



July 18, 2011

Department of Environment and Natural Resources
Division of Waste Management
Solid Waste Section
401 Oberlin Road, Suite 150
Raleigh, North Carolina 27605
919-508-8500

Attention: Ms. Jackie Drummond
Hydrogeologist

**Re: Water Quality Monitoring Report, First Semi-Annual 2011 Sampling Event
Material Recovery, LLC Construction & Demolition Landfill
Permit No. 92-31
Wake County, North Carolina**

Dear Ms. Drummond:

Material Recovery, LLC, a subsidiary of WCA Waste Corporation, is submitting the enclosed *Water Quality Monitoring Report*, which documents the results of the June 15-16, 2011, compliance monitoring event at the above-referenced facility. If you have any questions, please contact Dusty Reedy with Golder Associates NC, Inc. at 336-852-4903 or me at 954-415-7230.

Sincerely,
WCA WASTE CORPORATION

A handwritten signature in black ink, appearing to read "Nick Marotta", is written over a horizontal line.

Nick Marotta
Regional Engineer

Enclosure

C: Vernon Smith, Regional Vice President, WCA of North Carolina, 40 Estes Plant Road, Piedmont, South Carolina 29763, 864-845-8355. (letter only)
Dennis Gehle, General Manager, Material Recovery, LLC, 2600 Brown-Field Road, Raleigh, North Carolina 27610, 919-838-6973. (letter only)
Rachel P. Kirkman, P.G., Associate and Senior Geologist, 5B Oak Branch Drive, Greensboro, North Carolina, 27407. rkirkman@golder.com. 336-852-4903. (letter only)

NC DENR

Division of Waste Management - Solid Waste

Environmental Monitoring Reporting Form

Notice: This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

Instructions:

- Prepare one form for each individually monitored unit.
- Please type or print legibly.
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i)).
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

Solid Waste Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

Golder Associates NC, Inc. on behalf of Material Recovery, LLC

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: David Y. Reedy II, P.G.

Phone: 336-852-4903

E-mail: dreedy@golder.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Material Recovery, LLC C&D Landfill	2600 Brown-Field Rd, Raleigh, NC 27610	92-31	.0500	June 15-16, 2011

Environmental Status: (Check all that apply)

- Initial/Background Monitoring Detection Monitoring Assessment Monitoring Corrective Action

Type of data submitted: (Check all that apply)

- Groundwater monitoring data from monitoring wells Methane gas monitoring data
 Groundwater monitoring data from private water supply wells Corrective action data (specify) _____
 Leachate monitoring data Other(specify) _____
 Surface water monitoring data

Notification attached?

- No. No groundwater or surface water standards or explosive methane gas limits were exceeded.
 Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.
 Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

David Y. Reedy II, P.G.

Senior Project Hydrogeologist

(336) 852-4903

Facility Representative Name (Print)

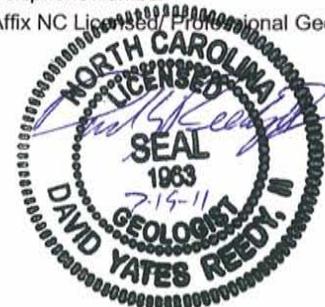
Title

(Area Code) Telephone Number

Affix NC Licensed/Professional Geologist Seal

Signature

Date





**WATER QUALITY MONITORING
REPORT**

FIRST SEMI-ANNUAL 2011 SAMPLING EVENT

**Material Recovery, LLC Construction and Demolition
Landfill, Permit No. 92-31**

Wake County, North Carolina

Submitted To:



WCA Waste Corporation
Material Recovery, LLC
2600 Brown-Field Road
Raleigh, NC. 27610 USA

Submitted By: Golder Associates NC, Inc.
5B Oak Branch Drive
Greensboro, NC. 27407 USA

July 2011

0739-602411.100

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July 19, 2011

0739-602411.100

Mr. Nick Marotta, Regional Engineer
WCA Waste Corporation
Material Recovery, LLC
2600 Brown-Field Road
Raleigh, NC. 27610 USA

**RE: WATER QUALITY MONITORING REPORT, FIRST SEMI-ANNUAL 2011 SAMPLING EVENT
MATERIAL RECOVERY CONSTRUCTION AND DEMOLITION LANDFILL, PERMIT NO. 92-31
WAKE COUNTY, NORTH CAROLINA**

Dear Nick:

Golder Associates NC, Inc. (Golder) is submitting the enclosed *Water Quality Monitoring Report*, which documents the results of the June 15-16, 2011, compliance monitoring event at the Material Recovery, LLC Construction and Demolition Landfill.

WCA Waste Corporation currently monitors groundwater at the facility for parameters listed in Title 15A NCAC 13B.0544 of the North Carolina Solid Waste Management Rules (NCSWMR). Three NC Appendix I inorganic constituents (barium, beryllium, and mercury) were detected at concentrations above the Solid Waste Section Limits (SWSLs) in samples from one or more downgradient monitoring wells during the June 2011 monitoring event. The concentration of barium in the sample from MW-3 was above the NC 2L Drinking Water Standard (NC 2L Standard) and the concentration of beryllium in the sample from MW-2 was above the Solid Waste Section Groundwater Protection Standard (GPS). The concentrations of barium and beryllium were statistically evaluated and determined to be below background concentrations; therefore, no further action is recommended. Cobalt and vanadium were detected at estimated concentrations in samples from downgradient wells below their SWSLs, but above their respective GPS; since concentrations are estimated no further action is recommended. The concentrations of NC Appendix I inorganic constituents are generally consistent with historical data.

Indicator parameters, iron and manganese, were detected at concentrations above their respective NC 2L Standards in samples from the upgradient and/or downgradient monitoring wells. Concentrations of these inorganic constituents are interpreted to represent background conditions based on available data and no further action is recommended. Barium was detected above the SWSL, but below the applicable surface water standard in downstream surface water monitoring point SW-3, as it has been during previous events. No additional NC Appendix I constituents were detected at concentrations above the SWSLs or applicable surface water standards during this event.

Trichlorofluoromethane, tetrachloroethene, trichloroethene, and tetrahydrofuran were detected in the sample from MW-3 above the SWSLs during this event. The concentrations of tetrachloroethene and trichloroethene were above their respective NC 2L Standards. A voluntary Alternate Source Demonstration (ASD) was submitted to the NC Department of Environment and Natural Resources (DENR), Division of Waste Management, Solid Waste Section on November 5, 2007, which evaluated the source of the trichlorofluoromethane. Based on the findings of the ASD, the most likely source for trichlorofluoromethane is landfill gas, rather than leachate. The ASD was approved by NC DENR on May 15, 2008. Subsequently, WCA Waste Corporation submitted a Landfill Gas Remediation Plan (LGRP) to address methane migration in the vicinity of MW-3, which was approved by NC DENR on July 1, 2010. The LGRP included the installation of a cut-off trench in the area near MW-3. The cut-off trench was installed prior to the December 2010 monitoring event. Trichlorofluoromethane concentrations in samples from MW-3 have been on a declining trend over the past four events, but the concentrations of tetrachloroethene and trichloroethene have increased over the last three events. Tetrahydrofuran was

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detected for the first time during the June 2011 event. VOC concentrations in MW-3 will continue to be evaluated for up to two years to determine the effectiveness of the corrective measures.

Based on the June 2011 sampling results and the approved ASD and LGRP, WCA Waste Corporation will continue to monitor water quality at the facility in accordance with the requirements of the Detection Monitoring Program for C&D Landfills. The next event is tentatively scheduled for December 2011. If you have any questions, please contact the undersigned at 336-852-4903.

Sincerely,
GOLDER ASSOCIATES NC, INC.



David "Dusty" Y. Reedy II, P.G.
Senior Project Hydrogeologist



Rachel P. Kirkman, P.G.
Associate and Senior Geologist

C: Dennis Gehle, General Manager, Material Recovery, LLC, 2600 Brown-Field Road, Raleigh, North Carolina, 27610, 919-838-6973.

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Appendix C	Statistical Evaluation Worksheets & Summary Table
Appendix D	Groundwater Monitoring Well Maintenance Records

1.0 INTRODUCTION

This report summarizes the monitoring results from June 15-16, 2011, groundwater and surface water sampling, and analysis event at the Material Recovery, LLC (Material Recovery) Construction & Demolition (C&D) Landfill in Wake County, North Carolina (NC) in accordance with Title 15A of the North Carolina Administrative Code (NCAC) Subchapter 13B.0544. The Material Recovery Landfill, an active C&D landfill, is owned and operated by Material Recovery, a subsidiary of WCA Waste Corporation (WCA) under Permit No. 92-31 issued by the NC Department of Environment and Natural Resources (DENR).

1.1 Site Description and Background

The location of the facility is shown on the inlay on Drawing 1. As presented, the Material Recovery C&D Landfill is located along Brown-Field Road near the town of Garner in Wake County, NC. The site consists of approximately 210 acres, of which, approximately 19 acres are currently permitted as the Phase 1 waste unit.

There are three small northwest-trending unnamed streams that traverse the site to intersect a north-trending unnamed stream that parallels the western facility property line. Two of the smaller drainages originate at 2- to 4-acre man-made ponds. The larger stream along the property line coincides with the location of a regional-scale diabase dike. A small storm water basin was constructed along the western boundary of Phase 1.

Topographic surface elevations at the facility range from elevations of approximately 180 to 290 feet above mean sea level. The northern portion of the site was previously used by the City of Raleigh for land application of wastewater sludge for approximately eleven years. Some of the parcels surrounding the site are still used for this purpose. The remainder of the facility consists of wooded areas, grass, and heavy brush.

1.2 Compliance Monitoring History

Groundwater monitoring at the facility was initiated in May 2002 after approval of the Groundwater Monitoring Plan by the NC DENR. Waste was first accepted at the site in October 2003. Currently the facility's monitoring network is comprised of five monitoring wells (MW-1, MW-2, MW-3, MW-4, and MW-5) which monitor the uppermost aquifer beneath the facility. In addition to the groundwater monitoring points, the facility's monitoring network includes three surface water sampling points, SW-1, which is upstream of the waste area along the major tributary, and SW-2 and SW-3, which are downstream monitoring points relative to the waste area. These points are sampled in conjunction with the groundwater monitoring wells in accordance with the facility's permit.

A voluntary Alternate Source Demonstration (ASD) was submitted to the NC DENR Division of Waste Management, Solid Waste Section on November 5, 2007, which evaluated the source of

trichlorofluoromethane in samples from MW-3. Based on the findings of the ASD, the most likely source for trichlorofluoromethane detected in samples from MW-3 is landfill gas, rather than leachate. The ASD was approved by NC DENR on May 15, 2008. Subsequently, WCA Waste Corporation submitted a Landfill Gas Remediation Plan (LGRP) to address methane migration in the vicinity of MW-3, which was approved by NC DENR on July 1, 2010. As proposed in the LGRP, a cut-off trench was installed prior to the December 2010 monitoring event. VOC concentrations in MW-3 will be evaluated for up to two years to determine the effectiveness of the corrective measures.

1.3 Hydrogeologic Setting

Geologically, the facility is located within the southern portion of the Raleigh Belt, which is near the eastern boundary of the Piedmont Physiographic Province. The bedrock at the facility consists of the granite of the Rolesville Batholith. The granite observed at the site is predominantly a medium-grained biotite granite and biotite-muscovite granite with garnets. Northwest trending Mesozoic diabase dikes are also common in this region (Stoddard et al. 1991). A magnetometer survey was performed during the initial site investigation and revealed a regional-scale diabase dike, which is shown on the NC State Geologic Map (NCGS 1985) and coincides with the stream along the western property boundary. Smaller anomalies were also identified across the site and were interpreted to represent smaller dikes (JEI 2001).

The uppermost groundwater beneath the facility is present in a shallow, unconfined aquifer comprised of saprolite, partially weathered rock, and granitic bedrock (JEI 2001). Groundwater occurs at depths of approximately 25 feet below grade along the upgradient side of the waste disposal area, and at depths of approximately 10 feet below grade along the perimeter downgradient boundary. Groundwater elevations obtained during the June 2011 monitoring event and summarized in Table 1 were used to prepare a groundwater surface contour map presented as Drawing 1.

Surface water and groundwater at the site generally flows west and northwest and discharges to the surrounding tributaries that flow into the Neuse River. Groundwater beneath the site flows in three distinguishable and vertically interconnected hydrogeologic units: saprolite, partially weathered rock, and bedrock.

Based on the June 15-16, 2011, groundwater contour map, the average hydraulic gradient in the shallow aquifer underlying the site, as measured along the conceptual flow path shown on the contour map, was calculated to be approximately 0.025 feet per foot. Groundwater velocities were calculated using a hydraulic conductivity of 1.20E-04 centimeters per second, which is the geometric mean of the hydraulic conductivities for each of the hydrogeologic units present at the facility (JEI 2001). The estimated effective porosity of the shallow aquifer is 0.20 (Heath 1982).

Using the above values, the estimated rate of groundwater flow for the uppermost aquifer beneath the facility was calculated using the following modified Darcy equation:

$$V_{gw} = Ki/n_e$$

where V_{gw} = average linear velocity (feet per year), K = hydraulic conductivity (feet per year), i = horizontal hydraulic gradient, and n_e = effective porosity.

The average estimated linear groundwater flow velocity under the waste management unit is approximately 15.6 feet per year, which is consistent with previous estimates (Table 2). The range of groundwater flow is expected to vary depending on the hydrogeologic unit in which it occurs. The linear velocity equation above makes the simplified assumptions of a homogeneous and isotropic aquifer. Therefore, this equation represents a likely average value for the uppermost aquifer and does not account for heterogeneous and/or anisotropic conditions that may be present in the uppermost aquifer at the facility.

2.0 FIELD PROGRAM, MONITORING RESULTS, AND DISCUSSION

Field activities conducted for the June 2011 sampling event are discussed in the following sections.

2.1 Visual Inspection Program

In order to ensure that a potential release is detected at the earliest possible time, the visual inspection program is used by the sampling crews at the Material Recovery C&D Landfill. This program includes physical indicators such as potential water table mounding beneath the waste management unit, physical examination of any stresses in biological communities, visible signs of leachate migration (i.e., leachate seeps), unexplained changes in soil characteristics, and any other change to the environment due to the waste management unit. During the June 2011 compliance monitoring event, no physical indicators of a potential release were observed in the vicinity of the waste management area.

2.2 Well Network and Groundwater Elevation Measurements

The approved network of groundwater monitoring wells at the facility consists of wells MW-1, MW-2, MW-3, MW-4, and MW-5. Monitoring well construction information is summarized on Table 3 and the well locations are shown on Drawing 1. The well locations were selected to yield groundwater samples representative of the conditions in the uppermost aquifer underlying the facility and to monitor for potential releases from the landfill unit. One upstream (SW-1) and two downstream (SW-2 and SW-3) surface water monitoring points are also monitored.

Monitoring well MW-1 is the facility's background well and is located hydraulically upgradient of the waste disposal area. Monitoring wells MW-2, MW-3, MW-4, and MW-5 are located downgradient of the waste disposal area and represent the facility's downgradient compliance wells.

Depth to water measurements were recorded to the nearest 0.01 foot prior to initiating groundwater purging and sampling activities. The respective groundwater level elevations for this event are presented in Table 1. The historical water level data are also shown on this table.

As presented, the data indicate that the hydraulic head level in the uppermost aquifer beneath the facility is fairly consistent, with temporal variation from the long-term average limited to approximately 5 feet (plus or minus). As expected, the range in fluctuation appears to be greater in the upgradient well MW-1, as this well is located in a groundwater recharge area. The range in fluctuation in compliance wells MW-2, MW-3, MW-4, and MW-5, which are located near groundwater discharge areas, is less, presumably due to the stabilizing effect of the hydraulic discharge boundary.

2.3 June 2011 Groundwater and Surface Water Monitoring Event

Personnel from Golder visited the facility on June 15-16, 2011, to purge and sample monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-5, and to sample surface water monitoring points SW-1, SW-2, and SW-3. Monitoring wells were purged and sampled using low-flow sampling techniques from dedicated bladder pumps. Measurements of temperature, pH, specific conductivity, dissolved oxygen, oxidation-reduction potential, and turbidity were recorded on approximately 3- to 4-minute intervals during the purge, depending on the purge rate. In general, the purge rate was matched to the yield of the monitoring well, as determined by continuously monitoring the depth to water, never allowing the purge rate to exceed 500 milliliters per minute. Purging was continued until stabilization was indicated by the field parameters. In general, stabilization was deemed to be complete once the range in measured values for the required field parameters was less than 10% per parameter over three monitoring intervals.

Prior to sampling, the laboratory-supplied sample containers were prepared. Each sample container was labeled with the sample identification number, sampling personnel, date and time of sample collection, project name and number, and requested chemical analyses. The required groundwater samples were collected directly from the dedicated bladder pump discharge lines into the labeled, laboratory-supplied, pre-preserved sample containers after purging was completed based on stabilization of field parameters.

The surface water samples were collected directly from the stream flow, by lowering the sample containers into the stream flow with the opening facing away from the current flow, taking care to prevent the over flow of the sample containers and to minimize sample-induced turbidity. Measurements of pH, specific conductivity, temperature, dissolved oxygen, oxidation reduction potential, and turbidity were recorded during the collection of the surface water samples.

After collection, the samples were placed in a cooler on ice, under chain-of-custody control. Copies of the sampling logs are presented in Appendix A. Included in each log is a description of the sampling location and equipment, sampling method, field observations, and field parameter measurements.

2.4 Laboratory Analysis Program

The June 2011 groundwater and surface water samples were shipped to Environmental Conservation Laboratories, Inc. (ENCO) of Cary, NC under chain-of-custody control for analysis. As presented, groundwater samples at the facility were analyzed for the NC Appendix I constituents plus tetrahydrofuran and several indicator parameters specific to the C&D rules effective January 1, 2007. The surface water

samples at the facility were analyzed for the NC Appendix I list of constituents and tetrahydrofuran. The samples were received by the laboratory on June 16, 2011, in good condition and properly preserved.

2.5 June 2011 Sampling Results

Analytical results for the June 2011 groundwater and surface water samples are summarized in Tables 4 and 5, respectively, with available historical data. The laboratory certificates-of-analysis, chain-of-custody form, and laboratory data review for the sampling event are included in Appendix B.

As presented, three NC Appendix I inorganic constituents (barium, beryllium, and mercury) were detected at quantifiable concentrations above their respective Solid Waste Section Limits (SWSLs) in samples from one or more downgradient monitoring wells at the facility. These results are generally consistent with historical detections in downgradient wells. Indicator parameters iron, manganese, alkalinity, chloride, and total dissolved solids were also detected at quantifiable concentrations in samples from one or more wells as they have been during previous events. Trichlorofluoromethane, tetrachloroethene, trichloroethene, and tetrahydrofuran were detected in the sample from MW-3 at concentrations above their respective SWSLs during this event. One NC Appendix I constituent (barium) was detected in downstream surface water monitoring point SW-3 above the SWSL during the June 2011 event.

3.0 LABORATORY AND FIELD QA/QC

A field blank was collected by Golder personnel as part of the June 2011 groundwater sampling event. In addition to the field blank, laboratory-prepared trip blanks accompanied the volatile sample containers for the June 2011 sampling event to and from the laboratory. ENCO analyzed the field blank for NC Appendix I volatile organic compounds (VOCs) and metals plus tetrahydrofuran, and the trip blank for NC Appendix I VOCs and tetrahydrofuran.

A review of the laboratory data was performed by Golder personnel (included in Appendix B). There were no detections of constituents in the field blank, method blank, or trip blank during the June 2011 sampling event; therefore, no data qualification was necessary.

4.0 DATA EVALUATION

The results of the data evaluations are presented in the following sections.

4.1 June 2011 Groundwater and Surface Water Quality Standard Comparisons

As presented in Table 4, the concentration of barium in the sample from MW-3 was above its SWSL and NC 2L Standard. The concentration of beryllium in the sample from MW-2 was above its SWSL and NC Solid Waste Section Groundwater Protection Standard (GPS). Cobalt was detected at estimated concentrations below the SWSL, but above its GPS in upgradient well MW-1 and downgradient well MW-3 at levels similar to previous events. Vanadium was detected at an estimated concentration below the SWSL, but above its GPS in the sample from MW-5 at a concentration similar to previous sampling events. Indicator metals, iron and manganese, were detected in samples from upgradient and/or

downgradient wells at concentrations above their respective NC 2L Standards. The concentrations of cobalt, vanadium, iron, and manganese are consistent with historical background data and are interpreted to represent naturally occurring conditions.

The concentrations of tetrachloroethene and trichloroethene in the sample from MW-3 were reported above the NC 2L Standard as they have been during previous events. There were no detections of NC Appendix I inorganic or organic constituents in surface water monitoring points above applicable surface water standards during this event.

4.2 June 2011 Statistical Evaluations

As presented, barium, beryllium, and mercury were detected at concentrations above their respective SWSLs in samples from downgradient monitoring wells during this sampling event. The concentration of barium in the sample from MW-3 was above its NC 2L Standard and the concentration of beryllium in the sample from MW-2 was above its GPS during this event. Therefore, the concentrations of barium and beryllium were statistically evaluated to determine if the reported concentrations exceed the facility background concentrations. The statistical worksheets are presented as Appendix C. As presented, the reported concentrations of barium and beryllium were determined to be below their respective background concentrations and are interpreted to represent naturally occurring conditions.

5.0 CONCLUSIONS

Trichlorofluoromethane, tetrachloroethene, trichloroethene, and tetrahydrofuran were detected in the sample from MW-3 above the SWSL during this event. A voluntary Alternate Source Demonstration (ASD) was submitted to the NC DENR Division of Waste Management, Solid Waste Section on November 5, 2007, which evaluated the source of trichlorofluoromethane. Based on the findings of the ASD, the most likely source for trichlorofluoromethane detected in samples from MW-3 is landfill gas, rather than leachate. The ASD was approved by NC DENR on May 15, 2008. Subsequently, WCA Waste Corporation submitted a Landfill Gas Remediation Plan (LGRP) to address methane migration in the vicinity of MW-3, which was approved by NC DENR on July 1, 2010. As proposed in the LGRP, a cut-off trench was installed prior to the December 2010 monitoring event. Trichlorofluoromethane concentrations in samples from MW-3 have been on a declining trend over the past four events. The concentrations of tetrachloroethene and trichloroethene have had an increasing trend over the past three events. This was the first event that tetrahydrofuran has been detected in a sample from a monitoring well. VOC concentrations in MW-3 will continue to be evaluated for up to two years to determine the effectiveness of the corrective measures.

Based on the results summarized herein, WCA will continue monitoring this facility in accordance with the requirements of the Detection Monitoring Program for C&D Landfills as outlined in Title 15A NCAC 13B.0544. The next groundwater monitoring event is tentatively scheduled for December 2011.

6.0 REFERENCES

Golder Associates NC, Inc., 2007, Material Recovery, LLC C&D Landfill; Alternate Source Demonstration. November 5.

Heath, Ralph C., 1982, Basic Ground-Water Hydrology, USGS Water Supply Paper 2220.

JEI (Joyce Engineering, Inc.), 2001, Hydrogeologic Report & Groundwater Monitoring Plan; Volume One; Site Application, Section II; Material Recovery, LLC Construction and Demolition Debris Landfill, Wake County, North Carolina.

NCGS (North Carolina Geologic Survey), 1985. Geologic Map of North Carolina

Stoddard, Edward F., Farrar, Stewart S., Horton, Jr. J. Wright, Butler, J. Robert and Durhan,

Robert M., 1991, The Eastern Piedmont in North Carolina, in Horton, J. W., Jr., and Zullo, V.A., eds., The Geology of the Carolinas: The University of Tennessee Press, p. 59 - 78.

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TABLES

TABLE 1

**Summary of Historical Groundwater Elevation Data in Monitoring Wells
Material Recovery, LLC Construction and Demolition Landfill, Permit No. 92-31
Wake County, North Carolina**

	Monitoring Wells				
	MW-1	MW-2	MW-3	MW-4	MW-5
TOC Elevation (ft AMSL)	280.95	213.37	218.54	201.52	203.38
Date	Static Groundwater Elevation (ft AMSL)				
08/07/02	252.98	195.37	191.13	186.43	191.82
06/16/03	258.29	197.10	195.09	191.72	193.45
12/01/03	258.17	197.55	195.62	191.88	194.13
06/10/04	257.17	196.89	194.54	191.12	193.43
12/16/04	256.71	196.85	193.93	190.70	193.38
06/05/05	256.73	196.40	193.41	190.13	193.01
12/27/05	254.10	196.16	191.64	189.84	193.38
06/21/06	253.98	196.27	192.07	189.57	193.18
12/01/06	253.11	196.43	191.83	189.44	193.67
06/28/07	254.11	196.29	192.21	189.32	192.83
12/13/07	251.52	195.89	190.81	187.92	192.52
06/19/08	251.92	195.86	191.95	189.91	192.46
12/02/08	250.38	195.86	190.75	189.90	193.09
01/23/09	--	--	191.25	--	--
06/11/09	252.94	196.15	191.92	190.30	193.38
12/10/09	252.69	196.37	191.42	191.45	194.82
06/15/10	255.99	196.11	192.51	191.10	193.37
12/09/10	254.44	195.98	191.34	189.67	192.56
06/15-16/11	254.05	195.79	191.33	190.04	192.57
MEAN	<i>254.40</i>	<i>196.30</i>	<i>192.36</i>	<i>190.02</i>	<i>193.17</i>
MAXIMUM	<i>258.29</i>	<i>197.55</i>	<i>195.62</i>	<i>191.88</i>	<i>194.82</i>
MINIMUM	<i>250.38</i>	<i>195.37</i>	<i>190.75</i>	<i>186.43</i>	<i>191.82</i>

Notes:

1. TOC = top of casing
2. ft AMSL = feet above mean sea level
3. Monitoring well MW-1 is the facility background well.

TABLE 2
Summary of Estimated Horizontal Flow Velocities
Material Recovery, LLC Construction and Demolition Landfill, Permit No. 92-31
Wake County, North Carolina

June 2011							
Gradient Calculation Segment	Flow Direction	Gradient Segment Length (feet)	Gradient Segment Elevations (feet)	Horizontal Gradient (i, feet/feet)	Effective Porosity (n _e)	Hydraulic Conductivity (K, cm/sec)	Velocity (V _{gw} , feet/year)
<i>i</i> ₁	NW	1174	230 ----- 200	0.0255	0.2	1.20E-04	15.86
<i>i</i> ₂	NW	2558	250 ----- 190	0.0235	0.2	1.20E-04	14.56
<i>i</i> ₃	NNW	1137	230 ----- 200	0.0264	0.2	1.20E-04	16.38

Notes:

1. Horizontal velocities based on the modified Darcy equation $V_{gw} = Ki/n_e$.
2. The geometric mean of K from individual well aquifer tests was used to calculate the hydraulic conductivity (tests conducted by Joyce Engineering Inc. as part of the Site Application, 2001).
3. An effective porosity of 20% was used in velocity calculations.
4. cm/sec = centimeters per second

TABLE 3

**Summary of Well Construction Information
Material Recovery, LLC Construction and Demolition Landfill, Permit No. 92-31
Wake County, North Carolina**

WELL & PIEZOMETER NUMBER	DATE INSTALLED	CASING DIAMETER (inches)	WELL ELEVATIONS		TOTAL DEPTH DRILLED		SCREENED INTERVAL				LITHOLOGY OF SCREENED INTERVAL	STATUS
			GROUND SURFACE feet above M.S.L.	T.O.C.	DEPTH (feet B.G.S.)	ELEV. (feet M.S.L.)	DEPTH (feet B.G.S.)		ELEVATION (feet M.S.L.)			
							from	to	from	to		
MW-1	08/22/01	2	278.17	280.95	49.0	229.17	24.0	49.0	254.17	229.17	Saprolite	Compliance Well
MW-2	08/02/02	2	210.55	213.37	35.0	175.55	19.5	34.5	191.05	176.05	PWR (Saprolite)	Compliance Well
MW-3	07/31/02	2	216.3	218.54	34.5	181.80	19.0	34.0	197.30	182.30	Silty Sand/PWR (Saprolite)	Compliance Well
MW-4	08/01/02	2	199.03	201.52	27.0	172.03	11.5	26.5	187.53	172.53	Silty Sand/PWR (Saprolite)	Compliance Well
MW-5	08/01/02	2	200.79	203.38	24.0	176.79	8.5	23.5	192.29	177.29	Silty Sand/PWR (Saprolite)	Compliance Well

Notes:

1. All elevations are referenced to mean sea level (M.S.L.); depths are referenced to ground surface (G.S.).
2. B.G.S. = below ground surface
3. T.O.C. = top of casing
4. PWR = partially weathered rock
5. MW-1 was installed by Joyce Engineering Inc. (JEI) as P-4 on August 22, 2001.
6. MW-2, MW-3, MW-4 and MW-5 were installed by JEI on August 2, 2002, July 31, 2002, and August 1, 2002, respectively.

Table 4

**Summary of Detected Constituents in Groundwater
Material Recovery, LLC Construction and Demolition Landfill, Permit 92-31
Wake County, North Carolina**

Parameter	Reporting Units	Date	SWS Reporting Limit	MW-1 (Upgradient)	MW-2	MW-3	MW-4	MW-5	Blanks
Antimony SWS GPS = 1 ug/L	ug/L	05/07/02	30	--	--	--	--	--	ND
	ug/L	08/07/02	30	--	--	--	--	--	--
	ug/L	06/29/07	6	ND	ND	ND	ND	ND	ND
	ug/L	12/13/07	6	ND	ND	ND	ND	ND	ND
	ug/L	06/19/08	6	ND	ND	ND	ND	ND	ND
	ug/L	12/02/08	6	ND	ND	ND	ND	ND	ND
	ug/L	06/11/09	6	ND	ND	ND	1.05 J	ND	ND
	ug/L	12/10/09	6	ND	ND	ND	ND	ND	ND
	ug/L	06/15/10	6	ND	ND	ND	ND	ND	ND
	ug/L	12/09/10	6	ND	ND	0.276 J	ND	ND	ND
	ug/L	06/15/11	6	ND	ND	ND	ND	ND	ND
Arsenic NC 2L = 10 ug/L	ug/L	08/07/02	10	ND	ND	ND	ND	ND	ND
	ug/L	06/16/03	10	ND	ND	ND	ND	ND	ND
	ug/L	12/16/03	10	ND	ND	ND	ND	ND	ND
	ug/L	06/16/04	10	ND	ND	ND	ND	ND	ND
	ug/L	12/16/04	10	ND	ND	ND	ND	ND	ND
	ug/L	06/14/05	10	ND	ND	ND	ND	ND	ND
	ug/L	12/27/05	10	ND	ND	ND	ND	ND	ND
	ug/L	06/21/06	10	ND	ND	ND	ND	ND	ND
	ug/L	12/13/06	10	3.2 B	3.8 B	9.2 B	3.0 B	4.0 B	3.5 J
	ug/L	06/29/07	10	ND	ND	4.7 J	ND	ND	ND
	ug/L	12/13/07	10	2.2 B	ND	4.6 B	ND	2.2 B	2.5 J
	ug/L	06/19/08	10	ND	ND	4.1 J	ND	ND	ND
	ug/L	12/02/08	10	ND	ND	ND	ND	ND	ND
	ug/L	06/11/09	10	4.4 B	ND	5.4 B	ND	ND	3.5 J
	ug/L	12/10/09	10	ND	ND	5.01 J	ND	3.75 J	ND
ug/L	06/15/10	10	ND	3.60 J	ND	ND	ND	ND	
ug/L	12/09/10	10	ND	ND	3.28 J	ND	ND	ND	
ug/L	06/15/11	10	3.39 J	ND	ND	ND	4.64 J	ND	
Barium NC 2L = 700 ug/L	ug/L	08/07/02	500	ND	ND	4000	ND	ND	ND
	ug/L	06/16/03	500	ND	ND	3100	ND	ND	ND
	ug/L	12/16/03	500	160	420	1200	120	120	ND
	ug/L	06/16/04	500	ND	540	1500	ND	ND	ND
	ug/L	12/16/04	500	ND	570	3100	ND	ND	ND
	ug/L	06/14/05	500	ND	520	2600	ND	ND	ND
	ug/L	12/27/05	500	ND	640	5700	ND	ND	ND
	ug/L	06/21/06	500	ND	708	4690	ND	ND	ND
	ug/L	12/13/06	100	217	681	6510	121	136	0.4 J
	ug/L	06/29/07	100	269	628	3140	99.5 J	42.1 B	10.4 J
	ug/L	12/13/07	100	417	697	5640	147	47.0 J	0.30 J
	ug/L	06/19/08	100	426	623	3750	123	38.6 J	ND
	ug/L	12/02/08	100	488	565	3130	109	40.3 J	ND
	ug/L	06/11/09	100	502	607	2380	94.2 J	45.2 J	ND
	ug/L	12/10/09	100	489	544	1970	99.9 J	36.0 J	ND
ug/L	06/15/10	100	359	560	1100	130	29.2 J	ND	
ug/L	12/09/10	100	433	650	987	151	41.3 J	1.72 J	
ug/L	06/15/11	100	447	597	1170	110	37.4 J	ND	
Beryllium SWS GPS = 4 ug/L	ug/L	06/29/07	1	ND	3.50	5.90	1.00	0.80 J	ND
	ug/L	12/13/07	1	ND	3.00	10.8	1.00	1.00	ND
	ug/L	06/19/08	1	ND	3.50	7.60	1.00	0.80 J	ND
	ug/L	12/02/08	1	0.40 J	2.80	6.70	0.90 J	1.00	ND
	ug/L	06/11/09	1	1.04	4.02	5.82	1.04	2.03	0.08 J
	ug/L	12/10/09	1	0.633 J	3.31	4.83	0.931 J	0.895 J	ND
	ug/L	06/15/10	1	0.435 J	4.03	2.73	1.04	0.597 J	ND
	ug/L	12/09/10	1	0.531 J	3.55	2.41	1.60	1.37	ND
	ug/L	06/15/11	1	0.592 J	4.04	2.95	1.26	0.757 J	ND

Table 4

**Summary of Detected Constituents in Groundwater
Material Recovery, LLC Construction and Demolition Landfill, Permit 92-31
Wake County, North Carolina**

