 | D | 50 - 129 |

Client: Golder Associates Inc. Job Number: 680-56602-1

**Client Sample ID:** **AA2-CON-FD**

Lab Sample ID: 680-56602-4 Date Sampled: 04/07/2010 1730
Client Matrix: Solid % Moisture: 12.8 Date Received: 04/09/2010 0927

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-165591 | | Instrument ID: | SGM |
| Preparation: | 3550B | Prep Batch: 680-165424 | | Initial Weight/Volume: | 15.05 g |
| Dilution: | 100 | | | Final Weight/Volume: | 5.0 mL |
| Date Analyzed: | 04/13/2010 0954 | | | Injection Volume: | 2 uL |
| Date Prepared: | 04/12/2010 1438 | | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 0 | D | 26 - 140 |
| DCB Decachlorobiphenyl | 0 | D | 50 - 129 |

## DATA REPORTING QUALIFIERS

Client: Golder Associates Inc. Job Number: 680-56602-1

| Lab Section | Qualifier | Description |
|---|---|---|
| GC Semi VOA | | |
| | F | MS or MSD exceeds the control limits |
| | 4 | MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable. |
| | E | Result exceeded calibration range. |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| | X | Surrogate is outside control limits |
| | D | Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D. |
| | p | The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported. |

# QUALITY CONTROL RESULTS

Client: Golder Associates Inc.

Job Number: 680-56602-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC Semi VOA** | | | | | |
| **Prep Batch: 680-165424** | | | | | |
| LCS 680-165424/19-A | Lab Control Sample | T | Solid | 3550B | |
| MB 680-165424/18-A | Method Blank | T | Solid | 3550B | |
| 680-56602-3 | AA2-CON | T | Solid | 3550B | |
| 680-56602-3MS | Matrix Spike | T | Solid | 3550B | |
| 680-56602-3MSD | Matrix Spike Duplicate | T | Solid | 3550B | |
| 680-56602-4 | AA2-CON-FD | T | Solid | 3550B | |
| 680-56602-5 | SSR1-11-N-10 | T | Solid | 3550B | |
| 680-56602-6 | SSR1-11-S-10 | T | Solid | 3550B | |
| 680-56602-7 | SSR1-11-E-5 | T | Solid | 3550B | |
| 680-56602-8 | SSR1-11-W-15 | T | Solid | 3550B | |
| 680-56602-9 | SSR1-11-W-10-3 | T | Solid | 3550B | |
| **Prep Batch: 680-165426** | | | | | |
| LCS 680-165426/17-A | Lab Control Sample | T | Water | 3520C | |
| MB 680-165426/16-A | Method Blank | T | Water | 3520C | |
| 680-56602-1 | RB-AA2-CON | T | Water | 3520C | |
| 680-56602-2 | FB-AA2-CON | T | Water | 3520C | |
| **Analysis Batch:680-165572** | | | | | |
| 680-56602-3MS | Matrix Spike | T | Solid | 8081A_8082 | 680-165424 |
| 680-56602-3MSD | Matrix Spike Duplicate | T | Solid | 8081A_8082 | 680-165424 |
| 680-56602-5 | SSR1-11-N-10 | T | Solid | 8081A_8082 | 680-165424 |
| 680-56602-6 | SSR1-11-S-10 | T | Solid | 8081A_8082 | 680-165424 |
| 680-56602-7 | SSR1-11-E-5 | T | Solid | 8081A_8082 | 680-165424 |
| **Analysis Batch:680-165591** | | | | | |
| LCS 680-165424/19-A | Lab Control Sample | T | Solid | 8081A_8082 | 680-165424 |
| MB 680-165424/18-A | Method Blank | T | Solid | 8081A_8082 | 680-165424 |
| 680-56602-3 | AA2-CON | T | Solid | 8081A_8082 | 680-165424 |
| 680-56602-4 | AA2-CON-FD | T | Solid | 8081A_8082 | 680-165424 |
| 680-56602-8 | SSR1-11-W-15 | T | Solid | 8081A_8082 | 680-165424 |
| 680-56602-9 | SSR1-11-W-10-3 | T | Solid | 8081A_8082 | 680-165424 |
| **Analysis Batch:680-165593** | | | | | |
| LCS 680-165426/17-A | Lab Control Sample | T | Water | 8081A_8082 | 680-165426 |
| MB 680-165426/16-A | Method Blank | T | Water | 8081A_8082 | 680-165426 |
| 680-56602-1 | RB-AA2-CON | T | Water | 8081A_8082 | 680-165426 |
| 680-56602-2 | FB-AA2-CON | T | Water | 8081A_8082 | 680-165426 |

**Report Basis**
T = Total

Client: Golder Associates Inc.

Job Number: 680-56602-1

## Surrogate Recovery Report

**8081A_8082_Organochlorine Pesticides & PCBs (GC)**

**Client Matrix: Solid**

| Lab Sample ID | Client Sample ID | TCX1 %Rec | TCX2 %Rec | DCB1 %Rec | DCB2 %Rec |
|---|---|---|---|---|---|
| 680-56602-3 | AA2-CON | 0D | 0D | 0D | 0D |
| 680-56602-4 | AA2-CON-FD | 0D | 0D | 0D | 0D |
| 680-56602-5 | SSR1-11-N-10 | 0D | 0D | 0D | 0D |
| 680-56602-6 | SSR1-11-S-10 | 0D | 0D | 0D | 0D |
| 680-56602-7 | SSR1-11-E-5 | 0D | 0D | 0D | 0D |
| 680-56602-8 | SSR1-11-W-15 | 81 | 79 | 1170E X 0 | 1430E X 0 |
| 680-56602-9 | SSR1-11-W-10-3 | 42 | 44 | 167X | 93p |
| MB 680-165424/18-A | | 77 | 84 | 75 | 91 |
| LCS 680-165424/19-A | | 80 | 81 | 87 | 90 |
| 680-56602-3 MS | AA2-CON MS | 0D | 0D | 0D | 0D |
| 680-56602-3 MSD | AA2-CON MSD | 0D | 0D | 0D | 0D |

| Surrogate | Acceptance Limits |
|---|---|
| TCX = Tetrachloro-m-xylene | 26-140 |
| DCB = DCB Decachlorobiphenyl | 50-129 |

Client: Golder Associates Inc.

Job Number: 680-56602-1

## Surrogate Recovery Report

**8081A_8082_Organochlorine Pesticides & PCBs (GC)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | TCX1 %Rec | TCX2 %Rec | DCB1 %Rec | DCB2 %Rec |
|---|---|---|---|---|---|
| 680-56602-1 | RB-AA2-CON | 71 | 70 | 15 | 18 |
| 680-56602-2 | FB-AA2-CON | 70 | 73 | 49 | 58 |
| MB 680-165426/16-A | | 70 | 73 | 80 | 89 |
| LCS 680-165426/17-A | | 75 | 76 | 70 | 79 |

| Surrogate | Acceptance Limits |
|---|---|
| TCX = Tetrachloro-m-xylene | 35-120 |
| DCB = DCB Decachlorobiphenyl | 14-115 |

Client: Golder Associates Inc.

Job Number: 680-56602-1

**Method Blank - Batch: 680-165424**

**Method: 8081A_8082**
**Preparation: 3550B**

Lab Sample ID: MB 680-165424/18-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/13/2010 0856
Date Prepared: 04/12/2010 1438

Analysis Batch: 680-165591
Prep Batch: 680-165424
Units: ug/Kg

Instrument ID: SGM
Lab File ID: md12036.d
Initial Weight/Volume: 15.00 g
Final Weight/Volume: 5.0 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <33 | | 2.9 | 33 |
| PCB-1221 | <67 | | 4.8 | 67 |
| PCB-1232 | <33 | | 3.3 | 33 |
| PCB-1242 | <33 | | 2.8 | 33 |
| PCB-1248 | <33 | | 7.2 | 33 |
| PCB-1254 | <33 | | 2.3 | 33 |
| PCB-1260 | <33 | | 6.7 | 33 |
| PCB-1268 | <33 | | 1.7 | 33 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 84 | 26 - 140 |
| DCB Decachlorobiphenyl | 91 | 50 - 129 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 77 | 26 - 140 |
| DCB Decachlorobiphenyl | 75 | 50 - 129 |

**Lab Control Sample - Batch: 680-165424**

**Method: 8081A_8082**
**Preparation: 3550B**

Lab Sample ID: LCS 680-165424/19-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/13/2010 0915
Date Prepared: 04/12/2010 1438

Analysis Batch: 680-165591
Prep Batch: 680-165424
Units: ug/Kg

Instrument ID: SGM
Lab File ID: md12037.d
Initial Weight/Volume: 15.00 g
Final Weight/Volume: 5.0 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| PCB-1016 | 333 | 309 | 93 | 43 - 136 | |
| PCB-1260 | 333 | 291 | 87 | 53 - 133 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 81 | 26 - 140 |
| DCB Decachlorobiphenyl | 90 | 50 - 129 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 80 | 26 - 140 |
| DCB Decachlorobiphenyl | 87 | 50 - 129 |

Client: Golder Associates Inc.

Job Number: 680-56602-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-165424**

**Method: 8081A_8082**
**Preparation: 3550B**

| | | | |
|---|---|---|---|
| MS Lab Sample ID: | 680-56602-3 | Analysis Batch: 680-165572 | Instrument ID: SGM |
| Client Matrix: | Solid | Prep Batch: 680-165424 | Lab File ID: md12050.d |
| Dilution: | 100 | | Initial Weight/Volume: 15.26 g |
| Date Analyzed: | 04/13/2010 1407 | | Final Weight/Volume: 5.0 mL |
| Date Prepared: | 04/12/2010 1438 | | Injection Volume: 2 uL |
| | | | Column ID: PRIMARY |

| | | | |
|---|---|---|---|
| MSD Lab Sample ID: | 680-56602-3 | Analysis Batch: 680-165572 | Instrument ID: SGM |
| Client Matrix: | Solid | Prep Batch: 680-165424 | Lab File ID: md12051.d |
| Dilution: | 100 | | Initial Weight/Volume: 15.21 g |
| Date Analyzed: | 04/13/2010 1426 | | Final Weight/Volume: 5.0 mL |
| Date Prepared: | 04/12/2010 1438 | | Injection Volume: 2 uL |
| | | | Column ID: PRIMARY |

| | % Rec. | | | | | |
|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| PCB-1016 | 0 | 0 | 43 - 136 | NC | 50 | F | F |
| PCB-1260 | -376 | 169 | 53 - 133 | 9 | 50 | 4 | 4 |

| Surrogate | MS % Rec | | MSD % Rec | | Acceptance Limits |
|---|---|---|---|---|---|
| Tetrachloro-m-xylene | 0 | D | 0 | D | 26 - 140 |
| DCB Decachlorobiphenyl | 0 | D | 0 | D | 50 - 129 |

| Surrogate | MS % Rec | | MSD % Rec | | Acceptance Limits |
|---|---|---|---|---|---|
| Tetrachloro-m-xylene | 0 | D | 0 | D | 26 - 140 |
| DCB Decachlorobiphenyl | 0 | D | 0 | D | 50 - 129 |

Client: Golder Associates Inc.

Job Number: 680-56602-1

**Method Blank - Batch: 680-165426**

**Method: 8081A_8082**
**Preparation: 3520C**

Lab Sample ID: MB 680-165426/16-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 04/13/2010 1914
Date Prepared: 04/12/2010 1730

Analysis Batch: 680-165593
Prep Batch: 680-165426
Units: ug/L

Instrument ID: SGM
Lab File ID: md12066.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <1.0 | | 0.071 | 1.0 |
| PCB-1221 | <2.0 | | 0.28 | 2.0 |
| PCB-1232 | <1.0 | | 0.11 | 1.0 |
| PCB-1242 | <1.0 | | 0.18 | 1.0 |
| PCB-1248 | <1.0 | | 0.36 | 1.0 |
| PCB-1254 | <1.0 | | 0.26 | 1.0 |
| PCB-1260 | <1.0 | | 0.20 | 1.0 |
| PCB-1268 | <1.0 | | 0.26 | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 73 | 35 - 120 |
| DCB Decachlorobiphenyl | 89 | 14 - 115 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 70 | 35 - 120 |
| DCB Decachlorobiphenyl | 80 | 14 - 115 |

**Lab Control Sample - Batch: 680-165426**

**Method: 8081A_8082**
**Preparation: 3520C**

Lab Sample ID: LCS 680-165426/17-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 04/13/2010 1933
Date Prepared: 04/12/2010 1730

Analysis Batch: 680-165593
Prep Batch: 680-165426
Units: ug/L

Instrument ID: SGM
Lab File ID: md12067.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 10 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| PCB-1016 | 10.0 | 10.8 | 108 | 57 - 124 | |
| PCB-1260 | 10.0 | 9.50 | 95 | 58 - 124 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 76 | 35 - 120 |
| DCB Decachlorobiphenyl | 79 | 14 - 115 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 75 | 35 - 120 |
| DCB Decachlorobiphenyl | 70 | 14 - 115 |

Serial Number 025070

# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING


TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165


Alternate Laboratory Name/Location
Phone:
Fax:

| | | | |
|---|---|---|---|
| PROJECT REFERENCE: Solutia Anniston | PROJECT NO. | PROJECT LOCATION (STATE): AL | PAGE 1 OF 1 |
| L (LAB) PROJECT MANAGER: Lidya G. | P.O. NUMBER | CONTRACT NO. | STANDARD REPORT DELIVERY ○ |
| IENT (SITE) PM: Tim Richards | CLIENT PHONE: 845-300-8703 | CLIENT FAX | DATE DUE |
| IENT NAME: Solutia / Golder | CLIENT E-MAIL: TRichards@Golder.com | | EXPEDITED REPORT DELIVERY (SURCHARGE) ⊗ |
| IENT ADDRESS: 3730 Chamblee Tucker Rd Atlanta GA 30341 | | | DATE DUE 4/14/10 |
| OMPANY CONTRACTING THIS WORK (if applicable): Solutia | | | NUMBER OF COOLERS SUBMITTED PER SHIPMENT: 1 |

| SAMPLE DATE | SAMPLE TIME | SAMPLE IDENTIFICATION | MATRIX: COMPOSITE (C) OR GRAB (G) INDICATE | AQUEOUS (WATER) | SOLID OR SEMISOLID | AIR | NONAQUEOUS LIQUID (OIL, SOLVENT, ...) | REQUIRED ANALYSIS: 680 PCBs | 8081A 8082 PCB | NUMBER OF CONTAINERS SUBMITTED: None | None | PRESERVATIVE | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4/6/10 | 18:45 | RB-AA2-CON | | X | | | | 1 | 1 | | | | * LEVEL II |
| 4/6/10 | 18:50 | FB-AA2-CON | | X | | | | 1 | 1 | | | | ↓ |
| 4/6/10 | 17:30 | AA2-CON | C | | X | | | 1 | 1 | | | | PRIMARY & MS/MSD |
| 4/6/10 | 17:30 | AA2-CON-FD | C | | X | | | 1 | 1 | | | | |
| 4/7/10 | 13:52 | SSR1-11-N-10 | G | | X | | | 1 | 1 | | | | |
| 4/7/10 | 14:00 | SSR1-11-S-10 | G | | X | | | 1 | 1 | | | | |
| 4/7/10 | 17:41 | SSR1-11-E-5 | G | | X | | | 1 | 2 | | | | ⇔ 1602 Jar For 680 & 8081A 8082 |
| 4/7/10 | 17:55 | SSR1-11-W-15 | G | | X | | | 1 | 2 | | | | |
| 4/8/10 | 13:50 | SSR1-11-W-10-3 | G | | X | | | 1 | 1 | | | | ↑ |
| | | | | | | | | | | | | | * LEVEL II |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME |
|---|---|---|---|---|---|---|---|---|
| | 4/8/10 | 16:00 | | | | | | |
| RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME |
| | | | | | | | | |

LABORATORY USE ONLY

| RECEIVED FOR LABORATORY BY: (SIGNATURE) | DATE | TIME | CUSTODY INTACT | CUSTODY SEAL NO. | SAVANNAH LOG NO. | LABORATORY REMARKS |
|---|---|---|---|---|---|---|
| Ruth A Daughtry | 4/9/10 | 0927 | YES ○ NO ○ | | 680-56602 | Temp 3.3 |

TAL8240-680 (1207)

# Login Sample Receipt Check List

Client: Golder Associates Inc.

Job Number: 680-56602-1

**Login Number: 56602**

**List Source: TestAmerica Savannah**

**Creator: Daughtry, Beth**

**List Number: 1**

| Question | T / F/ NA | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | N/A | |
| The cooler's custody seal, if present, is intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| There are no discrepancies between the sample IDs on the containers and the COC. | True | |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | N/A | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True | |
| Multiphasic samples are not present. | N/A | |
| Samples do not require splitting or compositing. | N/A | |
| Is the Field Sampler's name present on COC? | False | |
| Sample Preservation Verified | True | |

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

Job Number: 680-56602-2

Job Description: Anniston Landfill Site

For:
Golder Associates Inc.
3730 Chamblee Tucker Road
Atlanta, GA 30341

Attention: Mr. Tim Richards

Approved for release.
Lidya Gulizia
Project Manager I
4/20/2010 5:44 PM

Lidya Gulizia
Project Manager I
lidya.gulizia@testamericainc.com
04/20/2010

cc: Mr. Steve Moeller

The test results in this report meet NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted. Results pertain only to samples listed in this report. This report may not be reproduced, except in full, without the written approval of the laboratory. Questions should be directed to the person who signed this report.

