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BY ELECTRONIC SUBMITTAL

December 4, 2019

Ms. Rachel Patton
Virginia Department of Environmental Quality – Tidewater Regional Office
5636 Southern Boulevard
Virginia Beach, Virginia 23462
Rachel.Patton@deq.virginia.gov

RE: Chesapeake Energy Center Industrial Landfill, Solid Waste Facility Permit No. 440: Nature & Extent/Assessment of Corrective Measures Addendum for Antimony and Beta-BHC

Dear Ms. Patton

In accordance with Permit Module XI.H.1, Dominion Energy is submitting the attached Nature and Extent (N&E)/Assessment of Corrective Measures (ACM) addendum for antimony and beta-BHC at the Chesapeake Energy Center (CEC) Industrial Landfill.

The CEC Industrial Landfill currently monitors groundwater on a semi-annual basis in accordance with the VSWMR Phase II and corrective action programs. The existing groundwater Corrective Action Plan (CAP) addresses arsenic, beryllium, cobalt, selenium, and sulfide in response to previous groundwater protection standard (GPS) exceedances. Antimony and beta-BHC are being added to the CAP in response to being identified at concentrations above the GPS in one or both 2018 sampling events as detailed in our letter to the Department dated June 7, 2019.

If you have any questions regarding this submittal, please contact Kelly Hicks at (804) 273-4903 or via email at kelly.a.hicks@dominionenergy.com.

Sincerely,

Lisa C. Messinger

Lisa C. Messinger
Director, Environmental Services

Attachment

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NATURE AND EXTENT STUDY AND ASSESSMENT OF CORRECTIVE MEASURES ADDENDUM

Chesapeake Energy Center
Industrial Landfill, Permit No. 440
Chesapeake, Virginia

Prepared for:

Virginia Electric Power and Company
(d/b/a) Dominion Energy Virginia
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December 4, 2019

EXECUTIVE SUMMARY

Virginia Electric and Power Company (d/b/a Dominion Energy) notified the Virginia Department of Environmental Quality (DEQ) of groundwater protection standard (GPS) exceedances for two new constituents of concern (COCs; antimony and beta-BHC) at four compliance wells at the Chesapeake Energy Center Industrial Landfill (Facility) on June 7, 2019. Subsequent to the notification and consistent with the requirements in the Virginia Solid Waste Management Regulations (VSWMR), a limited Nature and Extent Study (NES) was completed to delineate the nature and extent of antimony and beta-BHC concentrations in groundwater and surface water adjoining the Facility. The NES was completed with a series of existing monitoring wells that have been installed around the perimeter of the Facility. Data from groundwater samples collected from these wells in February 2019 and groundwater and surface water samples collected in June 2019, were used to complete the required delineation activities.

Based on evaluation of the laboratory analytical results for the samples used in the investigation, the nature and extent of the antimony and beta-BHC impacts to groundwater at the Facility have been delineated. There were no detections of antimony or beta-BHC at concentrations above the Facility GPS in sampled groundwater wells or adjacent surface water sampled for this NES.

Based on the investigation results the existing groundwater Corrective Action Plan (CAP; Revision 1 dated June 2011) and Corrective Action Monitoring Plan (CAMP; 2nd Revision dated March 2015) for the Facility were reviewed to determine if the existing remedy is suitable for remediation of the new COCs. Based on our review, Golder believes that the monitored natural attenuation remedy presented in the CAP and the associated monitoring activities presented in the CAMP are sufficient to meet the regulatory requirements for corrective action with respect to the new COCs. Consistent with the CAMP conditions, the COCs have been added to the constituent list for performance and sentinel wells, as well as the surface water monitoring locations that are monitored under the existing corrective action program. Therefore, no modifications to the existing CAP or CAMP are proposed at this time.

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1.0 INTRODUCTION

This Nature and Extent Study (NES) / Assessment of Corrective Measures (ACM) Addendum (Addendum) has been prepared for the Chesapeake Energy Center (CEC) Industrial Landfill (Facility) in Chesapeake, Virginia. The Facility is owned and maintained by Virginia Electric and Power Company (d/b/a Dominion Energy). The Addendum was completed in response to the following Groundwater Protection Standard (GPS) exceedances that were documented in a June 7, 2019, letter to the Department of Environmental Quality (DEQ).