Parameter	Reporting Units	Date	SWS Reporting Limit	MW-1 (Upgradient)	MW-2	MW-3	MW-4	MW-5	Blanks					
Cadmium NC 2L = 2 ug/L	ug/L	05/07/02	1	--	--	--	--	--	ND					
	ug/L	08/07/02	1	1.4	1.1	1.8	1.2	1.0	ND					
	ug/L	06/16/03	1	1.2	1.1	1.7	1.8	3.4	ND					
	ug/L	12/16/03	1	ND	1.3	ND	ND	ND	ND					
	ug/L	06/16/04	1	ND	ND	ND	ND	ND	ND					
	ug/L	12/16/04	1	ND	ND	ND	ND	1.1	ND					
	ug/L	06/14/05	1	ND	ND	ND	ND	ND	ND					
	ug/L	12/27/05	1	ND	ND	ND	ND	ND	ND					
	ug/L	06/21/06	1	ND	ND	ND	ND	ND	ND					
	ug/L	12/13/06	1	ND	ND	0.50	J	ND	ND	ND				
	ug/L	06/29/07	1	ND	ND	0.50	J	ND	ND	ND				
	ug/L	12/13/07	1	ND	ND	ND	ND	ND	ND	ND				
	ug/L	06/19/08	1	ND	ND	ND	ND	ND	ND	ND				
	ug/L	12/02/08	1	ND	ND	ND	ND	ND	ND	ND				
	ug/L	06/11/09	1	0.26	J	0.36	J	0.58	J	0.19	J	0.34	J	ND
	ug/L	12/10/09	1	ND	ND	0.516	J	ND	ND	ND	ND	ND		
	ug/L	06/15/10	1	ND	ND	ND	ND	ND	ND	ND	ND	ND		
ug/L	12/09/10	1	ND	ND	0.523	J	ND	ND	ND	ND	ND			
ug/L	06/15/11	1	ND	ND	ND	ND	ND	ND	ND	ND	ND			
Chromium NC 2L = 10 ug/L	ug/L	08/07/02	10	ND	ND	ND	ND	ND	ND	ND				
	ug/L	06/16/03	10	ND	ND	ND	ND	ND	ND	ND				
	ug/L	12/16/03	10	ND	ND	ND	ND	ND	ND	ND				
	ug/L	06/16/04	10	ND	ND	ND	ND	ND	ND	ND				
	ug/L	12/16/04	10	ND	ND	ND	ND	ND	ND	ND				
	ug/L	06/14/05	10	ND	ND	ND	ND	ND	ND	ND				
	ug/L	12/27/05	10	ND	ND	ND	ND	15	ND	ND				
	ug/L	06/21/06	10	ND	ND	ND	ND	ND	ND	ND				
	ug/L	12/13/06	10	ND	ND	ND	ND	ND	ND	ND				
	ug/L	06/29/07	10	ND	ND	ND	ND	ND	ND	ND				
	ug/L	12/13/07	10	ND	ND	ND	ND	ND	ND	ND				
	ug/L	06/19/08	10	ND	ND	ND	ND	ND	ND	ND				
	ug/L	12/02/08	10	ND	ND	ND	ND	ND	ND	ND				
	ug/L	06/11/09	10	2.4	J	1.1	J	ND	ND	ND	ND			
	ug/L	12/10/09	10	ND	ND	ND	ND	ND	ND	ND	ND			
ug/L	06/15/10	10	1.79	J	ND	ND	ND	ND	ND	ND				
ug/L	12/09/10	10	1.04	J	ND	1.89	J	ND	ND	ND				
ug/L	06/15/11	10	ND	ND	ND	ND	ND	ND	ND	ND				
Cobalt SWS GPS = 1 ug/L	ug/L	06/29/07	10	5.8	J	ND	6.3	J	ND	ND	ND			
	ug/L	12/13/07	10	6.3	J	ND	6.5	J	ND	ND	ND			
	ug/L	06/19/08	10	6.1	J	ND	7.0	J	ND	ND	ND			
	ug/L	12/02/08	10	4.7	J	ND	3.9	J	ND	ND	ND			
	ug/L	06/11/09	10	7.5	J	ND	2.3	J	ND	1.4	J			
	ug/L	12/10/09	10	5.84	J	ND	2.19	J	ND	1.25	J			
	ug/L	06/15/10	10	5.84	J	ND	ND	ND	ND	ND	ND			
	ug/L	12/09/10	10	6.64	J	ND	1.87	J	ND	1.40	J			
	ug/L	06/15/11	10	6.17	J	ND	1.50	J	ND	ND	ND			
Copper NC 2L = 1000 ug/L	ug/L	08/07/02	0.05	ND	ND	ND	ND	ND	ND	ND				
	ug/L	06/29/07	10	ND	ND	2.0	J	ND	ND	ND				
	ug/L	12/13/07	10	13.6	ND	1.40	J	0.80	J	2.20	J			
	ug/L	06/19/08	10	6.30	B	1.30	B	10.5	ND	1.30	J			
	ug/L	12/02/08	10	13.1	ND	ND	ND	ND	ND	ND				
	ug/L	06/11/09	10	13.9	ND	ND	1.20	J	3.59	J	ND			
	ug/L	12/10/09	10	3.62	J	ND	ND	ND	ND	ND	ND			
	ug/L	06/15/10	10	3.99	J	ND	ND	ND	ND	ND	ND			
	ug/L	12/09/10	10	4.23	J	ND	ND	ND	1.87	J	ND			
	ug/L	06/15/11	10	3.18	J	ND	ND	1.70	J	ND	ND			

Table 4

**Summary of Detected Constituents in Groundwater
Material Recovery, LLC Construction and Demolition Landfill, Permit 92-31
Wake County, North Carolina**

Parameter	Reporting Units	Date	SWS Reporting Limit	MW-1 (Upgradient)	MW-2	MW-3	MW-4	MW-5	Blanks					
Lead NC 2L = 15 ug/L	ug/L	08/07/02	10	ND	ND	ND	ND	19	ND					
	ug/L	06/16/03	10	ND	ND	ND	ND	21	ND					
	ug/L	12/16/03	10	ND	ND	ND	ND	34	ND					
	ug/L	06/16/04	10	ND	ND	ND	ND	15	ND					
	ug/L	12/16/04	10	ND	ND	ND	ND	62	ND					
	ug/L	06/14/05	10	ND	ND	ND	ND	92	ND					
	ug/L	12/27/05	10	ND	ND	ND	ND	81	ND					
	ug/L	06/21/06	10	ND	ND	ND	ND	33.4	ND					
	ug/L	12/13/06	10	2.7	J	ND	4.6	J	2.5	J	44.0	ND		
	ug/L	06/29/07	10	ND	ND	ND	ND	ND	ND	ND	ND			
	ug/L	12/13/07	10	ND	ND	ND	ND	ND	2.4	J	ND			
	ug/L	06/19/08	10	2.7	J	ND	3.0	J	ND	ND	ND			
	ug/L	12/02/08	10	3.4	J	ND	ND	ND	ND	ND	ND			
	ug/L	06/11/09	10	5.2	J	2.4	J	3.5	J	2.4	J	5.1	J	ND
	ug/L	12/10/09	10	ND	ND	ND	ND	ND	ND	ND	ND	ND		
	ug/L	06/15/10	10	ND	ND	ND	ND	ND	ND	ND	ND	ND		
	ug/L	12/09/10	10	ND	ND	ND	ND	ND	ND	ND	ND	ND		
ug/L	06/15/11	10	2.23	J	ND	ND	ND	3.12	J	ND				
Mercury NC 2L = 1 ug/L	ug/L	08/07/02	0.5	ND	ND	ND	ND	ND	ND	ND				
	ug/L	06/16/03	0.5	ND	ND	ND	ND	ND	ND	ND				
	ug/L	12/16/03	0.5	ND	ND	ND	ND	ND	ND	ND				
	ug/L	06/16/04	0.5	ND	ND	ND	ND	ND	ND	ND				
	ug/L	12/16/04	0.5	ND	ND	ND	ND	ND	ND	ND				
	ug/L	06/14/05	0.5	ND	ND	ND	ND	ND	ND	ND				
	ug/L	12/27/05	0.5	ND	ND	ND	ND	ND	ND	ND				
	ug/L	06/21/06	2	ND	ND	ND	ND	ND	ND	ND				
	ug/L	12/13/06	0.2	ND	ND	ND	ND	ND	ND	ND				
	ug/L	06/29/07	0.2	ND	ND	2.24	ND	ND	ND	ND				
	ug/L	08/09/07	0.2	--	--	1.30	--	--	--	ND				
	ug/L	12/13/07	0.2	ND	ND	ND	ND	ND	ND	ND				
	ug/L	06/19/08	0.2	ND	ND	0.58	0.12	J	ND	ND				
	ug/L	12/02/08	0.2	ND	ND	0.59	ND	ND	ND	ND				
	ug/L	06/11/09	0.2	ND	ND	0.75	0.07	J	ND	ND				
	ug/L	12/10/09	0.2	ND	ND	1.03	0.113	J	ND	ND				
	ug/L	06/15/10	0.2	0.201	ND	1.53	ND	ND	ND	ND				
ug/L	12/09/10	0.2	ND	ND	0.848	ND	ND	ND	ND					
ug/L	06/15/11	0.2	ND	ND	0.768	ND	ND	ND	ND					
Nickel NC 2L = 100 ug/L	ug/L	08/07/02	50	ND	ND	ND	ND	ND	ND					
	ug/L	06/29/07	50	ND	ND	ND	ND	ND	ND					
	ug/L	12/13/07	50	3.4	J	ND	8.0	J	4.0	J	2.3	J	ND	
	ug/L	06/19/08	50	ND	ND	ND	2.1	J	ND	ND	ND			
	ug/L	12/02/08	50	ND	ND	ND	ND	ND	ND	ND				
	ug/L	06/11/09	50	2.3	J	0.7	J	2.1	J	1.5	J	1.2	J	ND
	ug/L	12/10/09	50	ND	ND	ND	ND	ND	ND	ND	ND			
	ug/L	06/15/10	50	ND	ND	ND	ND	ND	ND	ND	ND			
	ug/L	12/09/10	50	2.21	J	ND	ND	2.98	J	ND	ND			
	ug/L	06/15/11	50	ND	ND	ND	ND	ND	ND	ND				

Table 4

**Summary of Detected Constituents in Groundwater
Material Recovery, LLC Construction and Demolition Landfill, Permit 92-31
Wake County, North Carolina**

Parameter	Reporting Units	Date	SWS Reporting Limit	MW-1 (Upgradient)	MW-2	MW-3	MW-4	MW-5	Blanks				
Selenium NC 2L = 20 ug/L	ug/L	08/07/02	20	ND	ND	ND	ND	ND	ND				
	ug/L	06/16/03	20	ND	ND	ND	ND	ND	ND				
	ug/L	12/16/03	20	ND	ND	ND	ND	ND	ND				
	ug/L	06/16/04	20	ND	ND	ND	ND	ND	ND				
	ug/L	12/16/04	20	ND	ND	ND	ND	ND	ND				
	ug/L	06/14/05	20	ND	ND	ND	ND	ND	ND				
	ug/L	12/27/05	20	ND	ND	ND	ND	ND	ND				
	ug/L	06/21/06	20	ND	ND	ND	ND	ND	ND				
	ug/L	12/13/06	10	4.3	B	2.1	B	ND	5.4	B	ND	4.5	J
	ug/L	06/29/07	10	ND	ND	ND	2.8	J	ND	ND	ND	ND	
	ug/L	12/13/07	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	ug/L	06/19/08	10	ND	ND	ND	ND	2.7	J	ND	ND	ND	
	ug/L	12/02/08	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	ug/L	06/11/09	10	ND	ND	ND	4.8	J	ND	ND	ND	ND	
	ug/L	12/10/09	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	ug/L	06/15/10	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	ug/L	12/09/10	10	ND	ND	ND	ND	1.85	J	ND	ND	ND	
ug/L	06/15/11	10	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Silver SWS GPS = 20 ug/L	ug/L	08/07/02	10	ND	ND	ND	ND	ND	ND	ND	ND		
	ug/L	06/16/03	10	ND	ND	ND	ND	ND	ND	ND	ND		
	ug/L	12/16/03	10	ND	ND	ND	ND	ND	ND	ND	ND		
	ug/L	06/16/04	10	ND	ND	ND	ND	ND	ND	ND	ND		
	ug/L	12/16/04	10	ND	ND	ND	ND	ND	ND	ND	ND		
	ug/L	06/14/05	10	ND	ND	ND	ND	ND	ND	ND	ND		
	ug/L	12/27/05	10	ND	ND	ND	ND	ND	ND	ND	ND		
	ug/L	06/21/06	10	ND	ND	ND	ND	ND	ND	ND	ND		
	ug/L	12/13/06	10	ND	ND	3.1	J	ND	ND	ND	ND	ND	
	ug/L	06/29/07	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	ug/L	12/13/07	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	ug/L	06/19/08	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	ug/L	12/02/08	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	ug/L	06/11/09	10	2.7	J	ND	1.4	J	6.8	J	ND	ND	
	ug/L	12/10/09	10	ND	ND	2.08	J	ND	ND	ND	ND	ND	
	ug/L	06/15/10	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	ug/L	12/09/10	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	
ug/L	06/15/11	10	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Thallium SWS GPS = 0.2 ug/L	ug/L	06/29/07	5.5	0.246	J	0.137	J	0.390	J	0.039	J	ND	
	ug/L	12/13/07	5.5	0.372	J	0.141	J	0.492	J	0.050	J	ND	
	ug/L	06/19/08	5.5	0.352	J	0.143	J	0.450	J	0.047	J	ND	
	ug/L	12/02/08	5.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	ug/L	06/11/09	5.5	0.304	J	ND	ND	0.210	J	ND	ND	ND	
	ug/L	12/10/09	5.5	0.325	J	0.111	J	0.318	J	ND	ND	ND	
	ug/L	06/15/10	5.5	0.144	J	ND	ND	0.126	J	ND	ND	ND	
	ug/L	12/09/10	5.5	0.126	J	ND	ND	ND	ND	ND	ND	ND	
	ug/L	06/15/11	5.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Vanadium SWS GPS = 0.3 ug/L	ug/L	06/29/07	25	ND	ND	ND	ND	ND	2.9	J	ND	ND	
	ug/L	12/13/07	25	4.9	J	ND	ND	ND	4.0	J	ND	ND	
	ug/L	06/19/08	25	1.3	J	ND	ND	ND	1.1	J	ND	ND	
	ug/L	12/02/08	25	4.1	J	ND	ND	ND	ND	ND	ND	ND	
	ug/L	06/11/09	25	5.9	J	ND	ND	ND	6.6	J	ND	ND	
	ug/L	12/10/09	25	ND	ND	ND	ND	ND	2.15	J	ND	ND	
	ug/L	06/15/10	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	ug/L	12/09/10	25	ND	ND	ND	ND	ND	4.33	J	ND	ND	
	ug/L	06/15/11	25	ND	ND	ND	ND	ND	2.41	J	ND	ND	

Table 4

**Summary of Detected Constituents in Groundwater
Material Recovery, LLC Construction and Demolition Landfill, Permit 92-31
Wake County, North Carolina**

Parameter	Reporting Units	Date	SWS Reporting Limit	MW-1 (Upgradient)	MW-2	MW-3	MW-4	MW-5	Blanks
Zinc NC 2L = 1000 ug/L	ug/L	08/07/02	50	ND	ND	ND	ND	ND	ND
	ug/L	06/29/07	10	9.1 J	ND	26.1	ND	ND	ND
	ug/L	12/13/07	10	22.2	3.3 B	33.4	3.2 B	5.0 B	2.6 J
	ug/L	06/19/08	10	15.6	2.5 B	26.2	15.3	2.7 B	1.0 J
	ug/L	12/02/08	10	22.2	ND	13.7	ND	ND	ND
	ug/L	06/11/09	10	32.7 B	4.6 B	15.7 B	13.8 B	31.0 B	8.4 J
	ug/L	12/10/09	10	12.9	ND	11.0	ND	ND	ND
	ug/L	06/15/10	10	13.9	ND	7.62 J	4.03 J	ND	ND
	ug/L	12/09/10	10	27.0	ND	7.78 J	ND	ND	ND
	ug/L	06/15/11	10	12.5	ND	7.94 J	ND	ND	ND
Iron NC 2L = 300 ug/L	ug/L	06/29/07	300	ND	ND	239 J	ND	4180	ND
	ug/L	08/09/07	300	364	--	2920	--	--	23 J
	ug/L	12/13/07	300	2970	328	124 J	321	7340	ND
	ug/L	06/19/08	300	1230	86 J	75 J	203 J	16100	ND
	ug/L	12/02/08	300	3780	66 J	32 J	32 J	15500	ND
	ug/L	06/11/09	300	3150	40 J	35 J	158 J	25300	ND
	ug/L	12/10/09	300	409	41.4 J	32.8 J	58.3 J	6370	ND
	ug/L	06/15/10	300	517	109 J	48.9 J	78.6 J	8750	ND
	ug/L	12/09/10	300	210 J	ND	26.1 J	134 J	22300	ND
	ug/L	06/15/11	300	149 J	31.4 J	ND	111 J	9750	ND
Manganese NC 2L = 50 ug/L	ug/L	06/29/07	50	71.2	174	256	52.6	151	ND
	ug/L	12/13/07	50	121	123	356	72.3	170	ND
	ug/L	06/19/08	50	86.6	113	274	78.9	155	ND
	ug/L	12/02/08	50	137	72.3	237	63.0	158	2.6
	ug/L	06/11/09	50	125	111	195	68.0	158	ND
	ug/L	12/10/09	50	71.6	62.8	177	65.3	151	ND
	ug/L	06/15/10	50	62.8	158	108	85.4	136	ND
	ug/L	12/09/10	50	66.4	89.9	116	136	158	ND
	ug/L	06/15/11	50	68.2	118	142	106	157	ND
Tetrachloroethene NC 2L = 0.7 ug/L	ug/L	06/16/03	5	ND	ND	ND	ND	ND	ND
	ug/L	12/16/03	5	ND	ND	ND	ND	ND	ND
	ug/L	06/16/04	5	ND	ND	ND	ND	ND	ND
	ug/L	12/16/04	5	ND	ND	ND	ND	ND	ND
	ug/L	06/14/05	5	ND	ND	ND	ND	ND	ND
	ug/L	12/27/05	5	ND	ND	ND	ND	ND	ND
	ug/L	06/21/06	5	ND	ND	ND	ND	ND	ND
	ug/L	12/13/06	5	ND	ND	ND	ND	ND	ND
	ug/L	06/29/07	1	ND	ND	ND	ND	ND	ND
	ug/L	12/13/07	1	ND	ND	ND	ND	ND	ND
	ug/L	06/19/08	1	ND	ND	ND	ND	ND	ND
	ug/L	12/02/08	1	ND	ND	0.77 J	ND	ND	ND
	ug/L	06/11/09	1	ND	ND	0.82 J	ND	ND	ND
	ug/L	12/10/09	1	ND	ND	1.2	ND	ND	ND
	ug/L	06/15/10	1	ND	ND	1.0	ND	ND	ND
	ug/L	12/09/10	1	ND	ND	1.4	ND	ND	ND
ug/L	06/15/11	1	ND	ND	1.9	ND	ND	ND	

Table 4

**Summary of Detected Constituents in Groundwater
Material Recovery, LLC Construction and Demolition Landfill, Permit 92-31
Wake County, North Carolina**

Parameter	Reporting Units	Date	SWS Reporting Limit	MW-1 (Upgradient)	MW-2	MW-3	MW-4	MW-5	Blanks	
Trichloroethene NC 2L = 3 ug/L (verification event)	ug/L	06/16/03	5	ND	ND	ND	ND	ND	ND	
	ug/L	12/16/03	5	ND	ND	ND	ND	ND	ND	
	ug/L	06/16/04	5	ND	ND	ND	ND	ND	ND	
	ug/L	12/16/04	5	ND	ND	ND	ND	ND	ND	
	ug/L	06/14/05	5	ND	ND	ND	ND	ND	ND	
	ug/L	12/27/05	5	ND	ND	ND	ND	ND	ND	
	ug/L	06/21/06	5	ND	ND	ND	ND	ND	ND	
	ug/L	12/13/06	5	ND	ND	ND	ND	ND	ND	
	ug/L	06/29/07	1	ND	ND	ND	ND	ND	ND	
	ug/L	12/13/07	1	ND	ND	ND	ND	ND	ND	
	ug/L	06/19/08	1	ND	ND	0.60	J	ND	ND	ND
	ug/L	12/02/08	1	ND	ND	1.6		ND	ND	ND
	ug/L	01/23/09	1	--	--	1.7 (4.2)		ND	ND	ND
	ug/L	06/11/09	1	ND	ND	2.2		ND	ND	ND
	ug/L	12/10/09	1	ND	ND	3.4		ND	ND	ND
	ug/L	06/15/10	1	ND	ND	2.1		ND	ND	ND
	ug/L	12/09/10	1	ND	ND	3.0		ND	ND	ND
ug/L	06/15/11	1	ND	ND	4.6		ND	ND	ND	
Trichlorofluoromethane NC 2L = 2000 ug/L	ug/L	06/16/03	5	ND	ND	ND	ND	ND	ND	
	ug/L	12/16/03	5	ND	ND	ND	ND	ND	ND	
	ug/L	06/16/04	5	ND	ND	ND	ND	ND	ND	
	ug/L	12/16/04	5	ND	ND	ND	ND	ND	ND	
	ug/L	06/14/05	5	ND	ND	ND	ND	ND	ND	
	ug/L	12/27/05	5	ND	ND	ND	ND	ND	ND	
	ug/L	06/21/06	5	ND	ND	ND	ND	ND	ND	
	ug/L	12/13/06	5	ND	ND	3.3	J	ND	ND	
	ug/L	06/29/07	1	ND	0.53	J	34	ND	ND	
	ug/L	08/09/07	1	--	--	11	--	--	ND	
	ug/L	12/13/07	1	ND	ND	23	ND	ND	ND	
	ug/L	06/19/08	1	ND	ND	25	ND	ND	ND	
	ug/L	12/02/08	1	ND	ND	13	ND	ND	ND	
	ug/L	06/11/09	1	ND	ND	9.2	ND	ND	ND	
	ug/L	12/10/09	1	ND	ND	7.8	ND	ND	ND	
	ug/L	06/15/10	1	ND	ND	3.1	ND	ND	ND	
	ug/L	12/09/10	1	ND	ND	2.6	ND	ND	ND	
ug/L	06/15/11	1	ND	ND	2.2	ND	ND	ND		
Total Xylenes NC 2L = 500 ug/L	ug/L	06/16/03	10	ND	ND	ND	ND	ND	ND	
	ug/L	12/16/03	10	5	ND	ND	ND	ND	ND	
	ug/L	06/16/04	10	ND	ND	ND	ND	ND	ND	
	ug/L	12/16/04	10	ND	ND	ND	ND	ND	ND	
	ug/L	06/14/05	10	ND	ND	ND	ND	ND	ND	
	ug/L	12/27/05	5	ND	ND	ND	ND	ND	ND	
	ug/L	06/21/06	5	ND	ND	ND	ND	ND	ND	
	ug/L	12/13/06	5	ND	ND	ND	ND	ND	ND	
	ug/L	06/29/07	4	ND	ND	ND	ND	ND	ND	
	ug/L	12/13/07	5	ND	ND	ND	ND	ND	ND	
	ug/L	06/19/08	5	ND	ND	ND	ND	ND	ND	
	ug/L	12/02/08	5	ND	ND	ND	ND	ND	ND	
	ug/L	06/11/09	5	ND	ND	ND	ND	ND	ND	
	ug/L	12/10/09	5	ND	ND	ND	ND	ND	ND	
	ug/L	06/15/10	5	ND	ND	ND	ND	ND	ND	
	ug/L	12/09/10	5	ND	ND	ND	ND	ND	ND	
	ug/L	06/15/11	5	ND	ND	ND	ND	ND	ND	
Tetrahydrofuran (No Standard)	ug/L	06/15/11	--	ND	ND	4.8	ND	ND	ND	

Table 4

**Summary of Detected Constituents in Groundwater
Material Recovery, LLC Construction and Demolition Landfill, Permit 92-31
Wake County, North Carolina**

Parameter	Reporting Units	Date	SWS Reporting Limit	MW-1 (Upgradient)	MW-2	MW-3	MW-4	MW-5	Blanks
Chloride (NC 2L = 250 mg/L)	mg/L	06/29/07	--	16	15	27	3.6	3.1	0.54 J
	mg/L	08/09/07	--	24	--	39	--	--	ND
	mg/L	12/13/07	--	27	21	47	9.0	4.3 J	ND
	mg/L	06/19/08	--	29	16	33	5.4 B	4.1 B	1.7 J
	mg/L	12/02/08	--	32	15	33	4.7 J	2.9 J	ND
	mg/L	06/11/09	--	35	16	25	4.9 J	4.8 J	ND
	mg/L	12/10/09	--	40	16	24	5.6	9.2	ND
	mg/L	06/15/10	--	31	19	18	4.9 J	5.1	ND
	mg/L	12/09/10	--	36	18	14	5.0	4.2 J	ND
	mg/L	06/15/11	--	--	38	18	19	4.5 J	4.6 J
Total Dissolved Solids (NC 2L = 1000 mg/L)	mg/L	06/29/07	--	88	310	490	92	76	--
	mg/L	08/09/07	--	82	--	620	--	--	ND
	mg/L	12/13/07	--	70	360	690	110	66	ND
	mg/L	06/19/08	--	86	350	490	90	58	ND
	mg/L	12/02/08	--	78	350	520	110	76	ND
	mg/L	06/11/09	--	68	330	370	48	54	ND
	mg/L	12/10/09	--	64	310	350	46	100	ND
	mg/L	06/15/10	--	76	390	240	130	62	ND
	mg/L	12/09/10	--	72	340	130	130	50	ND
	mg/L	06/15/11	--	--	60	330	200	80	54
Sulfate (NC 2L = 250 mg/L)	mg/L	06/29/07	250	4.0 B	3.9 B	3.8 B	8.8 B	5.6 B	3.9 J
	mg/L	08/09/07	250	1.4 J	--	1.8 J	--	--	ND
	mg/L	12/13/07	250	0.86 J	1.2 J	1.4 J	3.6 J	0.88 J	ND
	mg/L	06/19/08	250	1.6 J	1.7 J	1.6 J	4.6 J	3.6 J	ND
	mg/L	12/02/08	250	ND	2.0 J	2.0 J	5.5 J	4.0 J	ND
	mg/L	06/11/09	250	1.9 J	1.9 J	1.8 J	6.2 J	4.9 J	ND
	mg/L	12/10/09	250	2.0 J	2.1 J	2.0 J	8.2 J	5.5 J	ND
	mg/L	06/15/10	250	3.1 J	2.0 J	ND	42 J	5.0 J	ND
	mg/L	12/09/10	250	2.5 J	2.1 J	1.9 J	59 J	3.7 J	ND
	mg/L	06/15/11	250	1.2 J	1.1 J	0.81 J	27 J	3.6 J	ND
Total Alkalinity (No Standard)	mg/L	08/07/02	2.0	3.0 J	5.0 J	ND	26	20	ND
	mg/L	06/29/07	--	ND	ND	ND	17	67	--
	mg/L	08/09/07	--	ND	--	ND	--	--	ND
	mg/L	12/13/07	--	4.7 J	5.4 J	ND	24	24	ND
	mg/L	06/19/08	--	6.1 B	7.9 B	ND	27 B	22 B	7.0 J
	mg/L	12/02/08	--	20	19	22	39	30	ND
	mg/L	06/11/09	--	ND	ND	ND	16	21	ND
	mg/L	12/10/09	--	10 J	10 J	16	27	15	ND
	mg/L	06/15/10	--	8.7 J	ND	11 J	18	23	ND
	mg/L	12/09/10	--	ND	ND	9.5 J	21	24	ND
mg/L	06/15/11	--	ND	12 J	ND	18	22	ND	
pH (field) verification event	S.U.	08/07/02	--	4.74	6.11	5.57	6.35	6.15	--
	S.U.	12/13/06	--	5.19	4.82	4.14	5.15	5.71	--
	S.U.	06/29/07	--	5.67	4.82	4.30	4.97	5.37	--
	S.U.	08/09/07	--	4.03	--	3.70	--	--	--
	S.U.	12/13/07	--	4.55	4.82	4.12	4.94	5.58	--
	S.U.	06/19/08	--	4.44	4.77	4.22	5.05	5.65	--
	S.U.	12/02/08	--	4.60	5.03	4.28	5.10	5.65	--
	S.U.	01/23/09	--	--	--	4.09	--	--	--
	S.U.	06/11/09	--	4.77	5.00	4.46	5.21	5.62	--
	S.U.	12/10/09	--	4.53	4.82	4.31	5.12	5.34	--
	S.U.	06/15/10	--	4.99	5.12	4.96	5.55	5.78	--
	S.U.	12/09/10	--	4.45	4.90	4.53	4.82	5.35	--
	S.U.	06/15/11	--	6.45	6.43	6.53	5.97	6.88	--

Table 4

**Summary of Detected Constituents in Groundwater
Material Recovery, LLC Construction and Demolition Landfill, Permit 92-31
Wake County, North Carolina**

Parameter	Reporting Units	Date	SWS Reporting Limit	MW-1 (Upgradient)	MW-2	MW-3	MW-4	MW-5	Blanks
Specific Conductance (Field) verification event	uS/cm	12/13/06	--	97.7	485	1208	143.8	88.5	--
	uS/cm	06/29/07	--	105	457	696	102	68	--
	uS/cm	08/09/07	--	114	--	785	--	--	--
	uS/cm	12/13/07	--	156	567	1040	402	222	--
	uS/cm	06/19/08	--	149	452	707	124	76	--
	uS/cm	12/02/08	--	131	374	586	101	61	--
	uS/cm	01/23/09	--	--	--	347	--	--	--
	uS/cm	06/11/09	--	166	452	494	82	74	--
	uS/cm	12/10/09	--	185	450	457	103	74	--
	uS/cm	06/15/10	--	143	464	274	157	75	--
	uS/cm	12/09/10	--	148	435	195	191	66	--
uS/cm	06/15/11	--	--	164	436	264	129	72	--
Temperature (Field) verification event	°C	12/13/06	--	17.5	16.1	16.2	17.4	15.1	--
	°C	06/29/07	--	20.25	21.3	20.53	20.88	20.64	--
	°C	08/09/07	--	19.13	--	17.51	--	--	--
	°C	12/13/07	--	17.42	17.06	16.99	19.01	16.99	--
	°C	06/19/08	--	18.52	17.58	17.38	17.38	16.02	--
	°C	12/02/08	--	15.63	15.55	16.09	17.15	14.53	--
	°C	01/23/09	--	--	--	14.76	--	--	--
	°C	06/11/09	--	20.49	18.35	17.64	18.82	19.25	--
	°C	12/10/09	--	16.76	15.70	16.05	16.47	14.63	--
	°C	06/15/10	--	20.84	19.16	18.42	17.93	18.64	--
	°C	12/09/10	--	16.14	15.30	15.26	16.58	13.62	--
°C	06/15/11	--	--	19.25	17.45	16.71	17.47	17.61	--
Turbidity (Field) verification event	NTU	12/13/06	--	21.6	10.5	16.8	28.7	992	--
	NTU	06/29/07	--	28.4	7.6	0.0	0.0	152	--
	NTU	08/09/07	--	33.5	--	96.2	--	--	--
	NTU	12/13/07	--	846	69.8	8.2	21.3	253	--
	NTU	06/19/08	--	65.9	7.94	16.8	11.2	91.1	--
	NTU	12/02/08	--	50.4	7.91	3.49	8.53	99.7	--
	NTU	01/23/09	--	--	--	3.33	--	--	--
	NTU	06/11/09	--	84.1	7.67	4.38	14.3	191	--
	NTU	12/10/09	--	33.1	5.12	1.67	7.68	42.9	--
	NTU	06/15/10	--	15.1	10.6	2.10	8.28	44.7	--
	NTU	12/09/10	--	6.96	3.21	1.53	6.40	98.5	--
NTU	06/15/11	--	3.04	3.40	1.06	6.17	235	--	
Dissolved Oxygen (Field) verification event	mg/L	12/13/07	--	7.72	5.91	1.18	2.45	0.57	--
	mg/L	06/19/08	--	7.28	5.40	2.18	1.16	0.95	--
	mg/L	12/02/08	--	7.37	6.56	4.03	4.36	1.38	--
	mg/L	01/23/09	--	--	--	2.34	--	--	--
	mg/L	06/11/09	--	7.66	5.68	3.06	1.29	0.85	--
	mg/L	12/10/09	--	6.77	6.14	1.53	0.89	2.24	--
	mg/L	06/15/10	--	6.56	1.80	2.50	1.33	2.64	--
	mg/L	12/09/10	--	7.27	4.31	3.21	5.81	5.34	--
mg/L	06/15/11	--	4.96	4.01	1.67	1.48	0.49	--	

Table 4

**Summary of Detected Constituents in Groundwater
Material Recovery, LLC Construction and Demolition Landfill, Permit 92-31
Wake County, North Carolina**

Parameter	Reporting Units	Date	SWS Reporting Limit	MW-1 (Upgradient)	MW-2	MW-3	MW-4	MW-5	Blanks
Oxidation-Reduction Potential (Field) verification event	mV	12/13/07	--	334	338	396	375	85	--
	mV	06/19/08	--	307	306	358	344	72	--
	mV	12/02/08	--	232.0	321.8	401.5	464.2	160.4	--
	mV	01/23/09	--	--	--	328.0	--	--	--
	mV	06/11/09	--	263.6	191.1	266.6	184.1	103.9	--
	mV	12/10/09	--	235.4	215.6	236.9	172.5	123.5	--
	mV	06/15/10	--	255.7	190.3	250.5	177.9	92.1	--
	mV	12/09/10	--	278.9	285.7	279.7	238.2	80.8	--
	mV	06/15/11	--	257.3	229.3	271.1	234.7	141.1	--

Notes:

1. MW = groundwater monitoring well
2. ug/L = micrograms per liter
3. mg/L = milligrams per liter
4. S.U. = Standard Units
5. uS/cm = microsiemens per centimeter
6. °C = degrees Celsius
7. NTU = Nephelometric Turbidity Units
8. mV = millivolts
9. J = Estimated Value
10. B = Blank-qualified data
11. ND = Not detected at or above the stated reporting limit
12. NC 2L = North Carolina groundwater quality standard established under 15A NCAC 2L .0202
13. SWS GPS = North Carolina Solid Waste Section Groundwater Protection Standard
14. -- = no data available
15. Shaded values are above their current respective NC 2L Standard or GPS.
16. Blanks = Field, trip, and laboratory blanks
17. SWS Reporting Limit = NCPQL or lab-specific reporting limit prior to 2007 and NCSWSL starting on 01/18/07

Table 5
Summary of Detected Constituents in Surface Water
Material Recovery, LLC Construction and Demolition Landfill, Permit 92-31
Wake County, North Carolina