Savannah Certifications and ID #s: A2LA: 0399.01; AL: 41450; ARDEQ: 88-0692; ARDOH; CA: 03217CA; CO; CT: PH0161; DE; FL: E87052; GA: 803; Guam; HI; IL: 200022; IN; IA: 353; KS: E-10322; KY EPPC: 90084; KY UST; LA DEQ: 30690; LA DHH: LA080008; ME: 2008022; MD: 250; MA: M-GA006; MI: 9925; MS; NFESC: 249; NV: GA00006; NJ: GA769; NM; NY: 10842; NC DWQ: 269; NC DHHS: 13701; PA: 68-00474; PR: GA00006; RI: LAO00244; SC: 98001001; TN: TN0296; TX: T104704185; USEPA: GA00006; VT: VT-87052; VA: 00302; WA; WV DEP: 094; WV DHHR: 9950 C; WI DNR: 999819810; WY/EPAR8: 8TMS-Q

**TestAmerica Laboratories, Inc.**
TestAmerica Savannah 5102 LaRoche Avenue, Savannah, GA 31404
Tel (912) 354-7858 Fax (912) 352-0165 www.testamericainc.com

ACCREDITED IN ACCORDANCE WITH nelac

**Job Narrative**
**680-56602-2**

**Receipt**
All samples were received in good condition within temperature requirements.

**GC/MS Semi VOA**
Method(s) 680: Internal standard response for the following sample(s) exceeded the upper control limit: RB-AA2-CON (680-56602-1). As such, the sample results may be biased low.

Method(s) 680: Sample AA2-CON-FD (680-56602-4) was diluted due to abundance of target analytes. As such, surrogate recoveries are not reported, and elevated reporting limits (RLs) are provided.

No other analytical or quality issues were noted.

**Comments**
No additional comments.

# METHOD SUMMARY

Client: Golder Associates Inc. Job Number: 680-56602-2

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix Solid** | | | |
| Polychlorinated Biphenyls (PCBs) (GC/MS) | TAL SAV | EPA 680 | |
| Extraction (Solid PCBs) | TAL SAV | | EPA 680 |
| **Matrix Water** | | | |
| Polychlorinated Biphenyls (PCBs) (GC/MS) | TAL SAV | EPA 680 | |
| Liquid-Liquid Extraction (Separatory Funnel) | TAL SAV | | EPA 680 |

**Lab References:**

TAL SAV = TestAmerica Savannah

**Method References:**

EPA = US Environmental Protection Agency

## METHOD / ANALYST SUMMARY

Client: Golder Associates Inc. Job Number: 680-56602-2

| Method | Analyst | Analyst ID |
|---|---|---|
| EPA 680 | Chamberlain, Kim | KAC |
| EPA 680 | Davis, Nancy | ND |

## SAMPLE SUMMARY

Client: Golder Associates Inc. Job Number: 680-56602-2

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 680-56602-1 | RB-AA2-CON | Water | 04/07/2010 1845 | 04/09/2010 0927 |
| 680-56602-2 | FB-AA2-CON | Water | 04/07/2010 1850 | 04/09/2010 0927 |
| 680-56602-3 | AA2-CON | Solid | 04/07/2010 1730 | 04/09/2010 0927 |
| 680-56602-4 | AA2-CON-FD | Solid | 04/07/2010 1730 | 04/09/2010 0927 |

# SAMPLE RESULTS

Client: Golder Associates Inc.

Job Number: 680-56602-2

**Client Sample ID:** **RB-AA2-CON**

Lab Sample ID: 680-56602-1
Client Matrix: Water

Date Sampled: 04/07/2010 1845
Date Received: 04/09/2010 0927

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 680 | Analysis Batch: 680-165611 | | Instrument ID: | MSF |
| Preparation: | 680 | Prep Batch: 680-165312 | | Lab File ID: | N/A |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1020 mL |
| Date Analyzed: | 04/13/2010 1704 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 04/09/2010 1703 | | | Injection Volume: | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Monochlorobiphenyl | <0.098 | | 0.0055 | 0.098 |
| Dichlorobiphenyl | <0.098 | | 0.0053 | 0.098 |
| Trichlorobiphenyl | <0.098 | | 0.0064 | 0.098 |
| Tetrachlorobiphenyl | <0.20 | | 0.013 | 0.20 |
| Pentachlorobiphenyl | <0.20 | | 0.014 | 0.20 |
| Hexachlorobiphenyl | <0.20 | | 0.015 | 0.20 |
| Heptachlorobiphenyl | <0.29 | | 0.029 | 0.29 |
| Octachlorobiphenyl | <0.29 | | 0.037 | 0.29 |
| Nonachlorobiphenyl | <0.49 | | 0.048 | 0.49 |
| DCB Decachlorobiphenyl | <0.49 | | 0.069 | 0.49 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl-13C12 | 89 | | 25 - 113 |

Client: Golder Associates Inc.

Job Number: 680-56602-2

**Client Sample ID:** **FB-AA2-CON**

Lab Sample ID: 680-56602-2
Client Matrix: Water

Date Sampled: 04/07/2010 1850
Date Received: 04/09/2010 0927

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 680 | Analysis Batch: 680-165611 | | Instrument ID: | MSF |
| Preparation: | 680 | Prep Batch: 680-165312 | | Lab File ID: | N/A |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1030 mL |
| Date Analyzed: | 04/13/2010 1736 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 04/09/2010 1703 | | | Injection Volume: | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Monochlorobiphenyl | <0.097 | | 0.0054 | 0.097 |
| Dichlorobiphenyl | <0.097 | | 0.0052 | 0.097 |
| Trichlorobiphenyl | <0.097 | | 0.0063 | 0.097 |
| Tetrachlorobiphenyl | <0.19 | | 0.013 | 0.19 |
| Pentachlorobiphenyl | <0.19 | | 0.014 | 0.19 |
| Hexachlorobiphenyl | <0.19 | | 0.015 | 0.19 |
| Heptachlorobiphenyl | <0.29 | | 0.029 | 0.29 |
| Octachlorobiphenyl | <0.29 | | 0.037 | 0.29 |
| Nonachlorobiphenyl | <0.49 | | 0.048 | 0.49 |
| DCB Decachlorobiphenyl | <0.49 | | 0.068 | 0.49 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl-13C12 | 87 | | 25 - 113 |

Client: Golder Associates Inc. Job Number: 680-56602-2

**Client Sample ID:** **AA2-CON**

Lab Sample ID: 680-56602-3 Date Sampled: 04/07/2010 1730
Client Matrix: Solid % Moisture: 14.4 Date Received: 04/09/2010 0927

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 680 | Analysis Batch: 680-165897 | | Instrument ID: | MSF |
| Preparation: | 680 | Prep Batch: 680-165422 | | Lab File ID: | N/A |
| Dilution: | 50 | | | Initial Weight/Volume: | 30.06 g |
| Date Analyzed: | 04/15/2010 1523 | | | Final Weight/Volume: | 1.0 mL |
| Date Prepared: | 04/12/2010 1342 | | | Injection Volume: | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Monochlorobiphenyl | | <190 | | 11 | 190 |
| Dichlorobiphenyl | | 1300 | | 20 | 190 |
| Trichlorobiphenyl | | 5500 | | 9.9 | 190 |
| Tetrachlorobiphenyl | | 7000 | | 22 | 390 |
| Pentachlorobiphenyl | | 9400 | | 20 | 390 |
| Hexachlorobiphenyl | | 13000 | | 19 | 390 |
| Heptachlorobiphenyl | | 12000 | | 29 | 580 |
| Octachlorobiphenyl | | 5900 | | 31 | 580 |
| Nonachlorobiphenyl | | 870 | J | 54 | 990 |
| DCB Decachlorobiphenyl | | 560 | J | 48 | 990 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl-13C12 | 0 | D | 30 - 130 |

Client: Golder Associates Inc. Job Number: 680-56602-2

**Client Sample ID:** **AA2-CON-FD**

Lab Sample ID: 680-56602-4 Date Sampled: 04/07/2010 1730
Client Matrix: Solid % Moisture: 12.8 Date Received: 04/09/2010 0927

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 680 | Analysis Batch: 680-165897 | | Instrument ID: | MSF |
| Preparation: | 680 | Prep Batch: 680-165422 | | Lab File ID: | N/A |
| Dilution: | 10 | | | Initial Weight/Volume: | 30.29 g |
| Date Analyzed: | 04/15/2010 1106 | | | Final Weight/Volume: | 1.0 mL |
| Date Prepared: | 04/12/2010 1342 | | | Injection Volume: | |

| Analyte | DryWt Corrected: Y | Result (ug/Kg) | Qualifier | MDL | RL |
|---|---|---|---|---|---|
| Monochlorobiphenyl | | 7.4 | J | 2.2 | 37 |
| Dichlorobiphenyl | | 54 | | 4.0 | 37 |
| Trichlorobiphenyl | | 390 | | 1.9 | 37 |
| Tetrachlorobiphenyl | | 1800 | | 4.2 | 76 |
| Pentachlorobiphenyl | | 3000 | | 3.9 | 76 |
| Hexachlorobiphenyl | | 4500 | | 3.7 | 76 |
| Heptachlorobiphenyl | | 3000 | | 5.7 | 110 |
| Octachlorobiphenyl | | 1400 | | 6.0 | 110 |
| Nonachlorobiphenyl | | 380 | | 11 | 190 |
| DCB Decachlorobiphenyl | | 330 | | 9.4 | 190 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl-13C12 | 0 | D | 30 - 130 |

## DATA REPORTING QUALIFIERS

Client: Golder Associates Inc. Job Number: 680-56602-2

| Lab Section | Qualifier | Description |
|---|---|---|
| GC/MS Semi VOA | | |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| | D | Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D. |

# QUALITY CONTROL RESULTS

Client: Golder Associates Inc.

Job Number: 680-56602-2

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC/MS Semi VOA** | | | | | |
| **Prep Batch: 680-165312** | | | | | |
| LCS 680-165312/10-A | Lab Control Sample | T | Water | 680 | |
| MB 680-165312/9-A | Method Blank | T | Water | 680 | |
| 680-56602-1 | RB-AA2-CON | T | Water | 680 | |
| 680-56602-2 | FB-AA2-CON | T | Water | 680 | |
| **Prep Batch: 680-165422** | | | | | |
| LCS 680-165422/9-A | Lab Control Sample | T | Solid | 680 | |
| MB 680-165422/8-A | Method Blank | T | Solid | 680 | |
| 680-56602-3 | AA2-CON | T | Solid | 680 | |
| 680-56602-4 | AA2-CON-FD | T | Solid | 680 | |
| 680-56602-5 | SSR1-11-N-10 | T | Solid | 680 | |
| 680-56602-6 | SSR1-11-S-10 | T | Solid | 680 | |
| 680-56602-7 | SSR1-11-E-5 | T | Solid | 680 | |
| 680-56602-8 | SSR1-11-W-15 | T | Solid | 680 | |
| 680-56602-9 | SSR1-11-W-10-3 | T | Solid | 680 | |
| **Analysis Batch:680-165611** | | | | | |
| LCS 680-165312/10-A | Lab Control Sample | T | Water | 680 | 680-165312 |
| MB 680-165312/9-A | Method Blank | T | Water | 680 | 680-165312 |
| 680-56602-1 | RB-AA2-CON | T | Water | 680 | 680-165312 |
| 680-56602-2 | FB-AA2-CON | T | Water | 680 | 680-165312 |
| **Analysis Batch:680-165789** | | | | | |
| LCS 680-165422/9-A | Lab Control Sample | T | Solid | 680 | 680-165422 |
| MB 680-165422/8-A | Method Blank | T | Solid | 680 | 680-165422 |
| 680-56602-9 | SSR1-11-W-10-3 | T | Solid | 680 | 680-165422 |
| **Analysis Batch:680-165897** | | | | | |
| 680-56602-3 | AA2-CON | T | Solid | 680 | 680-165422 |
| 680-56602-4 | AA2-CON-FD | T | Solid | 680 | 680-165422 |
| 680-56602-5 | SSR1-11-N-10 | T | Solid | 680 | 680-165422 |
| 680-56602-6 | SSR1-11-S-10 | T | Solid | 680 | 680-165422 |
| 680-56602-7 | SSR1-11-E-5 | T | Solid | 680 | 680-165422 |
| 680-56602-8 | SSR1-11-W-15 | T | Solid | 680 | 680-165422 |

**Report Basis**
T = Total

Client: Golder Associates Inc.

Job Number: 680-56602-2

## Surrogate Recovery Report

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

**Client Matrix: Solid**

| Lab Sample ID | Client Sample ID | 13DCB %Rec |
|---|---|---|
| 680-56602-3 | AA2-CON | 0D |
| 680-56602-4 | AA2-CON-FD | 0D |
| 680-56602-5 | SSR1-11-N-10 | 0D |
| 680-56602-6 | SSR1-11-S-10 | 0D |
| 680-56602-7 | SSR1-11-E-5 | 0D |
| 680-56602-8 | SSR1-11-W-15 | 0D |
| 680-56602-9 | SSR1-11-W-10-3 | 81 |
| MB 680-165422/8-A | | 68 |
| LCS 680-165422/9-A | | 86 |

| Surrogate | Acceptance Limits |
|---|---|
| 13DCB = Decachlorobiphenyl-13C12 | 30-130 |

Client: Golder Associates Inc.

Job Number: 680-56602-2

## Surrogate Recovery Report

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | 13DCB %Rec |
|---|---|---|
| 680-56602-1 | RB-AA2-CON | 89 |
| 680-56602-2 | FB-AA2-CON | 87 |
| MB 680-165312/9-A | | 100 |
| LCS 680-165312/10-A | | 109 |

| Surrogate | Acceptance Limits |
|---|---|
| 13DCB = Decachlorobiphenyl-13C12 | 25-113 |

Client: Golder Associates Inc.

Job Number: 680-56602-2

**Method Blank - Batch: 680-165312**

**Method: 680**
**Preparation: 680**

Lab Sample ID: MB 680-165312/9-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 04/13/2010 1410
Date Prepared: 04/09/2010 1703

Analysis Batch: 680-165611
Prep Batch: 680-165312
Units: ug/L

Instrument ID: MSF
Lab File ID: N/A
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 1 mL
Injection Volume:

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Monochlorobiphenyl | <0.10 | | 0.0056 | 0.10 |
| Dichlorobiphenyl | <0.10 | | 0.0054 | 0.10 |
| Trichlorobiphenyl | <0.10 | | 0.0065 | 0.10 |
| Tetrachlorobiphenyl | <0.20 | | 0.013 | 0.20 |
| Pentachlorobiphenyl | <0.20 | | 0.014 | 0.20 |
| Hexachlorobiphenyl | <0.20 | | 0.015 | 0.20 |
| Heptachlorobiphenyl | <0.30 | | 0.030 | 0.30 |
| Octachlorobiphenyl | <0.30 | | 0.038 | 0.30 |
| Nonachlorobiphenyl | <0.50 | | 0.049 | 0.50 |
| DCB Decachlorobiphenyl | <0.50 | | 0.070 | 0.50 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Decachlorobiphenyl-13C12 | 100 | 25 - 113 |

**Lab Control Sample - Batch: 680-165312**

**Method: 680**
**Preparation: 680**

Lab Sample ID: LCS 680-165312/10-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 04/13/2010 1515
Date Prepared: 04/09/2010 1703

Analysis Batch: 680-165611
Prep Batch: 680-165312
Units: ug/L

Instrument ID: MSF
Lab File ID: N/A
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 1 mL
Injection Volume:

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Monochlorobiphenyl | 2.00 | 1.55 | 77 | 10 - 125 | |
| Dichlorobiphenyl | 2.00 | 1.75 | 88 | 10 - 110 | |
| Trichlorobiphenyl | 2.00 | 1.82 | 91 | 17 - 110 | |
| Tetrachlorobiphenyl | 4.00 | 3.63 | 91 | 18 - 110 | |
| Pentachlorobiphenyl | 4.00 | 3.95 | 99 | 34 - 110 | |
| Hexachlorobiphenyl | 4.00 | 3.85 | 96 | 31 - 110 | |
| Heptachlorobiphenyl | 6.00 | 5.92 | 99 | 33 - 110 | |
| Octachlorobiphenyl | 6.00 | 6.16 | 103 | 33 - 110 | |
| DCB Decachlorobiphenyl | 10.0 | 9.86 | 99 | 26 - 115 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Decachlorobiphenyl-13C12 | 109 | 25 - 113 |

Client: Golder Associates Inc.