Constituent	Well ID	GPS (µg/L)	March 2018 Concentration (µg/L)	August 2018 Concentration (µg/L)
Antimony	CECW-2	6	ND	7.0
	CECW-6I		12.5	ND
	CECW-10R		9.1	ND
beta-BHC	PO-9	0.025 or RL	0.11	--

Notes:
GPS = Groundwater Protection Standard
ND = Not detected above laboratory method detection limit
RL = Laboratory Reporting Limit
µg/L = Micrograms per liter

This Addendum was completed consistent with the requirements in Solid Waste Facility Permit Number 440 and its references to the Virginia Solid Waste Management Regulations (VSWMR; 9VAC20-81 *et seq.)*. The following sections of this Addendum present relevant information pertaining to the nature and extent of the observed antimony and beta-BHC concentrations in groundwater followed by an evaluation of these new corrective action constituents against the Facility's existing corrective action permit and associated documents.

1.1 Site Information

As shown on Drawing 1, the 36.5 acre Facility is an Industrial Landfill (Solid Waste Permit #440) that is located at 2701 Vepco Street, in Chesapeake, Virginia. The 213.6-acre CEC property is owned and operated by Dominion Energy and is bounded to the north by the Norfolk and Western rail line and Military Highway (Route 13/460), to the east by the Southern Branch of the Elizabeth River (SBER), and to the west by a former non-contact cooling water discharge channel. The Facility was constructed in 1985 with a synthetic liner and was used as an area fill industrial landfill that was used exclusively for the disposal of coal combustion by-products generated at CEC.

The Facility is located on an inverted L-shaped peninsula measuring approximately 6,000 feet (ft) from south to north and 1,200 to 4,000 ft from west to east. The peninsula, on which the Facility is situated, is surrounded by the SBER, Deep Creek, and a former cooling water discharge canal on its eastern, southern, and western flanks, respectively. The ground surface topography of the peninsula is relatively flat and ranges from an approximate elevation of 5 to 12 feet mean sea level (msl). The Facility has a top elevation of approximately 65 feet msl. Adjoining land use around the landfill is zoned M-2 general industrial district with various industrial facilities located across the SBER from the landfill. It is Dominion Energy's understanding that there are no known users of the shallow water aquifer as a drinking water source in the area of the Facility.

1.2 Compliance Groundwater Monitoring Network

As a permitted solid waste facility, the groundwater beneath the Facility is monitored on a semi-annual basis in accordance with the VSWMR. These activities are conducted in accordance with various permit-attached documents, including the Facility's *Groundwater Monitoring Plan*, and include the sampling and analysis of groundwater samples collected from the following compliance monitoring wells:

Upgradient Wells	MW-4R, MW-5
Downgradient Wells	CECW-1, CECW-2, CECW-3, CECW-4, CECW-5, CECW-6I, CECW-10R, PO-8, PO-9, PO-10, PO-11

It is noted that MW-10R was added to the compliance network in 2015 and that the Facility's permit amendment reflecting this addition is still pending.

The locations of the compliance wells are shown on Drawing 2. As presented, the compliance wells are located around the perimeter of the Facility and are screened in the uppermost aquifer beneath the Facility. The uppermost aquifer is comprised of the surficial sediments of the Columbia Aquifer, which is underlain by the Yorktown confining zone, and the Yorktown-Eastover aquifer. The Columbia Aquifer is an unconfined water table aquifer; however, clayey fine sand, silt, clay, and peat deposits within the aquifer cause local confined to semi-confined conditions in some areas (Smith and Harlow, 2002). Groundwater movement through the unconfined and confined aquifers is generally lateral in nature with discharge into surrounding water bodies including the SBER and Deep Creek. Some groundwater movement also occurs vertically through confining units into deeper confined aquifers.

Groundwater monitoring at the Facility is currently conducted in accordance with the Phase II Monitoring Program in the VSWMR and the Corrective Action Program as outlined in the VSWMR and the Facility's solid waste permit. Key details pertaining to the Corrective Action Program at the Facility are summarized in the following section.

1.3 Additional Monitoring Wells

In addition to the compliance wells Dominion Energy operates several wells at the Facility including the following performance and sentinel wells that are maintained for the Corrective Action Program.

Performance Wells	MW-5, MW-5D, CECW-1, CECW-1D, CECW-2, CECW-2D, CECW-3, CECW-3D, CECW-6I, PO-8, PO-8D, PO-10, PO-10D
Sentinel Wells	CECW-10R, CECW-15, CECW-6D, CECW-8, CECW-8D

To comply with the Coal Combustion Residuals (CCRs) Rule, additional groundwater monitoring wells have been installed at the Facility, including the following with the shallow well (denoted by the "S" postscript) installed in the sediments comprising the uppermost water table Columbia Aquifer and the well with the "D" postscript being installed in the lower Yorktown Formation.