Parameter	Reporting Units	Date	SWS Reporting Limit	SW-1 (Upstream)	SW-2 (Downstream)	SW-3	Blanks
Antimony No SW Standard	ug/L	05/07/02	30	--	ND	--	ND
	ug/L	06/29/07	6	ND	ND	ND	ND
	ug/L	12/13/07	6	ND	ND	ND	ND
	ug/L	06/19/08	6	ND	ND	dry	ND
	ug/L	12/02/08	6	ND	ND	ND	ND
	ug/L	06/11/09	6	ND	ND	ND	ND
	ug/L	12/10/09	6	ND	ND	ND	ND
	ug/L	06/15/10	6	ND	ND	ND	ND
	ug/L	12/09/10	6	ND	ND	0.503 J	ND
	ug/L	06/15/11	6	ND	ND	ND	ND
Arsenic SW Standard = 50 ug/L	ug/L	05/07/02	10	--	ND	--	ND
	ug/L	08/07/02	10	--	--	ND	ND
	ug/L	06/16/03	10	ND	ND	ND	ND
	ug/L	12/16/03	10	ND	ND	ND	ND
	ug/L	06/16/04	10	ND	ND	ND	ND
	ug/L	12/16/04	10	ND	ND	ND	ND
	ug/L	06/14/05	10	ND	ND	ND	ND
	ug/L	12/27/05	10	ND	ND	ND	ND
	ug/L	06/21/06	10	ND	ND	ND	ND
	ug/L	12/13/06	10	2.8 B	3.0 B	2.0 B	3.5 J
	ug/L	06/29/07	10	3.7 J	ND	ND	ND
	ug/L	12/13/07	10	ND	ND	ND	2.5 J
	ug/L	06/19/08	10	ND	ND	dry	ND
	ug/L	12/02/08	10	ND	ND	ND	ND
	ug/L	06/11/09	10	ND	ND	ND	3.5 J
	ug/L	12/10/09	10	ND	ND	5.15 J	ND
	ug/L	06/15/10	10	ND	ND	ND	ND
ug/L	12/09/10	10	ND	ND	ND	ND	
ug/L	06/15/11	10	3.09 J	ND	ND	ND	
Barium No SW Standard	ug/L	05/07/02	500	--	ND	--	ND
	ug/L	08/07/02	500	--	--	ND	ND
	ug/L	06/16/03	500	ND	ND	ND	ND
	ug/L	12/16/03	500	ND	ND	230	ND
	ug/L	06/16/04	500	ND	ND	ND	ND
	ug/L	12/16/04	500	ND	ND	ND	ND
	ug/L	06/14/05	500	ND	ND	ND	ND
	ug/L	12/27/05	500	ND	ND	ND	ND
	ug/L	06/21/06	500	ND	ND	ND	ND
	ug/L	12/13/06	100	98.4 J	37.8 J	265	0.4 J
	ug/L	06/29/07	100	28.2 B	28.8 B	232	10.4 J
	ug/L	12/13/07	100	31.3 J	36.5 J	299	0.30 J
	ug/L	06/19/08	100	31.8 J	32.0 J	dry	ND
	ug/L	12/02/08	100	36.0 J	40.8 J	271	ND
	ug/L	06/11/09	100	41.2 J	48.3 J	264	ND
	ug/L	12/10/09	100	46.0 J	43.9 J	190	ND
	ug/L	06/15/10	100	34.0 J	32.0 J	245	ND
ug/L	12/09/10	100	29.6 J	32.6 J	277	1.72 J	
ug/L	06/15/11	100	27.5 J	33.3 J	259	ND	
Beryllium SW Standard = 6.5 ug/L	ug/L	05/07/02	2	--	ND	--	ND
	ug/L	06/29/07	1	ND	ND	ND	ND
	ug/L	12/13/07	1	ND	ND	ND	ND
	ug/L	06/19/08	1	ND	ND	dry	ND
	ug/L	12/02/08	1	ND	ND	ND	ND
	ug/L	06/11/09	1	0.14 B	0.15 B	0.22 B	0.08 J
	ug/L	12/10/09	1	0.114 J	0.154 J	0.592 J	ND
	ug/L	06/15/10	1	ND	ND	ND	ND
	ug/L	12/09/10	1	ND	ND	ND	ND
	ug/L	06/15/11	1	ND	ND	0.216 J	ND



Table 5
Summary of Detected Constituents in Surface Water
Material Recovery, LLC Construction and Demolition Landfill, Permit 92-31
Wake County, North Carolina

Parameter	Reporting Units	Date	SWS Reporting Limit	SW-1 (Upstream)	SW-2 (Downstream)	SW-3	Blanks		
Cadmium SW Standard = 2 ug/L (N)	ug/L	05/07/02	1	--	ND	--	ND		
	ug/L	08/07/02	1	--	--	1.6	ND		
	ug/L	06/16/03	1	1.0	ND	1.1	ND		
	ug/L	12/16/03	1	ND	ND	ND	ND		
	ug/L	06/16/04	1	ND	ND	ND	ND		
	ug/L	12/16/04	1	ND	ND	ND	ND		
	ug/L	06/14/05	1	ND	ND	ND	ND		
	ug/L	12/27/05	1	ND	ND	ND	ND		
	ug/L	06/21/06	1	ND	ND	ND	ND		
	ug/L	12/13/06	1	ND	ND	ND	ND		
	ug/L	06/29/07	1	ND	ND	ND	ND		
	ug/L	12/13/07	1	ND	ND	ND	ND		
	ug/L	06/19/08	1	ND	ND	dry	ND		
	ug/L	12/02/08	1	ND	ND	ND	ND		
	ug/L	06/11/09	1	0.20	J	ND	0.28	J	
	ug/L	12/10/09	1	ND	ND	ND	ND		
	ug/L	06/15/10	1	ND	ND	ND	ND		
	ug/L	12/09/10	1	ND	ND	ND	ND		
ug/L	06/15/11	1	ND	ND	ND	ND			
Chromium SW Standard = 50 ug/L	ug/L	05/07/02	10	--	ND	--	ND		
	ug/L	08/07/02	10	--	--	ND	ND		
	ug/L	06/16/03	10	ND	ND	ND	ND		
	ug/L	12/16/03	10	ND	ND	ND	ND		
	ug/L	06/16/04	10	ND	ND	ND	ND		
	ug/L	12/16/04	10	ND	ND	ND	ND		
	ug/L	06/14/05	10	ND	ND	ND	ND		
	ug/L	12/27/05	10	ND	ND	ND	ND		
	ug/L	06/21/06	10	ND	ND	ND	ND		
	ug/L	12/13/06	10	ND	ND	ND	ND		
	ug/L	06/29/07	10	ND	ND	ND	ND		
	ug/L	12/13/07	10	ND	ND	ND	ND		
	ug/L	06/19/08	10	ND	ND	dry	ND		
	ug/L	12/02/08	10	ND	ND	ND	ND		
	ug/L	06/11/09	10	1.1	J	1.2	J	0.7	J
	ug/L	12/10/09	10	1.70	J	ND	3.41	J	
	ug/L	06/15/10	10	ND	ND	1.00	J	ND	
	ug/L	12/09/10	10	ND	ND	ND	ND		
ug/L	06/15/11	10	ND	ND	ND	ND			
Cobalt No SW Standard	ug/L	05/07/02	10	--	ND	--	ND		
	ug/L	06/29/07	10	ND	ND	ND	ND		
	ug/L	12/13/07	10	ND	ND	ND	ND		
	ug/L	06/19/08	10	ND	ND	dry	ND		
	ug/L	12/02/08	10	ND	ND	ND	ND		
	ug/L	06/11/09	10	0.7	J	ND	ND		
	ug/L	12/10/09	10	ND	ND	3.20	J		
	ug/L	06/15/10	10	ND	ND	ND	ND		
	ug/L	12/09/10	10	ND	ND	ND	ND		
ug/L	06/15/11	10	ND	ND	ND	ND			
Copper SW Standard = 7 ug/L (A)	ug/L	05/07/02	0.05	--	ND	--	ND		
	ug/L	08/07/02	0.05	--	--	ND	ND		
	ug/L	06/29/07	10	ND	ND	ND	ND		
	ug/L	12/13/07	10	ND	ND	ND	ND		
	ug/L	06/19/08	10	1.60	B	ND	dry	1.30	J
	ug/L	12/02/08	10	1.70	J	ND	ND		
	ug/L	06/11/09	10	2.02	J	1.03	J	ND	
	ug/L	12/10/09	10	3.13	J	2.67	J	4.41	J
	ug/L	06/15/10	10	ND	ND	ND	ND		
	ug/L	12/09/10	10	ND	ND	ND	ND		
	ug/L	06/15/11	10	ND	ND	ND	ND		



Table 5

**Summary of Detected Constituents in Surface Water
Material Recovery, LLC Construction and Demolition Landfill, Permit 92-31
Wake County, North Carolina**

Parameter	Reporting Units	Date	SWS Reporting Limit	SW-1 (Upstream)	SW-2 (Downstream)	SW-3	Blanks		
Lead SW Standard = 25 ug/L (N)	ug/L	05/07/02	10	--	ND	--	ND		
	ug/L	08/07/02	10	--	--	ND	ND		
	ug/L	06/16/03	10	ND	ND	ND	ND		
	ug/L	12/16/03	10	ND	ND	ND	ND		
	ug/L	06/16/04	10	ND	ND	ND	ND		
	ug/L	12/16/04	10	ND	ND	ND	ND		
	ug/L	06/14/05	10	ND	ND	ND	ND		
	ug/L	12/27/05	10	ND	ND	ND	ND		
	ug/L	06/21/06	10	ND	ND	ND	ND		
	ug/L	12/13/06	10	2.1	J	ND	3.8	J	
	ug/L	06/29/07	10	ND	ND	ND	ND		
	ug/L	12/13/07	10	ND	ND	ND	ND		
	ug/L	06/19/08	10	ND	ND	dry	ND		
	ug/L	12/02/08	10	ND	ND	ND	ND		
	ug/L	06/11/09	10	2.5	J	3.5	J	2.2	J
	ug/L	12/10/09	10	3.51	J	ND	10.2	ND	
	ug/L	06/15/10	10	ND	ND	ND	ND		
	ug/L	12/09/10	10	ND	ND	ND	ND		
ug/L	06/15/11	10	ND	2.15	J	1.96	J		
Nickel SW Standard = 88 ug/L (N)	ug/L	05/07/02	50	--	ND	--	ND		
	ug/L	08/07/02	50	--	--	ND	ND		
	ug/L	06/29/07	50	ND	ND	ND	ND		
	ug/L	12/13/07	50	ND	ND	ND	ND		
	ug/L	06/19/08	50	ND	ND	dry	ND		
	ug/L	12/02/08	50	ND	ND	ND	ND		
	ug/L	06/11/09	50	0.9	J	1.0	J	1.8	J
	ug/L	12/10/09	50	ND	ND	2.94	J	ND	
	ug/L	06/15/10	50	ND	ND	ND	ND		
	ug/L	12/09/10	50	ND	ND	ND	ND		
ug/L	06/15/11	50	ND	ND	ND	ND			
Selenium SW Standard = 5 ug/L	ug/L	05/07/02	20	--	ND	--	ND		
	ug/L	08/07/02	20	--	--	ND	ND		
	ug/L	06/16/03	20	ND	ND	ND	ND		
	ug/L	12/16/03	20	ND	ND	ND	ND		
	ug/L	06/16/04	20	ND	ND	ND	ND		
	ug/L	12/16/04	20	ND	ND	ND	ND		
	ug/L	06/14/05	20	ND	ND	ND	ND		
	ug/L	12/27/05	20	ND	ND	ND	ND		
	ug/L	06/21/06	20	ND	ND	ND	ND		
	ug/L	12/13/06	10	2.8	B	4.1	B	3.1	B
	ug/L	06/29/07	10	ND	ND	ND	ND		
	ug/L	12/13/07	10	ND	ND	ND	ND		
	ug/L	06/19/08	10	ND	ND	dry	ND		
	ug/L	12/02/08	10	ND	ND	ND	ND		
	ug/L	06/11/09	10	ND	4.8	J	ND	ND	
	ug/L	12/10/09	10	ND	ND	ND	ND		
	ug/L	06/15/10	10	ND	ND	ND	ND		
	ug/L	12/09/10	10	ND	ND	0.830	J	ND	
ug/L	06/15/11	10	ND	ND	1.15	J	ND		
Thallium No SW Standard	ug/L	05/07/02	10	--	ND	--	ND		
	ug/L	06/29/07	5.5	ND	ND	0.042	J	ND	
	ug/L	12/13/07	5.5	ND	ND	0.041	J	ND	
	ug/L	06/19/08	5.5	ND	ND	dry	ND		
	ug/L	12/02/08	5.5	ND	ND	ND	ND		
	ug/L	06/11/09	5.5	ND	ND	ND	ND		
	ug/L	12/10/09	5.5	ND	ND	0.173	J	ND	
	ug/L	06/15/10	5.5	ND	ND	ND	ND		
	ug/L	12/09/10	5.5	ND	ND	ND	ND		
ug/L	06/15/11	5.5	ND	ND	ND	ND			



Table 5
Summary of Detected Constituents in Surface Water
Material Recovery, LLC Construction and Demolition Landfill, Permit 92-31
Wake County, North Carolina

Parameter	Reporting Units	Date	SWS Reporting Limit	SW-1 (Upstream)	SW-2 (Downstream)	SW-3	Blanks
Vanadium No SW Standard	ug/L	05/07/02	40	--	ND	--	ND
	ug/L	06/29/07	25	1.9 J	ND	ND	ND
	ug/L	12/13/07	25	ND	ND	ND	ND
	ug/L	06/19/08	25	ND	ND	dry	ND
	ug/L	12/02/08	25	ND	ND	ND	ND
	ug/L	06/11/09	25	1.8 J	1.3 J	0.9 J	ND
	ug/L	12/10/09	25	3.52 J	2.22 J	8.66 J	ND
	ug/L	06/15/10	25	ND	ND	ND	ND
	ug/L	12/09/10	25	ND	ND	ND	ND
	ug/L	06/15/11	25	1.43 J	ND	1.75 J	ND
Zinc SW Standard = 50 ug/L (A)	ug/L	05/07/02	50	--	ND	--	ND
	ug/L	08/07/02	50	--	--	ND	ND
	ug/L	06/29/07	10	ND	ND	ND	ND
	ug/L	12/13/07	10	1.0 B	1.0 B	2.2 B	2.6 J
	ug/L	06/19/08	10	1.1 B	1.4 B	dry	1.0 J
	ug/L	12/02/08	10	7.1 J	ND	ND	ND
	ug/L	06/11/09	10	11.0 B	38.8 B	7.8 B	8.4 J
	ug/L	12/10/09	10	7.72 J	6.93 J	26.3	ND
	ug/L	06/15/10	10	4.85 J	ND	6.62 J	ND
	ug/L	12/09/10	10	ND	ND	ND	ND
ug/L	06/15/11	10	ND	ND	7.08 J	ND	
Acetone SW Standard = 2 ug/L*	ug/L	05/07/02	100	--	ND	--	ND
	ug/L	06/16/03	100	ND	ND	ND	ND
	ug/L	12/16/03	100	ND	ND	ND	ND
	ug/L	06/16/04	100	ND	ND	ND	ND
	ug/L	12/16/04	100	ND	ND	ND	ND
	ug/L	06/14/05	100	ND	ND	ND	ND
	ug/L	12/27/05	100	ND	ND	ND	ND
	ug/L	06/21/06	100	ND	ND	ND	ND
	ug/L	12/13/06	100	1.6 J	ND	ND	ND
	ug/L	06/29/07	100	ND	ND	ND	1.5 J
	ug/L	12/13/07	100	ND	ND	ND	ND
	ug/L	06/19/08	100	ND	ND	dry	ND
	ug/L	12/02/08	100	ND	ND	ND	ND
	ug/L	06/11/09	100	ND	ND	ND	ND
	ug/L	12/10/09	100	ND	ND	ND	ND
ug/L	06/15/10	100	ND	ND	ND	ND	
ug/L	12/09/10	100	ND	ND	ND	ND	
ug/L	06/15/11	100	ND	ND	ND	ND	
pH (field)	S.U.	08/07/02	--	--	--	5.76	--
	S.U.	12/13/06	--	6.10	6.09	5.90	--
	S.U.	06/29/07	--	6.62	5.86	6.31	--
	S.U.	12/13/07	--	5.93	5.96	5.46	--
	S.U.	06/19/08	--	6.66	6.69	dry	--
	S.U.	12/02/08	--	6.60	6.56	6.82	--
	S.U.	06/11/09	--	6.56	6.46	6.25	--
	S.U.	12/10/09	--	6.38	5.75	6.00	--
	S.U.	06/15/10	--	6.32	6.51	6.62	--
	S.U.	12/09/10	--	5.78	5.78	5.65	--
S.U.	06/15/11	--	8.28	7.94	7.87	--	
Specific Conductance (Field)	uS/cm	12/13/06	--	183	113	476	--
	uS/cm	06/29/07	--	71	81	454	--
	uS/cm	12/13/07	--	119	145	626	--
	uS/cm	06/19/08	--	97	119	dry	--
	uS/cm	12/02/08	--	79	134	442	--
	uS/cm	06/11/09	--	99	353	440	--
	uS/cm	12/10/09	--	63	183	274	--
	uS/cm	06/15/10	--	87	126	438	--
	uS/cm	12/09/10	--	82	98	409	--
	uS/cm	06/15/11	--	89	131	460	--



Table 5

**Summary of Detected Constituents in Surface Water
Material Recovery, LLC Construction and Demolition Landfill, Permit 92-31
Wake County, North Carolina**

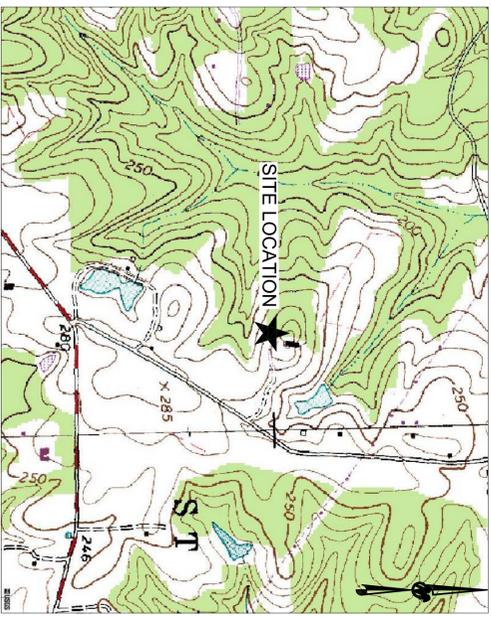
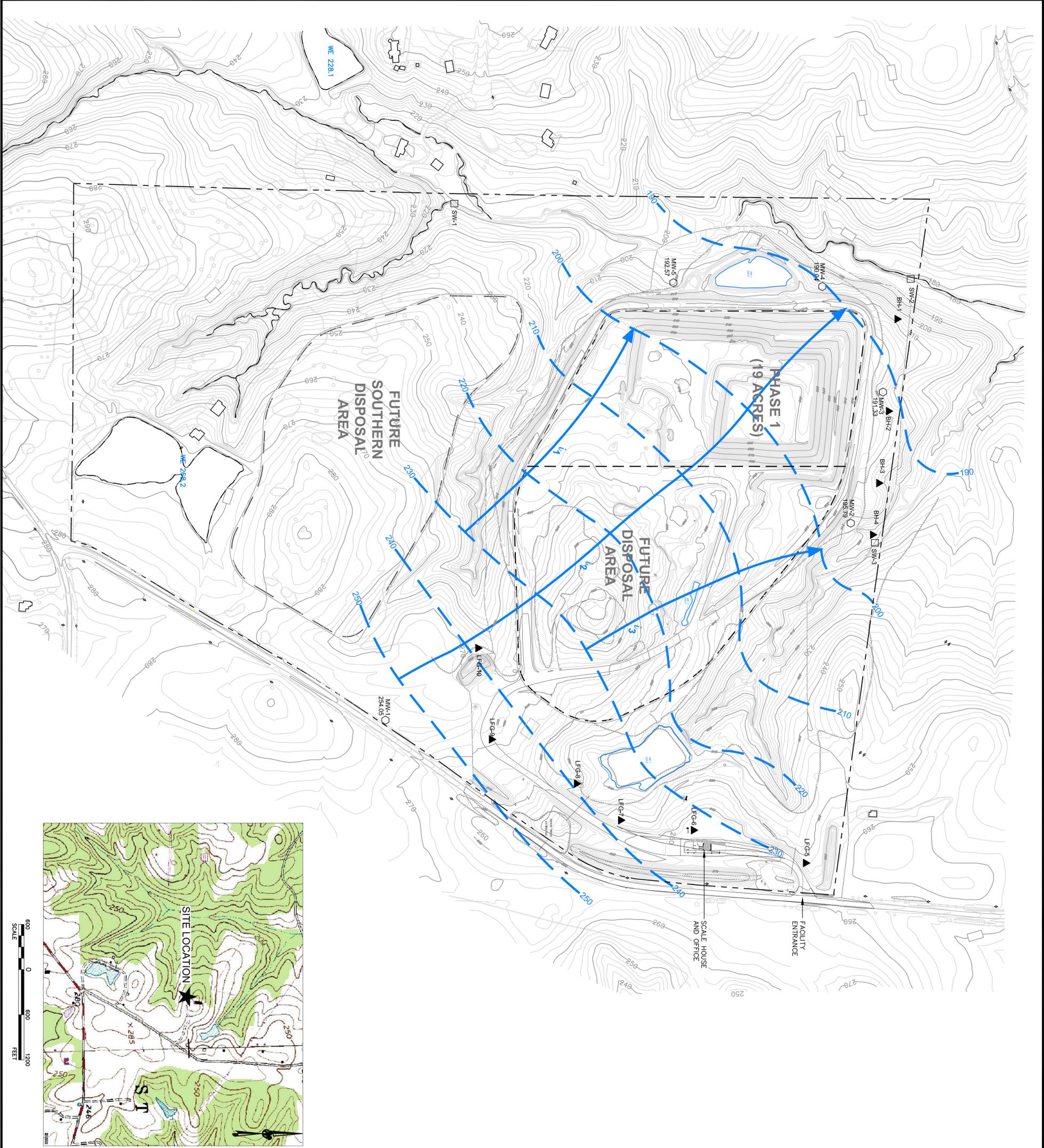
Parameter	Reporting Units	Date	SWS Reporting Limit	SW-1 (Upstream)	SW-2 (Downstream)	SW-3	Blanks
Temperature (Field)	°C	12/13/06	--	12.8	10.6	11.2	--
	°C	06/29/07	--	27.92	23.41	22.96	--
	°C	12/13/07	--	15.22	14.57	15.72	--
	°C	06/19/08	--	22.71	20.16	dry	--
	°C	12/02/08	--	8.91	8.98	9.62	--
	°C	06/11/09	--	24.98	23.07	20.52	--
	°C	12/10/09	--	10.91	10.79	10.98	--
	°C	06/15/10	--	26.00	22.70	22.02	--
	°C	12/09/10	--	4.79	4.64	5.78	--
	°C	06/15/11	--	23.25	19.85	20.63	--
Turbidity (Field)	NTU	12/13/06	--	4.2	11.4	16.3	--
	NTU	06/29/07	--	8.7	0.0	80.5	--
	NTU	12/13/07	--	0.0	0.0	39.5	--
	NTU	06/19/08	--	35.2	20.1	dry	--
	NTU	12/02/08	--	16.3	12.5	6.34	--
	NTU	06/11/09	--	56.2	18.4	11.8	--
	NTU	12/10/09	--	95.2	54.2	51.3	--
	NTU	06/15/10	--	18.3	12.7	3.59	--
	NTU	12/09/10	--	18.1	16.7	15.1	--
	NTU	06/15/11	--	13.9	8.41	15.2	--
Dissolved Oxygen (Field)	mg/L	12/13/07	--	8.82	14.57	8.26	--
	mg/L	06/19/08	--	7.66	8.54	dry	--
	mg/L	12/02/08	--	8.23	10.83	9.33	--
	mg/L	06/11/09	--	4.58	8.47	9.36	--
	mg/L	12/10/09	--	9.76	11.26	10.82	--
	mg/L	06/15/10	--	4.51	8.58	8.93	--
	mg/L	12/09/10	--	13.10	14.56	10.93	--
	mg/L	06/15/11	--	6.25	8.42	7.64	--
Oxidation-Reduction Potential (Field)	mV	12/13/07	--	111	305	331	--
	mV	06/19/08	--	26	64	dry	--
	mV	12/02/08	--	171.7	324.3	269.1	--
	mV	06/11/09	--	62.5	207.3	192.6	--
	mV	12/10/09	--	168.4	181.3	190.3	--
	mV	06/15/10	--	130.2	106.3	120.3	--
	mV	12/09/10	--	206.9	174.4	292.6	--
	mV	06/15/11	--	179.2	119.6	98.0	--

Notes:

1. SW = surface water monitoring point
2. ug/L = micrograms per liter
3. mg/L = milligrams per liter
4. S.U. = Standard Units
5. uS/cm = microsiemens per centimeter
6. °C = degrees Celsius
7. NTU = Nephelometric Turbidity Units
8. mV = millivolts
9. J = Estimated Value
10. B = Blank-qualified data
11. ND = Not detected at or above the stated reporting limit
12. -- = no data available
13. dry = no flowing water at time of sampling and no sample was collected
13. Shaded values are above their current respective NC Surface Water Standards under 15A NCAC 2B.0211 for Freshwater Aquatic Life classification.
14. Blanks = Field, trip, and laboratory blanks
15. SWS Reporting Limit = NCPQL or lab-specific reporting limit prior to 2007 and NCSWSL starting on 01/18/07
16. (A) = Action Level Standard per 15A NCAC 2B.0211
17. (N) = Narrative Standard per 15A NCAC 2B.0211
18. * = Standard is a National Criteria per EPA



DRAWING



LEGEND

- EXISTING 10-FOOT GROUND SURFACE CONTOUR
- EXISTING 2-FOOT GROUND SURFACE CONTOUR
- PROPERTY LINE
- - - APPROXIMATE LIMITS OF WASTE
- EXISTING ROAD
- ▲ BH-1 LANDFILL GAS MONITORING POINT
- MM-1 GROUNDWATER MONITORING POINT AND GROUNDWATER ELEVATION
- SW-3 SURFACE WATER MONITORING POINT
- 250 GROUNDWATER SURFACE CONTOURS
- i APPROXIMATE GROUNDWATER FLOW SEGMENT USED TO CALCULATE GRADIENT
- TRELLINE

NOTES

- 1) TOPOGRAPHIC CONTOUR INTERVAL = 2 FEET
- 2) GROUNDWATER SURFACE CONTOUR INTERVAL = 10 FEET
- 3) GROUNDWATER ELEVATIONS MEASURED ON JUNE 15-16, 2011.
- 4) GROUNDWATER CONTOURS BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATA. TOPOGRAPHIC CONTOURS AND KNOWN FIELD CONDITIONS. THEREFORE, GROUNDWATER CONTOURS MAY NOT REFLECT ACTUAL CONDITIONS.
- 5) GROUNDWATER CONTOUR LINES SHOW THE WATER TABLE SHAPE AND ELEVATION. THESE CONTOURS ARE INFERRED LINES FOLLOWING THE GROUNDWATER SURFACE AT A CONSTANT ELEVATION ABOVE SEA LEVEL. THE GROUNDWATER FLOW DIRECTION IS GENERALLY PERPENDICULAR TO THE GROUNDWATER SURFACE CONTOURS, SIMILAR TO THE RELATIONSHIP BETWEEN SURFACE WATER FLOW AND TOPOGRAPHIC CONTOURS.
- 6) DRAWING BASED ON THE SITE PLAN PREPARED BY JOYCE ENGINEERING, INC. (SEPTEMBER, 2009). DIGITAL MAP PROVIDED BY SPATIAL DATA ACQUISITION SYSTEMS, INC., OF HIGH POINT, NORTH CAROLINA, DATE OF ACQUISITION WAS FEBRUARY 11, 2010.
- 7) LANDFILL GAS MONITORING POINTS AND SURFACE WATER MONITORING POINT LOCATIONS ARE APPROXIMATE.
- 8) ELEVATIONS SHOWN IN THIS DRAWING ARE IN FEET ABOVE SEA LEVEL DATUM ('SEA LEVEL DATUM' REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM (NGVD) OF 1929). AND COORDINATES ARE EXPRESSED IN TERMS OF THE STATE PLANE COORDINATE SYSTEM.



PROJECT	DATE	DES	REV	DESCRIPTION	CHK	REV
▲	7/6/11	NLR		JUNE 2011 GROUNDWATER CONTOURS	LKB	
				REVISION DESCRIPTION		
					CHK	REV
MATERIAL RECOVERY, LLC C&D LANDFILL WAKE COUNTY, NORTH CAROLINA						
GROUNDWATER CONTOUR MAP JUNE 15-16, 2011						

Goldier Associates
GREENSBORO, NC

PROJECT No.	073-9602411	FILE No.	0739602411
DESIGN	DVR	5/11/10	SCALE AS SHOWN
CADD	LKB	5/11/10	REV.
CHECK	DVR	5/11/10	
REVIEW	RPK	5/11/10	

DWG 1

APPENDIX A
GROUNDWATER AND SURFACE WATER SAMPLING LOGS



DATE: 6-15-11

GROUNDWATER SAMPLING LOG

Project Name: WCA-Material Recovery

Project No./Phase No.: 0739602411

Well ID: MW-3

Sampler(s): N. Rathjen, B. Freyer

Well Diameter: 2 inches

Initial Depth to Water: 27.21 feet

Depth to Bottom: 37.66 feet

Water Column Thickness: 10.45 feet

Pumping Rate: 200 mL/min.

System Volume: 500 mL

Well Location: W of MW-2 near BH-2 along Northern property line

Equipment: YSI 556, QED MP-15, Water Level Meter, Dedicated Bladder Pump

Hanna Turbidimeter

Time	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	Dis O ₂ (mg/L)	Temp. (°C)	ORP (millivolts)	DTW (feet)
1028	6.67	0.244	1.85	4.93	17.57	370.6	27.32
1031	6.59	0.226	1.26	3.67	17.13	349.8	27.41
1034	6.56	0.214	1.38	2.75	16.89	319.7	27.42
1037	6.57	0.210	1.43	2.55	16.83	304.6	27.45
1040	6.59	0.212	1.56	2.43	16.77	288.7	27.40
1043	6.60	0.219	2.09	2.29	16.74	282.9	27.40
1046	6.58	0.229	1.26	2.02	16.73	278.4	27.40
1049	6.56	0.240	1.40	1.79	16.71	275.8	27.40
1052	6.55	0.252	0.79	1.72	16.72	273.3	27.40
1055	6.53	0.264	1.06	1.67	16.71	271.1	27.40
Sampled @ 1055							

Comments (weather conditions, color, type of sample, purge-water management, etc.):

Weather - calm, clear, 70's

Signature: [Signature]

Date: 6-15-11

QA/QC Sign Off: [Signature]

Date: 6-30-11



DATE: 6/15/11

GROUNDWATER SAMPLING LOG

Project Name: WCA-Material Recovery Project No./Phase No.: 0739602411
 Well ID: MW-5 Sampler(s): N. Rathjen, B. Freyer
 Well Diameter: 2 inches Initial Depth to Water: 10.81 feet
 Depth to Bottom: 26.00 feet Water Column Thickness: 15.19 feet
 Pumping Rate: 150 mL/min. System Volume: 500 mL
 Well Location: SW portion of Northern disposal area near W stream
 Equipment: YSI 556, QED MP-15, Water Level Meter, Dedicated Bladder Pump
Hanna Turbidimeter

Time	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	Dis O ₂ (mg/L)	Temp. (°C)	ORP (millivolts)	DTW (feet)
1118	5.94	0.064	902	8.09	17.48	183.7	11.12
1121	7.26	0.072	779	1.45	17.37	179.8	11.12
1125	7.01	0.071	580	1.02	17.61	176.6	11.12
1129	6.93	0.071	588	0.85	17.69	172.9	11.12
1133	6.97	0.071	631	0.91	17.72	164.7	11.12
1137	7.00	0.071	631	0.74	17.69	156.2	11.12
1141	6.94	0.071	621	0.65	17.51	155.6	11.12
1145	6.91	0.072	554	0.59	17.58	151.6	11.12
1149	6.90	0.072	460	0.54	17.76	149.0	11.12
1153	6.92	0.072	414	0.55	17.78	145.7	11.12
1157	6.95	0.072	378	0.52	17.78	143.0	11.12
1201	6.94	0.072	327	0.52	17.89	140.0	11.12
1205	6.89	0.072	265	0.51	17.84	142.7	11.12
1209	6.92	0.072	246	0.51	17.75	139.6	11.12
1213	6.88	0.072	235	0.49	17.61	141.1	11.12
	Sampled @ 1213						

Comments (weather conditions, color, type of sample, purge-water management, etc.):

Weather - clear, calm, 70s

Signature: Nath Rathjen

Date: 6/15/11

QA/QC Sign Off: Paul Reedy

Date: 6-30-11



DATE: 6-16-11

GROUNDWATER SAMPLING LOG

Project Name: WCA-Material Recovery

Project No./Phase No.: 0739602411

Well ID: MW-6AS

Sampler(s): N. Rathjen, B. Freyer

Well Diameter: 2 inches

Initial Depth to Water: 9.41 feet

Depth to Bottom: 16.09 feet

Water Column Thickness: 6.68 feet

Pumping Rate: 200 100 mL/min.

System Volume: 500 mL

Well Location: South of new phase near perimeter rd (nestal w/ MW-6A,D)

Equipment: YSI 556, QED MP-15, Water Level Meter, Dedicated Bladder Pump

Hanna Turbidimeter

Time	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	Dis O ₂ (mg/L)	Temp. (°C)	ORP (millivolts)	DTW (feet)
1250	8.02	0.100	71000	5.03	19.50	99.2	9.61
1253	6.22	0.094	71000	2.00	18.92	186.4	9.61
1258	6.02	0.090	71000	2.35	19.31	191.9	9.61
1259							
1303	6.19	0.072	71000 ⁶²⁴	3.76	19.80	191.8	9.61
1308	6.50	0.070	260	4.15	19.56	189.2	9.61
1313	6.21	0.072	105	3.86	19.05	216.4	9.61
1318	6.35	0.071	48.9	3.84	19.34	205.8	9.61
1323	6.50	0.071	31.4	3.76	19.20	205.7	9.61
1328	6.60	0.071	30.9	3.88	19.35	199.2	9.61
1333	6.56	0.071	30.5	3.70	19.13	202.3	9.61
	sampled @ 1333						

adjusted
purge rate
to 100 due
to turbidity

Comments (weather conditions, color, type of sample, purge-water management, etc.):

sunny, calm, 80's

Signature: B. Freyer

Date: 6-16-11

QA/QC Sign Off: Paul Reedy

Date: 6-30-11



DATE: 6-16-11

GROUNDWATER SAMPLING LOG

Project Name: WCA-Material Recovery

Project No./Phase No.: 0739602411

Well ID: MW-7AS

Sampler(s): N. Rathjen, B. Freyer

Well Diameter: 2 inches

Initial Depth to Water: 13.37 feet

Depth to Bottom: 24.00 feet

Water Column Thickness: 10.63 feet

Pumping Rate: 150 mL/min.