Job Number: 680-56602-2

**Method Blank - Batch: 680-165422**

**Method: 680**
**Preparation: 680**

Lab Sample ID: MB 680-165422/8-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/14/2010 1230
Date Prepared: 04/12/2010 1342

Analysis Batch: 680-165789
Prep Batch: 680-165422
Units: ug/Kg

Instrument ID: MSF
Lab File ID: N/A
Initial Weight/Volume: 30.00 g
Final Weight/Volume: 1.0 mL
Injection Volume:

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Monochlorobiphenyl | <3.3 | | 0.19 | 3.3 |
| Dichlorobiphenyl | <3.3 | | 0.35 | 3.3 |
| Trichlorobiphenyl | <3.3 | | 0.17 | 3.3 |
| Tetrachlorobiphenyl | <6.7 | | 0.37 | 6.7 |
| Pentachlorobiphenyl | <6.7 | | 0.34 | 6.7 |
| Hexachlorobiphenyl | <6.7 | | 0.33 | 6.7 |
| Heptachlorobiphenyl | <10 | | 0.50 | 10 |
| Octachlorobiphenyl | <10 | | 0.53 | 10 |
| Nonachlorobiphenyl | <17 | | 0.93 | 17 |
| DCB Decachlorobiphenyl | <17 | | 0.83 | 17 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Decachlorobiphenyl-13C12 | 68 | 30 - 130 |

**Lab Control Sample - Batch: 680-165422**

**Method: 680**
**Preparation: 680**

Lab Sample ID: LCS 680-165422/9-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/14/2010 1302
Date Prepared: 04/12/2010 1342

Analysis Batch: 680-165789
Prep Batch: 680-165422
Units: ug/Kg

Instrument ID: MSF
Lab File ID: N/A
Initial Weight/Volume: 30.00 g
Final Weight/Volume: 1.0 mL
Injection Volume:

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Monochlorobiphenyl | 66.7 | 44.6 | 67 | 30 - 130 | |
| Dichlorobiphenyl | 66.7 | 47.8 | 72 | 30 - 130 | |
| Trichlorobiphenyl | 66.7 | 49.8 | 75 | 30 - 130 | |
| Tetrachlorobiphenyl | 133 | 98.8 | 74 | 40 - 140 | |
| Pentachlorobiphenyl | 133 | 107 | 80 | 40 - 140 | |
| Hexachlorobiphenyl | 133 | 105 | 79 | 40 - 140 | |
| Heptachlorobiphenyl | 200 | 161 | 80 | 40 - 140 | |
| Octachlorobiphenyl | 200 | 163 | 82 | 40 - 140 | |
| DCB Decachlorobiphenyl | 333 | 254 | 76 | 30 - 130 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Decachlorobiphenyl-13C12 | 86 | 30 - 130 |

Serial Number 025070

# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING


TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

Alternate Laboratory Name/Location
Phone:
Fax:


| | | | |
|---|---|---|---|
| PROJECT REFERENCE: Solutia Anniston | PROJECT NO. | PROJECT LOCATION (STATE): AL | PAGE 1 OF 1 |
| L (LAB) PROJECT MANAGER: Lidya G. | P.O. NUMBER | CONTRACT NO. | STANDARD REPORT DELIVERY ○ |
| IENT (SITE) PM: Tim Richards | CLIENT PHONE: 845-300-8703 | CLIENT FAX | DATE DUE |
| IENT NAME: Solutia / Golder | CLIENT E-MAIL: TRichards@Golder.com | | EXPEDITED REPORT DELIVERY (SURCHARGE) ⊗ |
| IENT ADDRESS: 3730 Chamblee Tucker Rd Atlanta GA 30341 | | | DATE DUE 4/14/10 |
| OMPANY CONTRACTING THIS WORK (if applicable): Solutia | | | NUMBER OF COOLERS SUBMITTED PER SHIPMENT: 1 |

| SAMPLE DATE | SAMPLE TIME | SAMPLE IDENTIFICATION | MATRIX: COMPOSITE (C) OR GRAB (G) INDICATE | AQUEOUS (WATER) | SOLID OR SEMISOLID | AIR | NONAQUEOUS LIQUID (OIL, SOLVENT, ...) | REQUIRED ANALYSIS: 680 PCBs | 8081A 8082 PCB | NUMBER OF CONTAINERS SUBMITTED | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PRESERVATIVE | | None | None | | | | | | |
| 4/6/10 | 18:45 | RB-AA2-CON | G | X | | | | 1 | 1 | | * LEVEL II |
| 4/6/10 | 18:50 | FB-AA2-CON | G | X | | | | 1 | 1 | | ↓ |
| 4/6/10 | 17:30 | AA2-CON | C | | X | | | 1 | 1 | | Primary & MS/MSD |
| 4/6/10 | 17:30 | AA2-CON-FD | C | | X | | | 1 | 1 | | |
| 4/7/10 | 13:52 | SSR1-11-N-10 | G | | X | | | 1 | 1 | | |
| 4/7/10 | 14:00 | SSR1-11-S-10 | G | | X | | | 1 | 1 | | |
| 4/7/10 | 17:41 | SSR1-11-E-5 | G | | X | | | 1 | 2 | | ⟷ 1602 Jar For 680 & 8081A 8082 |
| 4/7/10 | 17:55 | SSR1-11-W-15 | G | | X | | | 1 | 2 | | |
| 4/8/10 | 13:50 | SSR1-11-W-10-3 | G | | X | | | 1 | 1 | | ↑ |
| | | | | | | | | | | | * LEVEL II |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

| RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME |
|---|---|---|---|---|---|---|---|---|
| | 4/8/10 | 16:00 | | | | | | |
| RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME |
| | | | | | | | | |

LABORATORY USE ONLY

| RECEIVED FOR LABORATORY BY: (SIGNATURE) | DATE | TIME | CUSTODY INTACT | CUSTODY SEAL NO. | SAVANNAH LOG NO. | LABORATORY REMARKS |
|---|---|---|---|---|---|---|
| Ruth A Daughtry | 4/9/10 | 0927 | YES ○ NO ○ | | 680-56602 | Temp 3.3 |

TAL8240-680 (1207)

# Login Sample Receipt Check List

Client: Golder Associates Inc.

Job Number: 680-56602-2

**Login Number: 56602**

**List Source: TestAmerica Savannah**

**Creator: Daughtry, Beth**

**List Number: 1**

| Question | T / F/ NA | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | N/A | |
| The cooler's custody seal, if present, is intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| There are no discrepancies between the sample IDs on the containers and the COC. | True | |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | N/A | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True | |
| Multiphasic samples are not present. | N/A | |
| Samples do not require splitting or compositing. | N/A | |
| Is the Field Sampler's name present on COC? | False | |
| Sample Preservation Verified | True | |

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

Job Number: 680-57431-1

Job Description: Anniston Landfill Seep 5/6/10

For:
Golder Associates Inc.
3730 Chamblee Tucker Road
Atlanta, GA 30341

Attention: Mr. Tim Richards

Approved for release.
Lidya Gulizia
Project Manager I
5/18/2010 9:59 AM

Lidya Gulizia
Project Manager I
lidya.gulizia@testamericainc.com
05/18/2010

cc: Ms. Lori Anne Hendel
Mr. Steve Moeller



Savannah Certifications and ID #s: A2LA: 0399.01; AL: 41450; ARDEQ: 88-0692; ARDOH; CA: 03217CA; CO; CT: PH0161; DE; FL: E87052; GA: 803; Guam; HI; IL: 200022; IN; IA: 353; KS: E-10322; KY EPPC: 90084; KY UST; LA DEQ: 30690; LA DHH: LA080008; ME: 2008022; MD: 250; MA: M-GA006; MI: 9925; MS; NFESC: 249; NV: GA00006; NJ: GA769; NM; NY: 10842; NC DWQ: 269; NC DHHS: 13701; PA: 68-00474; PR: GA00006; RI: LAO00244; SC: 98001001; TN: TN0296; TX: T104704185; USEPA: GA00006; VT: VT-87052; VA: 00302; WA; WV DEP: 094; WV DHHR: 9950 C; WI DNR: 999819810; WY/EPAR8: 8TMS-Q

**TestAmerica Laboratories, Inc.**
TestAmerica Savannah 5102 LaRoche Avenue, Savannah, GA 31404
Tel (912) 354-7858 Fax (912) 352-0165 www.testamericainc.com

ACCREDITED IN ACCORDANCE WITH nelac

**Receipt**
All samples were received in good condition within temperature requirements.

**GC/MS VOA**
No analytical or quality issues were noted.

**GC/MS Semi VOA**
Method(s) 8270C: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch 167912 were outside control limits. The associated laboratory control sample (LCS) recovery met acceptance criteria.

Method(s) 8270C: The matrix spike (MS) has surrogates outside QC limits. The original sample is within QC limits and the data has been reported.

Method(s) 8270C: The surrogate recovery for the blank associated with batch 167912 was outside recovery limits. All associated sample surrogates fell within acceptance criteria; therefore, the data have been reported.

No other analytical or quality issues were noted.

**GC Semi VOA**
No analytical or quality issues were noted.

**Metals**
No analytical or quality issues were noted.

**Comments**
No additional comments.

# METHOD SUMMARY

Client: Golder Associates Inc. Job Number: 680-57431-1

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix Water** | | | |
| Volatile Organic Compounds (GC/MS) | TAL SAV | SW846 8260B | |
| Purge and Trap | TAL SAV | | SW846 5030B |
| Polychlorinated Biphenyls (PCBs) (GC/MS) | TAL SAV | EPA 680 | |
| Liquid-Liquid Extraction (Separatory Funnel) | TAL SAV | | EPA 680 |
| Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS) | TAL SAV | SW846 8270C | |
| Semivolatile Organic Compounds (GC/MS SIM) | TAL SAV | SW846 8270C | |
| Liquid-Liquid Extraction (Continuous) | TAL SAV | | SW846 3520C |
| Liquid-Liquid Extraction (Continuous) | TAL SAV | | SW846 3520C |
| Organochlorine Pesticides & PCBs (GC) | TAL SAV | SW846 8081A_8082 | |
| Liquid-Liquid Extraction (Continuous) | TAL SAV | | SW846 3520C |
| Organophosphorous Pesticides (GC) | TAL SAV | SW846 8141A | |
| Liquid-Liquid Extraction (Continuous) | TAL SAV | | SW846 3520C |
| Metals (ICP) | TAL SAV | SW846 6010B | |
| Sample Filtration, Field | TAL SAV | | FIELD_FLTRD |
| Preparation, Total Recoverable or Dissolved Metals | TAL SAV | | SW846 3005A |
| Mercury (CVAA) | TAL SAV | SW846 7470A | |
| Sample Filtration, Field | TAL SAV | | FIELD_FLTRD |
| Preparation, Mercury | TAL SAV | | SW846 7470A |

**Lab References:**

TAL SAV = TestAmerica Savannah

**Method References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Golder Associates Inc. Job Number: 680-57431-1

| Method | Analyst | Analyst ID |
|---|---|---|
| SW846 8260B | Bearden, Robert | RB |
| EPA 680 | Davis, Nancy | ND |
| SW846 8270C | Davis, Nancy | ND |
| SW846 8270C | Haynes, Carion | CRH |
| SW846 8081A_8082 | Smith, Crystal | CAS |
| SW846 8141A | Kellar, Joshua | JK |
| SW846 6010B | Bland, Brian | BCB |
| SW846 7470A | Robertson, Bryn | BR |

## SAMPLE SUMMARY

Client: Golder Associates Inc. Job Number: 680-57431-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 680-57431-1 | SEEP-0.1 um | Water | 05/06/2010 1600 | 05/07/2010 1156 |
| 680-57431-2TB | Trip Blank-1 | Water | 05/06/2010 0000 | 05/07/2010 1156 |
| 680-57431-3 | SEEP-1 | Water | 05/06/2010 1605 | 05/07/2010 1156 |
| 680-57431-4FD | SEEP-1 FD | Water | 05/06/2010 0000 | 05/07/2010 1156 |
| 680-57431-5FB | FIELD BLANK-1 | Water | 05/06/2010 1620 | 05/07/2010 1156 |

# SAMPLE RESULTS

Client: Golder Associates Inc. Job Number: 680-57431-1

**Client Sample ID:** **Trip Blank-1**

Lab Sample ID: 680-57431-2TB Date Sampled: 05/06/2010 0000
Client Matrix: Water Date Received: 05/07/2010 1156

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-168185 | | Instrument ID: | MSO |
| Preparation: | 5030B | | | Lab File ID: | o0504.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 05/11/2010 1505 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 05/11/2010 1505 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methylene Chloride | <5.0 | | 1.0 | 5.0 |
| 1,1,2,2-Tetrachloroethane | <1.0 | | 0.18 | 1.0 |
| Chlorobenzene | <1.0 | | 0.25 | 1.0 |
| Isopropylbenzene | <1.0 | | 0.10 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 102 | | 75 - 120 |
| 4-Bromofluorobenzene | 88 | | 75 - 120 |
| Dibromofluoromethane | 100 | | 75 - 121 |

Client: Golder Associates Inc. Job Number: 680-57431-1

**Client Sample ID:** **SEEP-1**

Lab Sample ID: 680-57431-3 Date Sampled: 05/06/2010 1605
Client Matrix: Water Date Received: 05/07/2010 1156

**8260B Volatile Organic Compounds (GC/MS)**

| | | | |
|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-168185 | Instrument ID: MSO |
| Preparation: | 5030B | | Lab File ID: o0506.d |
| Dilution: | 1.0 | | Initial Weight/Volume: 5 mL |
| Date Analyzed: | 05/11/2010 1534 | | Final Weight/Volume: 5 mL |
| Date Prepared: | 05/11/2010 1534 | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methylene Chloride | <5.0 | | 1.0 | 5.0 |
| 1,1,2,2-Tetrachloroethane | <1.0 | | 0.18 | 1.0 |
| Chlorobenzene | <1.0 | | 0.25 | 1.0 |
| Isopropylbenzene | <1.0 | | 0.10 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 102 | | 75 - 120 |
| 4-Bromofluorobenzene | 88 | | 75 - 120 |
| Dibromofluoromethane | 101 | | 75 - 121 |

Client: Golder Associates Inc. Job Number: 680-57431-1

**Client Sample ID:** **SEEP-1 FD**

Lab Sample ID: 680-57431-4FD Date Sampled: 05/06/2010 0000
Client Matrix: Water Date Received: 05/07/2010 1156

**8260B Volatile Organic Compounds (GC/MS)**

| | | | |
|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-168185 | Instrument ID: MSO |
| Preparation: | 5030B | | Lab File ID: o0512.d |
| Dilution: | 1.0 | | Initial Weight/Volume: 5 mL |
| Date Analyzed: | 05/11/2010 1700 | | Final Weight/Volume: 5 mL |
| Date Prepared: | 05/11/2010 1700 | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methylene Chloride | <5.0 | | 1.0 | 5.0 |
| 1,1,2,2-Tetrachloroethane | <1.0 | | 0.18 | 1.0 |
| Chlorobenzene | <1.0 | | 0.25 | 1.0 |
| Isopropylbenzene | <1.0 | | 0.10 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 102 | | 75 - 120 |
| 4-Bromofluorobenzene | 87 | | 75 - 120 |
| Dibromofluoromethane | 103 | | 75 - 121 |

Client: Golder Associates Inc. Job Number: 680-57431-1

**Client Sample ID:** **FIELD BLANK-1**

Lab Sample ID: 680-57431-5FB Date Sampled: 05/06/2010 1620
Client Matrix: Water Date Received: 05/07/2010 1156

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8260B | Analysis Batch: 680-168185 | | Instrument ID: | MSO |
| Preparation: | 5030B | | | Lab File ID: | o0502.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 5 mL |
| Date Analyzed: | 05/11/2010 1436 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 05/11/2010 1436 | | | | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methylene Chloride | <5.0 | | 1.0 | 5.0 |
| 1,1,2,2-Tetrachloroethane | <1.0 | | 0.18 | 1.0 |
| Chlorobenzene | <1.0 | | 0.25 | 1.0 |
| Isopropylbenzene | <1.0 | | 0.10 | 1.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 101 | | 75 - 120 |
| 4-Bromofluorobenzene | 87 | | 75 - 120 |
| Dibromofluoromethane | 102 | | 75 - 121 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **SEEP-0.1 um**

Lab Sample ID: 680-57431-1
Client Matrix: Water

Date Sampled: 05/06/2010 1600
Date Received: 05/07/2010 1156

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 680 | Analysis Batch: 680-168269 | | Instrument ID: | MSF |
| Preparation: | 680 | Prep Batch: 680-167910 | | Lab File ID: | N/A |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 05/10/2010 2241 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 05/08/2010 1209 | | | Injection Volume: | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Monochlorobiphenyl | <0.095 | | 0.0053 | 0.095 |
| Dichlorobiphenyl | <0.095 | | 0.0051 | 0.095 |
| Trichlorobiphenyl | <0.095 | | 0.0062 | 0.095 |
| Tetrachlorobiphenyl | <0.19 | | 0.012 | 0.19 |
| Pentachlorobiphenyl | <0.19 | | 0.013 | 0.19 |
| Hexachlorobiphenyl | <0.19 | | 0.014 | 0.19 |
| Heptachlorobiphenyl | <0.29 | | 0.029 | 0.29 |
| Octachlorobiphenyl | <0.29 | | 0.036 | 0.29 |
| Nonachlorobiphenyl | <0.48 | | 0.047 | 0.48 |
| DCB Decachlorobiphenyl | <0.48 | | 0.067 | 0.48 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl-13C12 | 38 | | 25 - 113 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **SEEP-1**