Additional Wells	CW-01S/01D, CW-02S/02D, CW-03S/03D, CW-04S/04D, CW-05S/05D, CW-06S/06D, CW-07S/07D, CW-08S/08D, CW-09S/09D, CW-10S/10D, CW-11S/11D, CW-12S/12D

1.4 Corrective Action Program

Consistent with the requirements of the Phase II Monitoring Program Dominion Energy established GPS for the Facility on May 23, 2001. Subsequently, arsenic was reported in the uppermost water-bearing zone underlying the Facility at concentrations above the GPS during the 2002 second semi-annual sampling event (September 17, 2002). As a result, an ACM and NES were completed and submitted to DEQ on June 19, 2003. In response to DEQ comments dated October 2, 2003, revised NES and ACM Reports including sulfide were submitted to the DEQ in January 2004.

In response to ACM comments received from the DEQ, Dominion Energy installed six deep wells at the following locations: CECW-2, CECW-3, CECW-8, CECW-5, PO-8, and PO-10 in November 2005. The wells were installed to generate additional hydrogeological data for the remedial alternative evaluation. Following installation of the additional wells, the finalized Corrective Action Plan (CAP) was submitted to DEQ on January 23, 2007.

In response to identified concentrations of cobalt and beryllium above the GPS during the 2010 first semi-annual sampling event, Dominion Energy submitted an addendum to the ACM report on July 22, 2010. Subsequent to the addendum submittal, cobalt and beryllium were added to the CAP for the Facility on March 10, 2011, with the addition of the CAP (Revision 1) and Corrective Action Monitoring Plan (CAMP) to the Facility's solid waste permit.

As required in the CAMP, the first Corrective Action Site Evaluation (CASE) report, dated March 16, 2012, was submitted to DEQ to summarize the first year of CAP sampling. The CASE indicated that natural attenuation was occurring as expected and that the corrective action monitoring program should continue unchanged until the next CASE is due or until remedial objectives have been met.

On March 24, 2014, the second CASE report was submitted to the DEQ to evaluate CAP sampling results from the monitoring period of April 2011 to March 2014. CAP monitoring results indicated a geochemical environment conducive to a speciation-based groundwater remedy and provided evidence that conditions at the landfill are suitable for monitored natural attenuation. Future CAP sampling data will be compared to the results of this CASE period to determine if the implemented remedy has the ability to achieve GPS.

On January 15, 2015, Dominion Energy requested a minor permit amendment to incorporate an updated Groundwater Monitoring Plan (GMP) and CAMP to reflect the planned decommissioning of groundwater monitoring wells CECW-3 and CECW-3D in support of planned landfill closure activities and a top of casing elevation change for well PO-11. GMP and CAMP revisions are pending DEQ approval.

In response to a confirmed concentration of selenium above the GPS during the 2016 first semi-annual sampling event, Dominion Energy has included selenium in the CAP for the site. An NES/ACM Report Addendum for selenium was submitted to DEQ on August 5, 2016.

On March 10, 2017, the third CASE report was submitted to the DEQ to evaluate CAP sampling results from the monitoring period of March 2014 to March 2017. CAP monitoring results continue to indicate a geochemical environment conducive to a speciation-based groundwater remedy and provide evidence that conditions at the landfill are suitable for monitored natural attenuation. The collection of additional data with future comparisons to previous CASE periods will determine whether the implemented remedy may achieve GPS within a reasonable time frame.

2.0 GROUNDWATER FLOW EVALUATION

Static water level data for the Facility from February 2019 are summarized in Table 1. The Groundwater Surface Contour overlay presented on Drawing 2 was prepared using static water level data obtained from perimeter monitoring and observation wells. The interpreted data present an approximation of the groundwater potentiometric surface in the uppermost aquifer beneath and adjacent to the regulated unit. As presented, the general groundwater flow directions remain consistent with previous interpretations for the facility (radial in nature towards the east, south, and west).

2.1 Horizontal Flow Rate

Using the idealized groundwater flow lines shown on Drawing 2, which roughly run east to west and north to south, the average groundwater flow rate for the Facility was calculated.