System Volume: 500 mL

Well Location: S of new phase along perimeter rd (nested w/ MW-7AD)

Equipment: YSI 556, QED MP-15, Water Level Meter, Dedicated Bladder Pump

Hanna Turbidimeter

Time	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	Dis O ₂ (mg/L)	Temp. (°C)	ORP (millivolts)	DTW (feet)
1426	6.41	0.107	71000	6.37	18.50	274.5	13.65
1431	5.60	0.106	71000	5.74	19.07	290.1	13.71
1434	5.77	0.105	71000	5.44	18.78	266.4	13.71
1438	5.70	0.105	71000	4.86	18.45	267.1	13.71
1442	5.62	0.104	982	4.47	18.55	269.4	13.71
1446	5.98	0.104	675	4.27	19.06	243.2	13.71
1450	6.27	0.104	502	4.10	18.70	225.4	13.78
1454	6.04	0.102	421	3.92	18.58	237.2	13.78
1458	6.05	0.101	325	3.80	18.55	235.8	13.78
1502	6.07	0.100	292	3.54	18.65	234.4	13.74
1506	6.36	0.100	241	3.42	18.94	213.3	13.74
1510	6.35	0.099	186	3.28	18.64	214.4	13.74
1514	6.24	0.099	175	4.43	18.48	225.0	13.74
1518	6.21	0.098	141	3.15	18.26	226.5	13.74
1522	6.16	0.098	131	3.05	18.18	228.6	13.74
1526	6.22	0.097	131	3.01	18.15	222.9	13.74
	sampled @ 1526						

Comments (weather conditions, color, type of sample, purge-water management, etc.):

mostly sunny, calm, 80s

Signature: B. Freyer

Date: 6-16-11

QA/QC Sign Off: Paul Ready

Date: 6-30-11



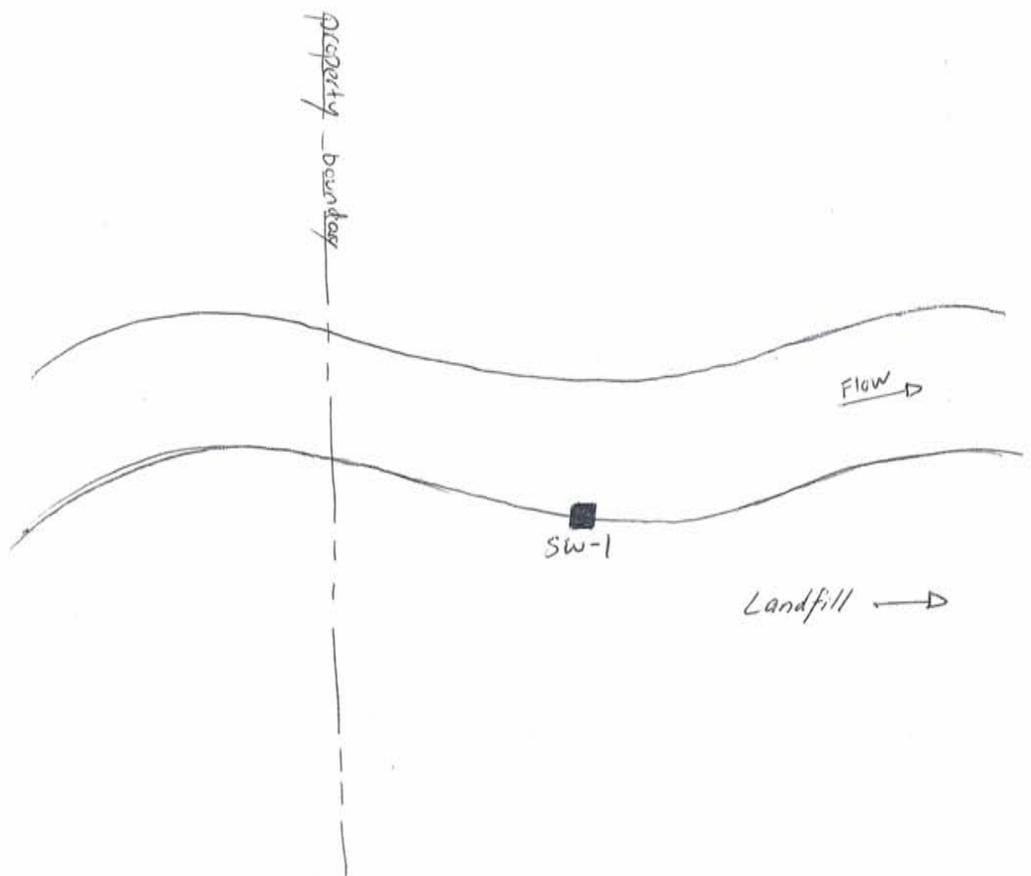
DATE: 6-15-11

SURFACE WATER SAMPLING LOG

Project Name: WCA-Material Recovery Project No./Phase No.: 0739602411
 Sample ID: SW-1 Sampler(s): N.Rathjen/B. Freyer
 Sampling Location: West of southern disposal area, along western property line
 Equipment: YSI 556, Hanna Turbidimeter

Surface Water Sampling Location Sketch

Time	1541
pH s.u.	8.28
Cond. mS/cm	0.089
Turb. ntu	13.9
Dis. O ₂ mg/L	6.25
Temp. °C	23.25
ORP mv	179.2



Comments (sample methodology, weather conditions, color, silt, etc.):

Weather - clear, calm, 80's

Signature: Nath Rathjen

Date: 6-15-11

QA/QC Sign Off: Paul Reedy

Date: 6-30-11



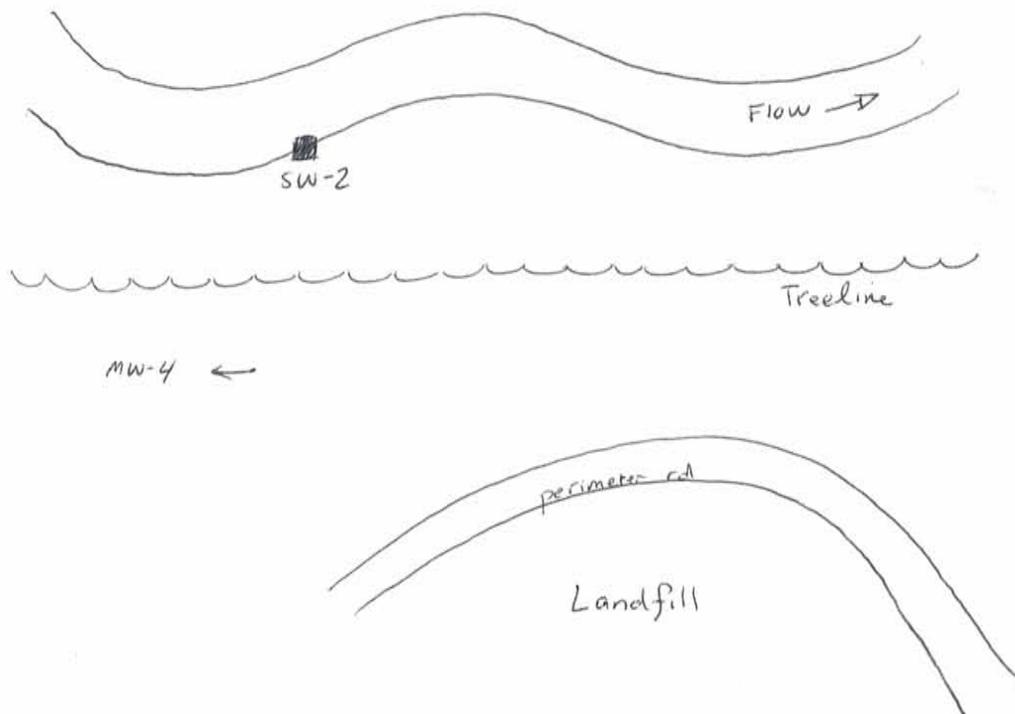
DATE: 6-15-11

SURFACE WATER SAMPLING LOG

Project Name: WCA-Material Recovery Project No./Phase No.: 0739602411
 Sample ID: SW-2 Sampler(s): N.Rathjen/B. Freyer
 Sampling Location: near NW corner of property line
 Equipment: YSI 556, Hanna Turbidimeter

Surface Water Sampling Location Sketch

Time	1430
pH s.u.	7.94
Cond. mS/cm	0.131
Turb. ntu	8.41
Dis. O ₂ mg/L	8.42
Temp. °C	19.85
ORP mv	119.6



Comments (sample methodology, weather conditions, color, silt, etc.):

Weather - clear, calm, 80's

Signature: Natho Rathjen

Date: 6-15-11

QA/QC Sign Off: Paul Reed

Date: 6-30-11



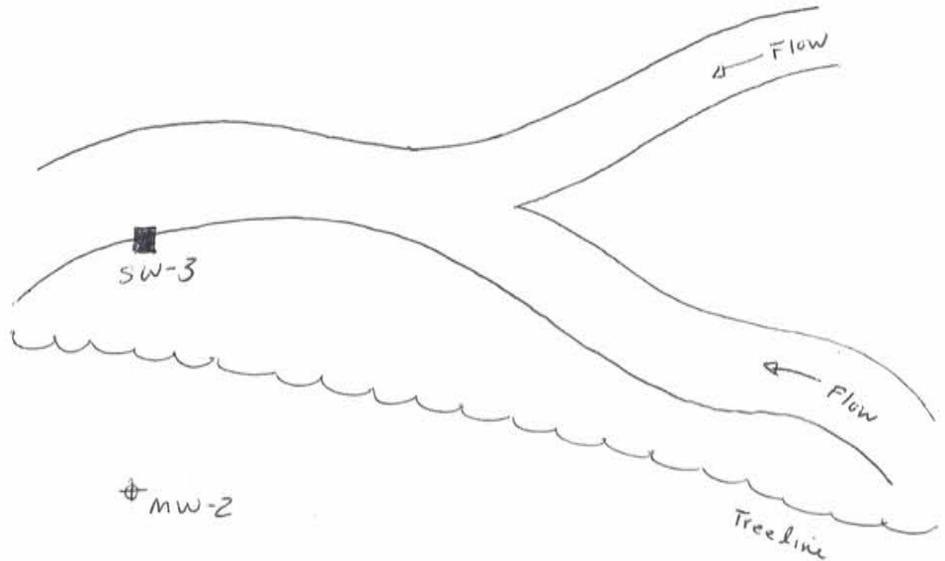
DATE: 6-15-11

SURFACE WATER SAMPLING LOG

Project Name: WCA-Material Recovery Project No./Phase No.: 0739602411
Sample ID: SW-3 Sampler(s): N.Rathjen/B. Freyer
Sampling Location: adjacent to BH-4, along northern-central property line
Equipment: YSI 556, Hanna Turbidimeter

Surface Water Sampling Location Sketch

Time	1421
pH s.u.	7.87
Cond. mS/cm	0.460
Turb. ntu	15.2
Dis. O ₂ mg/L	7.64
Temp. °C	20.63
ORP mv	98.0



Comments (sample methodology, weather conditions, color, silt, etc.):

Weather - calm, clear, 80's

Signature: Nattho Rathjen

Date: 6-15-11

QA/QC Sign Off: Paul Reed

Date: 6-30-11

APPENDIX B
JUNE 2011 GROUNDWATER AND SURFACE WATER CERTIFICATE-OF-ANALYSIS,
CHAIN-OF-CUSTODY FORMS, AND LABORATORY DATA REVIEWS

Environmental Conservation Laboratories, Inc.

102-A Woodwinds Industrial Court

Cary NC, 27511

Phone: 919.467.3090 FAX: 919.467.3515



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Thursday, June 30, 2011

Golder Associates, Inc. (G0007)

Attn: Dusty Reedy

5B Oak Branch Drive

Greensboro, NC 27407

RE: Laboratory Results for

Project Number: 073-9602411.100, Project Name/Desc: WCA- Material Recovery, LLC

ENCO Workorder: C106225

Dear Dusty Reedy,

Enclosed is a copy of your laboratory report for test samples received by our laboratory on Thursday, June 16, 2011.

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. Results for these procedures apply only to the samples as submitted.

The analytical results contained in this report are in compliance with NELAC standards, except as noted in the project narrative. This report shall not be reproduced except in full, without the written approval of the Laboratory.

This report contains only those analyses performed by Environmental Conservation Laboratories. Unless otherwise noted, all analyses were performed at ENCO Cary. Data from outside organizations will be reported under separate cover.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Stephanie Franz', with a stylized flourish at the end.

Stephanie Franz

Project Manager

Enclosure(s)



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PROJECT NARRATIVE

Date: 30 June 2011
Client: Golder Associates, Inc. (GO007)
Project: WCA- Material Recovery, LLC
Lab ID: C106225

Overview

Environmental Conservation Laboratories, Inc. (ENCO) analyzed all submitted samples in accordance with the methods referenced in the laboratory report. Any particular difficulties encountered during sample handling by ENCO are discussed in the QC Remarks section below.

Quality Control Samples

The spike recoveries of Toluene and Trichloroethene were outside of control limits for the 8260B MS sample. The QC batch was approved based on acceptable LCS recovery of these analytes.

The spike recovery of Alkalinity was outside of control limits for the MS and MSD samples. The precision between duplicate samples for the TDS analysis was outside of control limits. The QC batches were approved based on acceptable LCS recovery of these analytes.

Quality Control Remarks

The 8260B surrogate spike recovery of Dibromofluoromethane was outside of control limits for samples, MW-5 and the Trip Blank. These samples were approved based on acceptable recovery of the other surrogate standards.

Other Comments

The detections of Selenium in samples MW-2, MW-3, and SW-3 were not consistent with historical results available for these samples. The samples were reprepmed and reanalyzed by an alternate method (6010C) for confirmation purposes. As the detections did not confirm, both sets of results are included in the report.

All samples received under this work order arrived in acceptable conditions. The samples were not checked for residual chlorine, as it is not required.

The analytical data presented in this report are consistent with the methods as referenced in the analytical report. Any exceptions or deviations are noted in the QC remarks section of this narrative or in the Flags/Notes and Definitions section of the report.

Released By:
Environmental Conservation Laboratories, Inc.

Stephanie Franz
Project Manager



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SAMPLE SUMMARY/LABORATORY CHRONICLE

Client ID:	9231-MW1	Lab ID: C106225-01	Sampled: 06/15/11 10:03	Received: 06/16/11 18:15
Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)	
EPA 300.0	07/13/11	06/29/11 11:57	6/30/2011 00:11	
EPA 310.2	06/29/11	06/21/11 08:37	6/21/2011 09:23	
EPA 6010C	12/12/11	06/17/11 11:02	6/21/2011 10:07	
EPA 6020A	12/12/11	06/17/11 11:10	6/20/2011 10:24	
EPA 7470A	07/13/11	06/17/11 08:40	6/17/2011 15:15	
EPA 8260B	06/29/11	06/21/11 10:55	6/21/2011 21:39	
SM 2540C	06/22/11	06/17/11 10:58	6/17/2011 10:58	

Client ID:	9231-MW2 (MS/MSD)	Lab ID: C106225-02	Sampled: 06/16/11 09:51	Received: 06/16/11 18:15
Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)	
EPA 300.0	07/14/11	06/29/11 11:57	6/29/2011 23:55	
EPA 310.2	06/30/11	06/21/11 08:37	6/21/2011 09:24	
EPA 6010C	12/13/11	06/17/11 11:02	6/21/2011 09:56	
EPA 6020A	12/13/11	06/17/11 11:10	6/20/2011 10:05	
EPA 7470A	07/14/11	06/17/11 08:40	6/17/2011 14:46	
EPA 8260B	06/30/11	06/21/11 10:55	6/21/2011 21:10	
SM 2540C	06/23/11	06/17/11 10:58	6/17/2011 10:58	

Client ID:	9231-MW3	Lab ID: C106225-03	Sampled: 06/15/11 10:55	Received: 06/16/11 18:15
Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)	
EPA 300.0	07/13/11	06/29/11 11:57	6/30/2011 01:20	
EPA 310.2	06/29/11	06/21/11 08:37	6/21/2011 09:27	
EPA 6010C	12/12/11	06/17/11 11:02	6/21/2011 10:09	
EPA 6020A	12/12/11	06/17/11 11:10	6/20/2011 10:28	
EPA 7470A	07/13/11	06/17/11 08:40	6/17/2011 15:17	
EPA 8260B	06/29/11	06/21/11 10:55	6/21/2011 22:08	
SM 2540C	06/22/11	06/17/11 10:58	6/17/2011 10:58	

Client ID:	9231-MW4	Lab ID: C106225-04	Sampled: 06/16/11 10:28	Received: 06/16/11 18:15
Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)	
EPA 300.0	07/14/11	06/29/11 11:57	6/30/2011 01:36	
EPA 310.2	06/30/11	06/21/11 08:37	6/21/2011 09:28	
EPA 6010C	12/13/11	06/17/11 11:02	6/21/2011 10:12	
EPA 6020A	12/13/11	06/17/11 11:10	6/20/2011 10:32	
EPA 7470A	07/14/11	06/17/11 08:40	6/17/2011 15:20	
EPA 8260B	06/30/11	06/21/11 10:55	6/21/2011 22:38	
SM 2540C	06/23/11	06/17/11 10:58	6/17/2011 10:58	



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Client ID:	9231-MW5	Lab ID: C106225-05	Sampled: 06/16/11 12:13	Received: 06/16/11 18:15
Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)	
EPA 300.0	07/14/11	06/29/11 11:57	6/30/2011 01:52	
EPA 310.2	06/30/11	06/21/11 08:37	6/21/2011 09:29	
EPA 6010C	12/13/11	06/17/11 11:02	6/21/2011 10:21	
EPA 6020A	12/13/11	06/17/11 11:10	6/20/2011 10:43	
EPA 7470A	07/14/11	06/17/11 08:40	6/17/2011 15:29	
EPA 8260B	06/30/11	06/21/11 10:55	6/21/2011 23:08	
SM 2540C	06/23/11	06/17/11 10:58	6/17/2011 10:58	

Client ID:	9231-SW1	Lab ID: C106225-06	Sampled: 06/15/11 15:41	Received: 06/16/11 18:15
Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)	
EPA 6010C	12/12/11	06/17/11 11:02	6/21/2011 10:23	
EPA 6020A	12/12/11	06/17/11 11:10	6/20/2011 10:47	
EPA 8260B	06/29/11	06/21/11 10:55	6/21/2011 23:38	

Client ID:	9231-SW2	Lab ID: C106225-07	Sampled: 06/15/11 14:30	Received: 06/16/11 18:15
Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)	
EPA 6010C	12/12/11	06/17/11 11:02	6/21/2011 10:25	
EPA 6020A	12/12/11	06/17/11 11:10	6/20/2011 10:50	
EPA 8260B	06/29/11	06/21/11 10:55	6/22/2011 00:07	

Client ID:	9231-SW3	Lab ID: C106225-08	Sampled: 06/15/11 14:21	Received: 06/16/11 18:15
Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)	
EPA 6010C	12/12/11	06/17/11 11:02	6/21/2011 10:28	
EPA 6020A	12/12/11	06/17/11 11:10	6/20/2011 10:54	
EPA 8260B	06/29/11	06/21/11 10:55	6/22/2011 00:37	

Client ID:	Field Blank	Lab ID: C106225-09	Sampled: 06/16/11 16:16	Received: 06/16/11 18:15
Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)	
EPA 6010C	12/13/11	06/17/11 11:02	6/21/2011 10:30	
EPA 6020A	12/13/11	06/17/11 11:10	6/20/2011 10:58	
EPA 7470A	07/14/11	06/17/11 08:40	6/17/2011 15:31	
EPA 8260B	06/30/11	06/21/11 10:55	6/22/2011 01:06	

Client ID:	Trip Blank	Lab ID: C106225-10	Sampled: 06/15/11 10:03	Received: 06/16/11 18:15
Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)	
EPA 8260B	06/29/11	06/21/11 10:55	6/22/2011 01:36	



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NORTH CAROLINA SWS SAMPLE DETECTION SUMMARY

Client ID: 9231-MW1 **Lab ID: C106225-01**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Arsenic - Total	3.39	J	1	2.80	10.0	10	ug/L	EPA 6010C	
Barium - Total	447		1	1.00	10.0	100	ug/L	EPA 6010C	
Beryllium - Total	0.592	J	1	0.100	1.00	1	ug/L	EPA 6010C	
Chloride	38000		1	290	5000	NE	ug/L	EPA 300.0	
Cobalt - Total	6.17	J	1	1.10	10.0	10	ug/L	EPA 6010C	
Copper - Total	3.18	J	1	1.60	10.0	10	ug/L	EPA 6010C	
Iron - Total	149	J	1	22.0	50.0	300	ug/L	EPA 6010C	
Lead - Total	2.23	J	1	1.90	10.0	10	ug/L	EPA 6010C	
Manganese - Total	68.2		1	1.10	10.0	50	ug/L	EPA 6010C	
Sulfate	1200	J	1	70	5000	250000	ug/L	EPA 300.0	
Total Dissolved Solids	60000		1	10000	10000	NE	ug/L	SM 2540C	
Zinc - Total	12.5		1	3.80	10.0	10	ug/L	EPA 6010C	

Client ID: 9231-MW2 (MS/MSD) **Lab ID: C106225-02**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Barium - Total	597		1	1.00	10.0	100	ug/L	EPA 6010C	
Beryllium - Total	4.04		1	0.100	1.00	1	ug/L	EPA 6010C	
Chloride	18000		1	290	5000	NE	ug/L	EPA 300.0	
Iron - Total	31.4	J	1	22.0	50.0	300	ug/L	EPA 6010C	
Manganese - Total	118		1	1.10	10.0	50	ug/L	EPA 6010C	
Selenium - Total	1.05	J	1	0.830	1.00	10	ug/L	EPA 6020A	
Sulfate	1100	J	1	70	5000	250000	ug/L	EPA 300.0	
Total Alkalinity as CaCO3	12000	J	1	12000	15000	NE	ug/L	EPA 310.2	
Total Dissolved Solids	330000		1	10000	10000	NE	ug/L	SM 2540C	

Client ID: 9231-MW3 **Lab ID: C106225-03**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Barium - Total	1170		1	1.00	10.0	100	ug/L	EPA 6010C	
Beryllium - Total	2.95		1	0.100	1.00	1	ug/L	EPA 6010C	
Chloride	19000		1	290	5000	NE	ug/L	EPA 300.0	
Cobalt - Total	1.50	J	1	1.10	10.0	10	ug/L	EPA 6010C	
Manganese - Total	142		1	1.10	10.0	50	ug/L	EPA 6010C	
Mercury - Total	0.768		1	0.170	0.200	0.2	ug/L	EPA 7470A	
Selenium - Total	0.874	J	1	0.830	1.00	10	ug/L	EPA 6020A	
Sulfate	810	J	1	70	5000	250000	ug/L	EPA 300.0	
Tetrachloroethene	1.9		1	0.73	1.0	1	ug/L	EPA 8260B	
Tetrahydrofuran	4.8		1	0.80	1.0	NE	ug/L	EPA 8260B	
Total Dissolved Solids	200000		1	10000	10000	NE	ug/L	SM 2540C	
Trichloroethene	4.6		1	0.72	1.0	1	ug/L	EPA 8260B	
Trichlorofluoromethane	2.2		1	0.66	1.0	1	ug/L	EPA 8260B	
Zinc - Total	7.94	J	1	3.80	10.0	10	ug/L	EPA 6010C	

Client ID: 9231-MW4 **Lab ID: C106225-04**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Barium - Total	110		1	1.00	10.0	100	ug/L	EPA 6010C	
Beryllium - Total	1.26		1	0.100	1.00	1	ug/L	EPA 6010C	
Chloride	4500	J	1	290	5000	NE	ug/L	EPA 300.0	
Copper - Total	1.70	J	1	1.60	10.0	10	ug/L	EPA 6010C	
Iron - Total	111	J	1	22.0	50.0	300	ug/L	EPA 6010C	



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Client ID: 9231-MW4 **Lab ID: C106225-04**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Manganese - Total	106		1	1.10	10.0	50	ug/L	EPA 6010C	
Sulfate	27000	J	1	70	5000	250000	ug/L	EPA 300.0	
Total Alkalinity as CaCO3	18000		1	12000	15000	NE	ug/L	EPA 310.2	
Total Dissolved Solids	80000		1	10000	10000	NE	ug/L	SM 2540C	

Client ID: 9231-MW5 **Lab ID: C106225-05**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Arsenic - Total	4.64	J	1	2.80	10.0	10	ug/L	EPA 6010C	
Barium - Total	37.4	J	1	1.00	10.0	100	ug/L	EPA 6010C	
Beryllium - Total	0.757	J	1	0.100	1.00	1	ug/L	EPA 6010C	
Chloride	4600	J	1	290	5000	NE	ug/L	EPA 300.0	
Iron - Total	9750		1	22.0	50.0	300	ug/L	EPA 6010C	
Lead - Total	3.12	J	1	1.90	10.0	10	ug/L	EPA 6010C	
Manganese - Total	157		1	1.10	10.0	50	ug/L	EPA 6010C	
Sulfate	3600	J	1	70	5000	250000	ug/L	EPA 300.0	
Total Alkalinity as CaCO3	22000		1	12000	15000	NE	ug/L	EPA 310.2	
Total Dissolved Solids	54000		1	10000	10000	NE	ug/L	SM 2540C	
Vanadium - Total	2.41	J	1	1.40	10.0	25	ug/L	EPA 6010C	

Client ID: 9231-SW1 **Lab ID: C106225-06**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Arsenic - Total	3.09	J	1	2.80	10.0	10	ug/L	EPA 6010C	
Barium - Total	27.5	J	1	1.00	10.0	100	ug/L	EPA 6010C	
Vanadium - Total	1.43	J	1	1.40	10.0	25	ug/L	EPA 6010C	

Client ID: 9231-SW2 **Lab ID: C106225-07**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Barium - Total	33.3	J	1	1.00	10.0	100	ug/L	EPA 6010C	
Lead - Total	2.15	J	1	1.90	10.0	10	ug/L	EPA 6010C	

Client ID: 9231-SW3 **Lab ID: C106225-08**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Barium - Total	259		1	1.00	10.0	100	ug/L	EPA 6010C	
Beryllium - Total	0.216	J	1	0.100	1.00	1	ug/L	EPA 6010C	
Lead - Total	1.96	J	1	1.90	10.0	10	ug/L	EPA 6010C	
Selenium - Total	1.15	J	1	0.830	1.00	10	ug/L	EPA 6020A	
Vanadium - Total	1.75	J	1	1.40	10.0	25	ug/L	EPA 6010C	
Zinc - Total	7.08	J	1	3.80	10.0	10	ug/L	EPA 6010C	



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ANALYTICAL RESULTS

Description: 9231-MW1

Lab Sample ID: C106225-01

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/15/11 10:03

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.90	U	ug/L	1	0.90	1.0	5	EPA 8260B	06/21/11 21:39	JKG	
1,1,1-Trichloroethane [71-55-6] ^	0.65	U	ug/L	1	0.65	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.75	U	ug/L	1	0.75	1.0	3	EPA 8260B	06/21/11 21:39	JKG	
1,1,2-Trichloroethane [79-00-5] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
1,1-Dichloroethane [75-34-3] ^	0.080	U	ug/L	1	0.080	1.0	5	EPA 8260B	06/21/11 21:39	JKG	
1,1-Dichloroethene [75-35-4] ^	0.60	U	ug/L	1	0.60	1.0	5	EPA 8260B	06/21/11 21:39	JKG	
1,2,3-Trichloropropane [96-18-4] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	06/21/11 21:39	JKG	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
1,2-Dichlorobenzene [95-50-1] ^	0.11	U	ug/L	1	0.11	1.0	5	EPA 8260B	06/21/11 21:39	JKG	
1,2-Dichloroethane [107-06-2] ^	0.47	U	ug/L	1	0.47	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
1,2-Dichloropropane [78-87-5] ^	0.59	U	ug/L	1	0.59	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
1,4-Dichlorobenzene [106-46-7] ^	0.79	U	ug/L	1	0.79	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	06/21/11 21:39	JKG	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	06/21/11 21:39	JKG	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	06/21/11 21:39	JKG	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	06/21/11 21:39	JKG	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	06/21/11 21:39	JKG	
Benzene [71-43-2] ^	0.68	U	ug/L	1	0.68	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
Bromochloromethane [74-97-5] ^	0.87	U	ug/L	1	0.87	1.0	3	EPA 8260B	06/21/11 21:39	JKG	
Bromodichloromethane [75-27-4] ^	0.75	U	ug/L	1	0.75	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
Bromoform [75-25-2] ^	0.68	U	ug/L	1	0.68	1.0	3	EPA 8260B	06/21/11 21:39	JKG	
Bromomethane [74-83-9] ^	0.58	U	ug/L	1	0.58	1.0	10	EPA 8260B	06/21/11 21:39	JKG	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	06/21/11 21:39	JKG	
Carbon tetrachloride [56-23-5] ^	0.69	U	ug/L	1	0.69	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
Chlorobenzene [108-90-7] ^	0.74	U	ug/L	1	0.74	1.0	3	EPA 8260B	06/21/11 21:39	JKG	
Chloroethane [75-00-3] ^	0.75	U	ug/L	1	0.75	1.0	10	EPA 8260B	06/21/11 21:39	JKG	
Chloroform [67-66-3] ^	0.70	U	ug/L	1	0.70	1.0	5	EPA 8260B	06/21/11 21:39	JKG	
Chloromethane [74-87-3] ^	0.55	U	ug/L	1	0.55	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
cis-1,2-Dichloroethene [156-59-2] ^	0.72	U	ug/L	1	0.72	1.0	5	EPA 8260B	06/21/11 21:39	JKG	
cis-1,3-Dichloropropene [10061-01-5] ^	0.075	U	ug/L	1	0.075	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
Dibromochloromethane [124-48-1] ^	0.63	U	ug/L	1	0.63	1.0	3	EPA 8260B	06/21/11 21:39	JKG	
Dibromomethane [74-95-3] ^	0.90	U	ug/L	1	0.90	1.0	10	EPA 8260B	06/21/11 21:39	JKG	
Ethylbenzene [100-41-4] ^	0.62	U	ug/L	1	0.62	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	06/21/11 21:39	JKG	
Methylene chloride [75-09-2] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
Styrene [100-42-5] ^	0.053	U	ug/L	1	0.053	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
Tetrachloroethene [127-18-4] ^	0.73	U	ug/L	1	0.73	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0	NE	EPA 8260B	06/21/11 21:39	JKG	
Toluene [108-88-3] ^	0.85	U	ug/L	1	0.85	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
trans-1,2-Dichloroethene [156-60-5] ^	0.12	U	ug/L	1	0.12	1.0	5	EPA 8260B	06/21/11 21:39	JKG	
trans-1,3-Dichloropropene [10061-02-6] ^	0.50	U	ug/L	1	0.50	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	06/21/11 21:39	JKG	



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Description: 9231-MW1

Lab Sample ID: C106225-01

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/15/11 10:03

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Trichloroethene [79-01-6] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
Trichlorofluoromethane [75-69-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	06/21/11 21:39	JKG	
Vinyl chloride [75-01-4] ^	0.60	U	ug/L	1	0.60	1.0	1	EPA 8260B	06/21/11 21:39	JKG	
Xylenes (Total) [1330-20-7] ^	2.1	U	ug/L	1	2.1	3.0	5	EPA 8260B	06/21/11 21:39	JKG	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
4-Bromofluorobenzene	49	1	50.0	98 %	51-122	1F21018	EPA 8260B	06/21/11 21:39	JKG	
Dibromofluoromethane	56	1	50.0	112 %	68-117	1F21018	EPA 8260B	06/21/11 21:39	JKG	
Toluene-d8	50	1	50.0	101 %	69-110	1F21018	EPA 8260B	06/21/11 21:39	JKG	



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Description: 9231-MW1

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Matrix: Ground Water

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Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	06/17/11 15:15	JDH	



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Description: 9231-MW1

Lab Sample ID: C106225-01

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/15/11 10:03

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	06/20/11 10:24	VLO	
Arsenic [7440-38-2] ^	3.39	J	ug/L	1	2.80	10.0	10	EPA 6010C	06/21/11 10:07	JDH	
Barium [7440-39-3] ^	447		ug/L	1	1.00	10.0	100	EPA 6010C	06/21/11 10:07	JDH	
Beryllium [7440-41-7] ^	0.592	J	ug/L	1	0.100	1.00	1	EPA 6010C	06/21/11 10:07	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	06/21/11 10:07	JDH	
Chromium [7440-47-3] ^	1.00	U	ug/L	1	1.00	10.0	10	EPA 6010C	06/21/11 10:07	JDH	
Cobalt [7440-48-4] ^	6.17	J	ug/L	1	1.10	10.0	10	EPA 6010C	06/21/11 10:07	JDH	
Copper [7440-50-8] ^	3.18	J	ug/L	1	1.60	10.0	10	EPA 6010C	06/21/11 10:07	JDH	
Iron [7439-89-6] ^	149	J	ug/L	1	22.0	50.0	300	EPA 6010C	06/21/11 10:07	JDH	
Lead [7439-92-1] ^	2.23	J	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:07	JDH	
Manganese [7439-96-5] ^	68.2		ug/L	1	1.10	10.0	50	EPA 6010C	06/21/11 10:07	JDH	
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	06/21/11 10:07	JDH	
Selenium [7782-49-2] ^	0.830	U	ug/L	1	0.830	1.00	10	EPA 6020A	06/20/11 10:24	VLO	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:07	JDH	
Thallium [7440-28-0] ^	0.110	U	ug/L	1	0.110	1.00	5.5	EPA 6020A	06/20/11 10:24	VLO	
Vanadium [7440-62-2] ^	1.40	U	ug/L	1	1.40	10.0	25	EPA 6010C	06/21/11 10:07	JDH	
Zinc [7440-66-6] ^	12.5		ug/L	1	3.80	10.0	10	EPA 6010C	06/21/11 10:07	JDH	



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Description: 9231-MW1

Lab Sample ID: C106225-01

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/15/11 10:03

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Total Alkalinity as CaCO3 [471-34-1] ^	12000	U	ug/L	1	12000	15000	NE	EPA 310.2	06/21/11 09:23	CCB	
Total Dissolved Solids [ECL-0156] ^	60000		ug/L	1	10000	10000	NE	SM 2540C	06/17/11 10:58	KER	



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Description: 9231-MW1

Lab Sample ID: C106225-01

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/15/11 10:03

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Classical Chemistry Parameters

^ - ENCO Orlando certified analyte [NC 424]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Chloride [16887-00-6] ^	38000		ug/L	1	290	5000	NE	EPA 300.0	06/30/11 00:11	RSA	
Sulfate [14808-79-8] ^	1200	J	ug/L	1	70	5000	250000	EPA 300.0	06/30/11 00:11	RSA	



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Description: 9231-MW2 (MS/MSD)

Lab Sample ID: C106225-02

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 09:51

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Table with 11 columns: Analyte [CAS Number], Results, Flag, Units, DF, MDL, MRL, NC SWSL, Method, Analyzed, By, Notes. It lists various chemical compounds and their corresponding test results.