Lab Sample ID: 680-57431-3
Client Matrix: Water

Date Sampled: 05/06/2010 1605
Date Received: 05/07/2010 1156

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

| | | | |
|---|---|---|---|
| Method: | 680 | Analysis Batch: 680-168269 | Instrument ID: | MSF |
| Preparation: | 680 | Prep Batch: 680-167910 | Lab File ID: | N/A |
| Dilution: | 1.0 | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 05/10/2010 2313 | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 05/08/2010 1209 | | Injection Volume: | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Monochlorobiphenyl | 0.38 | | 0.0053 | 0.095 |
| Dichlorobiphenyl | 0.19 | | 0.0051 | 0.095 |
| Trichlorobiphenyl | 0.017 | J | 0.0062 | 0.095 |
| Tetrachlorobiphenyl | <0.19 | | 0.012 | 0.19 |
| Pentachlorobiphenyl | <0.19 | | 0.013 | 0.19 |
| Hexachlorobiphenyl | <0.19 | | 0.014 | 0.19 |
| Heptachlorobiphenyl | <0.29 | | 0.029 | 0.29 |
| Octachlorobiphenyl | <0.29 | | 0.036 | 0.29 |
| Nonachlorobiphenyl | <0.48 | | 0.047 | 0.48 |
| DCB Decachlorobiphenyl | <0.48 | | 0.067 | 0.48 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl-13C12 | 46 | | 25 - 113 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **SEEP-1 FD**

Lab Sample ID: 680-57431-4FD
Client Matrix: Water

Date Sampled: 05/06/2010 0000
Date Received: 05/07/2010 1156

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 680 | Analysis Batch: 680-168269 | | Instrument ID: | MSF |
| Preparation: | 680 | Prep Batch: 680-167910 | | Lab File ID: | N/A |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 05/10/2010 2345 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 05/08/2010 1209 | | | Injection Volume: | |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Monochlorobiphenyl | 0.38 | | 0.0053 | 0.095 |
| Dichlorobiphenyl | 0.18 | | 0.0051 | 0.095 |
| Trichlorobiphenyl | 0.015 | J | 0.0062 | 0.095 |
| Tetrachlorobiphenyl | <0.19 | | 0.012 | 0.19 |
| Pentachlorobiphenyl | <0.19 | | 0.013 | 0.19 |
| Hexachlorobiphenyl | <0.19 | | 0.014 | 0.19 |
| Heptachlorobiphenyl | <0.29 | | 0.029 | 0.29 |
| Octachlorobiphenyl | <0.29 | | 0.036 | 0.29 |
| Nonachlorobiphenyl | <0.48 | | 0.047 | 0.48 |
| DCB Decachlorobiphenyl | <0.48 | | 0.067 | 0.48 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl-13C12 | 41 | | 25 - 113 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **FIELD BLANK-1**

Lab Sample ID: 680-57431-5FB
Client Matrix: Water

Date Sampled: 05/06/2010 1620
Date Received: 05/07/2010 1156

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

| | | | |
|---|---|---|---|
| Method: | 680 | Analysis Batch: 680-168269 | Instrument ID: MSF |
| Preparation: | 680 | Prep Batch: 680-167910 | Lab File ID: N/A |
| Dilution: | 1.0 | | Initial Weight/Volume: 1050 mL |
| Date Analyzed: | 05/11/2010 0018 | | Final Weight/Volume: 1 mL |
| Date Prepared: | 05/08/2010 1209 | | Injection Volume: |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Monochlorobiphenyl | <0.095 | | 0.0053 | 0.095 |
| Dichlorobiphenyl | <0.095 | | 0.0051 | 0.095 |
| Trichlorobiphenyl | <0.095 | | 0.0062 | 0.095 |
| Tetrachlorobiphenyl | <0.19 | | 0.012 | 0.19 |
| Pentachlorobiphenyl | <0.19 | | 0.013 | 0.19 |
| Hexachlorobiphenyl | <0.19 | | 0.014 | 0.19 |
| Heptachlorobiphenyl | <0.29 | | 0.029 | 0.29 |
| Octachlorobiphenyl | <0.29 | | 0.036 | 0.29 |
| Nonachlorobiphenyl | <0.48 | | 0.047 | 0.48 |
| DCB Decachlorobiphenyl | <0.48 | | 0.067 | 0.48 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl-13C12 | 45 | | 25 - 113 |

Client: Golder Associates Inc. Job Number: 680-57431-1

**Client Sample ID:** **SEEP-1**

Lab Sample ID: 680-57431-3 Date Sampled: 05/06/2010 1605
Client Matrix: Water Date Received: 05/07/2010 1156

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 680-168320 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-167912 | | Lab File ID: | g1207a.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 500 mL |
| Date Analyzed: | 05/12/2010 1525 | | | Final Weight/Volume: | 0.5 mL |
| Date Prepared: | 05/08/2010 1209 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,2-Dichlorobenzene | <10 | | 0.53 | 10 |
| 1,4-Dichlorobenzene | 1.4 | J | 0.54 | 10 |
| 2,4,6-Trichlorophenol | <10 | | 0.85 | 10 |
| 4-Nitrophenol | <25 | | 1.9 | 25 |
| o,o',o''-Triethylphosphorothioate | <10 | | 1.0 | 10 |
| 2,4,5-Trichlorophenol | <10 | | 1.2 | 10 |
| Pentachlorophenol | <10 | | 2.0 | 10 |
| Phenol | <10 | | 0.83 | 10 |
| 2,4-Dichlorophenol | <10 | | 1.1 | 10 |

| *Surrogate* | *%Rec* | *Qualifier* | *Acceptance Limits* |
|---|---|---|---|
| 2-Fluorobiphenyl | 74 | | 50 - 113 |
| 2-Fluorophenol | 62 | | 36 - 110 |
| Nitrobenzene-d5 | 73 | | 45 - 112 |
| Phenol-d5 | 61 | | 38 - 116 |
| Terphenyl-d14 | 78 | | 10 - 121 |
| 2,4,6-Tribromophenol | 80 | | 40 - 139 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **SEEP-1**

Lab Sample ID: 680-57431-3
Client Matrix: Water

Date Sampled: 05/06/2010 1605
Date Received: 05/07/2010 1156

**8270C Semivolatile Organic Compounds (GC/MS SIM)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 680-168791 | | Instrument ID: | MSF |
| Preparation: | 3520C | Prep Batch: 680-167912 | | Lab File ID: | f0081a.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 500 mL |
| Date Analyzed: | 05/17/2010 1722 | | | Final Weight/Volume: | 0.5 mL |
| Date Prepared: | 05/08/2010 1209 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | RL | RL |
|---|---|---|---|---|
| Pentachlorophenol | <1.0 | | 1.0 | 1.0 |

Client: Golder Associates Inc. Job Number: 680-57431-1

**Client Sample ID:** **SEEP-1 FD**

Lab Sample ID: 680-57431-4FD
Client Matrix: Water

Date Sampled: 05/06/2010 0000
Date Received: 05/07/2010 1156

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 680-168320 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-167912 | | Lab File ID: | g1208.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 05/12/2010 1325 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 05/08/2010 1209 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,2-Dichlorobenzene | <9.5 | | 0.50 | 9.5 |
| 1,4-Dichlorobenzene | 1.6 | J | 0.51 | 9.5 |
| 2,4,6-Trichlorophenol | <9.5 | | 0.81 | 9.5 |
| 4-Nitrophenol | <24 | | 1.8 | 24 |
| o,o',o''-Triethylphosphorothioate | <9.5 | | 0.95 | 9.5 |
| 2,4,5-Trichlorophenol | <9.5 | | 1.1 | 9.5 |
| Pentachlorophenol | <9.5 | | 1.9 | 9.5 |
| Phenol | <9.5 | | 0.79 | 9.5 |
| 2,4-Dichlorophenol | <9.5 | | 1.0 | 9.5 |

| *Surrogate* | *%Rec* | *Qualifier* | *Acceptance Limits* |
|---|---|---|---|
| 2-Fluorobiphenyl | 84 | | 50 - 113 |
| 2-Fluorophenol | 68 | | 36 - 110 |
| Nitrobenzene-d5 | 77 | | 45 - 112 |
| Phenol-d5 | 72 | | 38 - 116 |
| Terphenyl-d14 | 51 | | 10 - 121 |
| 2,4,6-Tribromophenol | 87 | | 40 - 139 |

Client: Golder Associates Inc. Job Number: 680-57431-1

**Client Sample ID:** **SEEP-1 FD**

Lab Sample ID: 680-57431-4FD Date Sampled: 05/06/2010 0000
Client Matrix: Water Date Received: 05/07/2010 1156

**8270C Semivolatile Organic Compounds (GC/MS SIM)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 680-168791 | | Instrument ID: | MSF |
| Preparation: | 3520C | Prep Batch: 680-167912 | | Lab File ID: | f0082.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1050 mL |
| Date Analyzed: | 05/17/2010 1647 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 05/08/2010 1209 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | RL | RL |
|---|---|---|---|---|
| Pentachlorophenol | <0.95 | | 0.95 | 0.95 |

Client: Golder Associates Inc. Job Number: 680-57431-1

**Client Sample ID:** **FIELD BLANK-1**

Lab Sample ID: 680-57431-5FB
Client Matrix: Water

Date Sampled: 05/06/2010 1620
Date Received: 05/07/2010 1156

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 680-168320 | | Instrument ID: | MSG |
| Preparation: | 3520C | Prep Batch: 680-167912 | | Lab File ID: | g1209.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 05/12/2010 1349 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 05/08/2010 1209 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| 1,2-Dichlorobenzene | <9.4 | | 0.50 | 9.4 |
| 1,4-Dichlorobenzene | <9.4 | | 0.51 | 9.4 |
| 2,4,6-Trichlorophenol | <9.4 | | 0.80 | 9.4 |
| 4-Nitrophenol | <24 | | 1.8 | 24 |
| o,o',o''-Triethylphosphorothioate | <9.4 | | 0.94 | 9.4 |
| 2,4,5-Trichlorophenol | <9.4 | | 1.1 | 9.4 |
| Pentachlorophenol | <9.4 | | 1.9 | 9.4 |
| Phenol | <9.4 | | 0.78 | 9.4 |
| 2,4-Dichlorophenol | <9.4 | | 1.0 | 9.4 |

| *Surrogate* | *%Rec* | *Qualifier* | *Acceptance Limits* |
|---|---|---|---|
| 2-Fluorobiphenyl | 69 | | 50 - 113 |
| 2-Fluorophenol | 58 | | 36 - 110 |
| Nitrobenzene-d5 | 62 | | 45 - 112 |
| Phenol-d5 | 58 | | 38 - 116 |
| Terphenyl-d14 | 86 | | 10 - 121 |
| 2,4,6-Tribromophenol | 66 | | 40 - 139 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **FIELD BLANK-1**

Lab Sample ID: 680-57431-5FB
Client Matrix: Water

Date Sampled: 05/06/2010 1620
Date Received: 05/07/2010 1156

**8270C Semivolatile Organic Compounds (GC/MS SIM)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8270C | Analysis Batch: 680-168791 | | Instrument ID: | MSF |
| Preparation: | 3520C | Prep Batch: 680-167912 | | Lab File ID: | f0083.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 1060 mL |
| Date Analyzed: | 05/17/2010 1704 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 05/08/2010 1209 | | | Injection Volume: | 1 uL |

| Analyte | Result (ug/L) | Qualifier | RL | RL |
|---|---|---|---|---|
| Pentachlorophenol | <0.94 | | 0.94 | 0.94 |

Client: Golder Associates Inc. Job Number: 680-57431-1

**Client Sample ID:** **SEEP-0.1 um**

Lab Sample ID: 680-57431-1 Date Sampled: 05/06/2010 1600
Client Matrix: Water Date Received: 05/07/2010 1156

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-168211 | | Instrument ID: | SGZ |
| Preparation: | 3520C | Prep Batch: 680-167911 | | Initial Weight/Volume: | 500 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 2.5 mL |
| Date Analyzed: | 05/10/2010 1918 | | | Injection Volume: | 2 uL |
| Date Prepared: | 05/08/2010 1209 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <0.25 | | 0.036 | 0.25 |
| PCB-1221 | <0.25 | | 0.14 | 0.25 |
| PCB-1232 | <0.25 | | 0.055 | 0.25 |
| PCB-1242 | <0.25 | | 0.090 | 0.25 |
| PCB-1248 | <0.25 | | 0.18 | 0.25 |
| PCB-1254 | <0.25 | | 0.13 | 0.25 |
| PCB-1260 | <0.25 | | 0.10 | 0.25 |
| PCB-1268 | <0.50 | | 0.13 | 0.50 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| *Tetrachloro-m-xylene* | *53* | | *35 - 120* |
| DCB Decachlorobiphenyl | 38 | | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **SEEP-0.1 um**

Lab Sample ID: 680-57431-1
Client Matrix: Water

Date Sampled: 05/06/2010 1600
Date Received: 05/07/2010 1156

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-168211 | | Instrument ID: | SGZ |
| Preparation: | 3520C | Prep Batch: 680-167911 | | Initial Weight/Volume: | 500 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 2.5 mL |
| Date Analyzed: | 05/10/2010 1918 | | | Injection Volume: | 2 uL |
| Date Prepared: | 05/08/2010 1209 | | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 47 | | 35 - 120 |
| DCB Decachlorobiphenyl | 34 | | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **SEEP-1**

Lab Sample ID: 680-57431-3
Client Matrix: Water

Date Sampled: 05/06/2010 1605
Date Received: 05/07/2010 1156

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-168211 | Instrument ID: SGZ |
| Preparation: | 3520C | Prep Batch: 680-167911 | Initial Weight/Volume: 1050 mL |
| Dilution: | 1.0 | | Final Weight/Volume: 5 mL |
| Date Analyzed: | 05/10/2010 1953 | | Injection Volume: 2 uL |
| Date Prepared: | 05/08/2010 1209 | | Result Type: PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <0.24 | | 0.034 | 0.24 |
| PCB-1221 | <0.24 | | 0.13 | 0.24 |
| PCB-1232 | <0.24 | | 0.052 | 0.24 |
| PCB-1242 | <0.24 | | 0.086 | 0.24 |
| PCB-1248 | <0.24 | | 0.17 | 0.24 |
| PCB-1254 | 0.12 | J p | 0.12 | 0.24 |
| PCB-1260 | <0.24 | | 0.095 | 0.24 |
| PCB-1268 | <0.48 | | 0.12 | 0.48 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 62 | | 35 - 120 |
| DCB Decachlorobiphenyl | 40 | | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **SEEP-1**

Lab Sample ID: 680-57431-3
Client Matrix: Water

Date Sampled: 05/06/2010 1605
Date Received: 05/07/2010 1156

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-168211 | Instrument ID: SGZ |
| Preparation: | 3520C | Prep Batch: 680-167911 | Initial Weight/Volume: 1050 mL |
| Dilution: | 1.0 | | Final Weight/Volume: 5 mL |
| Date Analyzed: | 05/10/2010 1953 | | Injection Volume: 2 uL |
| Date Prepared: | 05/08/2010 1209 | | Result Type: SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 56 | | 35 - 120 |
| DCB Decachlorobiphenyl | 39 | | 14 - 115 |

Client: Golder Associates Inc. Job Number: 680-57431-1

**Client Sample ID:** **SEEP-1 FD**

Lab Sample ID: 680-57431-4FD
Client Matrix: Water

Date Sampled: 05/06/2010 0000
Date Received: 05/07/2010 1156

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-168211 | Instrument ID: SGZ |
| Preparation: | 3520C | Prep Batch: 680-167911 | Initial Weight/Volume: 500 mL |
| Dilution: | 1.0 | | Final Weight/Volume: 2.5 mL |
| Date Analyzed: | 05/10/2010 2027 | | Injection Volume: 2 uL |
| Date Prepared: | 05/08/2010 1209 | | Result Type: PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <0.25 | | 0.036 | 0.25 |
| PCB-1221 | <0.25 | | 0.14 | 0.25 |
| PCB-1232 | <0.25 | | 0.055 | 0.25 |
| PCB-1242 | <0.25 | | 0.090 | 0.25 |
| PCB-1248 | <0.25 | | 0.18 | 0.25 |
| PCB-1254 | <0.25 | | 0.13 | 0.25 |
| PCB-1260 | <0.25 | | 0.10 | 0.25 |
| PCB-1268 | <0.50 | | 0.13 | 0.50 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 67 | | 35 - 120 |
| DCB Decachlorobiphenyl | 44 | p | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **SEEP-1 FD**

Lab Sample ID: 680-57431-4FD
Client Matrix: Water

Date Sampled: 05/06/2010 0000
Date Received: 05/07/2010 1156

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-168211 | Instrument ID: SGZ |
| Preparation: | 3520C | Prep Batch: 680-167911 | Initial Weight/Volume: 500 mL |
| Dilution: | 1.0 | | Final Weight/Volume: 2.5 mL |
| Date Analyzed: | 05/10/2010 2027 | | Injection Volume: 2 uL |
| Date Prepared: | 05/08/2010 1209 | | Result Type: SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 47 | | 35 - 120 |
| DCB Decachlorobiphenyl | 66 | | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **FIELD BLANK-1**

Lab Sample ID: 680-57431-5FB
Client Matrix: Water

Date Sampled: 05/06/2010 1620
Date Received: 05/07/2010 1156

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | |
|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-168211 | Instrument ID: SGZ |
| Preparation: | 3520C | Prep Batch: 680-167911 | Initial Weight/Volume: 1060 mL |
| Dilution: | 1.0 | | Final Weight/Volume: 5 mL |
| Date Analyzed: | 05/10/2010 2102 | | Injection Volume: 2 uL |
| Date Prepared: | 05/08/2010 1209 | | Result Type: PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <0.24 | | 0.033 | 0.24 |
| PCB-1221 | <0.24 | | 0.13 | 0.24 |
| PCB-1232 | <0.24 | | 0.052 | 0.24 |
| PCB-1242 | <0.24 | | 0.085 | 0.24 |
| PCB-1248 | <0.24 | | 0.17 | 0.24 |
| PCB-1254 | <0.24 | | 0.12 | 0.24 |
| PCB-1260 | <0.24 | | 0.094 | 0.24 |
| PCB-1268 | <0.47 | | 0.12 | 0.47 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 72 | | 35 - 120 |
| DCB Decachlorobiphenyl | 69 | | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **FIELD BLANK-1**