The average hydraulic gradient (i) beneath the landfill is calculated to be 1.8E-02 along the groundwater flow line on Drawing 2 using the following equation:

$$igw1 = \frac{h_L}{L} = \frac{(6-2)}{210} = 2.0\text{E}-02$$

$$igw2 = \frac{h_L}{L} = \frac{(10-4)}{400} = 1.5\text{E}-02$$

$$igw\ Average = \frac{(2.0E-02 + 1.5E-02)}{2} = 1.8\text{E}-02$$

Where: i = hydraulic gradient (unitless)
h_L = head loss (elevation difference in feet)
L = length (horizontal distance in feet)

Porosity for the uppermost aquifer beneath the Facility is estimated to be 30% (θ = 0.30), and the hydraulic conductivity, k, for the site is 6.48E-04 foot per minute.

The groundwater flow rate was calculated using the following formula:

$$V\left(\frac{ft}{s}\right) = \frac{k\left(\frac{ft}{s}\right) * i}{\theta} = \frac{\left(6.48E-04\frac{ft}{min} * 1.8E-02\right)}{0.30} = 3.9E-05\frac{ft}{min}$$

Where: k = hydraulic conductivity (ft/s)
i = hydraulic gradient (unitless)
θ = assumed porosity (unitless)

Using conversion factors to express the groundwater flow rate in feet per year (ft/year):

$$\text{V}\left(\frac{\text{ft}}{\text{y}}\right) = \left(3.9\text{E}-05\frac{\text{ft}}{min}\right) * \left(1{,}440\frac{min}{\text{d}}\right) * (365\ \text{d}) = 21\frac{\text{ft}}{\text{y}}$$

The estimated average groundwater flow rate beneath the Facility based on the interpreted groundwater potentiometric surface for February 2019 is approximately 21 feet per year, which is generally consistent with previous estimates. It is noted that the groundwater velocity at this Facility is variable due to changes in the hydraulic gradient as groundwater flow in the uppermost aquifer beneath the Facility converges on the receiving stream systems that border the waste management unit to the east, south, and west.

2.2 Vertical Flow Rate

Using similar equations and groundwater elevations measured on March 16, 2019, the vertical rate of groundwater flow was estimated from selected nested well pairs that have been installed at the Facility as follows:

Well Identification	Groundwater Elevation (ft MSL)	Well Pair		Gradient (unitless)	Hydraulic Conductivity (feet/min)	Effective Porosity (unitless)	Estimated Vertical Flow Rate (feet/year)
		Groundwater Elevation Difference (feet)	Mid-Point Screen Separation (feet)				
CW-1S	1.80	0.19	23.4	8.03E-03	6.48E-04	0.30	9.22
CW-1D	1.99						
CW-3S	1.70	0.07	35.3	1.96E-03	6.48E-04	0.30	2.25
CW-3D	1.77						
CW-5S	2.14	(0.58)	26.1	(2.22E-02)	6.48E-04	0.30	(25.20)
CW-5D	1.56						
CW-7S	2.17	(0.17)	25.0	(6.80E-03)	6.48E-04	0.30	(7.72)
CW-7D	2.00						
CW-9S	2.06	(0.34)	21.80	(1.56E-02)	6.48E-04	0.30	(17.71)
CW-9D	1.72						
CW-11S	2.37	(0.07)	22.70	(3.08E-03)	6.48E-04	0.30	(3.50)
CW-11D	2.30						

Notes: Positive Difference indicate upward flow.

MSL = Mean sea level

As presented, the vertical groundwater flow regime at the Facility is variable with upward flow regime from the lower Yorktown Aquifer to the uppermost Columbia Aquifer northeastern side of the Facility and a downward flow regime from the Columbia Aquifer to the lower Yorktown Aquifer observed along the southern and western perimeter of the Facility. The existing monitoring system is sufficient to monitor upward as well as downward flow regimes.

3.0 GROUNDWATER PROTECTION STANDARD EXCEEDANCES

As documented in the June 7, 2019, letter to DEQ, GPS exceedances for antimony were reported during the first semi-annual 2018 event at CECW-6I and CECW-10R with a GPS exceedance for antimony reported at CECW-2 for the second semi-annual event. A GPS exceedance for beta-BHC was reported for the sample collected from PO-9 for the first semi-annual 2018 event.

4.0 NATURE AND EXTENT SAMPLING

To support the NES delineation activities, Dominion Energy completed additional groundwater and surface water sampling and analysis activities as discussed in the following sections.