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Description: 9231-MW2 (MS/MSD)

Lab Sample ID: C106225-02

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 09:51

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.60	U	ug/L	1	0.60	1.0	1	EPA 8260B	06/21/11 21:10	JKG	
Xylenes (Total) [1330-20-7] ^	2.1	U	ug/L	1	2.1	3.0	5	EPA 8260B	06/21/11 21:10	JKG	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
4-Bromofluorobenzene	47	1	50.0	94 %	51-122	1F21018	EPA 8260B	06/21/11 21:10	JKG	
Dibromofluoromethane	53	1	50.0	106 %	68-117	1F21018	EPA 8260B	06/21/11 21:10	JKG	
Toluene-d8	50	1	50.0	99 %	69-110	1F21018	EPA 8260B	06/21/11 21:10	JKG	



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Description: 9231-MW2 (MS/MSD)

Lab Sample ID: C106225-02

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 09:51

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	06/17/11 14:46	JDH	



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Description: 9231-MW2 (MS/MSD)

Lab Sample ID: C106225-02

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 09:51

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	06/20/11 10:05	VLO	
Arsenic [7440-38-2] ^	2.80	U	ug/L	1	2.80	10.0	10	EPA 6010C	06/21/11 09:56	JDH	
Barium [7440-39-3] ^	597		ug/L	1	1.00	10.0	100	EPA 6010C	06/21/11 09:56	JDH	
Beryllium [7440-41-7] ^	4.04		ug/L	1	0.100	1.00	1	EPA 6010C	06/21/11 09:56	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	06/21/11 09:56	JDH	
Chromium [7440-47-3] ^	1.00	U	ug/L	1	1.00	10.0	10	EPA 6010C	06/21/11 09:56	JDH	
Cobalt [7440-48-4] ^	1.10	U	ug/L	1	1.10	10.0	10	EPA 6010C	06/21/11 09:56	JDH	
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	06/21/11 09:56	JDH	
Iron [7439-89-6] ^	31.4	J	ug/L	1	22.0	50.0	300	EPA 6010C	06/21/11 09:56	JDH	
Lead [7439-92-1] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 09:56	JDH	
Manganese [7439-96-5] ^	118		ug/L	1	1.10	10.0	50	EPA 6010C	06/21/11 09:56	JDH	
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	06/21/11 09:56	JDH	
Selenium [7782-49-2] ^	1.05	J	ug/L	1	0.830	1.00	10	EPA 6020A	06/20/11 10:05	VLO	
Selenium [7782-49-2] ^	2.70	U	ug/L	1	2.70	10.0	10	EPA 6010C	06/21/11 09:56	JDH	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 09:56	JDH	
Thallium [7440-28-0] ^	0.110	U	ug/L	1	0.110	1.00	5.5	EPA 6020A	06/20/11 10:05	VLO	
Vanadium [7440-62-2] ^	1.40	U	ug/L	1	1.40	10.0	25	EPA 6010C	06/21/11 09:56	JDH	
Zinc [7440-66-6] ^	3.80	U	ug/L	1	3.80	10.0	10	EPA 6010C	06/21/11 09:56	JDH	



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Description: 9231-MW2 (MS/MSD)

Lab Sample ID: C106225-02

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 09:51

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Total Alkalinity as CaCO3 [471-34-1] ^	12000	J	ug/L	1	12000	15000	NE	EPA 310.2	06/21/11 09:24	CCB	
Total Dissolved Solids [ECL-0156] ^	330000		ug/L	1	10000	10000	NE	SM 2540C	06/17/11 10:58	KER	



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Description: 9231-MW2 (MS/MSD)

Lab Sample ID: C106225-02

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 09:51

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Classical Chemistry Parameters

^ - ENCO Orlando certified analyte [NC 424]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Chloride [16887-00-6] ^	18000		ug/L	1	290	5000	NE	EPA 300.0	06/29/11 23:55	RSA	
Sulfate [14808-79-8] ^	1100	J	ug/L	1	70	5000	250000	EPA 300.0	06/29/11 23:55	RSA	



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Description: 9231-MW3

Lab Sample ID: C106225-03

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/15/11 10:55

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.90	U	ug/L	1	0.90	1.0	5	EPA 8260B	06/21/11 22:08	JKG	
1,1,1-Trichloroethane [71-55-6] ^	0.65	U	ug/L	1	0.65	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.75	U	ug/L	1	0.75	1.0	3	EPA 8260B	06/21/11 22:08	JKG	
1,1,2-Trichloroethane [79-00-5] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
1,1-Dichloroethane [75-34-3] ^	0.080	U	ug/L	1	0.080	1.0	5	EPA 8260B	06/21/11 22:08	JKG	
1,1-Dichloroethene [75-35-4] ^	0.60	U	ug/L	1	0.60	1.0	5	EPA 8260B	06/21/11 22:08	JKG	
1,2,3-Trichloropropane [96-18-4] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	06/21/11 22:08	JKG	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
1,2-Dichlorobenzene [95-50-1] ^	0.11	U	ug/L	1	0.11	1.0	5	EPA 8260B	06/21/11 22:08	JKG	
1,2-Dichloroethane [107-06-2] ^	0.47	U	ug/L	1	0.47	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
1,2-Dichloropropane [78-87-5] ^	0.59	U	ug/L	1	0.59	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
1,4-Dichlorobenzene [106-46-7] ^	0.79	U	ug/L	1	0.79	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	06/21/11 22:08	JKG	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	06/21/11 22:08	JKG	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	06/21/11 22:08	JKG	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	06/21/11 22:08	JKG	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	06/21/11 22:08	JKG	
Benzene [71-43-2] ^	0.68	U	ug/L	1	0.68	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
Bromochloromethane [74-97-5] ^	0.87	U	ug/L	1	0.87	1.0	3	EPA 8260B	06/21/11 22:08	JKG	
Bromodichloromethane [75-27-4] ^	0.75	U	ug/L	1	0.75	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
Bromoform [75-25-2] ^	0.68	U	ug/L	1	0.68	1.0	3	EPA 8260B	06/21/11 22:08	JKG	
Bromomethane [74-83-9] ^	0.58	U	ug/L	1	0.58	1.0	10	EPA 8260B	06/21/11 22:08	JKG	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	06/21/11 22:08	JKG	
Carbon tetrachloride [56-23-5] ^	0.69	U	ug/L	1	0.69	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
Chlorobenzene [108-90-7] ^	0.74	U	ug/L	1	0.74	1.0	3	EPA 8260B	06/21/11 22:08	JKG	
Chloroethane [75-00-3] ^	0.75	U	ug/L	1	0.75	1.0	10	EPA 8260B	06/21/11 22:08	JKG	
Chloroform [67-66-3] ^	0.70	U	ug/L	1	0.70	1.0	5	EPA 8260B	06/21/11 22:08	JKG	
Chloromethane [74-87-3] ^	0.55	U	ug/L	1	0.55	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
cis-1,2-Dichloroethene [156-59-2] ^	0.72	U	ug/L	1	0.72	1.0	5	EPA 8260B	06/21/11 22:08	JKG	
cis-1,3-Dichloropropene [10061-01-5] ^	0.075	U	ug/L	1	0.075	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
Dibromochloromethane [124-48-1] ^	0.63	U	ug/L	1	0.63	1.0	3	EPA 8260B	06/21/11 22:08	JKG	
Dibromomethane [74-95-3] ^	0.90	U	ug/L	1	0.90	1.0	10	EPA 8260B	06/21/11 22:08	JKG	
Ethylbenzene [100-41-4] ^	0.62	U	ug/L	1	0.62	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	06/21/11 22:08	JKG	
Methylene chloride [75-09-2] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
Styrene [100-42-5] ^	0.053	U	ug/L	1	0.053	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
Tetrachloroethene [127-18-4] ^	1.9		ug/L	1	0.73	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
Tetrahydrofuran [109-99-9] ^	4.8		ug/L	1	0.80	1.0	NE	EPA 8260B	06/21/11 22:08	JKG	
Toluene [108-88-3] ^	0.85	U	ug/L	1	0.85	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
trans-1,2-Dichloroethene [156-60-5] ^	0.12	U	ug/L	1	0.12	1.0	5	EPA 8260B	06/21/11 22:08	JKG	
trans-1,3-Dichloropropene [10061-02-6] ^	0.50	U	ug/L	1	0.50	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	06/21/11 22:08	JKG	
Trichloroethene [79-01-6] ^	4.6		ug/L	1	0.72	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
Trichlorofluoromethane [75-69-4] ^	2.2		ug/L	1	0.66	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	06/21/11 22:08	JKG	



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Description: 9231-MW3

Lab Sample ID: C106225-03

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/15/11 10:55

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.60	U	ug/L	1	0.60	1.0	1	EPA 8260B	06/21/11 22:08	JKG	
Xylenes (Total) [1330-20-7] ^	2.1	U	ug/L	1	2.1	3.0	5	EPA 8260B	06/21/11 22:08	JKG	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
4-Bromofluorobenzene	48	1	50.0	97 %	51-122	1F21018	EPA 8260B	06/21/11 22:08	JKG	
Dibromofluoromethane	54	1	50.0	108 %	68-117	1F21018	EPA 8260B	06/21/11 22:08	JKG	
Toluene-d8	49	1	50.0	99 %	69-110	1F21018	EPA 8260B	06/21/11 22:08	JKG	



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Description: 9231-MW3

Lab Sample ID: C106225-03

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/15/11 10:55

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.768		ug/L	1	0.170	0.200	0.2	EPA 7470A	06/17/11 15:17	JDH	



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Description: 9231-MW3

Lab Sample ID: C106225-03

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/15/11 10:55

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	06/20/11 10:28		VLO
Arsenic [7440-38-2] ^	2.80	U	ug/L	1	2.80	10.0	10	EPA 6010C	06/21/11 10:09		JDH
Barium [7440-39-3] ^	1170		ug/L	1	1.00	10.0	100	EPA 6010C	06/21/11 10:09		JDH
Beryllium [7440-41-7] ^	2.95		ug/L	1	0.100	1.00	1	EPA 6010C	06/21/11 10:09		JDH
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	06/21/11 10:09		JDH
Chromium [7440-47-3] ^	1.00	U	ug/L	1	1.00	10.0	10	EPA 6010C	06/21/11 10:09		JDH
Cobalt [7440-48-4] ^	1.50	J	ug/L	1	1.10	10.0	10	EPA 6010C	06/21/11 10:09		JDH
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	06/21/11 10:09		JDH
Iron [7439-89-6] ^	22.0	U	ug/L	1	22.0	50.0	300	EPA 6010C	06/21/11 10:09		JDH
Lead [7439-92-1] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:09		JDH
Manganese [7439-96-5] ^	142		ug/L	1	1.10	10.0	50	EPA 6010C	06/21/11 10:09		JDH
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	06/21/11 10:09		JDH
Selenium [7782-49-2] ^	0.874	J	ug/L	1	0.830	1.00	10	EPA 6020A	06/20/11 10:28		VLO
Selenium [7782-49-2] ^	2.70	U	ug/L	1	2.70	10.0	10	EPA 6010C	06/21/11 10:09		JDH
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:09		JDH
Thallium [7440-28-0] ^	0.110	U	ug/L	1	0.110	1.00	5.5	EPA 6020A	06/20/11 10:28		VLO
Vanadium [7440-62-2] ^	1.40	U	ug/L	1	1.40	10.0	25	EPA 6010C	06/21/11 10:09		JDH
Zinc [7440-66-6] ^	7.94	J	ug/L	1	3.80	10.0	10	EPA 6010C	06/21/11 10:09		JDH



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Description: 9231-MW3

Lab Sample ID: C106225-03

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/15/11 10:55

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Total Alkalinity as CaCO3 [471-34-1] ^	12000	U	ug/L	1	12000	15000	NE	EPA 310.2	06/21/11 09:27	CCB	
Total Dissolved Solids [ECL-0156] ^	200000		ug/L	1	10000	10000	NE	SM 2540C	06/17/11 10:58	KER	



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Description: 9231-MW3

Lab Sample ID: C106225-03

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/15/11 10:55

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Classical Chemistry Parameters

^ - ENCO Orlando certified analyte [NC 424]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Chloride [16887-00-6] ^	19000		ug/L	1	290	5000	NE	EPA 300.0	06/30/11 01:20	RSA	
Sulfate [14808-79-8] ^	810	J	ug/L	1	70	5000	250000	EPA 300.0	06/30/11 01:20	RSA	



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Description: 9231-MW4

Lab Sample ID: C106225-04

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 10:28

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.90	U	ug/L	1	0.90	1.0	5	EPA 8260B	06/21/11 22:38	JKG	
1,1,1-Trichloroethane [71-55-6] ^	0.65	U	ug/L	1	0.65	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.75	U	ug/L	1	0.75	1.0	3	EPA 8260B	06/21/11 22:38	JKG	
1,1,2-Trichloroethane [79-00-5] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
1,1-Dichloroethane [75-34-3] ^	0.080	U	ug/L	1	0.080	1.0	5	EPA 8260B	06/21/11 22:38	JKG	
1,1-Dichloroethene [75-35-4] ^	0.60	U	ug/L	1	0.60	1.0	5	EPA 8260B	06/21/11 22:38	JKG	
1,2,3-Trichloropropane [96-18-4] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	06/21/11 22:38	JKG	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
1,2-Dichlorobenzene [95-50-1] ^	0.11	U	ug/L	1	0.11	1.0	5	EPA 8260B	06/21/11 22:38	JKG	
1,2-Dichloroethane [107-06-2] ^	0.47	U	ug/L	1	0.47	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
1,2-Dichloropropane [78-87-5] ^	0.59	U	ug/L	1	0.59	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
1,4-Dichlorobenzene [106-46-7] ^	0.79	U	ug/L	1	0.79	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	06/21/11 22:38	JKG	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	06/21/11 22:38	JKG	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	06/21/11 22:38	JKG	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	06/21/11 22:38	JKG	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	06/21/11 22:38	JKG	
Benzene [71-43-2] ^	0.68	U	ug/L	1	0.68	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
Bromochloromethane [74-97-5] ^	0.87	U	ug/L	1	0.87	1.0	3	EPA 8260B	06/21/11 22:38	JKG	
Bromodichloromethane [75-27-4] ^	0.75	U	ug/L	1	0.75	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
Bromoform [75-25-2] ^	0.68	U	ug/L	1	0.68	1.0	3	EPA 8260B	06/21/11 22:38	JKG	
Bromomethane [74-83-9] ^	0.58	U	ug/L	1	0.58	1.0	10	EPA 8260B	06/21/11 22:38	JKG	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	06/21/11 22:38	JKG	
Carbon tetrachloride [56-23-5] ^	0.69	U	ug/L	1	0.69	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
Chlorobenzene [108-90-7] ^	0.74	U	ug/L	1	0.74	1.0	3	EPA 8260B	06/21/11 22:38	JKG	
Chloroethane [75-00-3] ^	0.75	U	ug/L	1	0.75	1.0	10	EPA 8260B	06/21/11 22:38	JKG	
Chloroform [67-66-3] ^	0.70	U	ug/L	1	0.70	1.0	5	EPA 8260B	06/21/11 22:38	JKG	
Chloromethane [74-87-3] ^	0.55	U	ug/L	1	0.55	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
cis-1,2-Dichloroethene [156-59-2] ^	0.72	U	ug/L	1	0.72	1.0	5	EPA 8260B	06/21/11 22:38	JKG	
cis-1,3-Dichloropropene [10061-01-5] ^	0.075	U	ug/L	1	0.075	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
Dibromochloromethane [124-48-1] ^	0.63	U	ug/L	1	0.63	1.0	3	EPA 8260B	06/21/11 22:38	JKG	
Dibromomethane [74-95-3] ^	0.90	U	ug/L	1	0.90	1.0	10	EPA 8260B	06/21/11 22:38	JKG	
Ethylbenzene [100-41-4] ^	0.62	U	ug/L	1	0.62	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	06/21/11 22:38	JKG	
Methylene chloride [75-09-2] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
Styrene [100-42-5] ^	0.053	U	ug/L	1	0.053	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
Tetrachloroethene [127-18-4] ^	0.73	U	ug/L	1	0.73	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0	NE	EPA 8260B	06/21/11 22:38	JKG	
Toluene [108-88-3] ^	0.85	U	ug/L	1	0.85	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
trans-1,2-Dichloroethene [156-60-5] ^	0.12	U	ug/L	1	0.12	1.0	5	EPA 8260B	06/21/11 22:38	JKG	
trans-1,3-Dichloropropene [10061-02-6] ^	0.50	U	ug/L	1	0.50	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	06/21/11 22:38	JKG	
Trichloroethene [79-01-6] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
Trichlorofluoromethane [75-69-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	06/21/11 22:38	JKG	



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Description: 9231-MW4

Lab Sample ID: C106225-04

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 10:28

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.60	U	ug/L	1	0.60	1.0	1	EPA 8260B	06/21/11 22:38	JKG	
Xylenes (Total) [1330-20-7] ^	2.1	U	ug/L	1	2.1	3.0	5	EPA 8260B	06/21/11 22:38	JKG	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
4-Bromofluorobenzene	48	1	50.0	97 %	51-122	1F21018	EPA 8260B	06/21/11 22:38	JKG	
Dibromofluoromethane	55	1	50.0	110 %	68-117	1F21018	EPA 8260B	06/21/11 22:38	JKG	
Toluene-d8	49	1	50.0	98 %	69-110	1F21018	EPA 8260B	06/21/11 22:38	JKG	



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Description: 9231-MW4

Lab Sample ID: C106225-04

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 10:28

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	06/17/11 15:20	JDH	



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Description: 9231-MW4

Lab Sample ID: C106225-04

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 10:28

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	06/20/11 10:32	VLO	
Arsenic [7440-38-2] ^	2.80	U	ug/L	1	2.80	10.0	10	EPA 6010C	06/21/11 10:12	JDH	
Barium [7440-39-3] ^	110		ug/L	1	1.00	10.0	100	EPA 6010C	06/21/11 10:12	JDH	
Beryllium [7440-41-7] ^	1.26		ug/L	1	0.100	1.00	1	EPA 6010C	06/21/11 10:12	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	06/21/11 10:12	JDH	
Chromium [7440-47-3] ^	1.00	U	ug/L	1	1.00	10.0	10	EPA 6010C	06/21/11 10:12	JDH	
Cobalt [7440-48-4] ^	1.10	U	ug/L	1	1.10	10.0	10	EPA 6010C	06/21/11 10:12	JDH	
Copper [7440-50-8] ^	1.70	J	ug/L	1	1.60	10.0	10	EPA 6010C	06/21/11 10:12	JDH	
Iron [7439-89-6] ^	111	J	ug/L	1	22.0	50.0	300	EPA 6010C	06/21/11 10:12	JDH	
Lead [7439-92-1] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:12	JDH	
Manganese [7439-96-5] ^	106		ug/L	1	1.10	10.0	50	EPA 6010C	06/21/11 10:12	JDH	
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	06/21/11 10:12	JDH	
Selenium [7782-49-2] ^	0.830	U	ug/L	1	0.830	1.00	10	EPA 6020A	06/20/11 10:32	VLO	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:12	JDH	
Thallium [7440-28-0] ^	0.110	U	ug/L	1	0.110	1.00	5.5	EPA 6020A	06/20/11 10:32	VLO	
Vanadium [7440-62-2] ^	1.40	U	ug/L	1	1.40	10.0	25	EPA 6010C	06/21/11 10:12	JDH	
Zinc [7440-66-6] ^	3.80	U	ug/L	1	3.80	10.0	10	EPA 6010C	06/21/11 10:12	JDH	



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Description: 9231-MW4

Lab Sample ID: C106225-04

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 10:28

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Total Alkalinity as CaCO3 [471-34-1] ^	18000		ug/L	1	12000	15000	NE	EPA 310.2	06/21/11 09:28	CCB	
Total Dissolved Solids [ECL-0156] ^	80000		ug/L	1	10000	10000	NE	SM 2540C	06/17/11 10:58	KER	



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Description: 9231-MW4

Lab Sample ID: C106225-04

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 10:28

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Classical Chemistry Parameters

^ - ENCO Orlando certified analyte [NC 424]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Chloride [16887-00-6] ^	4500	J	ug/L	1	290	5000	NE	EPA 300.0	06/30/11 01:36	RSA	
Sulfate [14808-79-8] ^	27000	J	ug/L	1	70	5000	250000	EPA 300.0	06/30/11 01:36	RSA	



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Description: 9231-MW5

Lab Sample ID: C106225-05

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 12:13

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Table with 11 columns: Analyte [CAS Number], Results, Flag, Units, DF, MDL, MRL, NC SWSL, Method, Analyzed, By, Notes. It lists various chemical compounds and their corresponding analytical data.



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Description: 9231-MW5

Lab Sample ID: C106225-05

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 12:13

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.60	U	ug/L	1	0.60	1.0	1	EPA 8260B	06/21/11 23:08	JKG	
Xylenes (Total) [1330-20-7] ^	2.1	U	ug/L	1	2.1	3.0	5	EPA 8260B	06/21/11 23:08	JKG	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
4-Bromofluorobenzene	48	1	50.0	95 %	51-122	1F21018	EPA 8260B	06/21/11 23:08	JKG	
Dibromofluoromethane	60	1	50.0	121 %	68-117	1F21018	EPA 8260B	06/21/11 23:08	JKG	QS-03
Toluene-d8	51	1	50.0	102 %	69-110	1F21018	EPA 8260B	06/21/11 23:08	JKG	



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Description: 9231-MW5

Lab Sample ID: C106225-05

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 12:13

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	06/17/11 15:29	JDH	



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Description: 9231-MW5

Lab Sample ID: C106225-05

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 12:13

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	06/20/11 10:43		VLO
Arsenic [7440-38-2] ^	4.64	J	ug/L	1	2.80	10.0	10	EPA 6010C	06/21/11 10:21		JDH
Barium [7440-39-3] ^	37.4	J	ug/L	1	1.00	10.0	100	EPA 6010C	06/21/11 10:21		JDH
Beryllium [7440-41-7] ^	0.757	J	ug/L	1	0.100	1.00	1	EPA 6010C	06/21/11 10:21		JDH
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	06/21/11 10:21		JDH
Chromium [7440-47-3] ^	1.00	U	ug/L	1	1.00	10.0	10	EPA 6010C	06/21/11 10:21		JDH
Cobalt [7440-48-4] ^	1.10	U	ug/L	1	1.10	10.0	10	EPA 6010C	06/21/11 10:21		JDH
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	06/21/11 10:21		JDH
Iron [7439-89-6] ^	9750		ug/L	1	22.0	50.0	300	EPA 6010C	06/21/11 10:21		JDH
Lead [7439-92-1] ^	3.12	J	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:21		JDH
Manganese [7439-96-5] ^	157		ug/L	1	1.10	10.0	50	EPA 6010C	06/21/11 10:21		JDH
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	06/21/11 10:21		JDH
Selenium [7782-49-2] ^	0.830	U	ug/L	1	0.830	1.00	10	EPA 6020A	06/20/11 10:43		VLO
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:21		JDH
Thallium [7440-28-0] ^	0.110	U	ug/L	1	0.110	1.00	5.5	EPA 6020A	06/20/11 10:43		VLO
Vanadium [7440-62-2] ^	2.41	J	ug/L	1	1.40	10.0	25	EPA 6010C	06/21/11 10:21		JDH
Zinc [7440-66-6] ^	3.80	U	ug/L	1	3.80	10.0	10	EPA 6010C	06/21/11 10:21		JDH



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Description: 9231-MW5

Lab Sample ID: C106225-05

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 12:13

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Total Alkalinity as CaCO3 [471-34-1] ^	22000		ug/L	1	12000	15000	NE	EPA 310.2	06/21/11 09:29	CCB	
Total Dissolved Solids [ECL-0156] ^	54000		ug/L	1	10000	10000	NE	SM 2540C	06/17/11 10:58	KER	



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Description: 9231-MW5

Lab Sample ID: C106225-05

Received: 06/16/11 18:15

Matrix: Ground Water

Sampled: 06/16/11 12:13

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Classical Chemistry Parameters

^ - ENCO Orlando certified analyte [NC 424]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Chloride [16887-00-6] ^	4600	J	ug/L	1	290	5000	NE	EPA 300.0	06/30/11 01:52	RSA	
Sulfate [14808-79-8] ^	3600	J	ug/L	1	70	5000	250000	EPA 300.0	06/30/11 01:52	RSA	



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Description: 9231-SW1

Lab Sample ID: C106225-06

Received: 06/16/11 18:15

Matrix: Surface Water

Sampled: 06/15/11 15:41

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Table with 11 columns: Analyte [CAS Number], Results, Flag, Units, DF, MDL, MRL, NC SWSL, Method, Analyzed, By, Notes. It lists various chemical compounds and their corresponding test results.



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Description: 9231-SW1

Lab Sample ID: C106225-06

Received: 06/16/11 18:15

Matrix: Surface Water

Sampled: 06/15/11 15:41

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.60	U	ug/L	1	0.60	1.0	1	EPA 8260B	06/21/11 23:38	JKG	
Xylenes (Total) [1330-20-7] ^	2.1	U	ug/L	1	2.1	3.0	5	EPA 8260B	06/21/11 23:38	JKG	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
4-Bromofluorobenzene	46	1	50.0	93 %	51-122	1F21018	EPA 8260B	06/21/11 23:38	JKG	
Dibromofluoromethane	58	1	50.0	117 %	68-117	1F21018	EPA 8260B	06/21/11 23:38	JKG	
Toluene-d8	50	1	50.0	100 %	69-110	1F21018	EPA 8260B	06/21/11 23:38	JKG	



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Description: 9231-SW1

Lab Sample ID: C106225-06

Received: 06/16/11 18:15

Matrix: Surface Water

Sampled: 06/15/11 15:41

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	06/20/11 10:47	VLO	
Arsenic [7440-38-2] ^	3.09	J	ug/L	1	2.80	10.0	10	EPA 6010C	06/21/11 10:23	JDH	
Barium [7440-39-3] ^	27.5	J	ug/L	1	1.00	10.0	100	EPA 6010C	06/21/11 10:23	JDH	
Beryllium [7440-41-7] ^	0.100	U	ug/L	1	0.100	1.00	1	EPA 6010C	06/21/11 10:23	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	06/21/11 10:23	JDH	
Chromium [7440-47-3] ^	1.00	U	ug/L	1	1.00	10.0	10	EPA 6010C	06/21/11 10:23	JDH	
Cobalt [7440-48-4] ^	1.10	U	ug/L	1	1.10	10.0	10	EPA 6010C	06/21/11 10:23	JDH	
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	06/21/11 10:23	JDH	
Lead [7439-92-1] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:23	JDH	
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	06/21/11 10:23	JDH	
Selenium [7782-49-2] ^	0.830	U	ug/L	1	0.830	1.00	10	EPA 6020A	06/20/11 10:47	VLO	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:23	JDH	
Thallium [7440-28-0] ^	0.110	U	ug/L	1	0.110	1.00	5.5	EPA 6020A	06/20/11 10:47	VLO	
Vanadium [7440-62-2] ^	1.43	J	ug/L	1	1.40	10.0	25	EPA 6010C	06/21/11 10:23	JDH	
Zinc [7440-66-6] ^	3.80	U	ug/L	1	3.80	10.0	10	EPA 6010C	06/21/11 10:23	JDH	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.



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Description: 9231-SW2

Lab Sample ID: C106225-07

Received: 06/16/11 18:15

Matrix: Surface Water

Sampled: 06/15/11 14:30

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Table with 11 columns: Analyte [CAS Number], Results, Flag, Units, DF, MDL, MRL, NC SWSL, Method, Analyzed, By, Notes. It lists various chemical compounds and their corresponding test results.



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Description: 9231-SW2

Lab Sample ID: C106225-07

Received: 06/16/11 18:15

Matrix: Surface Water

Sampled: 06/15/11 14:30

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.60	U	ug/L	1	0.60	1.0	1	EPA 8260B	06/22/11 00:07	JKG	
Xylenes (Total) [1330-20-7] ^	2.1	U	ug/L	1	2.1	3.0	5	EPA 8260B	06/22/11 00:07	JKG	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
4-Bromofluorobenzene	49	1	50.0	98 %	51-122	1F21018	EPA 8260B	06/22/11 00:07	JKG	
Dibromofluoromethane	59	1	50.0	117 %	68-117	1F21018	EPA 8260B	06/22/11 00:07	JKG	
Toluene-d8	49	1	50.0	99 %	69-110	1F21018	EPA 8260B	06/22/11 00:07	JKG	



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Description: 9231-SW2

Lab Sample ID: C106225-07

Received: 06/16/11 18:15

Matrix: Surface Water

Sampled: 06/15/11 14:30

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	06/20/11 10:50	VLO	
Arsenic [7440-38-2] ^	2.80	U	ug/L	1	2.80	10.0	10	EPA 6010C	06/21/11 10:25	JDH	
Barium [7440-39-3] ^	33.3	J	ug/L	1	1.00	10.0	100	EPA 6010C	06/21/11 10:25	JDH	
Beryllium [7440-41-7] ^	0.100	U	ug/L	1	0.100	1.00	1	EPA 6010C	06/21/11 10:25	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	06/21/11 10:25	JDH	
Chromium [7440-47-3] ^	1.00	U	ug/L	1	1.00	10.0	10	EPA 6010C	06/21/11 10:25	JDH	
Cobalt [7440-48-4] ^	1.10	U	ug/L	1	1.10	10.0	10	EPA 6010C	06/21/11 10:25	JDH	
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	06/21/11 10:25	JDH	
Lead [7439-92-1] ^	2.15	J	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:25	JDH	
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	06/21/11 10:25	JDH	
Selenium [7782-49-2] ^	0.830	U	ug/L	1	0.830	1.00	10	EPA 6020A	06/20/11 10:50	VLO	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:25	JDH	
Thallium [7440-28-0] ^	0.110	U	ug/L	1	0.110	1.00	5.5	EPA 6020A	06/20/11 10:50	VLO	
Vanadium [7440-62-2] ^	1.40	U	ug/L	1	1.40	10.0	25	EPA 6010C	06/21/11 10:25	JDH	
Zinc [7440-66-6] ^	3.80	U	ug/L	1	3.80	10.0	10	EPA 6010C	06/21/11 10:25	JDH	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.