Lab Sample ID: 680-57431-5FB
Client Matrix: Water

Date Sampled: 05/06/2010 1620
Date Received: 05/07/2010 1156

**8081A_8082 Organochlorine Pesticides & PCBs (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8081A_8082 | Analysis Batch: 680-168211 | | Instrument ID: | SGZ |
| Preparation: | 3520C | Prep Batch: 680-167911 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 5 mL |
| Date Analyzed: | 05/10/2010 2102 | | | Injection Volume: | 2 uL |
| Date Prepared: | 05/08/2010 1209 | | | Result Type: | SECONDARY |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 70 | | 35 - 120 |
| DCB Decachlorobiphenyl | 67 | | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **SEEP-1**

Lab Sample ID: 680-57431-3
Client Matrix: Water

Date Sampled: 05/06/2010 1605
Date Received: 05/07/2010 1156

**8141A Organophosphorous Pesticides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8141A | Analysis Batch: 680-168078 | | Instrument ID: | SGO |
| Preparation: | 3520C | Prep Batch: 680-167911 | | Initial Weight/Volume: | 1050 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 5 mL |
| Date Analyzed: | 05/10/2010 2045 | | | Injection Volume: | 2 uL |
| Date Prepared: | 05/08/2010 1209 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl parathion | <0.24 | | 0.12 | 0.24 |
| Ethyl Parathion | <0.48 | * | 0.24 | 0.48 |
| Tetraethyldithiopyrophosphate | <0.24 | | 0.12 | 0.24 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 81 | | 26 - 134 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **SEEP-1 FD**

Lab Sample ID: 680-57431-4FD
Client Matrix: Water

Date Sampled: 05/06/2010 0000
Date Received: 05/07/2010 1156

**8141A Organophosphorous Pesticides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8141A | Analysis Batch: 680-168078 | | Instrument ID: | SGO |
| Preparation: | 3520C | Prep Batch: 680-167911 | | Initial Weight/Volume: | 500 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 2.5 mL |
| Date Analyzed: | 05/10/2010 2110 | | | Injection Volume: | 2 uL |
| Date Prepared: | 05/08/2010 1209 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl parathion | <0.25 | | 0.12 | 0.25 |
| Ethyl Parathion | <0.50 | * | 0.25 | 0.50 |
| Tetraethyldithiopyrophosphate | <0.25 | | 0.12 | 0.25 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 108 | | 26 - 134 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **FIELD BLANK-1**

Lab Sample ID: 680-57431-5FB
Client Matrix: Water

Date Sampled: 05/06/2010 1620
Date Received: 05/07/2010 1156

**8141A Organophosphorous Pesticides (GC)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 8141A | Analysis Batch: 680-168078 | | Instrument ID: | SGO |
| Preparation: | 3520C | Prep Batch: 680-167911 | | Initial Weight/Volume: | 1060 mL |
| Dilution: | 1.0 | | | Final Weight/Volume: | 5 mL |
| Date Analyzed: | 05/10/2010 2135 | | | Injection Volume: | 2 uL |
| Date Prepared: | 05/08/2010 1209 | | | Result Type: | PRIMARY |

| Analyte | Result (ug/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Methyl parathion | <0.24 | | 0.12 | 0.24 |
| Ethyl Parathion | <0.47 | * | 0.24 | 0.47 |
| Tetraethyldithiopyrophosphate | <0.24 | | 0.12 | 0.24 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 84 | | 26 - 134 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **SEEP-0.1 um**

Lab Sample ID: 680-57431-1
Client Matrix: Water

Date Sampled: 05/06/2010 1600
Date Received: 05/07/2010 1156

**6010B Metals (ICP)-Dissolved**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 680-168433 | | Instrument ID: | ICPD |
| Preparation: | 3005A | Prep Batch: 680-168245 | | Lab File ID: | 168245.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 05/13/2010 0156 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 05/12/2010 0956 | | | | |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Arsenic | <0.020 | | 0.010 | 0.020 |
| Barium | 0.12 | | 0.0020 | 0.010 |
| Beryllium | <0.0040 | | 0.00010 | 0.0040 |
| Cadmium | <0.0050 | | 0.0020 | 0.0050 |
| Chromium | <0.010 | | 0.0020 | 0.010 |
| Cobalt | <0.010 | | 0.0010 | 0.010 |
| Lead | <0.010 | | 0.0034 | 0.010 |
| Manganese | 0.17 | | 0.0030 | 0.010 |
| Nickel | <0.040 | | 0.0040 | 0.040 |
| Vanadium | <0.010 | | 0.0030 | 0.010 |

**7470A Mercury (CVAA)-Dissolved**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-168214 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-168114 | | Lab File ID: | 051110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 05/12/2010 1249 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 05/11/2010 1121 | | | | |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | <0.00020 | | 0.000091 | 0.00020 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **SEEP-1**

Lab Sample ID: 680-57431-3
Client Matrix: Water

Date Sampled: 05/06/2010 1605
Date Received: 05/07/2010 1156

**6010B Metals (ICP)-Total Recoverable**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 680-168433 | | Instrument ID: | ICPD |
| Preparation: | 3005A | Prep Batch: 680-168245 | | Lab File ID: | 168245.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 05/13/2010 0212 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 05/12/2010 0956 | | | | |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Arsenic | <0.020 | | 0.010 | 0.020 |
| Barium | 0.13 | | 0.0020 | 0.010 |
| Beryllium | <0.0040 | | 0.00010 | 0.0040 |
| Cadmium | <0.0050 | | 0.0020 | 0.0050 |
| Chromium | <0.010 | | 0.0020 | 0.010 |
| Cobalt | <0.010 | | 0.0010 | 0.010 |
| Lead | <0.010 | | 0.0034 | 0.010 |
| Manganese | 0.19 | | 0.0030 | 0.010 |
| Nickel | <0.040 | | 0.0040 | 0.040 |
| Vanadium | <0.010 | | 0.0030 | 0.010 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-168214 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-168114 | | Lab File ID: | 051110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 05/12/2010 1252 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 05/11/2010 1121 | | | | |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | <0.00020 | | 0.000091 | 0.00020 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **SEEP-1 FD**

Lab Sample ID: 680-57431-4FD
Client Matrix: Water

Date Sampled: 05/06/2010 0000
Date Received: 05/07/2010 1156

**6010B Metals (ICP)-Total Recoverable**

| | | | |
|---|---|---|---|
| Method: | 6010B | Analysis Batch: 680-168433 | Instrument ID: ICPD |
| Preparation: | 3005A | Prep Batch: 680-168245 | Lab File ID: 168245.chr |
| Dilution: | 1.0 | | Initial Weight/Volume: 50 mL |
| Date Analyzed: | 05/13/2010 0217 | | Final Weight/Volume: 50 mL |
| Date Prepared: | 05/12/2010 0956 | | |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Arsenic | <0.020 | | 0.010 | 0.020 |
| Barium | 0.12 | | 0.0020 | 0.010 |
| Beryllium | <0.0040 | | 0.00010 | 0.0040 |
| Cadmium | <0.0050 | | 0.0020 | 0.0050 |
| Chromium | <0.010 | | 0.0020 | 0.010 |
| Cobalt | <0.010 | | 0.0010 | 0.010 |
| Lead | <0.010 | | 0.0034 | 0.010 |
| Manganese | 0.19 | | 0.0030 | 0.010 |
| Nickel | <0.040 | | 0.0040 | 0.040 |
| Vanadium | <0.010 | | 0.0030 | 0.010 |

**7470A Mercury (CVAA)**

| | | | |
|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-168214 | Instrument ID: LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-168114 | Lab File ID: 051110.chr |
| Dilution: | 1.0 | | Initial Weight/Volume: 50 mL |
| Date Analyzed: | 05/12/2010 1255 | | Final Weight/Volume: 50 mL |
| Date Prepared: | 05/11/2010 1121 | | |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | <0.00020 | | 0.000091 | 0.00020 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Client Sample ID:** **FIELD BLANK-1**

Lab Sample ID: 680-57431-5FB
Client Matrix: Water

Date Sampled: 05/06/2010 1620
Date Received: 05/07/2010 1156

**6010B Metals (ICP)-Total Recoverable**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 6010B | Analysis Batch: 680-168433 | | Instrument ID: | ICPD |
| Preparation: | 3005A | Prep Batch: 680-168245 | | Lab File ID: | 168245.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 05/13/2010 0222 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 05/12/2010 0956 | | | | |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Arsenic | <0.020 | | 0.010 | 0.020 |
| Barium | <0.010 | | 0.0020 | 0.010 |
| Beryllium | <0.0040 | | 0.00010 | 0.0040 |
| Cadmium | <0.0050 | | 0.0020 | 0.0050 |
| Chromium | <0.010 | | 0.0020 | 0.010 |
| Cobalt | <0.010 | | 0.0010 | 0.010 |
| Lead | <0.010 | | 0.0034 | 0.010 |
| Manganese | <0.010 | | 0.0030 | 0.010 |
| Nickel | <0.040 | | 0.0040 | 0.040 |
| Vanadium | <0.010 | | 0.0030 | 0.010 |

**7470A Mercury (CVAA)**

| | | | | | |
|---|---|---|---|---|---|
| Method: | 7470A | Analysis Batch: 680-168214 | | Instrument ID: | LEEMAN1 |
| Preparation: | 7470A | Prep Batch: 680-168114 | | Lab File ID: | 051110.chr |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Date Analyzed: | 05/12/2010 1257 | | | Final Weight/Volume: | 50 mL |
| Date Prepared: | 05/11/2010 1121 | | | | |

| Analyte | Result (mg/L) | Qualifier | MDL | RL |
|---|---|---|---|---|
| Mercury | <0.00020 | | 0.000091 | 0.00020 |

## DATA REPORTING QUALIFIERS

Client: Golder Associates Inc. Job Number: 680-57431-1

| Lab Section | Qualifier | Description |
|---|---|---|
| GC/MS Semi VOA | | |
| | F | MS or MSD exceeds the control limits |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| | F | RPD of the MS and MSD exceeds the control limits |
| | X | Surrogate is outside control limits |
| GC Semi VOA | | |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| | * | RPD of the LCS and LCSD exceeds the control limits |
| | p | The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported. |

# QUALITY CONTROL RESULTS

Client: Golder Associates Inc. Job Number: 680-57431-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC/MS VOA** | | | | | |
| **Analysis Batch:680-168185** | | | | | |
| LCS 680-168185/6 | Lab Control Sample | T | Water | 8260B | |
| LCSD 680-168185/7 | Lab Control Sample Duplicate | T | Water | 8260B | |
| MB 680-168185/9 | Method Blank | T | Water | 8260B | |
| 680-57431-2TB | Trip Blank-1 | T | Water | 8260B | |
| 680-57431-3 | SEEP-1 | T | Water | 8260B | |
| 680-57431-4FD | SEEP-1 FD | T | Water | 8260B | |
| 680-57431-5FB | FIELD BLANK-1 | T | Water | 8260B | |

**Report Basis**
T = Total

Client: Golder Associates Inc.

Job Number: 680-57431-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC/MS Semi VOA** | | | | | |
| **Prep Batch: 680-167910** | | | | | |
| LCS 680-167910/8-A | Lab Control Sample | T | Water | 680 | |
| LCSD 680-167910/9-A | Lab Control Sample Duplicate | T | Water | 680 | |
| MB 680-167910/7-A | Method Blank | T | Water | 680 | |
| 680-57431-1 | SEEP-0.1 um | T | Water | 680 | |
| 680-57431-3 | SEEP-1 | T | Water | 680 | |
| 680-57431-4FD | SEEP-1 FD | T | Water | 680 | |
| 680-57431-5FB | FIELD BLANK-1 | T | Water | 680 | |
| **Prep Batch: 680-167912** | | | | | |
| LCS 680-167912/5-A | Lab Control Sample | T | Water | 3520C | |
| MB 680-167912/4-A | Method Blank | T | Water | 3520C | |
| 680-57431-3 | SEEP-1 | T | Water | 3520C | |
| 680-57431-3MS | Matrix Spike | T | Water | 3520C | |
| 680-57431-3MSD | Matrix Spike Duplicate | T | Water | 3520C | |
| 680-57431-4FD | SEEP-1 FD | T | Water | 3520C | |
| 680-57431-5FB | FIELD BLANK-1 | T | Water | 3520C | |
| **Analysis Batch:680-168269** | | | | | |
| LCS 680-167910/8-A | Lab Control Sample | T | Water | 680 | 680-167910 |
| LCSD 680-167910/9-A | Lab Control Sample Duplicate | T | Water | 680 | 680-167910 |
| MB 680-167910/7-A | Method Blank | T | Water | 680 | 680-167910 |
| 680-57431-1 | SEEP-0.1 um | T | Water | 680 | 680-167910 |
| 680-57431-3 | SEEP-1 | T | Water | 680 | 680-167910 |
| 680-57431-4FD | SEEP-1 FD | T | Water | 680 | 680-167910 |
| 680-57431-5FB | FIELD BLANK-1 | T | Water | 680 | 680-167910 |
| **Analysis Batch:680-168320** | | | | | |
| LCS 680-167912/5-A | Lab Control Sample | T | Water | 8270C | 680-167912 |
| MB 680-167912/4-A | Method Blank | T | Water | 8270C | 680-167912 |
| 680-57431-3 | SEEP-1 | T | Water | 8270C | 680-167912 |
| 680-57431-3MS | Matrix Spike | T | Water | 8270C | 680-167912 |
| 680-57431-3MSD | Matrix Spike Duplicate | T | Water | 8270C | 680-167912 |
| 680-57431-4FD | SEEP-1 FD | T | Water | 8270C | 680-167912 |
| 680-57431-5FB | FIELD BLANK-1 | T | Water | 8270C | 680-167912 |
| **Analysis Batch:680-168791** | | | | | |
| MB 680-167912/4-A | Method Blank | T | Water | 8270C | 680-167912 |
| 680-57431-3 | SEEP-1 | T | Water | 8270C | 680-167912 |
| 680-57431-4FD | SEEP-1 FD | T | Water | 8270C | 680-167912 |
| 680-57431-5FB | FIELD BLANK-1 | T | Water | 8270C | 680-167912 |

**Report Basis**
T = Total

Client: Golder Associates Inc. Job Number: 680-57431-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC Semi VOA** | | | | | |
| **Prep Batch: 680-167911** | | | | | |
| LCS 680-167911/11-A | Lab Control Sample | T | Water | 3520C | |
| LCS 680-167911/6-A | Lab Control Sample | T | Water | 3520C | |
| LCS 680-167911/9-A | Lab Control Sample | T | Water | 3520C | |
| LCSD 680-167911/10-A | Lab Control Sample Duplicate | T | Water | 3520C | |
| LCSD 680-167911/12-A | Lab Control Sample Duplicate | T | Water | 3520C | |
| MB 680-167911/5-A | Method Blank | T | Water | 3520C | |
| 680-57431-1 | SEEP-0.1 um | T | Water | 3520C | |
| 680-57431-3 | SEEP-1 | T | Water | 3520C | |
| 680-57431-4FD | SEEP-1 FD | T | Water | 3520C | |
| 680-57431-4MS | Matrix Spike | T | Water | 3520C | |
| 680-57431-4MSD | Matrix Spike Duplicate | T | Water | 3520C | |
| 680-57431-5FB | FIELD BLANK-1 | T | Water | 3520C | |
| **Analysis Batch:680-168078** | | | | | |
| LCS 680-167911/11-A | Lab Control Sample | T | Water | 8141A | 680-167911 |
| LCS 680-167911/9-A | Lab Control Sample | T | Water | 8141A | 680-167911 |
| LCSD 680-167911/10-A | Lab Control Sample Duplicate | T | Water | 8141A | 680-167911 |
| LCSD 680-167911/12-A | Lab Control Sample Duplicate | T | Water | 8141A | 680-167911 |
| MB 680-167911/5-A | Method Blank | T | Water | 8141A | 680-167911 |
| 680-57431-3 | SEEP-1 | T | Water | 8141A | 680-167911 |
| 680-57431-4FD | SEEP-1 FD | T | Water | 8141A | 680-167911 |
| 680-57431-5FB | FIELD BLANK-1 | T | Water | 8141A | 680-167911 |
| **Analysis Batch:680-168211** | | | | | |
| LCS 680-167911/6-A | Lab Control Sample | T | Water | 8081A_8082 | 680-167911 |
| MB 680-167911/5-A | Method Blank | T | Water | 8081A_8082 | 680-167911 |
| 680-57431-1 | SEEP-0.1 um | T | Water | 8081A_8082 | 680-167911 |
| 680-57431-3 | SEEP-1 | T | Water | 8081A_8082 | 680-167911 |
| 680-57431-4FD | SEEP-1 FD | T | Water | 8081A_8082 | 680-167911 |
| 680-57431-4MS | Matrix Spike | T | Water | 8081A_8082 | 680-167911 |
| 680-57431-4MSD | Matrix Spike Duplicate | T | Water | 8081A_8082 | 680-167911 |
| 680-57431-5FB | FIELD BLANK-1 | T | Water | 8081A_8082 | 680-167911 |

**Report Basis**
T = Total

Client: Golder Associates Inc. Job Number: 680-57431-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **Metals** | | | | | |
| **Prep Batch: 680-168114** | | | | | |
| LCS 680-168114/24-A | Lab Control Sample | T | Water | 7470A | |
| MB 680-168114/23-A | Method Blank | T | Water | 7470A | |
| 680-57431-1 | SEEP-0.1 um | D | Water | 7470A | |
| 680-57431-3 | SEEP-1 | T | Water | 7470A | |
| 680-57431-4FD | SEEP-1 FD | T | Water | 7470A | |
| 680-57431-5FB | FIELD BLANK-1 | T | Water | 7470A | |
| **Analysis Batch:680-168214** | | | | | |
| LCS 680-168114/24-A | Lab Control Sample | T | Water | 7470A | 680-168114 |
| MB 680-168114/23-A | Method Blank | T | Water | 7470A | 680-168114 |
| 680-57431-1 | SEEP-0.1 um | D | Water | 7470A | 680-168114 |
| 680-57431-3 | SEEP-1 | T | Water | 7470A | 680-168114 |
| 680-57431-4FD | SEEP-1 FD | T | Water | 7470A | 680-168114 |
| 680-57431-5FB | FIELD BLANK-1 | T | Water | 7470A | 680-168114 |
| **Prep Batch: 680-168245** | | | | | |
| LCS 680-168245/19-A | Lab Control Sample | R | Water | 3005A | |
| MB 680-168245/18-A | Method Blank | R | Water | 3005A | |
| 680-57431-1 | SEEP-0.1 um | D | Water | 3005A | |
| 680-57431-3 | SEEP-1 | R | Water | 3005A | |
| 680-57431-4FD | SEEP-1 FD | R | Water | 3005A | |
| 680-57431-5FB | FIELD BLANK-1 | R | Water | 3005A | |
| **Analysis Batch:680-168433** | | | | | |
| LCS 680-168245/19-A | Lab Control Sample | R | Water | 6010B | 680-168245 |
| MB 680-168245/18-A | Method Blank | R | Water | 6010B | 680-168245 |
| 680-57431-1 | SEEP-0.1 um | D | Water | 6010B | 680-168245 |
| 680-57431-3 | SEEP-1 | R | Water | 6010B | 680-168245 |
| 680-57431-4FD | SEEP-1 FD | R | Water | 6010B | 680-168245 |
| 680-57431-5FB | FIELD BLANK-1 | R | Water | 6010B | 680-168245 |

**Report Basis**
D = Dissolved
R = Total Recoverable
T = Total

Client: Golder Associates Inc.