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Description: 9231-SW3

Lab Sample ID: C106225-08

Received: 06/16/11 18:15

Matrix: Surface Water

Sampled: 06/15/11 14:21

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.90	U	ug/L	1	0.90	1.0	5	EPA 8260B	06/22/11 00:37	JKG	
1,1,1-Trichloroethane [71-55-6] ^	0.65	U	ug/L	1	0.65	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.75	U	ug/L	1	0.75	1.0	3	EPA 8260B	06/22/11 00:37	JKG	
1,1,2-Trichloroethane [79-00-5] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
1,1-Dichloroethane [75-34-3] ^	0.080	U	ug/L	1	0.080	1.0	5	EPA 8260B	06/22/11 00:37	JKG	
1,1-Dichloroethene [75-35-4] ^	0.60	U	ug/L	1	0.60	1.0	5	EPA 8260B	06/22/11 00:37	JKG	
1,2,3-Trichloropropane [96-18-4] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	06/22/11 00:37	JKG	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
1,2-Dichlorobenzene [95-50-1] ^	0.11	U	ug/L	1	0.11	1.0	5	EPA 8260B	06/22/11 00:37	JKG	
1,2-Dichloroethane [107-06-2] ^	0.47	U	ug/L	1	0.47	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
1,2-Dichloropropane [78-87-5] ^	0.59	U	ug/L	1	0.59	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
1,4-Dichlorobenzene [106-46-7] ^	0.79	U	ug/L	1	0.79	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	06/22/11 00:37	JKG	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	06/22/11 00:37	JKG	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	06/22/11 00:37	JKG	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	06/22/11 00:37	JKG	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	06/22/11 00:37	JKG	
Benzene [71-43-2] ^	0.68	U	ug/L	1	0.68	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
Bromochloromethane [74-97-5] ^	0.87	U	ug/L	1	0.87	1.0	3	EPA 8260B	06/22/11 00:37	JKG	
Bromodichloromethane [75-27-4] ^	0.75	U	ug/L	1	0.75	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
Bromoform [75-25-2] ^	0.68	U	ug/L	1	0.68	1.0	3	EPA 8260B	06/22/11 00:37	JKG	
Bromomethane [74-83-9] ^	0.58	U	ug/L	1	0.58	1.0	10	EPA 8260B	06/22/11 00:37	JKG	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	06/22/11 00:37	JKG	
Carbon tetrachloride [56-23-5] ^	0.69	U	ug/L	1	0.69	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
Chlorobenzene [108-90-7] ^	0.74	U	ug/L	1	0.74	1.0	3	EPA 8260B	06/22/11 00:37	JKG	
Chloroethane [75-00-3] ^	0.75	U	ug/L	1	0.75	1.0	10	EPA 8260B	06/22/11 00:37	JKG	
Chloroform [67-66-3] ^	0.70	U	ug/L	1	0.70	1.0	5	EPA 8260B	06/22/11 00:37	JKG	
Chloromethane [74-87-3] ^	0.55	U	ug/L	1	0.55	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
cis-1,2-Dichloroethene [156-59-2] ^	0.72	U	ug/L	1	0.72	1.0	5	EPA 8260B	06/22/11 00:37	JKG	
cis-1,3-Dichloropropene [10061-01-5] ^	0.075	U	ug/L	1	0.075	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
Dibromochloromethane [124-48-1] ^	0.63	U	ug/L	1	0.63	1.0	3	EPA 8260B	06/22/11 00:37	JKG	
Dibromomethane [74-95-3] ^	0.90	U	ug/L	1	0.90	1.0	10	EPA 8260B	06/22/11 00:37	JKG	
Ethylbenzene [100-41-4] ^	0.62	U	ug/L	1	0.62	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	06/22/11 00:37	JKG	
Methylene chloride [75-09-2] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
Styrene [100-42-5] ^	0.053	U	ug/L	1	0.053	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
Tetrachloroethene [127-18-4] ^	0.73	U	ug/L	1	0.73	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0	NE	EPA 8260B	06/22/11 00:37	JKG	
Toluene [108-88-3] ^	0.85	U	ug/L	1	0.85	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
trans-1,2-Dichloroethene [156-60-5] ^	0.12	U	ug/L	1	0.12	1.0	5	EPA 8260B	06/22/11 00:37	JKG	
trans-1,3-Dichloropropene [10061-02-6] ^	0.50	U	ug/L	1	0.50	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	06/22/11 00:37	JKG	
Trichloroethene [79-01-6] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
Trichlorofluoromethane [75-69-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	06/22/11 00:37	JKG	



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Description: 9231-SW3

Lab Sample ID: C106225-08

Received: 06/16/11 18:15

Matrix: Surface Water

Sampled: 06/15/11 14:21

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.60	U	ug/L	1	0.60	1.0	1	EPA 8260B	06/22/11 00:37	JKG	
Xylenes (Total) [1330-20-7] ^	2.1	U	ug/L	1	2.1	3.0	5	EPA 8260B	06/22/11 00:37	JKG	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
4-Bromofluorobenzene	48	1	50.0	96 %	51-122	1F21018	EPA 8260B	06/22/11 00:37	JKG	
Dibromofluoromethane	57	1	50.0	114 %	68-117	1F21018	EPA 8260B	06/22/11 00:37	JKG	
Toluene-d8	50	1	50.0	100 %	69-110	1F21018	EPA 8260B	06/22/11 00:37	JKG	



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Description: 9231-SW3

Lab Sample ID: C106225-08

Received: 06/16/11 18:15

Matrix: Surface Water

Sampled: 06/15/11 14:21

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	06/20/11 10:54	VLO	
Arsenic [7440-38-2] ^	2.80	U	ug/L	1	2.80	10.0	10	EPA 6010C	06/21/11 10:28	JDH	
Barium [7440-39-3] ^	259		ug/L	1	1.00	10.0	100	EPA 6010C	06/21/11 10:28	JDH	
Beryllium [7440-41-7] ^	0.216	J	ug/L	1	0.100	1.00	1	EPA 6010C	06/21/11 10:28	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	06/21/11 10:28	JDH	
Chromium [7440-47-3] ^	1.00	U	ug/L	1	1.00	10.0	10	EPA 6010C	06/21/11 10:28	JDH	
Cobalt [7440-48-4] ^	1.10	U	ug/L	1	1.10	10.0	10	EPA 6010C	06/21/11 10:28	JDH	
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	06/21/11 10:28	JDH	
Lead [7439-92-1] ^	1.96	J	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:28	JDH	
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	06/21/11 10:28	JDH	
Selenium [7782-49-2] ^	1.15	J	ug/L	1	0.830	1.00	10	EPA 6020A	06/20/11 10:54	VLO	
Selenium [7782-49-2] ^	2.70	U	ug/L	1	2.70	10.0	10	EPA 6010C	06/21/11 10:28	JDH	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:28	JDH	
Thallium [7440-28-0] ^	0.110	U	ug/L	1	0.110	1.00	5.5	EPA 6020A	06/20/11 10:54	VLO	
Vanadium [7440-62-2] ^	1.75	J	ug/L	1	1.40	10.0	25	EPA 6010C	06/21/11 10:28	JDH	
Zinc [7440-66-6] ^	7.08	J	ug/L	1	3.80	10.0	10	EPA 6010C	06/21/11 10:28	JDH	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.



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Description: Field Blank

Lab Sample ID: C106225-09

Received: 06/16/11 18:15

Matrix: Water

Sampled: 06/16/11 16:16

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Table with 11 columns: Analyte [CAS Number], Results, Flag, Units, DF, MDL, MRL, NC SWSL, Method, Analyzed, By, Notes. It lists various chemical compounds and their corresponding analytical data.



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Description: Field Blank

Lab Sample ID: C106225-09

Received: 06/16/11 18:15

Matrix: Water

Sampled: 06/16/11 16:16

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.60	U	ug/L	1	0.60	1.0	1	EPA 8260B	06/22/11 01:06	JKG	
Xylenes (Total) [1330-20-7] ^	2.1	U	ug/L	1	2.1	3.0	5	EPA 8260B	06/22/11 01:06	JKG	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
4-Bromofluorobenzene	48	1	50.0	96 %	51-122	1F21018	EPA 8260B	06/22/11 01:06	JKG	
Dibromofluoromethane	59	1	50.0	117 %	68-117	1F21018	EPA 8260B	06/22/11 01:06	JKG	
Toluene-d8	51	1	50.0	102 %	69-110	1F21018	EPA 8260B	06/22/11 01:06	JKG	



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Description: Field Blank

Lab Sample ID: C106225-09

Received: 06/16/11 18:15

Matrix: Water

Sampled: 06/16/11 16:16

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MDL</u>	<u>MRL</u>	<u>NC SWSL</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	06/17/11 15:31	JDH	



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Description: Field Blank

Lab Sample ID: C106225-09

Received: 06/16/11 18:15

Matrix: Water

Sampled: 06/16/11 16:16

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: Brent Freyer

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	06/20/11 10:58	VLO	
Arsenic [7440-38-2] ^	2.80	U	ug/L	1	2.80	10.0	10	EPA 6010C	06/21/11 10:30	JDH	
Barium [7440-39-3] ^	1.00	U	ug/L	1	1.00	10.0	100	EPA 6010C	06/21/11 10:30	JDH	
Beryllium [7440-41-7] ^	0.100	U	ug/L	1	0.100	1.00	1	EPA 6010C	06/21/11 10:30	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	06/21/11 10:30	JDH	
Chromium [7440-47-3] ^	1.00	U	ug/L	1	1.00	10.0	10	EPA 6010C	06/21/11 10:30	JDH	
Cobalt [7440-48-4] ^	1.10	U	ug/L	1	1.10	10.0	10	EPA 6010C	06/21/11 10:30	JDH	
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	06/21/11 10:30	JDH	
Iron [7439-89-6] ^	22.0	U	ug/L	1	22.0	50.0	300	EPA 6010C	06/21/11 10:30	JDH	
Lead [7439-92-1] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:30	JDH	
Manganese [7439-96-5] ^	1.10	U	ug/L	1	1.10	10.0	50	EPA 6010C	06/21/11 10:30	JDH	
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	06/21/11 10:30	JDH	
Selenium [7782-49-2] ^	0.830	U	ug/L	1	0.830	1.00	10	EPA 6020A	06/20/11 10:58	VLO	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:30	JDH	
Thallium [7440-28-0] ^	0.110	U	ug/L	1	0.110	1.00	5.5	EPA 6020A	06/20/11 10:58	VLO	
Vanadium [7440-62-2] ^	1.40	U	ug/L	1	1.40	10.0	25	EPA 6010C	06/21/11 10:30	JDH	
Zinc [7440-66-6] ^	3.80	U	ug/L	1	3.80	10.0	10	EPA 6010C	06/21/11 10:30	JDH	

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Description: Trip Blank

Lab Sample ID: C106225-10

Received: 06/16/11 18:15

Matrix: Water

Sampled: 06/15/11 10:03

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: ENCO

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.90	U	ug/L	1	0.90	1.0	5	EPA 8260B	06/22/11 01:36	JKG	
1,1,1-Trichloroethane [71-55-6] ^	0.65	U	ug/L	1	0.65	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.75	U	ug/L	1	0.75	1.0	3	EPA 8260B	06/22/11 01:36	JKG	
1,1,2-Trichloroethane [79-00-5] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
1,1-Dichloroethane [75-34-3] ^	0.080	U	ug/L	1	0.080	1.0	5	EPA 8260B	06/22/11 01:36	JKG	
1,1-Dichloroethene [75-35-4] ^	0.60	U	ug/L	1	0.60	1.0	5	EPA 8260B	06/22/11 01:36	JKG	
1,2,3-Trichloropropane [96-18-4] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	06/22/11 01:36	JKG	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
1,2-Dichlorobenzene [95-50-1] ^	0.11	U	ug/L	1	0.11	1.0	5	EPA 8260B	06/22/11 01:36	JKG	
1,2-Dichloroethane [107-06-2] ^	0.47	U	ug/L	1	0.47	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
1,2-Dichloropropane [78-87-5] ^	0.59	U	ug/L	1	0.59	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
1,4-Dichlorobenzene [106-46-7] ^	0.79	U	ug/L	1	0.79	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	06/22/11 01:36	JKG	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	06/22/11 01:36	JKG	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	06/22/11 01:36	JKG	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	06/22/11 01:36	JKG	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	06/22/11 01:36	JKG	
Benzene [71-43-2] ^	0.68	U	ug/L	1	0.68	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
Bromochloromethane [74-97-5] ^	0.87	U	ug/L	1	0.87	1.0	3	EPA 8260B	06/22/11 01:36	JKG	
Bromodichloromethane [75-27-4] ^	0.75	U	ug/L	1	0.75	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
Bromoform [75-25-2] ^	0.68	U	ug/L	1	0.68	1.0	3	EPA 8260B	06/22/11 01:36	JKG	
Bromomethane [74-83-9] ^	0.58	U	ug/L	1	0.58	1.0	10	EPA 8260B	06/22/11 01:36	JKG	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	06/22/11 01:36	JKG	
Carbon tetrachloride [56-23-5] ^	0.69	U	ug/L	1	0.69	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
Chlorobenzene [108-90-7] ^	0.74	U	ug/L	1	0.74	1.0	3	EPA 8260B	06/22/11 01:36	JKG	
Chloroethane [75-00-3] ^	0.75	U	ug/L	1	0.75	1.0	10	EPA 8260B	06/22/11 01:36	JKG	
Chloroform [67-66-3] ^	0.70	U	ug/L	1	0.70	1.0	5	EPA 8260B	06/22/11 01:36	JKG	
Chloromethane [74-87-3] ^	0.55	U	ug/L	1	0.55	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
cis-1,2-Dichloroethene [156-59-2] ^	0.72	U	ug/L	1	0.72	1.0	5	EPA 8260B	06/22/11 01:36	JKG	
cis-1,3-Dichloropropene [10061-01-5] ^	0.075	U	ug/L	1	0.075	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
Dibromochloromethane [124-48-1] ^	0.63	U	ug/L	1	0.63	1.0	3	EPA 8260B	06/22/11 01:36	JKG	
Dibromomethane [74-95-3] ^	0.90	U	ug/L	1	0.90	1.0	10	EPA 8260B	06/22/11 01:36	JKG	
Ethylbenzene [100-41-4] ^	0.62	U	ug/L	1	0.62	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	06/22/11 01:36	JKG	
Methylene chloride [75-09-2] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
Styrene [100-42-5] ^	0.053	U	ug/L	1	0.053	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
Tetrachloroethene [127-18-4] ^	0.73	U	ug/L	1	0.73	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0	NE	EPA 8260B	06/22/11 01:36	JKG	
Toluene [108-88-3] ^	0.85	U	ug/L	1	0.85	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
trans-1,2-Dichloroethene [156-60-5] ^	0.12	U	ug/L	1	0.12	1.0	5	EPA 8260B	06/22/11 01:36	JKG	
trans-1,3-Dichloropropene [10061-02-6] ^	0.50	U	ug/L	1	0.50	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	06/22/11 01:36	JKG	
Trichloroethene [79-01-6] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
Trichlorofluoromethane [75-69-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	06/22/11 01:36	JKG	



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Description: Trip Blank

Lab Sample ID: C106225-10

Received: 06/16/11 18:15

Matrix: Water

Sampled: 06/15/11 10:03

Work Order: C106225

Project: WCA- Material Recovery, LLC

Sampled By: ENCO

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.60	U	ug/L	1	0.60	1.0	1	EPA 8260B	06/22/11 01:36	JKG	
Xylenes (Total) [1330-20-7] ^	2.1	U	ug/L	1	2.1	3.0	5	EPA 8260B	06/22/11 01:36	JKG	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
4-Bromofluorobenzene	49	1	50.0	97 %	51-122	1F21018	EPA 8260B	06/22/11 01:36	JKG	
Dibromofluoromethane	59	1	50.0	119 %	68-117	1F21018	EPA 8260B	06/22/11 01:36	JKG	QS-03
Toluene-d8	52	1	50.0	103 %	69-110	1F21018	EPA 8260B	06/22/11 01:36	JKG	

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QUALITY CONTROL

Volatile Organic Compounds by GCMS - Quality Control

Batch 1F21018 - EPA 5030B_MS

Blank (1F21018-BLK1)

Prepared: 06/21/2011 10:55 Analyzed: 06/21/2011 18:42

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1,1,2-Tetrachloroethane	0.90	U	1.0	ug/L							
1,1,1-Trichloroethane	0.65	U	1.0	ug/L							
1,1,2,2-Tetrachloroethane	0.75	U	1.0	ug/L							
1,1,2-Trichloroethane	0.66	U	1.0	ug/L							
1,1-Dichloroethane	0.080	U	1.0	ug/L							
1,1-Dichloroethene	0.60	U	1.0	ug/L							
1,2,3-Trichloropropane	0.72	U	1.0	ug/L							
1,2-Dibromo-3-chloropropane	0.48	U	1.0	ug/L							
1,2-Dibromoethane	0.66	U	1.0	ug/L							
1,2-Dichlorobenzene	0.11	U	1.0	ug/L							
1,2-Dichloroethane	0.47	U	1.0	ug/L							
1,2-Dichloropropane	0.59	U	1.0	ug/L							
1,4-Dichlorobenzene	0.79	U	1.0	ug/L							
2-Butanone	1.3	U	5.0	ug/L							
2-Hexanone	0.88	U	5.0	ug/L							
4-Methyl-2-pentanone	1.1	U	5.0	ug/L							
Acetone	1.2	U	5.0	ug/L							
Acrylonitrile	3.5	U	10	ug/L							
Benzene	0.68	U	1.0	ug/L							
Bromochloromethane	0.87	U	1.0	ug/L							
Bromodichloromethane	0.75	U	1.0	ug/L							
Bromoform	0.68	U	1.0	ug/L							
Bromomethane	0.58	U	1.0	ug/L							
Carbon disulfide	1.5	U	5.0	ug/L							
Carbon tetrachloride	0.69	U	1.0	ug/L							
Chlorobenzene	0.74	U	1.0	ug/L							
Chloroethane	0.75	U	1.0	ug/L							
Chloroform	0.70	U	1.0	ug/L							
Chloromethane	0.55	U	1.0	ug/L							
cis-1,2-Dichloroethene	0.72	U	1.0	ug/L							
cis-1,3-Dichloropropene	0.075	U	1.0	ug/L							
Dibromochloromethane	0.63	U	1.0	ug/L							
Dibromomethane	0.90	U	1.0	ug/L							
Ethylbenzene	0.62	U	1.0	ug/L							
Iodomethane	1.7	U	5.0	ug/L							
Methylene chloride	0.14	U	1.0	ug/L							
Styrene	0.053	U	1.0	ug/L							
Tetrachloroethene	0.73	U	1.0	ug/L							
Tetrahydrofuran	0.80	U	1.0	ug/L							
Toluene	0.85	U	1.0	ug/L							
trans-1,2-Dichloroethene	0.12	U	1.0	ug/L							
trans-1,3-Dichloropropene	0.50	U	1.0	ug/L							
trans-1,4-Dichloro-2-butene	0.70	U	1.0	ug/L							
Trichloroethene	0.72	U	1.0	ug/L							
Trichlorofluoromethane	0.66	U	1.0	ug/L							
Vinyl acetate	0.95	U	5.0	ug/L							
Vinyl chloride	0.60	U	1.0	ug/L							
Xylenes (Total)	2.1	U	3.0	ug/L							



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QUALITY CONTROL

Volatile Organic Compounds by GCMS - Quality Control

Batch 1F21018 - EPA 5030B_MS

Blank (1F21018-BLK1) Continued

Prepared: 06/21/2011 10:55 Analyzed: 06/21/2011 18:42

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Surrogate: 4-Bromofluorobenzene	48			ug/L	50.0		96	51-122			
Surrogate: Dibromofluoromethane	53			ug/L	50.0		107	68-117			
Surrogate: Toluene-d8	49			ug/L	50.0		99	69-110			

LCS (1F21018-BS1)

Prepared: 06/21/2011 10:55 Analyzed: 06/21/2011 19:12

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	22		1.0	ug/L	20.0		111	75-133			
Benzene	21		1.0	ug/L	20.0		107	81-134			
Chlorobenzene	21		1.0	ug/L	20.0		104	83-117			
Toluene	23		1.0	ug/L	20.0		113	71-118			
Trichloroethene	22		1.0	ug/L	20.0		108	75-115			

Matrix Spike (1F21018-MS1)

Prepared: 06/21/2011 10:55 Analyzed: 06/21/2011 19:42

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	25		1.0	ug/L	20.0	0.60 U	126	75-133			
Benzene	23		1.0	ug/L	20.0	0.68 U	114	81-134			
Chlorobenzene	22		1.0	ug/L	20.0	0.74 U	112	83-117			
Toluene	24		1.0	ug/L	20.0	0.85 U	121	71-118			QM-07
Trichloroethene	23		1.0	ug/L	20.0	0.72 U	117	75-115			QM-07

Matrix Spike Dup (1F21018-MSD1)

Prepared: 06/21/2011 10:55 Analyzed: 06/21/2011 20:11

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	22		1.0	ug/L	20.0	0.60 U	111	75-133	12	20	
Benzene	21		1.0	ug/L	20.0	0.68 U	104	81-134	9	17	
Chlorobenzene	20		1.0	ug/L	20.0	0.74 U	99	83-117	12	16	
Toluene	22		1.0	ug/L	20.0	0.85 U	108	71-118	11	17	
Trichloroethene	21		1.0	ug/L	20.0	0.72 U	103	75-115	13	18	

Metals by EPA 6000/7000 Series Methods - Quality Control

Batch 1F17007 - EPA 245.1

Blank (1F17007-BLK1)

Prepared: 06/17/2011 08:40 Analyzed: 06/17/2011 14:40

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	0.170	U	0.200	ug/L							

LCS (1F17007-BS1)

Prepared: 06/17/2011 08:40 Analyzed: 06/17/2011 14:43

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	4.93		0.200	ug/L	5.00		99	85-115			



QUALITY CONTROL

Metals by EPA 6000/7000 Series Methods - Quality Control

Batch 1F17007 - EPA 245.1

Matrix Spike (1F17007-MS1)

Prepared: 06/17/2011 08:40 Analyzed: 06/17/2011 14:54

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	4.77		0.200	ug/L	5.00	0.170 U	95	85-115			

Matrix Spike Dup (1F17007-MSD1)

Prepared: 06/17/2011 08:40 Analyzed: 06/17/2011 14:57

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	5.13		0.200	ug/L	5.00	0.170 U	103	85-115	7	15	

Post Spike (1F17007-PS1)

Prepared: 06/17/2011 08:40 Analyzed: 06/17/2011 15:00

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	4.91		0.200	ug/L	5.00	0.170 U	98	75-125			

Metals (total recoverable) by EPA 6000/7000 Series Methods - Quality Control

Batch 1F17023 - EPA 3005A

Blank (1F17023-BLK1)

Prepared: 06/17/2011 11:02 Analyzed: 06/21/2011 09:50

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	2.80	U	10.0	ug/L							
Barium	1.00	U	10.0	ug/L							
Beryllium	0.100	U	1.00	ug/L							
Cadmium	0.360	U	1.00	ug/L							
Chromium	1.00	U	10.0	ug/L							
Cobalt	1.10	U	10.0	ug/L							
Copper	1.60	U	10.0	ug/L							
Iron	22.0	U	50.0	ug/L							
Lead	1.90	U	10.0	ug/L							
Manganese	1.10	U	10.0	ug/L							
Nickel	1.80	U	10.0	ug/L							
Selenium	2.70	U	10.0	ug/L							
Silver	1.90	U	10.0	ug/L							
Vanadium	1.40	U	10.0	ug/L							
Zinc	3.80	U	10.0	ug/L							

LCS (1F17023-BS1)

Prepared: 06/17/2011 11:02 Analyzed: 06/21/2011 09:53

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	520		10.0	ug/L	500		104	80-120			
Barium	525		10.0	ug/L	500		105	80-120			
Beryllium	265		1.00	ug/L	250		106	80-120			
Cadmium	261		1.00	ug/L	250		104	80-120			
Chromium	532		10.0	ug/L	500		106	80-120			
Cobalt	516		10.0	ug/L	500		103	80-120			
Copper	267		10.0	ug/L	250		107	80-120			



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QUALITY CONTROL

Metals (total recoverable) by EPA 6000/7000 Series Methods - Quality Control

Batch 1F17023 - EPA 3005A

LCS (1F17023-BS1) Continued

Prepared: 06/17/2011 11:02 Analyzed: 06/21/2011 09:53

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Iron	5250		50.0	ug/L	5000		105	80-120			
Lead	526		10.0	ug/L	500		105	80-120			
Manganese	264		10.0	ug/L	250		106	80-120			
Nickel	522		10.0	ug/L	500		104	80-120			
Selenium	529		10.0	ug/L	500		106	80-120			
Silver	270		10.0	ug/L	250		108	80-120			
Vanadium	269		10.0	ug/L	250		108	80-120			
Zinc	525		10.0	ug/L	500		105	80-120			

Matrix Spike (1F17023-MS1)

Prepared: 06/17/2011 11:02 Analyzed: 06/21/2011 09:58

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	542		10.0	ug/L	500	2.80 U	108	75-125			
Barium	1110		10.0	ug/L	500	597	102	75-125			
Beryllium	287		1.00	ug/L	250	4.04	113	75-125			
Cadmium	267		1.00	ug/L	250	0.360 U	107	75-125			
Chromium	542		10.0	ug/L	500	1.00 U	108	75-125			
Cobalt	548		10.0	ug/L	500	1.10 U	110	75-125			
Copper	273		10.0	ug/L	250	1.60 U	109	75-125			
Iron	5430		50.0	ug/L	5000	31.4	108	75-125			
Lead	542		10.0	ug/L	500	1.90 U	108	75-125			
Manganese	379		10.0	ug/L	250	118	104	75-125			
Nickel	533		10.0	ug/L	500	1.80 U	107	75-125			
Selenium	550		10.0	ug/L	500	2.70 U	110	75-125			
Silver	284		10.0	ug/L	250	1.90 U	114	75-125			
Vanadium	278		10.0	ug/L	250	1.40 U	111	75-125			
Zinc	540		10.0	ug/L	500	3.80 U	108	75-125			

Matrix Spike Dup (1F17023-MSD1)

Prepared: 06/17/2011 11:02 Analyzed: 06/21/2011 10:01

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	571		10.0	ug/L	500	2.80 U	114	75-125	5	20	
Barium	1130		10.0	ug/L	500	597	106	75-125	2	20	
Beryllium	296		1.00	ug/L	250	4.04	117	75-125	3	20	
Cadmium	276		1.00	ug/L	250	0.360 U	110	75-125	3	20	
Chromium	558		10.0	ug/L	500	1.00 U	112	75-125	3	20	
Cobalt	568		10.0	ug/L	500	1.10 U	114	75-125	4	20	
Copper	281		10.0	ug/L	250	1.60 U	113	75-125	3	20	
Iron	5590		50.0	ug/L	5000	31.4	111	75-125	3	20	
Lead	562		10.0	ug/L	500	1.90 U	112	75-125	4	20	
Manganese	388		10.0	ug/L	250	118	108	75-125	2	20	
Nickel	550		10.0	ug/L	500	1.80 U	110	75-125	3	20	
Selenium	570		10.0	ug/L	500	2.70 U	114	75-125	4	20	
Silver	258		10.0	ug/L	250	1.90 U	103	75-125	10	20	
Vanadium	287		10.0	ug/L	250	1.40 U	115	75-125	3	20	
Zinc	559		10.0	ug/L	500	3.80 U	112	75-125	3	20	



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QUALITY CONTROL

Metals (total recoverable) by EPA 6000/7000 Series Methods - Quality Control

Batch 1F17023 - EPA 3005A

Post Spike (1F17023-PS1)

Prepared: 06/17/2011 11:02 Analyzed: 06/21/2011 10:03

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	1.02		0.0100	mg/L	1.00	-0.000486	102	80-120			
Barium	1.62		0.0100	mg/L	1.00	0.597	102	80-120			
Beryllium	0.525		0.00100	mg/L	0.500	0.00404	104	80-120			
Cadmium	0.503		0.00100	mg/L	0.500	9.81E-5	101	80-120			
Chromium	1.03		0.0100	mg/L	1.00	0.000125	103	80-120			
Cobalt	0.993		0.0100	mg/L	1.00	-0.000345	99	80-120			
Copper	0.520		0.0100	mg/L	0.500	0.00101	104	80-120			
Iron	10.2		0.0500	mg/L	10.0	0.0314	101	80-120			
Lead	1.01		0.0100	mg/L	1.00	0.000840	101	80-120			
Manganese	0.625		0.0100	mg/L	0.500	0.118	101	80-120			
Nickel	0.997		0.0100	mg/L	1.00	0.000107	100	80-120			
Selenium	1.04		0.0100	mg/L	1.00	-0.00544	105	80-120			
Silver	0.525		0.0100	mg/L	0.500	0.000762	105	80-120			
Vanadium	0.527		0.0100	mg/L	0.500	-1.54E-5	105	80-120			
Zinc	1.01		0.0100	mg/L	1.00	0.00264	101	80-120			

Batch 1F17025 - EPA 200.8

Blank (1F17025-BLK1)

Prepared: 06/17/2011 11:10 Analyzed: 06/20/2011 09:58

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	0.220	U	2.00	ug/L							
Selenium	0.830	U	1.00	ug/L							
Thallium	0.110	U	1.00	ug/L							

LCS (1F17025-BS1)

Prepared: 06/17/2011 11:10 Analyzed: 06/20/2011 10:02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	23.3		2.00	ug/L	25.0		93	80-120			
Selenium	24.6		1.00	ug/L	25.0		98	80-120			
Thallium	23.6		1.00	ug/L	25.0		94	80-120			

Matrix Spike (1F17025-MS1)

Prepared: 06/17/2011 11:10 Analyzed: 06/20/2011 10:09

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	23.4		2.00	ug/L	25.0	0.220 U	94	80-120			
Selenium	24.1		1.00	ug/L	25.0	1.05	92	80-120			
Thallium	22.9		1.00	ug/L	25.0	0.110 U	92	80-120			

Matrix Spike Dup (1F17025-MSD1)

Prepared: 06/17/2011 11:10 Analyzed: 06/20/2011 10:13

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	24.6		2.00	ug/L	25.0	0.220 U	98	80-120	5	20	



QUALITY CONTROL

Metals (total recoverable) by EPA 6000/7000 Series Methods - Quality Control

Batch 1F17025 - EPA 200.8

Matrix Spike Dup (1F17025-MSD1) Continued

Prepared: 06/17/2011 11:10 Analyzed: 06/20/2011 10:13

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Selenium	23.5		1.00	ug/L	25.0	1.05	90	80-120	3	20	
Thallium	23.1		1.00	ug/L	25.0	0.110 U	93	80-120	0.9	20	

Post Spike (1F17025-PS1)

Prepared: 06/17/2011 11:10 Analyzed: 06/20/2011 10:17

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	23.8		2.00	ug/L	25.0	0.0190	95	80-120			
Selenium	24.2		1.00	ug/L	25.0	1.05	93	80-120			
Thallium	23.1		1.00	ug/L	25.0	-0.895	96	80-120			

Classical Chemistry Parameters - Quality Control

Batch 1F17005 - NO PREP

Blank (1F17005-BLK1)

Prepared & Analyzed: 06/17/2011 10:58

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Dissolved Solids	10000	U	10000	ug/L							

LCS (1F17005-BS1)

Prepared & Analyzed: 06/17/2011 10:58

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Dissolved Solids	300		10	mg/L	300		101	90-110			

Duplicate (1F17005-DUP1)

Prepared & Analyzed: 06/17/2011 10:58

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Dissolved Solids	280000		10000	ug/L		330000			17	10	QM-12

Duplicate (1F17005-DUP2)

Prepared & Analyzed: 06/17/2011 10:58

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Dissolved Solids	54000		10000	ug/L		110000			70	10	QR-04

Batch 1F21006 - NO PREP

Blank (1F21006-BLK1)

Prepared: 06/21/2011 08:37 Analyzed: 06/21/2011 09:21

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Alkalinity as CaCO3	12000	U	15000	ug/L							

LCS (1F21006-BS1)

Prepared: 06/21/2011 08:37 Analyzed: 06/21/2011 09:22



QUALITY CONTROL

Classical Chemistry Parameters - Quality Control

Batch 1F21006 - NO PREP

LCS (1F21006-BS1) Continued

Prepared: 06/21/2011 08:37 Analyzed: 06/21/2011 09:22

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Alkalinity as CaCO3	97		15	mg/L	100		97	80-120			

Matrix Spike (1F21006-MS1)

Prepared: 06/21/2011 08:37 Analyzed: 06/21/2011 09:25

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Alkalinity as CaCO3	39		15	mg/L	40.5	12	66	80-120			QM-05

Matrix Spike (1F21006-MS2)

Prepared: 06/21/2011 08:37 Analyzed: 06/21/2011 09:31

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Alkalinity as CaCO3	57		15	mg/L	40.5	14	106	80-120			

Matrix Spike Dup (1F21006-MSD1)

Prepared: 06/21/2011 08:37 Analyzed: 06/21/2011 09:26

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Alkalinity as CaCO3	44		15	mg/L	40.5	12	78	80-120	11	25	QM-05

Matrix Spike Dup (1F21006-MSD2)

Prepared: 06/21/2011 08:37 Analyzed: 06/21/2011 09:31

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Alkalinity as CaCO3	52		15	mg/L	40.5	14	96	80-120	8	25	

QUALITY CONTROL

Classical Chemistry Parameters - Quality Control

Batch 1F29019 - NO PREP

Blank (1F29019-BLK1)

Prepared: 06/29/2011 11:57 Analyzed: 06/29/2011 22:01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Chloride	290	U	5000	ug/L							
Sulfate	66	U	5000	ug/L							

LCS (1F29019-BS1)

Prepared: 06/29/2011 11:57 Analyzed: 06/29/2011 22:17

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Chloride	51000		5000	ug/L	50000		101	90-110			
Sulfate	51000		5000	ug/L	50000		102	90-110			

Matrix Spike (1F29019-MS1)

Prepared: 06/29/2011 11:57 Analyzed: 06/29/2011 23:22

Source: C106225-02



QUALITY CONTROL

Classical Chemistry Parameters - Quality Control

Batch 1F29019 - NO PREP

Matrix Spike (1F29019-MS1) Continued

Prepared: 06/29/2011 11:57 Analyzed: 06/29/2011 23:22

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Chloride	70000		5000	ug/L	50000	18000	104	90-110			
Sulfate	53000		5000	ug/L	50000	1100	104	90-110			

Matrix Spike Dup (1F29019-MSD1)

Prepared: 06/29/2011 11:57 Analyzed: 06/29/2011 23:38

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Chloride	69000		5000	ug/L	50000	18000	103	90-110	1	10	
Sulfate	52000		5000	ug/L	50000	1100	102	90-110	2	10	

FLAGS/NOTES AND DEFINITIONS

B	The analyte was detected in the associated method blank.
D	The sample was analyzed at dilution.
J	The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL), adjusted for actual sample preparation data and moisture content, where applicable.
U	The analyte was analyzed for but not detected to the level shown, adjusted for actual sample preparation data and moisture content, where applicable.
E	The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate.
MRL	Method Reporting Limit. The MRL is roughly equivalent to the practical quantitation limit (PQL) and is based on the low point of the calibration curve, when applicable, sample preparation factor, dilution factor, and, in the case of soil samples, moisture content.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QM-12	Precision between duplicate samples was outside acceptance limits.
QR-04	Duplicate precision outside acceptance limits due to low analyte concentration.
QS-03	Surrogate recovery outside acceptance limits



ENVIRONMENTAL CONSERVATION LABORATORIES CHAIN-OF-CUSTODY RECORD
 10775 Central Port Dr.
 Orlando, FL 32824
 (407) 826-5314 Fax (407) 850-6945

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 Page 1 of 1

Client Name: **Golder Associates, Inc. (GO007)**
 Address: **5B Oak Branch Drive Greensboro, NC 27407**
 City/ST/Zip: **Greensboro, NC 27407**
 Tel: **(336) 852-4903** Fax: **(336) 852-4904**
 Sampler(s) Name, Affiliation (Print): **Drent Freyer, Golder Associates**
 Sampler(s) Signature: *[Signature]*
 Reporting Contact: **Dusty Reedy**
 Billing Contact: **Bennis Gehle**
 Site Location / Time Zone: **W-A-16-11 / Eastern**

Project Number: **073-9602411.100**
 Project Name/Desc: **WCA- Material Recovery, LLC**
 PO # / Billing Info: **2011:**
 8260B Appendix 1, 8260B Extended

Item #	Sample ID (Field Identification)	Collection Date	Collection Time	Comp / Grab	Matrix (see codes)	Total # of Containers	Preservation (See Codes) (Combine as necessary)										Sample Comments
							Ag As, Ba, Be, Cd, Co, Cr, Cu, Fe, Mn, Ni, Pb, Sb, Se, Tl, V, Zn	Ag As, Ba, Be, Cd, Co, Cr, Cu, Ni, Pb, Sb, Se, Tl, V, Zn	Alkalinity 310 2, Chloride 300, TDS SM2540C	Hg	Sulfate 300	Requested Analytes	Requested Turnaround Times				
9231-MW1	6-15-11	1003	6	GW	5	X	X	X	X	X	X	X	X	X			
9231-MW2 (MS/MSD)	6-16-11	0951		GW	8	X	X	X	X	X	X	X	X	X			
9231-MW3	6-15-11	1055		GW	5	X	X	X	X	X	X	X	X	X			
9231-MW4	6-16-11	1028		GW	5	X	X	X	X	X	X	X	X	X			
9231-MW5	6-16-11	1213		GW	5	X	X	X	X	X	X	X	X	X	Filtered sample		
9231-SW1	6-15-11	1541		SW	4	X				X							
9231-SW2	6-15-11	1430		SW	4	X				X							
9231-SW3	6-15-11	1421		SW	4	X				X							
Field Blank	6-16-11	1616		WA	4	X	X	X	X								
Trip Blank				WA	2	X											

Sample Kit Prepared By: *[Signature]* Date/Time: **5-26-11**
 Relinquished By: *[Signature]* Date/Time: **6-16-11 1800**
 Comments/Special Reporting Requirements: **please provide level 2 data report**
 Relinquished By: *[Signature]* Date/Time: **6-16-11 1815**
 Relinquished By: *[Signature]* Date/Time: **6-16-11 1815**
 Condition Upon Receipt: Acceptable Unacceptable
 Cooler # & Temps on Receipt: **C-813 2.80C**

Matrix: GW-Groundwater SO-Sol DW-Drinking Water SE-Sediment SW-Surface Water WW-Wastewater A-Air O-Other (detail in comments)
 Preservation: H-HCl M-HNO3 S-H2SO4 NO-NaOH O-Other (detail in comments)
 Note: All samples submitted to ENCO Labs are in accordance with the terms and conditions listed on the reverse of this form, unless prior written agreements exist.