Job Number: 680-57431-1

## Surrogate Recovery Report

**8260B Volatile Organic Compounds (GC/MS)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | TOL %Rec | BFB %Rec | DBFM %Rec |
|---|---|---|---|---|
| 680-57431-2 | Trip Blank-1 | 102 | 88 | 100 |
| 680-57431-3 | SEEP-1 | 102 | 88 | 101 |
| 680-57431-4 | SEEP-1 FD | 102 | 87 | 103 |
| 680-57431-5 | FIELD BLANK-1 | 101 | 87 | 102 |
| MB 680-168185/9 | | 102 | 86 | 103 |
| LCS 680-168185/6 | | 104 | 96 | 100 |
| LCSD 680-168185/7 | | 103 | 94 | 103 |

| Surrogate | Acceptance Limits |
|---|---|
| TOL = Toluene-d8 (Surr) | 75-120 |
| BFB = 4-Bromofluorobenzene | 75-120 |
| DBFM = Dibromofluoromethane | 75-121 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

## Surrogate Recovery Report

**680 Polychlorinated Biphenyls (PCBs) (GC/MS)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | 13DCB %Rec |
|---|---|---|
| 680-57431-1 | SEEP-0.1 um | 38 |
| 680-57431-3 | SEEP-1 | 46 |
| 680-57431-4 | SEEP-1 FD | 41 |
| 680-57431-5 | FIELD BLANK-1 | 45 |
| MB 680-167910/7-A | | 50 |
| LCS 680-167910/8-A | | 63 |
| LCSD 680-167910/9-A | | 57 |

| Surrogate | Acceptance Limits |
|---|---|
| 13DCB = Decachlorobiphenyl-13C12 | 25-113 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

## Surrogate Recovery Report

**8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | FBP %Rec | 2FP %Rec | NBZ %Rec | PHL %Rec | TPH %Rec | TBP %Rec |
|---|---|---|---|---|---|---|---|
| 680-57431-3 | SEEP-1 | 74 | 62 | 73 | 61 | 78 | 80 |
| 680-57431-4 | SEEP-1 FD | 84 | 68 | 77 | 72 | 51 | 87 |
| 680-57431-5 | FIELD BLANK-1 | 69 | 58 | 62 | 58 | 86 | 66 |
| MB 680-167912/4-A | | 71 | 34X | 68 | 57 | 88 | 59 |
| LCS 680-167912/5-A | | 79 | 51 | 60 | 56 | 81 | 84 |
| 680-57431-3 MS | SEEP-1 MS | 45X | 27X | 37X | 37X | 65 | 59 |
| 680-57431-3 MSD | SEEP-1 MSD | 69 | 48 | 60 | 51 | 50 | 73 |

| Surrogate | Acceptance Limits |
|---|---|
| FBP = 2-Fluorobiphenyl | 50-113 |
| 2FP = 2-Fluorophenol | 36-110 |
| NBZ = Nitrobenzene-d5 | 45-112 |
| PHL = Phenol-d5 | 38-116 |
| TPH = Terphenyl-d14 | 10-121 |
| TBP = 2,4,6-Tribromophenol | 40-139 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

## Surrogate Recovery Report

**8081A_8082_Organochlorine Pesticides & PCBs (GC)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | TCX1 %Rec | TCX2 %Rec | DCB1 %Rec | DCB2 %Rec |
|---|---|---|---|---|---|
| 680-57431-1 | SEEP-0.1 um | 53 | 47 | 34 | 38 |
| 680-57431-3 | SEEP-1 | 62 | 56 | 40 | 39 |
| 680-57431-4 | SEEP-1 FD | 47 | 67 | 44p | 66 |
| 680-57431-5 | FIELD BLANK-1 | 72 | 70 | 67 | 69 |
| MB 680-167911/5-A | | 66 | 71 | 76 | 84 |
| LCS 680-167911/6-A | | 82 | 87 | 84 | 92 |
| 680-57431-4 MS | SEEP-1 FD MS | 61 | 56 | 54 | 52 |
| 680-57431-4 MSD | SEEP-1 FD MSD | 77 | 53 | 64 | 47 |

| Surrogate | Acceptance Limits |
|---|---|
| TCX = Tetrachloro-m-xylene | 35-120 |
| DCB = DCB Decachlorobiphenyl | 14-115 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

## Surrogate Recovery Report

**8141A Organophosphorous Pesticides (GC)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | TPP2 %Rec |
|---|---|---|
| 680-57431-3 | SEEP-1 | 81 |
| 680-57431-4 | SEEP-1 FD | 108 |
| 680-57431-5 | FIELD BLANK-1 | 84 |
| MB 680-167911/5-A | | 86 |
| LCS 680-167911/9-A | | 91 |
| LCS 680-167911/11-A | | 95 |
| LCSD 680-167911/10-A | | 92 |
| LCSD 680-167911/12-A | | 88 |

| Surrogate | Acceptance Limits |
|---|---|
| TPP = Triphenylphosphate | 26-134 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Method Blank - Batch: 680-168185**

**Method: 8260B**
**Preparation: 5030B**

Lab Sample ID: MB 680-168185/9
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 05/11/2010 1213
Date Prepared: 05/11/2010 1213

Analysis Batch: 680-168185
Prep Batch: N/A
Units: ug/L

Instrument ID: MSO
Lab File ID: oq297.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Methylene Chloride | <5.0 | | 1.0 | 5.0 |
| 1,1,2,2-Tetrachloroethane | <1.0 | | 0.18 | 1.0 |
| Chlorobenzene | <1.0 | | 0.25 | 1.0 |
| Isopropylbenzene | <1.0 | | 0.10 | 1.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Toluene-d8 (Surr) | 102 | 75 - 120 |
| 4-Bromofluorobenzene | 86 | 75 - 120 |
| Dibromofluoromethane | 103 | 75 - 121 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 680-168185**

**Method: 8260B**
**Preparation: 5030B**

LCS Lab Sample ID: LCS 680-168185/6
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 05/11/2010 1012
Date Prepared: 05/11/2010 1012

Analysis Batch: 680-168185
Prep Batch: N/A
Units: ug/L

Instrument ID: MSO
Lab File ID: oq289.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

LCSD Lab Sample ID: LCSD 680-168185/7
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 05/11/2010 1041
Date Prepared: 05/11/2010 1041

Analysis Batch: 680-168185
Prep Batch: N/A
Units: ug/L

Instrument ID: MSO
Lab File ID: oq291.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Methylene Chloride | 105 | 110 | 70 - 125 | 4 | 30 | | |
| 1,1,2,2-Tetrachloroethane | 97 | 93 | 69 - 129 | 5 | 30 | | |
| Chlorobenzene | 99 | 98 | 85 - 116 | 1 | 30 | | |
| Isopropylbenzene | 103 | 102 | 82 - 121 | 1 | 30 | | |

| Surrogate | LCS % Rec | LCSD % Rec | Acceptance Limits |
|---|---|---|---|
| Toluene-d8 (Surr) | 104 | 103 | 75 - 120 |
| 4-Bromofluorobenzene | 96 | 94 | 75 - 120 |
| Dibromofluoromethane | 100 | 103 | 75 - 121 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Method Blank - Batch: 680-167910**

**Method: 680**
**Preparation: 680**

Lab Sample ID: MB 680-167910/7-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 05/10/2010 2001
Date Prepared: 05/08/2010 1209

Analysis Batch: 680-168269
Prep Batch: 680-167910
Units: ug/L

Instrument ID: MSF
Lab File ID: N/A
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 1 mL
Injection Volume:

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Monochlorobiphenyl | <0.10 | | 0.0056 | 0.10 |
| Dichlorobiphenyl | <0.10 | | 0.0054 | 0.10 |
| Trichlorobiphenyl | <0.10 | | 0.0065 | 0.10 |
| Tetrachlorobiphenyl | <0.20 | | 0.013 | 0.20 |
| Pentachlorobiphenyl | <0.20 | | 0.014 | 0.20 |
| Hexachlorobiphenyl | <0.20 | | 0.015 | 0.20 |
| Heptachlorobiphenyl | <0.30 | | 0.030 | 0.30 |
| Octachlorobiphenyl | <0.30 | | 0.038 | 0.30 |
| Nonachlorobiphenyl | <0.50 | | 0.049 | 0.50 |
| DCB Decachlorobiphenyl | <0.50 | | 0.070 | 0.50 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Decachlorobiphenyl-13C12 | 50 | 25 - 113 |

Client: Golder Associates Inc. Job Number: 680-57431-1

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 680-167910**

**Method: 680**
**Preparation: 680**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 680-167910/8-A | Analysis Batch: | 680-168269 | Instrument ID: | MSF |
| Client Matrix: | Water | Prep Batch: | 680-167910 | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 05/10/2010 2033 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 05/08/2010 1209 | | | Injection Volume: | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 680-167910/9-A | Analysis Batch: | 680-168269 | Instrument ID: | MSF |
| Client Matrix: | Water | Prep Batch: | 680-167910 | Lab File ID: | N/A |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 05/10/2010 2105 | | | Final Weight/Volume: | 1 mL |
| Date Prepared: | 05/08/2010 1209 | | | Injection Volume: | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Monochlorobiphenyl | 28 | 27 | 10 - 125 | 5 | 40 | | |
| Dichlorobiphenyl | 35 | 33 | 10 - 110 | 7 | 40 | | |
| Trichlorobiphenyl | 38 | 35 | 17 - 110 | 8 | 40 | | |
| Tetrachlorobiphenyl | 41 | 39 | 18 - 110 | 7 | 40 | | |
| Pentachlorobiphenyl | 47 | 41 | 34 - 110 | 12 | 40 | | |
| Hexachlorobiphenyl | 48 | 43 | 31 - 110 | 10 | 40 | | |
| Heptachlorobiphenyl | 51 | 46 | 33 - 110 | 10 | 40 | | |
| Octachlorobiphenyl | 53 | 49 | 33 - 110 | 8 | 40 | | |
| DCB Decachlorobiphenyl | 53 | 49 | 26 - 115 | 8 | 40 | | |

| Surrogate | LCS % Rec | LCSD % Rec | Acceptance Limits |
|---|---|---|---|
| Decachlorobiphenyl-13C12 | 63 | 57 | 25 - 113 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Method Blank - Batch: 680-167912**

**Method: 8270C**
**Preparation: 3520C**

Lab Sample ID: MB 680-167912/4-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 05/12/2010 1213
Date Prepared: 05/08/2010 1209

Analysis Batch: 680-168320
Prep Batch: 680-167912
Units: ug/L

Instrument ID: MSG
Lab File ID: g1205.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 1 mL
Injection Volume: 1 uL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| 1,2-Dichlorobenzene | <10 | | 0.53 | 10 |
| 1,4-Dichlorobenzene | <10 | | 0.54 | 10 |
| 2,4,6-Trichlorophenol | <10 | | 0.85 | 10 |
| 4-Nitrophenol | <25 | | 1.9 | 25 |
| o,o',o''-Triethylphosphorothioate | <10 | | 1.0 | 10 |
| 2,4,5-Trichlorophenol | <10 | | 1.2 | 10 |
| Pentachlorophenol | <10 | | 2.0 | 10 |
| Phenol | <10 | | 0.83 | 10 |
| 2,4-Dichlorophenol | <10 | | 1.1 | 10 |

| Surrogate | % Rec | | Acceptance Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 71 | | 50 - 113 |
| 2-Fluorophenol | 34 | X | 36 - 110 |
| Nitrobenzene-d5 | 68 | | 45 - 112 |
| Phenol-d5 | 57 | | 38 - 116 |
| Terphenyl-d14 | 88 | | 10 - 121 |
| 2,4,6-Tribromophenol | 59 | | 40 - 139 |

**Method Blank - Batch: 680-167912**

**Method: 8270C**
**Preparation: 3520C**

Lab Sample ID: MB 680-167912/4-A
*Client Matrix:* *Water*
Dilution: 1.0
Date Analyzed: 05/17/2010 1611
Date Prepared: 05/08/2010 1209

Analysis Batch: 680-168791
*Prep Batch: 680-167912*
Units: ug/L

Instrument ID: MSF
*Lab File ID: f0080.d*
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 1 mL
Injection Volume: 1 uL

| Analyte | Result | Qual | RL | RL |
|---|---|---|---|---|
| Pentachlorophenol | <1.0 | | 1.0 | 1.0 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Lab Control Sample - Batch: 680-167912**

**Method: 8270C**
**Preparation: 3520C**

Lab Sample ID: LCS 680-167912/5-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 05/12/2010 1501
Date Prepared: 05/08/2010 1209

Analysis Batch: 680-168320
Prep Batch: 680-167912
Units: ug/L

Instrument ID: MSG
Lab File ID: g1206a.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 1 mL
Injection Volume: 1 uL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 1,2-Dichlorobenzene | 100 | 51.8 | 52 | 39 - 110 | |
| 1,4-Dichlorobenzene | 100 | 52.5 | 53 | 38 - 110 | |
| 2,4,6-Trichlorophenol | 100 | 72.8 | 73 | 46 - 120 | |
| 4-Nitrophenol | 100 | 84.8 | 85 | 30 - 122 | |
| 2,4,5-Trichlorophenol | 100 | 85.0 | 85 | 47 - 122 | |
| Pentachlorophenol | 100 | 71.6 | 72 | 37 - 132 | |
| Phenol | 100 | 57.4 | 57 | 39 - 110 | |
| 2,4-Dichlorophenol | 100 | 69.3 | 69 | 46 - 115 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 2-Fluorobiphenyl | 79 | 50 - 113 |
| 2-Fluorophenol | 51 | 36 - 110 |
| Nitrobenzene-d5 | 60 | 45 - 112 |
| Phenol-d5 | 56 | 38 - 116 |
| Terphenyl-d14 | 81 | 10 - 121 |
| 2,4,6-Tribromophenol | 84 | 40 - 139 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-167912**