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C106225

ENCO Cary

Sample Receipt Conditions

Client: Golder Associates, Inc. (GO007)	Lab Project Mgr: Stephanie Franz
Project: WCA- Material Recovery, LLC	Project Number: 073-9602411.100
PO #: 2011:	

Report To:

Golder Associates, Inc. (GO007)
Dusty Reedy
5B Oak Branch Drive
Greensboro, NC 27407
Phone: (336) 852-4903
Fax: (336) 852-4904

Invoice To:

Waste Corporation of America - Wake (WA033)
Dennis Gehle
2600 Brown-Field Road
Raleigh, NC 27610
Phone : (919) 838-6973
Fax:

Received By:	James G. Thadani	Date Received:	16-Jun-11 18:15
Logged In By:	James G. Thadani	Date Logged In:	16-Jun-11 18:44

Work Order Comments:

C-813 received at 2.8°C

Containers Intact	Y	Containers Properly Preserved	Y	Proper Containers Received	Y	All Samples in PreLog Received	Y	COC/Labels Agree	Y
Custody Seals Intact	Y	Volatile Containers Preserved	Y	Volatile Containers Headspace Free	Y	Aqueous Samples Checked for Residual Cl	N	Received On Ice	Y



Project Name: WCA – Material Recovery C&D Landfill

Project Reference Number: 0739-602411.100

Sampling Event Date: June 15-16, 2011

Review Date: July 1, 2011

Initials: DYR

Report #: C016225

Person(s) performing the review are to initial each item on this form as acknowledgement of data acceptance, or as acknowledgement of a review issue. In the case of the latter, a brief explanation should follow the applicable item.

Golder Associates Inc. has reviewed the laboratory certificates of analysis, chain-of-custody form, and laboratory provided sample group quality assurance and quality control data for the above referenced sample group to identify potential bias or inaccuracy, in general accordance with the following United States Environmental Protection Agency documents:

- Region III Modifications to Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration, September 1994;
- Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses, April 1993; and
- Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses, July 1998.

COMPLIANCE ANALYTE LIST(S) (check all that apply)

NC Closed Facility List (.500 Rules)

NC C & D List (New Rules)

NC Appendix I

NC Appendix I + Detects

NC Appendix II

NC Subtitle D Leachate List

Other: _____

1.0 CHAIN OF CUSTODY (COC) REVIEW

COC was properly signed by all parties.

Correct project name and number are on the form.

Sample receipt condition at laboratory was acceptable.

Each sample and blank submitted for analysis appears in the report.



2.0 SAMPLE HOLDING TIMES

Holding times for extraction and/or analysis were met for each analytical Method (see below for reference).

Notes: _____

Review Criteria		
Method	Analytes	Holding Time
SW-846 Method 8260 and 8011	VOCs	14 days
SW-846 Methods 8270, 8080, 8081, 8082, and 8151	SVOCs, PCBs, pesticides and herbicides	7 days for extraction, 40 days from extraction for analysis
SW-846 Methods 6000 and 7000 Series	Metals except mercury	6 months (no temperature requirements)
SW-846 Method 7470	Mercury	28 days
SW-846 Method 376.1	Sulfide	7 days
SW-846 Method 9010	Cyanide	14 days
EPA Method 300	Nitrate/Sulfate	48 hours/28 days
EPA Method 405.1	BOD	48 hours
EPA Method 410.4	COD	28 days
EPA Method 365.4	Phosphorous	28 days

3.0 LABORATORY QUALITY CONTROL REVIEW

Laboratory analyzed at least one internal blank for each method, where applicable.

Laboratory blank is interference-free.

Surrogate recoveries are provided for each analytical method, where applicable.

Surrogate recoveries for each method are within the acceptable limits (i.e., at least 50% of the surrogates were within range).

➤ **Surrogate spike recovery of dibromofluoromethane was outside control limits for MW-5 and trip blank.**

MS/MSD/LCS data results are provided for each analytical method.

MS/MSD/LCS recoveries for each method are within the acceptable limits (i.e., at least 1 of the 3 were within range).

➤ ***The spike recoveries of toluene and trichloroethene were outside of control limits for the MS sample. The spike recoveries of alkalinity were outside control limits for the MS and MSD samples. The QC batches were approved based on acceptable LCS recovery of these analytes.***



- *The precision between duplicate analyses for TDS was outside of control limits for one of the duplicates reported. The QC batch was approved based on acceptable LCS recovery of this analyte.*

4.0 ANALYTE LISTS/METHODS

- The proper number of constituents are present for each analyte list as identified above (including detects where applicable).
- Proper EPA SW-846 analytical methods were used for analysis.

5.0 DATA REPORTING

- All analytical reporting associated with the event was performed by the contracted lab.
- Trip, field and/or equipment, and laboratory blank results have all been reported. All detects for blanks are listed below by constituent. All laboratory method blanks, if any, have been 'flagged' with a 'B' where detected in other samples as appropriate and a laboratory narrative was provided. If the sample was flagged by the laboratory and is not within 5X of the concentration in the blank (or 10X for commonly detected laboratory contaminants-acetone, methylene chloride and phthalates), list below with explanation if flags should be removed. If flags need to be added for samples, also list below.
- It is clear from the laboratory report that samples have or have not been diluted during analysis, and if the samples have been diluted, the result is reported as a multiple of the dilution (e.g., a sample diluted 10x resulting in an analytical detection of 1.0 should be reported as 10). Those that have been diluted are listed below with the dilution factor.
- The report provides the reporting limit for each constituent.
- The results were reported at or below their proper reporting limits (i.e., MDLs with SWSLs reported). Those that are not reported correctly are listed below (by constituent) with the proper reporting limit listed beside them. State if the reporting limit error is due to dilutions.
- No organic constituents were reported above their respective SWSLs, and no inorganic or organic constituents were reported above their respective NC 2L Drinking Water Standards/GWPS in wells, or field/equipment/trip blanks, or above applicable surface water standards in surface water points.

Organic SWSL exceedances:

MW-3: Tetrachloroethene @ 1.4 ug/L (SWSL = 1 ug/L)



Trichloroethene @ 3.0 ug/L (SWSL = 1 ug/L)
Trichlorofluoromethane @ 2.6 ug/L (SWSL = 1 ug/L)

Inorganic/Organic NC2L or GWPS exceedances:

MW-1: Cobalt @ 6.17 ug/L (J) (GWPS = 1 ug/L)
Manganese @ 68.2 ug/L (NC 2L = 50 ug/L)
MW-2: Beryllium @ 4.04 ug/L (GWPS = 4 ug/L)
Manganese @ 118 ug/L (NC 2L = 50 ug/L)
MW-3: Barium @ 1170 ug/L (NC 2L = 700 ug/L)
Cobalt @ 1.50 ug/L (J) (GWPS = 1 ug/L)
Manganese @ 142 ug/L (NC 2L = 50 ug/L)
Tetrachloroethene @ 1.9 ug/L (NC 2L = 0.7 ug/L)
Trichloroethene @ 4.6 ug/L (NC 2L = 3 ug/L)
MW-4: Manganese @ 106 ug/L (NC 2L = 50 ug/L)
MW-5: Manganese @ 157 ug/L (NC 2L = 50 ug/L)
Iron @ 9750 ug/L (NC 2L = 300 ug/L)
Vanadium @ 2.41 ug/L (J) (GWPS = 0.3 ug/L)

No inorganic and organic constituents were detected in a well or surface water point at concentrations outside of their historical range (more than 5X previous concentrations or first-time detections).

First-time detections:

➤ **Tetrahydrofuran in MW-3**

Other report issues/Communications with laboratory/etc.:

APPENDIX C
STATISTICAL EVALUATION WORKSHEETS & SUMMARY TABLES

Summary of Statistical Analysis
WCA-Material Recovery, LLC Construction and Demolition Landfill, Permit No. 92-31
Wake County, North Carolina

June 2011								
Detected Monitoring Constituent/Analytes	Reporting Units	Statistical Evaluation Method		Prediction Interval	MW-2	MW-3	MW-4	MW-5
Barium	ug/L	Interwell	Upper Prediction Limit	772	597	1170	110	37.4 J
		Intrawell MW-3	Upper Tolerance Limit	7379				
Beryllium	ug/L	Interwell	Upper Prediction Limit	1.47	4.04	2.95	1.26	0.757 J
		Intrawell MW-2	Upper Tolerance Limit	4.85				

Notes:

1. Shaded values represent apparent statistical significant increases (SSIs) over background concentrations.
2. Statistical worksheets are provided as Appendix C.
3. ug/L = micrograms per liter
4. J = estimated concentration below the Solid Waste Section Limit
5. ND = Not detected above laboratory detection limit

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024011.100
 Date: 7/1/11

Analyte: Barium					Quantitation
Sample No.	Sample Date	Location	Concentration (ug/L)		Limit (ug/L)
1	08/07/02	MW-1	ND		500
2	06/16/03	MW-1	ND		500
3	12/16/03	MW-1	160		500
4	06/16/04	MW-1	ND		500
5	12/16/04	MW-1	ND		500
6	06/14/05	MW-1	ND		500
7	12/27/05	MW-1	ND		500
8	06/21/06	MW-1	ND		500
9	12/13/06	MW-1	217		100
10	06/29/07	MW-1	269		100
11	12/13/07	MW-1	417		100
12	06/19/08	MW-1	426		100
13	12/02/08	MW-1	488		100
14	06/11/09	MW-1	502		100
15	12/10/09	MW-1	489		100
16	06/15/10	MW-1	359		100
17	12/09/10	MW-1	433		100
18	05/25/11	MW-1	447		100

Number of Data 18
 Number of Truncated Data 7
 Percentage of Truncated Data 39%
 Upper Prediction Interval: 772 ug/L

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024011.100
 Date: 1/4/11

Probability Plots to determine the distribution of Barium

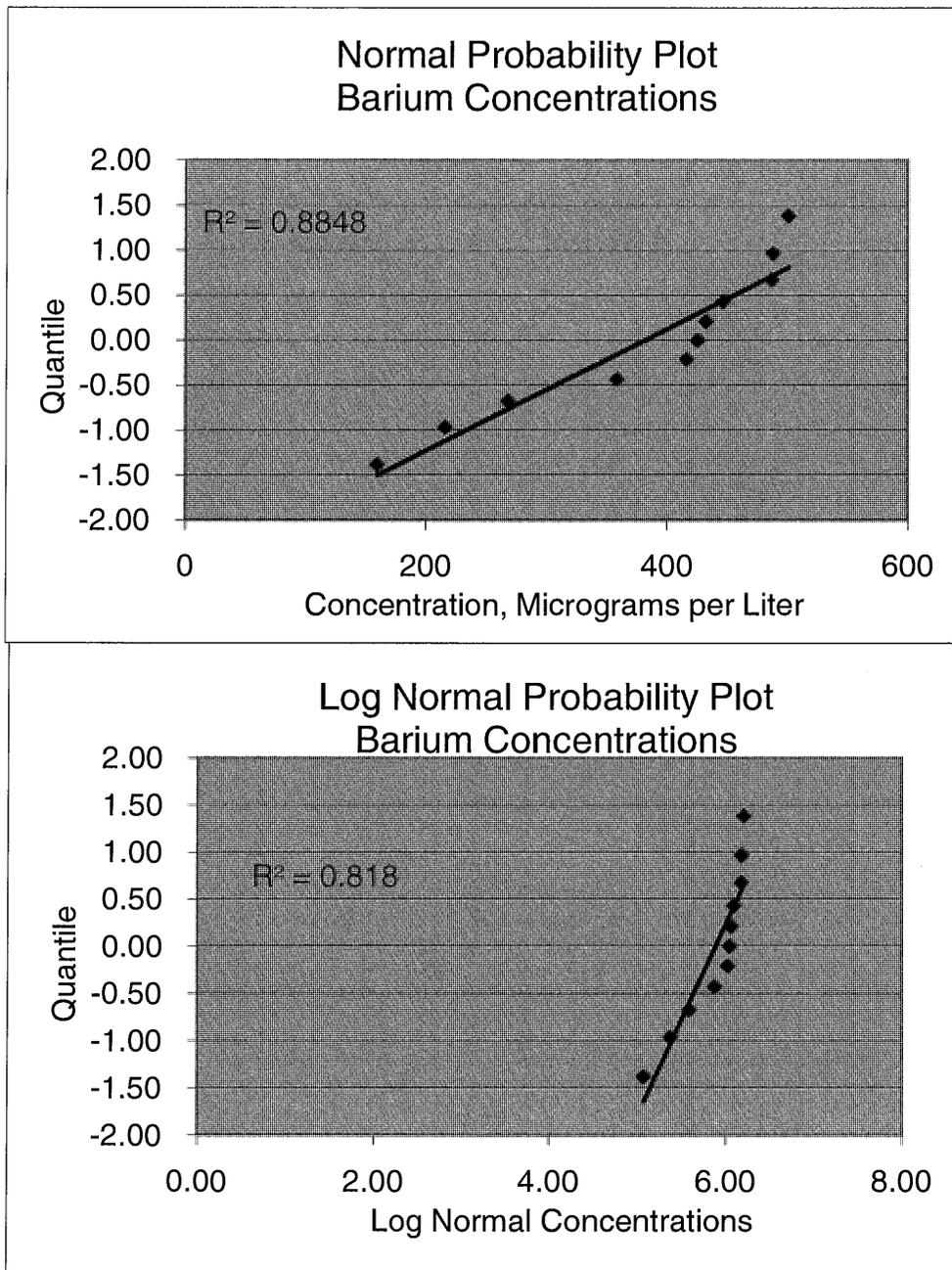
Complete the following table where:

i = ordered value of sample, arranged from smallest to largest
 $X(i)$ = sample values arranged from smallest to largest
 $\text{LN}[X(i)]$ = Natural Log Value of sample concentrations arranged from smallest to largest
 $[i/(n+1)]$ = Cumulative probability
 n = number of samples = 11

$X(i)$	$\text{LN}[X(i)]$	i	Rank	$[i/(n+1)]$	Quantiles
160	5.08	1	1	0.083	-1.38
217	5.38	2	2	0.167	-0.97
269	5.59	3	3	0.250	-0.67
359	5.88	4	4	0.333	-0.43
417	6.03	5	5	0.417	-0.21
426	6.05	6	6	0.500	0.00
433	6.07	7	7	0.583	0.21
447	6.10	8	8	0.667	0.43
488	6.19	9	9	0.750	0.67
489	6.19	10	10	0.833	0.97
502	6.22	11	11	0.917	1.38

Project Name: Material Recovery, LLC C&D Landfill
Project No: 739-6024011.100
Date: 01/04/11

Probability Plots to determine the distribution of Barium



Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 1/4/11

Shapiro Wilk Test Statistic (W) for normality of total Barium

Complete the following table where

- i = ordered value of sample, arranged from smallest to largest
- X(i) = sample values arranged from smallest to largest
- X(n-i+1) = sample values arranged from largest to smallest
- A(n-i+1) = coefficient from table A-1, Statistical Analysis of Ground-Water Data at RCRA Facilities
- B(i) = summation of (X(n-i+1)-X(i))A(n-i+1)

i	X(i)	X(n-i+1)	X(n-i+1) - X(i)	A(n-i+1)	B(i)
1	160.00	502.00	342.00	0.5601	191.55
2	217.00	489.00	272	0.3315	90.17
3	269.00	488.00	219	0.226	49.49
4	359.00	447.00	88	0.1429	12.58
5	417.00	433.00	16	0.0695	1.11
6	426.00	426.00	0	0	0.00
7	433.00	417.00			
8	447.00	359.00			
9	488.00	269.00			
10	489.00	217.00			
11	502.00	160.00			

The test statistic W can be found using:

$$W = \text{SQR}[B/(SD \times \text{SQRT}(n-1))]$$

where: B = summation of (X(n-i+1)-X(i))A(n-i+1) = 344.90
 SD = standard deviation of the data group = 116.99
 n = number of samples = 11
 W = 0.869

Compare this value to the critical value in Table A-2 of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance (Draft) July, 1992, to determine if the data is normally distributed.

From Table A-2 with (n) samples and a 95% confidence level, the critical value is

W(crit) = 0.85
 and the calculated W = 0.869

Therefore the data set is Normal

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 1/4/11

Determination of reported background value as an outlier

Analyte: Barium

Background Data

Sample No.	Sample Date	Location	Concentration (ug/l)	Quantitation Limit (ug/l)
1	08/07/02	MW-1	ND	500
2	06/16/03	MW-1	ND	500
3	12/16/03	MW-1	160	500
4	06/16/04	MW-1	ND	500
5	12/16/04	MW-1	ND	500
6	06/14/05	MW-1	ND	500
7	12/27/05	MW-1	ND	500
8	06/21/06	MW-1	ND	500
9	12/13/06	MW-1	217	100
10	06/29/07	MW-1	269	100
11	12/13/07	MW-1	417	100
12	06/19/08	MW-1	426	100
13	12/02/08	MW-1	488	100
14	06/11/09	MW-1	502	100
15	12/10/09	MW-1	489	100
16	06/15/10	MW-1	359	100
17	12/09/10	MW-1	433	100
18	05/25/11	MW-1	447	100

mean = 382.455
 STD = 116.994

Note: All concentrations are micrograms per liter

Using the data listed above, form the statistic Tn:

$$Tn = (Xn - \text{mean}) / \text{STD}$$

where: Xn = largest observed sample value
 mean = mean of the background values
 STD = standard deviation of the background values

For Xn = 502.000
 mean = 382.455
 STD = 116.994

Tn = 1.022

From Table 8 included in the Staistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Interim Final Guidance, the critical value for the given sample group is

Number of samples = 18
Tc = 2.504

Since Tc > Tn, the sample result is not considered to be an outlier



Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 1/4/11

Aitchison's Adjustment for Barium

Background Values (positive detects only)

Sample No.	Sample Date	Location	Concentration (ug/l)
1	08/07/02	MW-1	ND
2	06/16/03	MW-1	ND
3	12/16/03	MW-1	160
4	06/16/04	MW-1	ND
5	12/16/04	MW-1	ND
6	06/14/05	MW-1	ND
7	12/27/05	MW-1	ND
8	06/21/06	MW-1	ND
9	12/13/06	MW-1	217
10	06/29/07	MW-1	269
11	12/13/07	MW-1	417
12	06/19/08	MW-1	426
13	12/02/08	MW-1	488
14	06/11/09	MW-1	502
15	12/10/09	MW-1	489
16	06/15/10	MW-1	359
17	12/09/10	MW-1	433
18	05/25/11	MW-1	447

Mean of detected values = 382.45
 Standard Deviation of detected values = 116.99

The adjusted mean can be found using

$$M(a) = (1-d/n) \times M$$

where: d = number non- detected values = 7
 n = total number samples = 18
 M = mean detected values = 382.45

M(a) = 233.72

The adjusted standard deviation squared may be found using

$$STD(a) = (n-(d+1)S)/n-1 + d(n-d)MM/n(n-1)$$

where: n = total number samples = 18
 d = number non-detected values = 7
 S = std deviation of detected values squared = 13687.67
 MM = mean of detected values squared = 146271.48

STD(a) = 44858.45

and the adjusted standard deviation is then

S(a) = SQRT(STD(a)) = 211.80



Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 1/4/11

Parametric Prediction Interval for Aitchison's adjusted data

Analyte: Barium

Background Data

Sample No.	Sample Date	Location	Concentration (ug/l)	Quantitation Limit (ug/l)
1	08/07/02	MW-1	ND	500
2	06/16/03	MW-1	ND	500
3	12/16/03	MW-1	160	500
4	06/16/04	MW-1	ND	500
5	12/16/04	MW-1	ND	500
6	06/14/05	MW-1	ND	500
7	12/27/05	MW-1	ND	500
8	06/21/06	MW-1	ND	500
9	12/13/06	MW-1	217	100
10	06/29/07	MW-1	269	100
11	12/13/07	MW-1	417	100
12	06/19/08	MW-1	426	100
13	12/02/08	MW-1	488	100
14	06/11/09	MW-1	502	100
15	12/10/09	MW-1	489	100
16	06/15/10	MW-1	359	100
17	12/09/10	MW-1	433	100
18	05/25/11	MW-1	447	100

Note: All sample concentrations are micrograms per liter

The background mean and standard deviation were modified using Aitchison's Adjustment.
 The adjusted mean and standard deviation are as follows:

the adjusted mean and standard deviation are

adjusted mean = 233.72
 adjusted standard deviation = 211.80

Using the background data, the upper Prediction Limit can be determined using:

Upper Prediction Limit = (Mean Conc) + t(n-1,k,.95) x (Std Dev) x SQRT(1/m+1/n)

where: Mean Conc = mean concentration background samples
 t(n-1k,.95) = Bonferroni t-statistic from table 1, with
 n-1 = degrees of freedom (number of samples - 1)
 k = number of downgradient samples per event
 .95 = confidence interval
 Std Dev = standard deviation of background samples
 m = number independent samples from each sampling point
 n = number of background samples

For: Mean Conc = 233.722
 Std Dev = 211.798
 t(n-1,k,.95)*sqrt(1/m+1/n) = 2.540
 k = 4
 m = 1
 n = 18

UPL = 772 ug/L

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 1/4/11

Parametric Tolerance Interval for Aitchison's adjusted data

Analyte: Barium

Background Data

Sample No.	Sample Date	Location	Concentration (ug/l)	Quantitation Limit (ug/l)
1	08/07/02	MW-1	ND	500
2	06/16/03	MW-1	ND	500
3	12/16/03	MW-1	160	500
4	06/16/04	MW-1	ND	500
5	12/16/04	MW-1	ND	500
6	06/14/05	MW-1	ND	500
7	12/27/05	MW-1	ND	500
8	06/21/06	MW-1	ND	500
9	12/13/06	MW-1	217	100
10	06/29/07	MW-1	269	100
11	12/13/07	MW-1	417	100
12	06/19/08	MW-1	426	100
13	12/02/08	MW-1	488	100
14	06/11/09	MW-1	502	100
15	12/10/09	MW-1	489	100
16	06/15/10	MW-1	359	100
17	12/09/10	MW-1	433	100
18	05/25/11	MW-1	447	100

Note: All sample concentrations are micrograms per liter

The background mean and standard deviation were modified using Aitchison's Adjustment. The adjusted mean and standard deviation are as follows:

The adjusted mean and standard deviation are

adjusted mean = 233.72
 adjusted standard deviation = 211.80

Using the background data, the upper Tolerance Limit can be determined using

Upper Tolerance Limit = (Mean Concentration) + K x (Standard Deviation Samples)

where: K = factor for constructing one sided normal tolerance limit
 taken from table 4-2, page 87, Statistical Methods for Groundwater Monitoring, Gibbons, 1994
 n = number of background samples

For: K = 2.453
 n = 18

UTL = 753 ug/L



Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024011.100
 Date: 7/1/11

Analyte: Barium (Intra-Well MW-3)					Quantitation
Sample No.	Sample Date	Location	Concentration (ug/L)		Limit (ug/L)
1	08/07/02	MW-3	4000		500
2	06/16/03	MW-3	3100		500
3	12/16/03	MW-3	1200		500
4	06/16/04	MW-3	1500		500
5	12/16/04	MW-3	3100		500
6	06/14/05	MW-3	2600		500
7	12/27/05	MW-3	5700		500
8	06/21/06	MW-3	4690		500
9	12/13/06	MW-3	6510		100
10	06/29/07	MW-3	3140		100
11	12/13/07	MW-3	5640		100
12	06/19/08	MW-3	3750		100
13	12/02/08	MW-3	3130		100
14	06/11/09	MW-3	2380		100
15	12/10/09	MW-3	1970		100
16	06/15/10	MW-3	1100		100
17	12/09/10	MW-3	987		100

Number of Data 17
 Number of Truncated Data 0
 Percentage of Truncated Data 0%
 Upper Tolerance Interval: **7379 ug/L**

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024011.100
 Date: 7/1/11

Probability Plots to determine the distribution of Barium (Intra-Well MW-3)

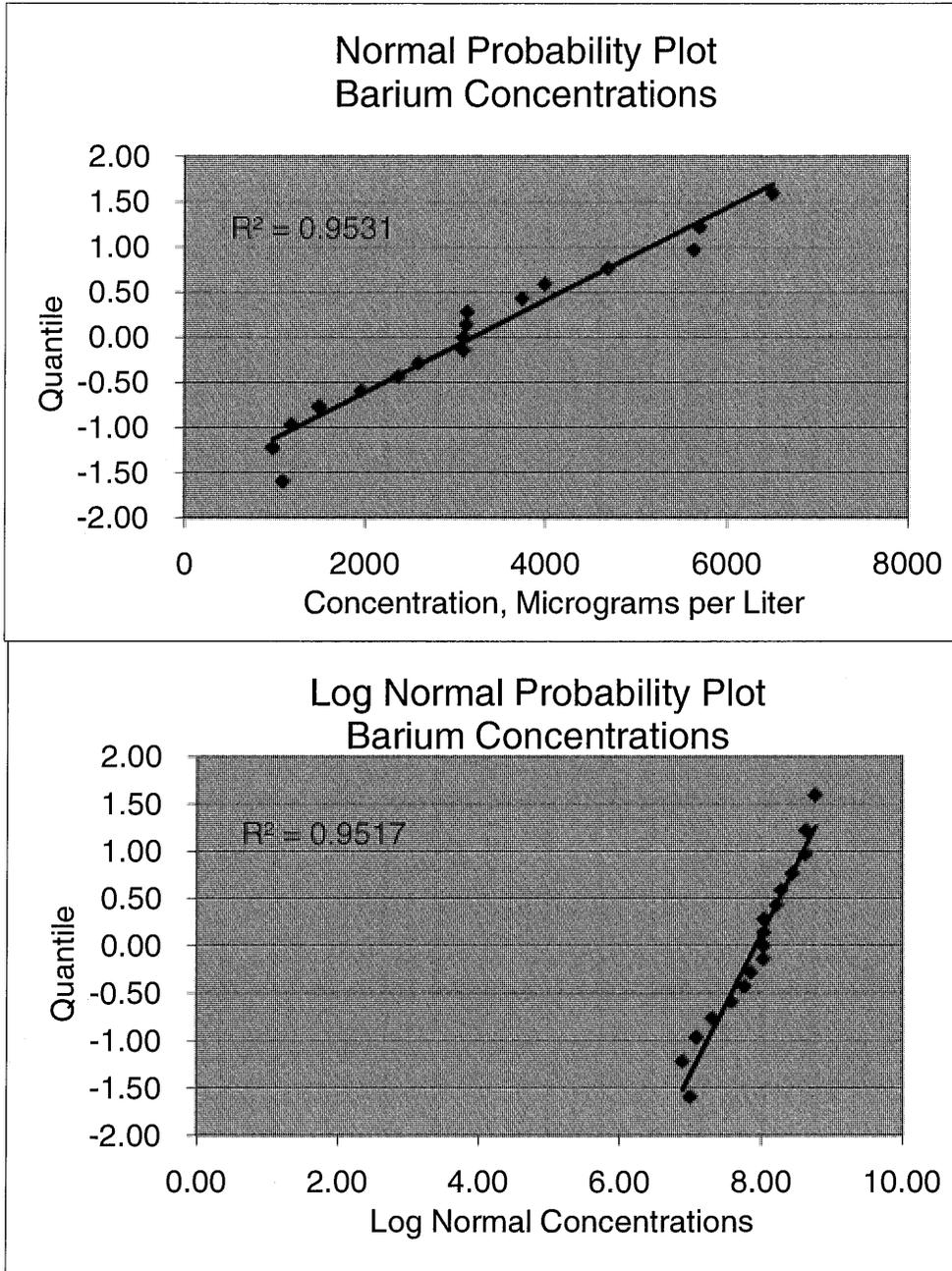
Complete the following table where:

- i = ordered value of sample, arranged from smallest to largest
- X(i) = sample values arranged from smallest to largest
- LN[X(i)] = Natural Log Value of sample concentrations arranged from smallest to largest
- [i/(n+1)] = Cumulative probability
- n = number of samples = 17

X(i)	LN[X(i)]	i	Rank	[Rank/(n+1)]	Quantiles
1100	7.00	1	1	0.056	-1.59
987	6.89	2	2	0.111	-1.22
1200	7.09	3	3	0.167	-0.97
1500	7.31	4	4	0.222	-0.76
1970	7.59	5	5	0.278	-0.59
2380	7.77	6	6	0.333	-0.43
2600	7.86	7	7	0.389	-0.28
3100	8.04	8	8	0.444	-0.14
3100	8.04	9	9	0.500	0.00
3130	8.05	10	10	0.556	0.14
3140	8.05	11	11	0.611	0.28
3750	8.23	12	12	0.667	0.43
4000	8.29	13	13	0.722	0.59
4690	8.45	14	14	0.778	0.76
5640	8.64	15	15	0.833	0.97
5700	8.65	16	16	0.889	1.22
6510	8.78	17	17	0.944	1.59

Project Name: Material Recovery, LLC C&D Landfill
Project No: 739-6024011.100
Date: 07/01/11

Probability Plots to determine the distribution of Barium (Intra-Well MW-3)



Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 1/4/11

Shapiro Wilk Test Statistic (W) for normality of total Barium (Intra-Well MW-3)

Complete the following table where

- i = ordered value of sample, arranged from smallest to largest
- X(i) = sample values arranged from smallest to largest
- X(n-i+1) = sample values arranged from largest to smallest
- A(n-i+1) = coefficient from table A-1, Statistical Analysis of Ground-Water Data at RCRA Facilities
- B(i) = summation of (X(n-i+1)-X(i))A(n-i+1)

i	X(i)	X(n-i+1)	X(n-i+1) - X(i)	A(n-i+1)	B(i)
1	1100.00	6510.00	5410.00	0.4968	2687.69
2	987.00	5700.00	4713	0.3273	1542.56
3	1200.00	5640.00	4440	0.254	1127.76
4	1500.00	4690.00	3190.00	0.1988	634.17
5	1970.00	4000.00	2030	0.1524	309.37
6	2380.00	3750.00	1370	0.1109	151.93
7	2600.00	3140.00	540	0.0725	39.15
8	3100.00	3130.00	30	0.0359	1.08
9	3100.00	3100.00	0	0	0.00
10	3130.00	3100.00			
11	3140.00	2600.00			
12	3750.00	2380.00			
13	4000.00	1970.00			
14	4690.00	1500.00			
15	5640.00	1200.00			
16	5700.00	1100.00			
17	6510.00	987.00			

The test statistic W can be found using:

$$W = \text{SQR}[B / (\text{SD} \times \text{SQRT}(n-1))]$$

where: B = summation of (X(n-i+1)-X(i))A(n-i+1) = 6493.72
 SD = standard deviation of the data group = 1678.78
 n = number of samples = 17

W = 0.935

Compare this value to the critical value in Table A-2 of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance (Draft) July, 1992, to determine if the data is normally distributed.

From Table A-2 with (n) samples and a 95% confidence level, the critical value is

W(crit) = 0.892
 and the calculated W = 0.935

Therefore the data set is Normal



Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 1/4/11

Determination of reported background value as an outlier

Analyte: Barium (Intra-Well MW-3)

Background Data

Sample No.	Sample Date	Location	Concentration		Quantitation
			(ug/l)		Limit (ug/l)
1	08/07/02	MW-3	4000		500
2	06/16/03	MW-3	3100		500
3	12/16/03	MW-3	1200		500
4	06/16/04	MW-3	1500		500
5	12/16/04	MW-3	3100		500
6	06/14/05	MW-3	2600		500
7	12/27/05	MW-3	5700		500
8	06/21/06	MW-3	4690		500
9	12/13/06	MW-3	6510		100
10	06/29/07	MW-3	3140		100
11	12/13/07	MW-3	5640		100
12	06/19/08	MW-3	3750		100
13	12/02/08	MW-3	3130		100
14	06/11/09	MW-3	2380		100
15	12/10/09	MW-3	1970		100
16	06/15/10	MW-3	1100		100
17	12/09/10	MW-3	987		100

mean = 3205.706
 STD = 1678.781

Note: All concentrations are micrograms per liter

Using the data listed above, form the statistic Tn:

$$Tn = (Xn - \text{mean}) / \text{STD}$$

where: Xn = largest observed sample value
 mean = mean of the background values
 STD = standard deviation of the background values

For Xn = 6510.000
 mean = 3205.706
 STD = 1678.781

$$Tn = 1.968$$

From Table 8 included in the Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Interim Final Guidance, the critical value for the given sample group is

Number of samples = 17
 Tc = 2.475

Since Tc > Tn, the sample result is not considered to be an outlier

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 1/4/11

Parametric Prediction Interval for normally distributed data

Analyte: Barium

Background Data

Sample No.	Sample Date	Location	Concentration (ug/l)	Quantitation Limit (ug/l)
1	08/07/02	MW-3	4000.00	500.00
2	06/16/03	MW-3	3100.00	500.00
3	12/16/03	MW-3	1200.00	500.00
4	06/16/04	MW-3	1500.00	500.00
5	12/16/04	MW-3	3100.00	500.00
6	06/14/05	MW-3	2600.00	500.00
7	12/27/05	MW-3	5700.00	500.00
8	06/21/06	MW-3	4690.00	500.00
9	12/13/06	MW-3	6510.00	100.00
10	06/29/07	MW-3	3140.00	100.00
11	12/13/07	MW-3	5640.00	100.00
12	06/19/08	MW-3	3750.00	100.00
13	12/02/08	MW-3	3130.00	100.00
14	06/11/09	MW-3	2380.00	100.00
15	12/10/09	MW-3	1970.00	100.00
16	06/15/10	MW-3	1100.00	100.00
17	12/09/10	MW-3	987.00	100.00

Note: All sample concentrations are micrograms per liter

Using the background data, the upper Prediction Limit can be determined using:

$$\text{Upper Prediction Limit} = (\text{Mean Conc}) + t(n-1, k, .95) \times (\text{Std Dev}) \times \text{SQRT}(1/m+1/n)$$

where: Mean Conc = mean concentration background samples
 t(n-1, k, .95) = Bonferroni t-statistic with
 n-1 = degrees of freedom (number of samples - 1)
 k = number of downgradient samples per event
 .95 = confidence interval
 Std Dev = standard deviation of background samples
 m = number independent samples from each sampling point
 n = number of background samples

For: Mean Conc = 3205.706
 Std Dev = 1678.781
 $t(n-1, k, .95) \times \text{sqrt}(1/m+1/n) = 1.810$
 k = 1
 m = 1
 n = 17

UPL = 6244 ug/L



Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 1/4/11

Parametric Tolerance Interval for normally distributed data

Analyte: Barium

Background Data

Sample No.	Sample Date	Location	Concentration (ug/l)	Quantitation Limit (ug/l)
1	08/07/02	MW-3	4000.00	500.00
2	06/16/03	MW-3	3100.00	500.00
3	12/16/03	MW-3	1200.00	500.00
4	06/16/04	MW-3	1500.00	500.00
5	12/16/04	MW-3	3100.00	500.00
6	06/14/05	MW-3	2600.00	500.00
7	12/27/05	MW-3	5700.00	500.00
8	06/21/06	MW-3	4690.00	500.00
9	12/13/06	MW-3	6510.00	100.00
10	06/29/07	MW-3	3140.00	100.00
11	12/13/07	MW-3	5640.00	100.00
12	06/19/08	MW-3	3750.00	100.00
13	12/02/08	MW-3	3130.00	100.00
14	06/11/09	MW-3	2380.00	100.00
15	12/10/09	MW-3	1970.00	100.00
16	06/15/10	MW-3	1100.00	100.00
17	12/09/10	MW-3	987.00	100.00

Note: All sample concentrations are micrograms per liter

Using the background data, the upper Tolerance Limit can be determined using:

Upper Tolerance Limit = (Mean Concentration) + K x (Standard Deviation Samples)

where: Mean Conc = mean concentration background samples
 K = factor for constructing one sided normal tolerance limit
 taken from table 4-2, page 87, Statistical Methods for Groundwater
 Monitoring, Gibbons, 1994
 n = number of background samples
 STDS = Standard Deviation Samples

For: n = 17
 K = 2.486
 Mean Conc = 3205.71
 STDS = 1678.78
 UTL = 7379 ug/L

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024011.100
 Date: 7/1/11

Analyte: Beryllium					Quantitation
Sample No.	Sample Date	Location	Concentration (ug/L)		Limit (ug/L)
1	06/29/07	MW-1	ND		2
2	12/13/07	MW-1	ND		1
3	06/19/08	MW-1	ND		1
4	12/02/08	MW-1	0.40	J	1
5	06/11/09	MW-1	1.04		1
6	12/10/09	MW-1	0.633	J	1
7	06/15/10	MW-1	0.435	J	1
8	12/09/10	MW-1	0.531	J	1
9	06/15/11	MW-1	0.592	J	1

Number of Data 9
 Number of Truncated Data 3
 Percentage of Truncated Data 33%
 Upper Prediction Interval: 1.47 ug/L

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024011.100
 Date: 7/1/11

Probability Plots to determine the distribution of Beryllium

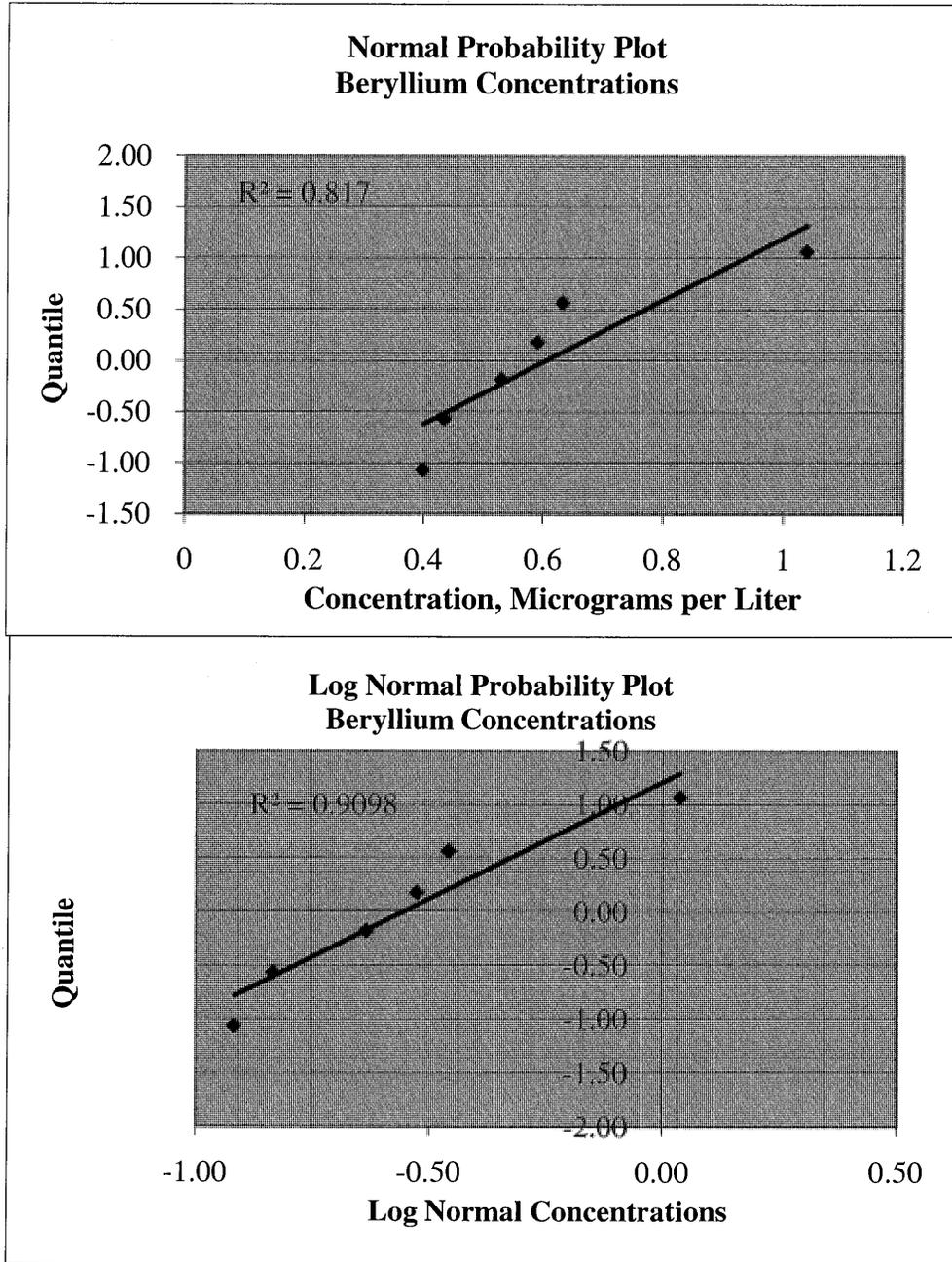
Complete the following table where:

- i = ordered value of sample, arranged from smallest to largest
- $X(i)$ = sample values arranged from smallest to largest
- $\text{LN}[X(i)]$ = Natural Log Value of sample concentrations arranged from smallest to largest
- $[i/(n+1)]$ = Cumulative probability
- n = number of samples = 6

$X(i)$	$\text{LN}[X(i)]$	i	Rank	$[i/(n+1)]$	Quantiles
0.4	-0.92	1	1	0.143	-1.07
0.435	-0.83	2	2	0.286	-0.57
0.531	-0.63	3	3	0.429	-0.18
0.592	-0.52	4	4	0.571	0.18
0.633	-0.46	5	5	0.714	0.57
1.04	0.04	6	6	0.857	1.07

Project Name: Material Recovery, LLC C&D Landfill
Project No: 739-6024011.100
Date: 07/01/11

Probability Plots to determine the distribution of Beryllium



Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 7/15/10

Shapiro Wilk Test Statistic (W) for normality of total Beryllium

Complete the following table where

- i = ordered value of sample, arranged from smallest to largest
- X(i) = sample values arranged from smallest to largest
- X(n-i+1) = sample values arranged from largest to smallest
- A(n-i+1) = coefficient from table A-1, Statistical Analysis of Ground-Water Data at RCRA Facilities
- B(i) = summation of (X(n-i+1)-X(i))A(n-i+1)

i	X(i)	X(n-i+1)	X(n-i+1) - X(i)	A(n-i+1)	B(i)
1	0.40	1.04	0.64	0.6431	0.41
2	0.44	0.63	0.20	0.2816	0.06
3	0.53	0.59	0.06	0.0875	0.01
4	0.59	0.53			
5	0.63	0.44			
6	1.04	0.40			

The test statistic W can be found using:

$$W = \text{SQR}[B / (\text{SD} \times \text{SQRT}(n-1))]$$

where:

B = summation of (X(n-i+1)-X(i))A(n-i+1)	=	0.47
SD = standard deviation of the data group	=	0.23
n = number of samples	=	6
W =		0.838

Compare this value to the critical value in Table A-2 of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance (Draft) July, 1992, to determine if the data is normally distributed.

From Table A-2 with (n) samples and a 95% confidence level, the critical value is

W(crit) = 0.788
 and the calculated W = 0.838

Therefore the data set is Normal

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 7/15/10

Determination of reported background value as an outlier

Analyte: Beryllium

Background Data

Sample No.	Sample Date	Location	Concentration (ug/l)	Quantitation Limit (ug/l)
1	06/29/07	MW-1	ND	2
2	12/13/07	MW-1	ND	1
3	06/19/08	MW-1	ND	1
4	12/02/08	MW-1	0.400	1
5	06/11/09	MW-1	1.040	1
6	12/10/09	MW-1	0.633	1
7	06/15/10	MW-1	0.435	1
8	12/09/10	MW-1	0.531	1
9	06/15/11	MW-1	0.592	1
			mean =	0.605
			STD =	0.231

Note: All concentrations are micrograms per liter

Using the data listed above, form the statistc Tn:

$$T_n = (X_n - \text{mean}) / \text{STD}$$

where: Xn = largest observed sample value
 mean = mean of the background values
 STD = standard deviation of the background values

For Xn = 1.040
 mean = 0.605
 STD = 0.231

$$T_n = 1.883$$

From Table 8 included in the Staistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Interim Final Guidance, the critical value for the given sample group is

Number of samples = 9
Tc = 2.11

Since Tc > Tn, the sample result is not considered to be an outlier

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 7/15/10

Aitchison's Adjustment for Beryllium

Background Values (positive detects only)

Sample No.	Sample Date	Location	Concentration (ug/l)
1	06/29/07	MW-1	ND
2	12/13/07	MW-1	ND
3	06/19/08	MW-1	ND
4	12/02/08	MW-1	0.4
5	06/11/09	MW-1	1.04
6	12/10/09	MW-1	0.633
7	06/15/10	MW-1	0.435
8	12/09/10	MW-1	0.531
9	06/15/11	MW-1	0.592

Mean of detected values = 0.61
 Standard Deviation of detected values = 0.23

The adjusted mean can be found using

$$M(a) = (1-d/n) \times M$$

where: d = number non- detected values = 3
 n = total number samples = 9
 M = mean detected values = 0.61

M(a) = 0.40

The adjusted standard deviation squared may be found using

$$STD(a) = (n-(d+1)S)/n-1 + d(n-d)MM/n(n-1)$$

where: n = total number samples = 9
 d = number non-detected values = 3
 S = std deviation of detected values squared = 0.05
 MM = mean of detected values squared = 0.37

STD(a) = 0.12

and the adjusted standard deviation is then

$$S(a) = \text{SQRT}(STD(a)) = 0.35$$

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 7/15/10

Parametric Prediction Interval for Aitchison's adjusted data

Analyte: Barium

Background Data

Sample No.	Sample Date	Location	Concentration (ug/l)	Quantitation Limit (ug/l)
1	06/29/07	MW-1	ND	2.00
2	12/13/07	MW-1	ND	1.00
3	06/19/08	MW-1	ND	1.00
4	12/02/08	MW-1	0.40	1.00
5	06/11/09	MW-1	1.04	1.00
6	12/10/09	MW-1	0.63	1.00
7	06/15/10	MW-1	0.44	1.00
8	12/09/10	MW-1	0.53	1.00
9	06/15/11	MW-1	0.59	1.00

Note: All sample concentrations are micrograms per liter

The background mean and standard deviation were modified using Aitchison's Adjustment. The adjusted mean and standard deviation are as follows:

the adjusted mean and standard deviation are

adjusted mean = 0.40
 adjusted standard deviation = 0.35

Using the background data, the upper Prediction Limit can be determined using:

$$\text{Upper Prediction Limit} = (\text{Mean Conc}) + t(n-1, k, .95) \times (\text{Std Dev}) \times \text{SQRT}(1/m+1/n)$$

where: Mean Conc = mean concentration background samples
 $t(n-1, k, .95)$ = Bonferroni t-statistic from table 1, with
 n-1 = degrees of freedom (number of samples - 1)
 k = number of downgradient samples per event
 .95 = confidence interval
 Std Dev = standard deviation of background samples
 m = number independent samples from each sampling point
 n = number of background samples

For: Mean Conc = 0.403
 Std Dev = 0.353
 $t(n-1, k, .95) \times \text{sqrt}(1/m+1/n) = 3.010$
 k = 4
 m = 1
 n = 9

UPL = 1.47 ug/L

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 7/15/10

Parametric Tolerance Interval for Aitchison's adjusted data

Analyte: Barium

Background Data

Sample No.	Sample Date	Location	Quantitation	
			Concentration (ug/l)	Limit (ug/l)
1	06/29/07	MW-1	ND	2.00
2	12/13/07	MW-1	ND	1.00
3	06/19/08	MW-1	ND	1.00
4	12/02/08	MW-1	0.40	1.00
5	06/11/09	MW-1	1.04	1.00
6	12/10/09	MW-1	0.63	1.00
7	06/15/10	MW-1	0.44	1.00
8	12/09/10	MW-1	0.53	1.00
9	06/15/11	MW-1	0.59	1.00

Note: All sample concentrations are micrograms per liter

The background mean and standard deviation were modified using Aitchison's Adjustment. The adjusted mean and standard deviation are as follows:

The adjusted mean and standard deviation are

adjusted mean = 0.40
 adjusted standard deviation = 0.35

Using the background data, the upper Tolerance Limit can be determined using

$$\text{Upper Tolerance Limit} = (\text{Mean Concentration}) + K \times (\text{Standard Deviation Samples})$$

where: K = factor for constructing one sided normal tolerance limit taken from table 4-2, page 87, Statistical Methods for Groundwater Monitoring, Gibbons, 1994
 n = number of background samples

For: K = 3.031
 n = 9

$$\text{UTL} = 1.47 \text{ ug/L}$$

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024011.100
 Date: 7/1/11

Analyte: Beryllium (MW-2 Intrawell)		Concentration			Quantitation
Sample No.	Sample Date	Location	(ug/L)		Limit (ug/L)
1	06/29/07	MW-2	3.50		1
2	12/13/07	MW-2	3.00		1
3	06/19/08	MW-2	3.50		1
4	12/02/08	MW-2	2.80		1
5	06/11/09	MW-2	4.02		1
6	12/10/09	MW-2	3.31		1
7	06/15/10	MW-2	4.03		1
8	12/09/10	MW-2	3.55		1

Number of Data 8
 Number of Truncated Data 0
 Percentage of Truncated Data 0%
 Upper Tolerance Interval: **4.85 ug/L**

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024011.100
 Date: 7/1/11

Probability Plots to determine the distribution of Beryllium (MW-2 Intrawell)

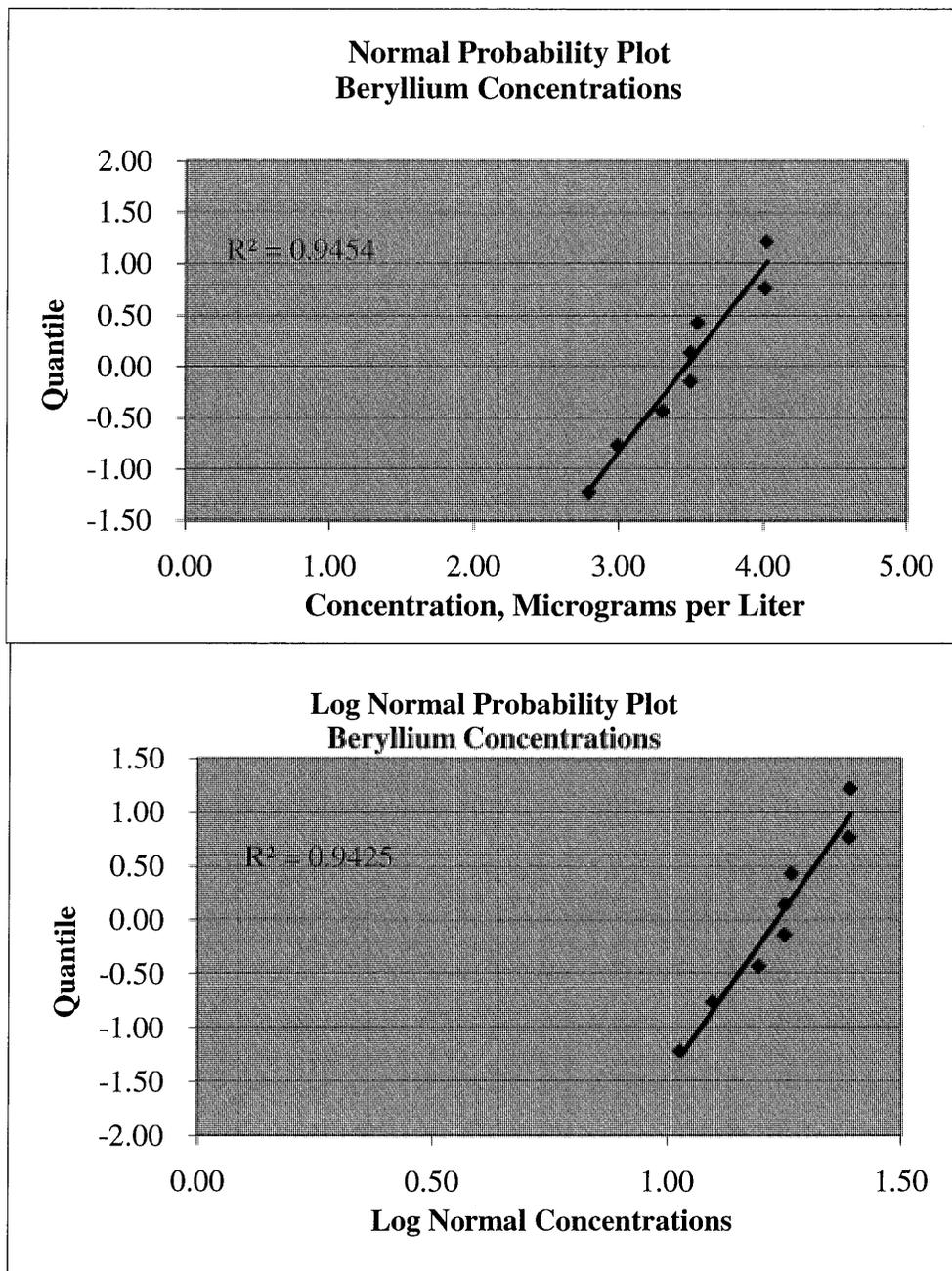
Complete the following table where:

- i = ordered value of sample, arranged from smallest to largest
- X(i) = sample values arranged from smallest to largest
- LN[X(i)] = Natural Log Value of sample concentrations arranged from smallest to largest
- [i/(n+1)] = Cumulative probability
- n = number of samples = 8

X(i)	LN[X(i)]	i	Rank	[Rank/(n+1)]	Quantiles
2.80	1.03	1	1	0.111	-1.22
3	1.10	2	2	0.222	-0.76
3.31	1.20	3	3	0.333	-0.43
3.5	1.25	4	4	0.444	-0.14
3.5	1.25	5	5	0.556	0.14
3.55	1.27	6	6	0.667	0.43
4.02	1.39	7	7	0.778	0.76
4.03	1.39	8	8	0.889	1.22

Project Name: Material Recovery, LLC C&D Landfill
Project No: 739-6024011.100
Date: 07/01/11

Probability Plots to determine the distribution of Beryllium (MW-2 Intrawe



Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 7/15/10

Determination of reported background value as an outlier

Analyte: Beryllium (MW-2 Intrawell)

Background Data

Sample No.	Sample Date	Location	Concentration (ug/l)	Quantitation Limit (ug/l)
1	06/29/07	MW-2	3.5	1
2	12/13/07	MW-2	3	1
3	06/19/08	MW-2	3.5	1
4	12/02/08	MW-2	2.8	1
5	06/11/09	MW-2	4.02	1
6	12/10/09	MW-2	3.31	1
7	06/15/10	MW-2	4.03	1
8	12/09/10	MW-2	3.55	1

mean = 3.464
 STD = 0.434

Note: All concentrations are micrograms per liter

Using the data listed above, form the statistic Tn:

$$Tn = (Xn - \text{mean}) / \text{STD}$$

where: Xn = largest observed sample value
 mean = mean of the background values
 STD = standard deviation of the background values

For Xn = 4.030
 mean = 3.464
 STD = 0.434

Tn = 1.304

From Table 8 included in the Staistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Interim Final Guidance, the critical value for the given sample group is

Number of samples = 8
Tc = 2.032

Since Tc > Tn, the sample result is not considered to be an outlier

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 7/15/10

Shapiro Wilk Test Statistic (W) for normality of total Beryllium (MW-2 Intrawell)

Complete the following table where

- i = ordered value of sample, arranged from smallest to largest
- X(i) = sample values arranged from smallest to largest
- X(n-i+1) = sample values arranged from largest to smallest
- A(n-i+1) = coefficient from table A-1, Statistical Analysis of Ground-Water Data at RCRA Facilities
- B(i) = summation of (X(n-i+1)-X(i))A(n-i+1)

i	X(i)	X(n-i+1)	X(n-i+1) - X(i)	A(n-i+1)	B(i)
1	2.80	4.03	1.23	0.6052	0.74
2	3.00	4.02	1.02	0.3164	0.32
3	3.31	3.55	0.24	0.1743	0.04
4	3.50	3.50	0	0.0561	0.00
5	3.50	3.50			
6	3.55	3.31			
7	4.02	3.00			
8	4.03	2.80			

The test statistic W can be found using:

$$W = \text{SQR}[B / (\text{SD} \times \text{SQRT}(n-1))]$$

where:

B = summation of (X(n-i+1)-X(i))A(n-i+1)	=	1.11
SD = standard deviation of the data group	=	0.43
n = number of samples	=	8

W = 0.932

Compare this value to the critical value in Table A-2 of Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance (Draft) July, 1992, to determine if the data is normally distributed.

From Table A-2 with (n) samples and a 95% confidence level, the critical value is

W(crit) = 0.818
 and the calculated W = 0.932

Therefore the data set is Normal

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 7/15/10

Parametric Prediction Interval for normally distributed data

Analyte: Barium

Background Data

Sample No.	Sample Date	Location	Quantitation	
			Concentration (ug/l)	Limit (ug/l)
1	06/29/07	MW-2	3.50	1.00
2	12/13/07	MW-2	3.00	1.00
3	06/19/08	MW-2	3.50	1.00
4	12/02/08	MW-2	2.80	1.00
5	06/11/09	MW-2	4.02	1.00
6	12/10/09	MW-2	3.31	1.00
7	06/15/10	MW-2	4.03	1.00
8	12/09/10	MW-2	3.55	1.00

Note: All sample concentrations are micrograms per liter

Using the background data, the upper Prediction Limit can be determined using:

$$\text{Upper Prediction Limit} = (\text{Mean Conc}) + t(n-1, k, .95) \times (\text{Std Dev}) \times \text{SQRT}(1/m + 1/n)$$

where: Mean Conc = mean concentration background samples
 $t(n-1, k, .95)$ = Bonferroni t-statistic with
 $n-1$ = degrees of freedom (number of samples - 1)
 k = number of downgradient samples per event
 $.95$ = confidence interval
 Std Dev = standard deviation of background samples
 m = number independent samples from each sampling point
 n = number of background samples

For: Mean Conc = 3.464
 Std Dev = 0.434
 $t(n-1, k, .95) \times \text{sqrt}(1/m + 1/n) = 2.080$
 $k = 1$
 $m = 1$
 $n = 8$
UPL = 4.37 ug/L

Project Name: Material Recovery, LLC C&D Landfill
 Project No: 739-6024010.100
 Date: 7/15/10

Parametric Tolerance Interval for normally distributed data

Analyte: Barium

Background Data

Sample No.	Sample Date	Location	Quantitation	
			Concentration (ug/l)	Limit (ug/l)
1	06/29/07	MW-2	3.50	1.00
2	12/13/07	MW-2	3.00	1.00
3	06/19/08	MW-2	3.50	1.00
4	12/02/08	MW-2	2.80	1.00
5	06/11/09	MW-2	4.02	1.00
6	12/10/09	MW-2	3.31	1.00
7	06/15/10	MW-2	4.03	1.00
8	12/09/10	MW-2	3.55	1.00

Note: All sample concentrations are micrograms per liter

Using the background data, the upper Tolerance Limit can be determined using:

$$\text{Upper Tolerance Limit} = (\text{Mean Concentration}) + K \times (\text{Standard Deviation Samples})$$

where: Mean Conc = mean concentration background samples
 K = factor for constructing one sided normal tolerance limit taken from table 4-2, page 87, Statistical Methods for Groundwater Monitoring, Gibbons, 1994
 n = number of background samples
 STDS = Standard Deviation Samples

For: n = 8
 K = 3.188
 Mean Conc = 3.46
 STDS = 0.43

UTL = 4.85 ug/L

APPENDIX D
GROUNDWATER MONITORING WELL MAINTENANCE RECORDS

GROUNDWATER MONITORING WELL MAINTENANCE RECORD

FACILITY: WCA - Material Recovery, LLC **PERMIT NO.:** 92-31

LOCATION: MW-1 **DATE:** June 15-16, 2011

INSPECTOR: N. Rathjen **COMPANY:** Golder Associates NC, Inc.

1. Is surface water diverted away from the well head? YES

2. Is the concrete pad still intact and free of cracks? YES

3. Has surface water runoff undercut the concrete pad? NO

4. Is the outer casing still secure and locked? YES

5. Is the well identification tag present and is it legible? YES

5a. Does the well identification tag provide the following information:

• The well identification number? YES

• Drilling contractor and registration number? YES

• Total well depth? YES

• Depth to screen? YES

• A warning that the well is not for water supply and that the ground water may contain hazardous materials? YES

6. Is the grout between the inner and outer well casings all the way to the ground surface? YES

7. Is the inner casing firmly grouted in place? YES

8. Are the inner and outer casings upright and unobstructed? YES

9. Is water collecting in the outer casing? Does a weep hole need to be bored in the outer casing to provide drainage? NO

10. Is the monitoring well accessible by a four-wheel drive vehicle? YES

11. Have brush and weeds been trimmed so that the well is easy to locate and access? YES

12. Does the inner well casing have a vented cap? YES

13. Is the monitoring well visible and adequately protected from moving equipment? YES

GROUNDWATER MONITORING WELL MAINTENANCE RECORD

FACILITY: WCA - Material Recovery, LLC **PERMIT NO.:** 92-31

LOCATION: MW-2 **DATE:** June 15-16, 2011

INSPECTOR: N. Rathjen **COMPANY:** Golder Associates NC, Inc.

1. Is surface water diverted away from the well head? YES

2. Is the concrete pad still intact and free of cracks? YES

3. Has surface water runoff undercut the concrete pad? NO

4. Is the outer casing still secure and locked? YES

5. Is the well identification tag present and is it legible? YES

5a. Does the well identification tag provide the following information:

• The well identification number? YES

• Drilling contractor and registration number? YES

• Total well depth? YES

• Depth to screen? YES

• A warning that the well is not for water supply and that the ground water may contain hazardous materials? YES

6. Is the grout between the inner and outer well casings all the way to the ground surface? YES

7. Is the inner casing firmly grouted in place? YES

8. Are the inner and outer casings upright and unobstructed? YES

9. Is water collecting in the outer casing? Does a weep hole need to be bored in the outer casing to provide drainage? NO

10. Is the monitoring well accessible by a four-wheel drive vehicle? YES

11. Have brush and weeds been trimmed so that the well is easy to locate and access? YES

12. Does the inner well casing have a vented cap? YES

13. Is the monitoring well visible and adequately protected from moving equipment? YES

GROUNDWATER MONITORING WELL MAINTENANCE RECORD

FACILITY: WCA - Material Recovery, LLC **PERMIT NO.:** 92-31

LOCATION: MW-3 **DATE:** June 15-16, 2011

INSPECTOR: N. Rathjen **COMPANY:** Golder Associates NC, Inc.

1. Is surface water diverted away from the well head? YES

2. Is the concrete pad still intact and free of cracks? YES

3. Has surface water runoff undercut the concrete pad? NO

4. Is the outer casing still secure and locked? YES

5. Is the well identification tag present and is it legible? YES

5a. Does the well identification tag provide the following information:

- The well identification number? YES
- Drilling contractor and registration number? YES
- Total well depth? YES
- Depth to screen? YES
- A warning that the well is not for water supply and that the ground water may contain hazardous materials? YES

6. Is the grout between the inner and outer well casings all the way to the ground surface? YES

7. Is the inner casing firmly grouted in place? YES

8. Are the inner and outer casings upright and unobstructed? YES

9. Is water collecting in the outer casing? Does a weep hole need to be bored in the outer casing to provide drainage?
NO

10. Is the monitoring well accessible by a four-wheel drive vehicle? YES

11. Have brush and weeds been trimmed so that the well is easy to locate and access? YES

12. Does the inner well casing have a vented cap? YES

13. Is the monitoring well visible and adequately protected from moving equipment? YES

GROUNDWATER MONITORING WELL MAINTENANCE RECORD

FACILITY: WCA - Material Recovery, LLC **PERMIT NO.:** 92-31

LOCATION: MW-4 **DATE:** June 15-16, 2011

INSPECTOR: N. Rathjen **COMPANY:** Golder Associates NC, Inc.

1. Is surface water diverted away from the well head? YES

2. Is the concrete pad still intact and free of cracks? YES

3. Has surface water runoff undercut the concrete pad? NO

4. Is the outer casing still secure and locked? YES

5. Is the well identification tag present and is it legible? YES

5a. Does the well identification tag provide the following information:

• The well identification number? YES

• Drilling contractor and registration number? YES

• Total well depth? YES

• Depth to screen? YES

• A warning that the well is not for water supply and that the ground water may contain hazardous materials? YES

6. Is the grout between the inner and outer well casings all the way to the ground surface? YES

7. Is the inner casing firmly grouted in place? YES

8. Are the inner and outer casings upright and unobstructed? YES

9. Is water collecting in the outer casing? Does a weep hole need to be bored in the outer casing to provide drainage? NO

10. Is the monitoring well accessible by a four-wheel drive vehicle? YES

11. Have brush and weeds been trimmed so that the well is easy to locate and access? YES

12. Does the inner well casing have a vented cap? YES

13. Is the monitoring well visible and adequately protected from moving equipment? YES

GROUNDWATER MONITORING WELL MAINTENANCE RECORD

FACILITY: WCA - Material Recovery, LLC **PERMIT NO.:** 92-31

LOCATION: MW-5 **DATE:** June 15-16, 2011

INSPECTOR: N. Rathjen **COMPANY:** Golder Associates NC, Inc.

1. Is surface water diverted away from the well head? YES

2. Is the concrete pad still intact and free of cracks? YES

3. Has surface water runoff undercut the concrete pad? NO

4. Is the outer casing still secure and locked? YES

5. Is the well identification tag present and is it legible? YES

5a. Does the well identification tag provide the following information:

- The well identification number? YES
- Drilling contractor and registration number? YES
- Total well depth? YES
- Depth to screen? YES
- A warning that the well is not for water supply and that the ground water may contain hazardous materials? YES

6. Is the grout between the inner and outer well casings all the way to the ground surface? YES

7. Is the inner casing firmly grouted in place? YES

8. Are the inner and outer casings upright and unobstructed? YES

9. Is water collecting in the outer casing? Does a weep hole need to be bored in the outer casing to provide drainage? NO

10. Is the monitoring well accessible by a four-wheel drive vehicle? YES

11. Have brush and weeds been trimmed so that the well is easy to locate and access? YES

12. Does the inner well casing have a vented cap? YES

13. Is the monitoring well visible and adequately protected from moving equipment? YES



WELL CONDITION SUMMARY

DATE: 6-16-11

Project No./Task No. 0737602411
Page 1 of 1

Project Name WCA-Material Recovery
Personnel N. Rathjen / B. Frey

Well ID	Protective Casing	Well Casing	Label	Lock	Pad Condition	Depth of Well (Feet)	General Turbidity	Comments/Observations*
MW-1	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged		<input type="checkbox"/> Clear <input type="checkbox"/> Turbid	<i>pad covered</i>
MW-2	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged		<input type="checkbox"/> Clear <input type="checkbox"/> Turbid	<i>pad covered</i>
MW-3	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged		<input type="checkbox"/> Clear <input type="checkbox"/> Turbid	
MW-4	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged		<input type="checkbox"/> Clear <input type="checkbox"/> Turbid	
MW-5	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged		<input type="checkbox"/> Clear <input type="checkbox"/> Turbid	
MW-6A _s	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged		<input type="checkbox"/> Clear <input type="checkbox"/> Turbid	
MW-6A _D	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged		<input type="checkbox"/> Clear <input type="checkbox"/> Turbid	
MW-7A _s	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged		<input type="checkbox"/> Clear <input type="checkbox"/> Turbid	
MW-7A _D	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged		<input type="checkbox"/> Clear <input type="checkbox"/> Turbid	
	<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> OK <input type="checkbox"/> Damaged		<input type="checkbox"/> Clear <input type="checkbox"/> Turbid	
	<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> OK <input type="checkbox"/> Damaged		<input type="checkbox"/> Clear <input type="checkbox"/> Turbid	
	<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> OK <input type="checkbox"/> Damaged		<input type="checkbox"/> Clear <input type="checkbox"/> Turbid	
	<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> OK <input type="checkbox"/> Damaged		<input type="checkbox"/> Clear <input type="checkbox"/> Turbid	

* Note ponding water, weep holes, condition of surrounding area, including any disturbance of the ground since last inspection, evidence of contamination.

Signature: N. Rathjen Date: 6-16-11

Paul Reedy
6-30-11

At Golder Associates we strive to be the most respected global group of companies specializing in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organizational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

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