**Method: 8270C**
**Preparation: 3520C**

| | | | |
|---|---|---|---|
| MS Lab Sample ID: | 680-57431-3 | Analysis Batch: 680-168320 | Instrument ID: MSG |
| Client Matrix: | Water | Prep Batch: 680-167912 | Lab File ID: g1210.d |
| Dilution: | 1.0 | | Initial Weight/Volume: 500 mL |
| Date Analyzed: | 05/12/2010 1413 | | Final Weight/Volume: 1 mL |
| Date Prepared: | 05/08/2010 1209 | | Injection Volume: 1 uL |

| | | | |
|---|---|---|---|
| MSD Lab Sample ID: | 680-57431-3 | Analysis Batch: 680-168320 | Instrument ID: MSG |
| Client Matrix: | Water | Prep Batch: 680-167912 | Lab File ID: g1211.d |
| Dilution: | 1.0 | | Initial Weight/Volume: 500 mL |
| Date Analyzed: | 05/12/2010 1437 | | Final Weight/Volume: 0.5 mL |
| Date Prepared: | 05/08/2010 1209 | | Injection Volume: 1 uL |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| 1,2-Dichlorobenzene | 37 | 48 | 39 - 110 | 26 | 40 | F | |
| 1,4-Dichlorobenzene | 35 | 44 | 38 - 110 | 21 | 40 | F | |
| 2,4,6-Trichlorophenol | 48 | 66 | 46 - 120 | 32 | 40 | | |
| 4-Nitrophenol | 57 | 59 | 30 - 122 | 2 | 40 | | |
| 2,4,5-Trichlorophenol | 51 | 75 | 47 - 122 | 37 | 40 | | |
| Pentachlorophenol | 65 | 76 | 37 - 132 | 16 | 40 | | |
| Phenol | 35 | 53 | 39 - 110 | 39 | 40 | F | |
| 2,4-Dichlorophenol | 42 | 65 | 46 - 115 | 43 | 40 | F | F |

| Surrogate | MS % Rec | | MSD % Rec | Acceptance Limits |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 45 | X | 69 | 50 - 113 |
| 2-Fluorophenol | 27 | X | 48 | 36 - 110 |
| Nitrobenzene-d5 | 37 | X | 60 | 45 - 112 |
| Phenol-d5 | 37 | X | 51 | 38 - 116 |
| Terphenyl-d14 | 65 | | 50 | 10 - 121 |
| 2,4,6-Tribromophenol | 59 | | 73 | 40 - 139 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Method Blank - Batch: 680-167911**

**Method: 8081A_8082**
**Preparation: 3520C**

Lab Sample ID: MB 680-167911/5-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 05/10/2010 1721
Date Prepared: 05/08/2010 1209

Analysis Batch: 680-168211
Prep Batch: 680-167911
Units: ug/L

Instrument ID: SGZ
Lab File ID: ze10015.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 5 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| PCB-1016 | <0.25 | | 0.036 | 0.25 |
| PCB-1221 | <0.25 | | 0.14 | 0.25 |
| PCB-1232 | <0.25 | | 0.055 | 0.25 |
| PCB-1242 | <0.25 | | 0.090 | 0.25 |
| PCB-1248 | <0.25 | | 0.18 | 0.25 |
| PCB-1254 | <0.25 | | 0.13 | 0.25 |
| PCB-1260 | <0.25 | | 0.10 | 0.25 |
| PCB-1268 | <0.50 | | 0.13 | 0.50 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 71 | 35 - 120 |
| DCB Decachlorobiphenyl | 84 | 14 - 115 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 66 | 35 - 120 |
| DCB Decachlorobiphenyl | 76 | 14 - 115 |

**Lab Control Sample - Batch: 680-167911**

**Method: 8081A_8082**
**Preparation: 3520C**

Lab Sample ID: LCS 680-167911/6-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 05/10/2010 1738
Date Prepared: 05/08/2010 1209

Analysis Batch: 680-168211
Prep Batch: 680-167911
Units: ug/L

Instrument ID: SGZ
Lab File ID: ze10016.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 5 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| PCB-1016 | 10.0 | 11.1 | 111 | 57 - 124 | |
| PCB-1260 | 10.0 | 11.6 | 116 | 58 - 124 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 87 | 35 - 120 |
| DCB Decachlorobiphenyl | 92 | 14 - 115 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Tetrachloro-m-xylene | 82 | 35 - 120 |
| DCB Decachlorobiphenyl | 84 | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 680-167911**

**Method: 8081A_8082**
**Preparation: 3520C**

| | | | |
|---|---|---|---|
| MS Lab Sample ID: | 680-57431-4 | Analysis Batch: 680-168211 | Instrument ID: SGZ |
| Client Matrix: | Water | Prep Batch: 680-167911 | Lab File ID: ze10028.d |
| Dilution: | 1.0 | | Initial Weight/Volume: 500 mL |
| Date Analyzed: | 05/10/2010 2119 | | Final Weight/Volume: 2.5 mL |
| Date Prepared: | 05/08/2010 1209 | | Injection Volume: 2 uL |
| | | | Column ID: PRIMARY |
| MSD Lab Sample ID: | 680-57431-4 | Analysis Batch: 680-168211 | Instrument ID: SGZ |
| Client Matrix: | Water | Prep Batch: 680-167911 | Lab File ID: ze10029.d |
| Dilution: | 1.0 | | Initial Weight/Volume: 500 mL |
| Date Analyzed: | 05/10/2010 2136 | | Final Weight/Volume: 2.5 mL |
| Date Prepared: | 05/08/2010 1209 | | Injection Volume: 2 uL |
| | | | Column ID: PRIMARY |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| PCB-1016 | 89 | 62 | 57 - 124 | 36 | 40 | | p |
| PCB-1260 | 76 | 97 | 58 - 124 | 24 | 40 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 61 | 77 | 35 - 120 |
| DCB Decachlorobiphenyl | 54 | 64 | 14 - 115 |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 56 | 53 | 35 - 120 |
| DCB Decachlorobiphenyl | 52 | 47 | 14 - 115 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Method Blank - Batch: 680-167911**

**Method: 8141A**
**Preparation: 3520C**

Lab Sample ID: MB 680-167911/5-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 05/10/2010 1834
Date Prepared: 05/08/2010 1209

Analysis Batch: 680-168078
Prep Batch: 680-167911
Units: ug/L

Instrument ID: SGO
Lab File ID: oe10011.d
Initial Weight/Volume: 1000 mL
Final Weight/Volume: 5 mL
Injection Volume: 2 uL
Column ID: PRIMARY

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Methyl parathion | <0.25 | | 0.12 | 0.25 |
| Ethyl Parathion | <0.50 | | 0.25 | 0.50 |
| Tetraethyldithiopyrophosphate | <0.25 | | 0.12 | 0.25 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| Triphenylphosphate | 86 | 26 - 134 |

Client: Golder Associates Inc. Job Number: 680-57431-1

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 680-167911**

**Method: 8141A**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 680-167911/9-A | Analysis Batch: | 680-168078 | Instrument ID: | SGO |
| Client Matrix: | Water | Prep Batch: | 680-167911 | Lab File ID: | oe10012.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 05/10/2010 1906 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 05/08/2010 1209 | | | Injection Volume: | 2 uL |
| | | | | Column ID: | PRIMARY |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 680-167911/10-A | Analysis Batch: | 680-168078 | Instrument ID: | SGO |
| Client Matrix: | Water | Prep Batch: | 680-167911 | Lab File ID: | oe10013.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 05/10/2010 1931 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 05/08/2010 1209 | | | Injection Volume: | 2 uL |
| | | | | Column ID: | PRIMARY |

| | % Rec. | | | | | |
|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Methyl parathion | 68 | 80 | 31 - 130 | 16 | 40 | | |

| Surrogate | LCS % Rec | LCSD % Rec | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 91 | 92 | 26 - 134 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 680-167911**

**Method: 8141A**
**Preparation: 3520C**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 680-167911/11-A | Analysis Batch: | 680-168078 | Instrument ID: | SGO |
| Client Matrix: | Water | Prep Batch: | 680-167911 | Lab File ID: | oe10014.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 05/10/2010 1956 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 05/08/2010 1209 | | | Injection Volume: | 2 uL |
| | | | | Column ID: | PRIMARY |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 680-167911/12-A | Analysis Batch: | 680-168078 | Instrument ID: | SGO |
| Client Matrix: | Water | Prep Batch: | 680-167911 | Lab File ID: | oe10015.d |
| Dilution: | 1.0 | Units: | ug/L | Initial Weight/Volume: | 1000 mL |
| Date Analyzed: | 05/10/2010 2020 | | | Final Weight/Volume: | 5 mL |
| Date Prepared: | 05/08/2010 1209 | | | Injection Volume: | 2 uL |
| | | | | Column ID: | PRIMARY |

| | % Rec. | | | | | |
|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Ethyl Parathion | 84 | 48 | 45 - 132 | 54 | 40 | | * |
| Tetraethyldithiopyrophosphate | 84 | 81 | 53 - 130 | 3 | 40 | | |

| Surrogate | LCS % Rec | LCSD % Rec | Acceptance Limits |
|---|---|---|---|
| Triphenylphosphate | 95 | 88 | 26 - 134 |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Method Blank - Batch: 680-168245**

**Method: 6010B**
**Preparation: 3005A**
**Total Recoverable**

Lab Sample ID: MB 680-168245/18-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 05/13/2010 0012
Date Prepared: 05/12/2010 0956

Analysis Batch: 680-168433
Prep Batch: 680-168245
Units: mg/L

Instrument ID: ICPD
Lab File ID: 168245.chr
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Arsenic | <0.020 | | 0.010 | 0.020 |
| Barium | <0.010 | | 0.0020 | 0.010 |
| Beryllium | <0.0040 | | 0.00010 | 0.0040 |
| Cadmium | <0.0050 | | 0.0020 | 0.0050 |
| Chromium | <0.010 | | 0.0020 | 0.010 |
| Cobalt | <0.010 | | 0.0010 | 0.010 |
| Lead | <0.010 | | 0.0034 | 0.010 |
| Manganese | <0.010 | | 0.0030 | 0.010 |
| Nickel | <0.040 | | 0.0040 | 0.040 |
| Vanadium | <0.010 | | 0.0030 | 0.010 |

**Lab Control Sample - Batch: 680-168245**

**Method: 6010B**
**Preparation: 3005A**
**Total Recoverable**

Lab Sample ID: LCS 680-168245/19-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 05/13/2010 0017
Date Prepared: 05/12/2010 0956

Analysis Batch: 680-168433
Prep Batch: 680-168245
Units: mg/L

Instrument ID: ICPD
Lab File ID: 168245.chr
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| *Arsenic* | *2.00* | *2.07* | *104* | 75 - 125 | |
| Barium | 2.00 | 2.17 | 108 | 75 - 125 | |
| Beryllium | 0.0500 | 0.0530 | 106 | 75 - 125 | |
| Cadmium | 0.0500 | 0.0535 | 107 | 75 - 125 | |
| Chromium | 0.200 | 0.213 | 106 | 75 - 125 | |
| Cobalt | 0.500 | 0.534 | 107 | 75 - 125 | |
| Lead | 0.500 | 0.528 | 106 | 75 - 125 | |
| Manganese | 0.500 | 0.537 | 107 | 75 - 125 | |
| Nickel | 0.500 | 0.534 | 107 | 75 - 125 | |
| Vanadium | 0.500 | 0.525 | 105 | 75 - 125 | |

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Method Blank - Batch: 680-168114**

**Method: 7470A**
**Preparation: 7470A**

Lab Sample ID: MB 680-168114/23-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 05/12/2010 1223
Date Prepared: 05/11/2010 1121

Analysis Batch: 680-168214
Prep Batch: 680-168114
Units: mg/L

Instrument ID: LEEMAN1
Lab File ID: 051110.chr
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Result | Qual | MDL | RL |
|---|---|---|---|---|
| Mercury | <0.00020 | | 0.000091 | 0.00020 |

**Lab Control Sample - Batch: 680-168114**

**Method: 7470A**
**Preparation: 7470A**

Lab Sample ID: LCS 680-168114/24-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 05/12/2010 1226
Date Prepared: 05/11/2010 1121

Analysis Batch: 680-168214
Prep Batch: 680-168114
Units: mg/L

Instrument ID: LEEMAN1
Lab File ID: 051110.chr
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Mercury | 0.00250 | 0.00230 | 92 | 80 - 120 | |

Serial Number 029830

# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING


TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165


Alternate Laboratory Name/Location

Phone:
Fax:

| PROJECT REFERENCE | PROJECT NO. | PROJECT LOCATION (STATE) |
|---|---|---|
| Solutia Anniston | | AL |
| TAL (LAB) PROJECT MANAGER | P.O. NUMBER | CONTRACT NO. |
| Lidya G. | | |
| CLIENT (SITE) PM | CLIENT PHONE | CLIENT FAX |
| Tim Richards | 845-300-8703 | |
| CLIENT NAME | CLIENT E-MAIL | |
| Solutia/Golder | trichards@golder.com | |
| CLIENT ADDRESS | | |
| 3730 Chamblee Tucker Rd. Atlanta, GA | | |
| COMPANY CONTRACTING THIS WORK (if applicable) | | |
| Solutia | | |

PAGE Page 59 of 61 OF

STANDARD REPORT DELIVERY ○

DATE DUE

EXPEDITED REPORT DELIVERY (SURCHARGE) ⊘

DATE DUE 5-11-10

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

| SAMPLE DATE | SAMPLE TIME | SAMPLE IDENTIFICATION | MATRIX: COMPOSITE (C) OR GRAB (G) INDICATE | AQUEOUS (WATER) | SOLID OR SEMISOLID | AIR | NONAQUEOUS LIQUID (OIL, SOLVENT, ...) | REQUIRED ANALYSIS: OPPest 8141A | PCB 8081A - 8082 | PUB 680 | SVOC 8270C | VOC 8260B | Total Metals (Total Hg 7471A) | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | PRESERVATIVE | | | | | | | | | | |
| | | | | | | | | NUMBER OF CONTAINERS SUBMITTED | | | | | | | | | | |
| 5-6-10 | 3:05pm | SEEP-1 | G | X | | | | 2 | 2 | 2 | 2 | 3 | 1 | | | | | level II |
| 5-6-10 | — | SEEP-1FD | G | X | | | | 2 | 2 | 2 | 2 | 3 | 1 | | | | | ↓ |
| 5-6-10 | 4:20pm | FIELD BLANK-1 | G | X | | | | 1 | 1 | 1 | 1 | 3 | 1 | | | | | |

| RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME |
|---|---|---|---|---|---|---|---|---|
| Cassidy K | 5-6-10 | 5:30pm | | | | | | |
| RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME |
| | | | | | | | | |

LABORATORY USE ONLY

| RECEIVED FOR LABORATORY BY: (SIGNATURE) | DATE | TIME | CUSTODY INTACT | CUSTODY SEAL NO. | SAVANNAH LOG NO. | LABORATORY REMARKS |
|---|---|---|---|---|---|---|
| George Romero | 5/7/10 | 0924 | YES ○ NO ○ | | 680-57431 | 0.9 \| 1.4 \| 1.5 \| 0.8 |

TAL8240-680 (1207)

Serial Number 029832

# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

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Alternate Laboratory Name/Location

Phone:
Fax:

| PROJECT REFERENCE | PROJECT NO. | PROJECT LOCATION (STATE) |
|---|---|---|
| Solutia Anniston | | AL |
| TAL (LAB) PROJECT MANAGER | P.O. NUMBER | CONTRACT NO. |
| Lidya G. | | |
| CLIENT (SITE) PM | CLIENT PHONE | CLIENT FAX |
| Tim Richards | 845-300-8703 | |
| CLIENT NAME | CLIENT E-MAIL | |
| Solutia/Golder | trichards@golder.com | |
| CLIENT ADDRESS | | |
| 3730 Chamblee Tucker Rd Atlanta, GA | | |
| COMPANY CONTRACTING THIS WORK (if applicable) | | |
| Solutia | | |

MATRIX TYPE (COMPOSITE (C) OR GRAB (G) INDICATE; AQUEOUS (WATER); SOLID OR SEMISOLID; AIR; NONAQUEOUS LIQUID (OIL, SOLVENT, ...))

REQUIRED ANALYSIS: PCB 8082A - 8082 (Filtered); PCB 680 (Filtered); Diss metals 6010B (FP); Diss Hg 7470A (FP); VOC 8260B

PRESERVATIVE

PAGE 60 OF 61

STANDARD REPORT DELIVERY ○

DATE DUE

EXPEDITED REPORT DELIVERY (SURCHARGE) ⊘

DATE DUE 5-11-10

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

| SAMPLE DATE | SAMPLE TIME | SAMPLE IDENTIFICATION | COMPOSITE (C) OR GRAB (G) | AQUEOUS (WATER) | SOLID OR SEMISOLID | AIR | NONAQUEOUS LIQUID (OIL, SOLVENT, ...) | NUMBER OF CONTAINERS SUBMITTED | | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5-6-10 | 4:00PM | SEEP-0.1 U | G | X | | | | 2 | 2 | 1 | Ø | | | | | Level II |
| 5-6-10 | — | Trip Blank-1 | | | | | | Ø | Ø | Ø | 1 | | | | | |

| RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME | RELINQUISHED BY: (SIGNATURE) | DATE | TIME |
|---|---|---|---|---|---|---|---|---|
| Cassidy D | 5-6-10 | 5:30PM | | | | | | |
| RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME | RECEIVED BY: (SIGNATURE) | DATE | TIME |
| | | | | | | | | |

LABORATORY USE ONLY

| RECEIVED FOR LABORATORY BY: (SIGNATURE) | DATE | TIME | CUSTODY INTACT | CUSTODY SEAL NO. | SAVANNAH LOG NO. | LABORATORY REMARKS |
|---|---|---|---|---|---|---|
| Georgette Conner | 5/7/10 | 0924 | YES ○ NO ○ | | 680-57431 | 0.9/1.4/1.5/0.8 |

TAL8240-680 (1207)

# Login Sample Receipt Check List

Client: Golder Associates Inc.

Job Number: 680-57431-1

**Login Number: 57431**

**List Source: TestAmerica Savannah**

**Creator: Conner, Keaton**

**List Number: 1**

| Question | T / F/ NA | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | N/A | |
| The cooler's custody seal, if present, is intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | 4 coolers rec'd on ice |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | 0.9, 1.4, 1.5, and 0.8 C |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| There are no discrepancies between the sample IDs on the containers and the COC. | True | |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | MS/MSD not requested (no additional volume provided). |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | True | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True | |
| Multiphasic samples are not present. | N/A | |
| Samples do not require splitting or compositing. | N/A | |
| Is the Field Sampler's name present on COC? | N/A | |
| Sample Preservation Verified | True | |

# Appendix D: Field Forms

## MONITORING WELL DEVELOPMENT LOG

Project Number 043-3716-003.2 Page 1 of 1

Project Name - Location Solutia

Well ID: OWR-5D Date: 4/6/10

Water Level: 51.74 Time (Water Level): 1025

Description of Measuring Point: SHARPIE POINT ON TOC

Purging Time:
On @ 1115
Off @: 1235

Evacuation Method: ELECTRIC SUBMERSIBLE PUMP (MONSOON)

Well Depth: 71.9 Volume in Well (gal): 3.23

Water Level: 51.74 Well Diameter: 2

Water Column: 20.16 Evacuation Rate (gal/min): 1.2 gpm (water column dependent)

Gallons per Foot: 0.16 Total Volume Removed (gal): 50

Purging Personnel: JOHN KING

### DEVELOPMENT/PURGING DATA AND FIELD PARAMETERS

| Date/Time: | 4/6/10 1135 | 4/6/10 1223 | 4/6/10 1230 | 4/6/10 1235 | | | |
|---|---|---|---|---|---|---|---|
| Color: | Red | H red | H red | H red | | | |
| Odor: | Sweet ~~ | Sweet | Sweet | Sweet | | | |
| Appearance: | cloudy | cloudy | Slightly Cloudy | slightly cloudy | | | |
| Temperature (C): | 19.0 | 18.26 | 18.53 | 18.58 | | | |
| pH: | 7.37 | 4.23 | 4.23 | 4.23 | | | |
| Turbidity (NTU): | 7000 | 7.62 | ~~750~~ 280 | 185 | | | |
| Spec. Cond. (umhos/cm): | 823 | 737 | 738 | 712 | | | |
| DO (mg/L): | 3.36 | 3.33 | 3.0 | 2.73 | | | |
| ORP (mV): | 123.8 | ~~146~~ | 149.5 | 153.0 | | | |
| Removed (gallons): | 20 gal | 35 gal | 45 gal | 50 gal | | | |
| DTW | 63.3 | 68.9 | | | | | |

NOTES:

Representative Water (Site-Wide QAPP, rev. 5, September 2008):

| | |
|---|---|
| pH = | +/- 0.1 Standard Units |
| Temperature = | +/- 0.5C |
| Specific Conductance = | +/- 10 percent |
| Turbidity = | < 10 NTUs or +/- 10 percent if greater than 10 NTU (if possible) |

## LOW FLOW MONITORING WELL PURGING LOG

Project Number 643-3746-003.2 Page 1 of 1

Project Name - Location Solutia, Anniston, AL -

Well ID: QWR-5D Date: 4/7/10 Water Level: 51.89 Time (Water Level): 1448

Purging Time:
On @ 1525
Off @:

Evacuation Method: ELECTRIC SUBMERSIBLE PUMP (STAINLESS STEEL)

Well Depth: 68'bgs (71.9' BTOC)

Volume in Well (gal): 3.2gal 3x vol = 9.6gal 5x vol = 16gal

Screen Depth: 68-58'bgs

Evacuation Rate (gal/min): 0.2 gpm

Purging Personnel: John King

Total Volume Removed (gal): 13 gal

### PURGING DATA AND FIELD PARAMETERS

| Date/Time: | Temperature (C): | pH: | Turbidity (NTU): | Spec. Cond. (umhos/cm): | DO (mg/L): | ORP (mV): | Volume: (Gallons) | Depth to Water (FT): |
|---|---|---|---|---|---|---|---|---|
| 4/7/10 1535 | 18.94 | 4.34 | 163 | 802 | 5.50 | 96.0 | 3.0 | 54.25 |
| 1545 | 18.35 | 4.26 | 33.8 | 769 | 3.26 | 103.4 | ~~4.5~~ 4.5 | 55.15 |
| 1553 | 18.23 | 4.20 | 18.6 | 744 | 2.45 | 107.8 | 7.0 | 55.61 |
| 1558 | 18.37 | 4.18 | 15.1 | 751 | 2.29 | 109.1 | 8.0 | 55.65 |
| 1603 | 18.22 | 4.17 | 12.1 | 737 | 2.04 | 114.2 | 9.0 | 55.60 |
| 1608 | 18.34 | 4.11 | 9.41 | 731 | 1.93 | 113.8 | 10.0 | 55.40 |
| 1613 | 18.51 | 4.08 | 10.9 | 735 | 1.80 | 114.8 | 11.0 | 54.95 |
| 1618 | 18.62 | 4.09 | 8.57 | 732 | 1.70 | 115.5 | 12.0 | 55.10 |
| 1623 | 18.59 | 4.09 | 9.81 | 734 | 1.74 | 116.9 | 13.0 | 55.40 |
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Field Crew: Josh Richards/ John King

**NOTES:**

Stabilization Requirements as per the EPA SOP for Low-Flow/Minimal Drawdown GW Sample Collection
Three successive readings every 3 to 5 minutes to include:

| | |
|---|---|
| pH = | +/- 0.1 Standard Units |
| Specific Conductance = | +/- 3 percent |
| ORP = | +/- 10 mV |
| Dissolved Oxygen = | +/- 0.3 mg/L |
| Turbidity = | < 10 NTU or +/- 10 percent when turbidity is greater than 10 NTU. |

## GROUNDWATER SAMPLING FORM

Project Number 043-3746.-003.2 Page 1 of 1

Project Name/Site Name Solutia, Anniston, AL -

| | | | |
|---|---|---|---|
| Well ID | OWR-5D | COC ID #1 OWR-5D | = Original Sample |
| Event | Addt'l Sampling Scope - April '10 | COC ID #2 OWR-5D-DUP | = Duplicate |
| Date | 4/7/10 | COC ID #3 Field Blank-1 | = Field Blank |
| Begin Time | 1650 | COC ID #4 MS and MSD | = MS/MSD |
| End Time | 1810 | COC ID #5 OWR-5DF-2u/OWR-5DF-0.1u | = Original Sample - Filtered |
| Sampler(s) | John King | COC ID #6 NA | = Dupilicate - Filtered |
| Weather | Ptly cldy 75° | | |

## SAMPLING DATA / FIELD PARAMETERS

| | | | |
|---|---|---|---|
| Temperature (°C) | 18.59 | DO (mg/L) | 1.71 |
| pH (Standard Unit) | 4.09 | ORP (mV) | 116.9 |
| Conductivity (µmhos/cm) | 734 | Color | Cream yellowish (light) |
| Turbidity (NTU) | 9.81 | | |

Sampling Method/Material Stainless Steel Submersible Pump

## CONTAINER AND ANALYSES DESCRIPTION

| COLLECTED | CONTAINER AND ANALYSES | NOTES |
|---|---|---|
| — | 40 ml glass vial with HCl for VOA analysis | |
| — | 1 L glass vial with no preservative for SVOA analysis (8270) | |
| — | 1 L glass vial with no preservative for Organophos. Pest. Analysis (8141) | |
| 8 | 1 L glass vial with no preservative for PCB analysis | 2 + 2 DUP + 2 2 MS + 2 MSD ~~2 MS + 2 MSD~~ |
| 4 | 1 L glass vial with no preservative for PCB analysis (filtered) | 2 @ 2u, 2 @ 0.1u |
| — | 500 ml plastic with HNO3 for metals analysis (see COC for exact metals) | |
| — | 500 ml plastic with HNO3 for metals analysis (filtered) | |

## REMARKS

## PARAMETER LIST

**METALS**

Mercury- Y (N) Cobalt- Y (N)

**VOCs**

Chlorobenzene- Y (N)

**SVOCs**

4-Nitrophenol- Y (N) o,o,o-Triethylphosphorothioate- Y (N) 1,2-dichlorobenzene- Y (N) 1,4-dichlorobenzne- Y (N)
2,4,6-trichlorophenol- Y (N) pentachlorophenol- Y (N)

**ORGANOPHOSPHOROUS PESTICIDES**

Sulfotepp- Y (N) Parathion- Y (N)

**PCBs-** (Y) N.

Field Crew: ~~Josh~~ Tim Richards/ John King

Golder Associates

## Field Instrument Turbidity Calibration Records

**INSTRUMENT** (MAKE/MODEL NO.) HACH 2100 TURBIDIMETER **INSTRUMENT NO.** HT-1

**STANDARD INFORMATION**

**Origin Date:** 8/09 **Standard Vendor:** HACH

**Prepared Date:** 8/09 **Where Prepared:** GOLDEN

**Expiration Date:** 8/11

**Units:Nephelometric Turbidity Unit**

*Standard* 5.05 Nephelometric Turbidity Unit

*Standard* 58.0 Nephelometric Turbidity Unit

*Standard* 518 Nephelometric Turbidity Unit

*Standard* — Nephelometric Turbidity Unit

| DATE (mm/dd/yy) | TIME (hr:min) | TEMP DEG C | STD VALUE | INSTRUMENT RESPONSE | % DEV | PASS/ FAIL | CALIBRATED (YES or NR) | TYPE (INIT, CONT) | SAMPLER INITIALS |
|---|---|---|---|---|---|---|---|---|---|
| 4/6/10 | 1128 | NA | 5.05 | 4.85 | 4.0 | P | NR | INIT | JC |
| | | | 58.0 | 58.1 | 0.2 | P | NR | INIT | JC |
| | | | 518 | 517 | 0.2 | P | NR | INIT | JC |
| | 1245 | NA | 5.05 | 5.23 | 0.36 | P | NR | CONT | JC |
| | | | 58.0 | 57.9 | 0.2 | P | NR | CONT | JC |
| | | | 518 | 518 | 0 | P | NR | CONT | JC |
| 4/7/10 | 1205 | NA | 5.05 | 4.97 | 1.6 | P | NR | CONT | JC |
| | | | 58.0 | 60.9 | 0.5 | P | NR | CONT | JC |
| | | | 518 | 519 | 0.2 | P | NR | CONT | JC |
| | 1810 | NA | 5.05 | 5.11 | 1.2 | P | NR | CONT | JC |
| | | | 58.0 | 58.7 | 1.2 | P | NR | CONT | JC |
| | | | 518 | 518 | 0 | P | NR | CONT | JC |
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Calibration values for turbidity need to be within 10% of the standard for values.

NR – Not Required. If at end of the day or within calibration range, calibration is not performed.

Golder Associates

## Field Instrument ORP/Dissolved Oxygen Calibration Records

**INSTRUMENT** (MAKE/MODEL NO.) YSI 556 **INSTRUMENT NO.** 556-3

**STANDARD INFORMATION**

**Origin Date:** 8/09 **Standard Vendor:** GEOTECH

**Prepared Date:** 8/09 **Where Prepared:** GOLDEN

**Expiration Date:** 4/10 **Units:** **Millivolts**

*Standard* DO - SATURATED AIR

*Standard* ORP - 220 mV solution (@25°C)

*Standard*

| DATE (mm/dd/yy) | TIME (hr:min) | TEMP DEG C | STD VALUE | INSTRUMENT RESPONSE | % DEV | PASS/ FAIL | CALIBRATED (YES or NR) | TYPE (INIT, CONT) | SAMPLER INITIALS |
|---|---|---|---|---|---|---|---|---|---|
| 4/6/10 | 1148 | 24.4 | 8.294 | 8.25 | 0.5 | P | NR | INIT | JL |
| ↓ | 1250 | 23.2 | 8.546 | 8.55 | 0 | P | NR | ~~CONT~~ | JL |
| 4/7/10 | 1125 | 26.2 | 8.084 | 8.05 | 0.4 | P | NR | CONT | JL |
| ↓ | 1815 | 24.9 | 8.279 | 8.28 | 0 | P | NR | CONT | JL |
| | | | | | | | | | |
| | | | | | | | | | |
| ORP | | | | | | | | | |
| 4/6/10 | 1130 | 23.9 | 221.6 | 221.6 | 0 | P | NR | INIT | JL |
| ↓ | 1300 | 25.1 | 220 | 221.4 | 0.6 | P | NR | CONT | JL |
| 4/7/10 | 1200 | 25.0 | 220 | 216.7 | 1.5 | P | NR | CONT | JL |
| ↓ | 1819 | 25.5 | 220.8 | 217.2 | 1.6 | P | NR | CONT | JL |
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Acceptable ORP calibration check is if the meter reads within +/- 10 mV units of calibration standard.
Acceptable DO calibration check is if the meter reads within +/- 0.2 mg/L of calibrated value.

NR – Not Required. If at end of the day or within calibration range, calibration is not performed.

Golder Associates

## Field Instrument Conductivity Calibration Records

**INSTRUMENT** (MAKE/MODEL NO.) YSI 556 **INSTRUMENT NO.** 556-3

**STANDARD INFORMATION**

**Origin Date:** 2/10 **Standard Vendor:** GEOTECH

**Prepared Date:** 2/10 **Where Prepared:** GOLDER

**Expiration Date:** 1/11 **Units:** umhos/cm

*Standard* ~~Air~~ 84 umhos/cm

*Standard* 500 *umhos/cm*

*Standard* 2000 *umhos/cm*

| DATE (mm/dd/yy) | TIME (hr:min) | TEMP DEG C° | STD VALUE | INSTRUMENT RESPONSE | % DEV | PASS/ FAIL | CALIBRATED (YES or NR) | TYPE (INIT, CONT) | SAMPLER INITIALS |
|---|---|---|---|---|---|---|---|---|---|
| 4/6/10 | 1120 | 20.8 | 84 | 84 | 0 | P | NR | INIT | JK |
| ↓ | ↓ | 20.9 | 500 | 490 | 2.0 | P | NR | INIT | JK |
| ↓ | ↓ | 20.5 | 2000 | 1988 | 0.6 | P | NR | INIT | JK |
| | 1252 | 24.1 | 84 | 86 | 2.4 | P | NR | CONT | JK |
| | ↓ | 24.2 | 500 | 492 | 1.6 | P | NR | CONT | JK |
| ↓ | ↓ | 24.2 | 2000 | 2006 | 0.3 | P | NR | CONT | JK |
| 4/7/10 | 1131 | 22.7 | 84 | 86 | 2.4 | P | NR | CONT | JK |
| ↓ | ↓ | 22.7 | 500 | 493 | 1.4 | P | NR | CONT | JK |
| ↓ | ↓ | 22.7 | 2000 | 1956 | 2.2 | P | NR | CONT | JK |
| | 1821 | 24.9 | 84 | 85 | 1.2 | P | NR | CONT | JK |
| | ↓ | 25.0 | 500 | 495 | 1.0 | P | NR | CONT | JK |
| ↓ | ↓ | 24.7 | 2000 | 1972 | 1.4 | P | NR | CONT | JK |
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Acceptable calibration check is if the meter reads within +/- 5% of the appropriate calibration standard.

NR – Not Required. If at end of the day or within calibration range, calibration is not performed.

Golder Associates

## Field Instrument pH Calibration Records

**INSTRUMENT** (MAKE/MODEL NO.) YSI 556 **INSTRUMENT NO.** 556-3

**STANDARD INFORMATION**

**Origin Date:** 8/09 **Standard Vendor:** LSS

**Prepared Date:** 8/09 **Where Prepared:** Golder

**Expiration Date:** see below **Units:** **Standard Units**

*Standard* 4.01 @ 25 Deg C 6/11

*Standard* 7.00 @ 25 Deg C 3/11

*Standard* 10.0 @ 25 Deg C 6/10

| DATE (mm/dd/yy) | TIME (hr:min) | TEMP DEG C | STD VALUE | INSTRUMENT RESPONSE | % DEV | PASS/ FAIL | CALIBRATED (YES or NR) | TYPE (INIT, CONT) | SAMPLER INITIALS |
|---|---|---|---|---|---|---|---|---|---|
| 4/6/10 | 1123 | 21.4 | 4.01 | 4.19 | 4.5 | P | NR | INIT | |
| ↓ | ↓ | 21.7 | 7.00 | 7.00 | 0 | P | NR | INIT | |
| ↓ | ↓ | 21.6 | 10.00 | 9.90 | 1.0 | P | NR | INIT | |
| ↓ | 1257 | 25.1 | 4.01 | 4.15 | 3.5 | P | NR | CONT | |
| ↓ | ↓ | 24.9 | 7.00 | 7.02 | 0.3 | P | NR | CONT | |
| ↓ | ↓ | 25.0 | 10.00 | 9.92 | 0.8 | P | NR | CONT | |
| 4/7/10 | 1237 | 22.5 | 4.01 | 4.13 | 3.0 | P | NR | CONT | |
| ↓ | ↓ | 24.2 | 7.00 | 6.97 | 0.4 | P | NR | CONT | |
| ↓ | ↓ | 24.0 | 10.00 | 9.99 | 0.1 | P | NR | CONT | |
| ↓ | 1827 | 24.4 | 4.01 | 4.12 | 2.7 | P | NR | CONT | |
| ↓ | ↓ | 24.8 | 7.00 | 7.01 | 0.1 | P | NR | CONT | |
| ↓ | ↓ | 24.8 | 10.00 | 9.91 | 0.9 | P | NR | CONT | |
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Acceptable calibration check is if the meter reads within +/- 0.2 pH units of the value of appropriate calibration standard.

NR – Not Required. If at end of the day or within calibration range, calibration is not performed.