4.1 Groundwater Sampling

4.2 Compliance Wells

The solid waste compliance and corrective action wells were sampled in June 2019. The compliance well locations are shown on Drawing 2. During the sampling event the compliance monitoring wells were sampled in accordance with the procedures presented in the Facility's Groundwater Monitoring Plan (GMP). In general, the compliance monitoring wells were purged and sampled using micropurge sampling procedures and dedicated bladder pumps. Prior to purging, the depth to static water level in each well was measured with an electronic water level indicator, accurate to 0.01 foot. Using calibrated water quality meters, field parameter measurements were recorded at each well during the micropurge procedures, including pH, specific conductance, temperature, dissolved oxygen, oxidation-reduction potential, and turbidity. After the water quality parameters stabilized, groundwater samples were collected in pre-preserved, laboratory-supplied sample containers. Following collection, the samples were placed in a cooler on ice under chain-of-custody control. The samples were shipped to Eurofins TestAmerica under chain-of-custody control using a commercial courier for analysis following the completion of the sampling event. Eurofins TestAmerica is a Virginia Environmental Laboratory Accreditation Program (VELAP)-accredited laboratory for the analyses completed.

The laboratory certificates of analysis and chain-of-custody forms for the June 2019 compliance event are presented in Appendix A. The sample results are summarized in Table 2.

4.3 Additional Wells

In support of the NES investigation for antimony and beta-BHC, data obtained from additional CCR wells located around the perimeter of the Facility during the February 2019 CCR background event have been used to assist with the horizontal and vertical delineation of these constituents of concern in the uppermost aquifer beneath the Facility. The additional CCR well locations are listed in Section 1.3 and shown on Drawing 2.

Golder understands that these wells were sampled for the CCR Rule Appendix III and Appendix IV constituents permit-required constituents and parameters, including antimony using dedicated bladder pumps and low-flow micropurge sampling procedures consistent with the provisions in the Facility's CCR Rule GMP (Haley & Aldrich, 2019a). Following collection in laboratory-provided, pre-preserved, pre-labeled sample containers the samples were placed in a cooler on ice under chain-of-custody control. The samples were shipped to PACE Analytical Services LLC under chain-of-custody control using a commercial courier for analysis following the completion of the sampling event. Pace Analytical Services is a VELAP-accredited laboratory for the analyses completed.

The laboratory certificates of analysis and chain-of-custody form for the February 2019 sampling event are presented in the *Initial CCR Groundwater Monitoring and Corrective Action Report* prepared for the Facility (Haley & Aldrich, 2019b) and are not represented herein. The sample results for antimony are presented in Table 3.

4.4 Surface Water Sampling

In support of the NES investigation, surface water samples were collected from four compliance surface water sampling locations designated in the CAMP for the Facility on June 27, 2019. For consistency with previous sampling events, the samples were collected at high tide from the subsurface water column approximately 1 foot above the river bottom. The four surface water locations are shown on Drawing 2.

The samples were collected using the surface water sampling procedures outlined in the CAMP. Following collection in pre-preserved, pre-labeled, laboratory-provided sample containers, the samples were placed in a cooler on ice under chain-of-custody control and shipped using a commercial courier to Eurofins TestAmerica in North Canton, Ohio for analysis.

A copy of the laboratory certificates of analysis and chain-of-custody form is presented in Appendix A. As presented, the samples were analyzed for beta-BHC and antimony. Eurofins TestAmerica is a VELAP-accredited laboratory for the requested analyses.

The results of the analyses are summarized below:

Analyte	SW-1 (ug/L)	SW-2 (ug/L)	SW-3 (ug/L)	SW-4 (ug/L)
Antimony	<0.57	<0.57	<0.57	<0.57
Beta-BHC	<0.0048	<0.0047	<0.0044	<0.0047

Notes: ug/L = micrograms per liter

5.0 CONSTITUENT OF CONCERN DELINEATION

Using the sampling results from the groundwater and surface water sampling activities, Golder plotted the analytical results on Drawings 3 and 4. The results of the delineation are discussed in the following sections.

5.1 Antimony Delineation

Antimony concentrations from the sampling events used in this investigation are plotted on Drawing 3. The plotted antimony concentrations are not contoured since most of the sampling results are less than the method reporting limit and since none of the reported antimony concentrations, including the results reported for CECW-2, CECW-6I, and CECW-10R, exceed the antimony GPS of 6.0 ug/L.

Cross Sections A-A' and B-B', presented on Drawing 5, illustrate the antimony concentrations in profile with a groundwater flow net that illustrates the approximate direction of groundwater flow in the aquifers underlying the Facility. As shown, the depicted groundwater flow regime is consistent with historical interpretations with groundwater flow down through the landfill and out under the berms up into the surface water system. As with the plan view, the antimony concentrations in the cross sections are not contoured since none of the reported antimony concentrations, including the results reported for CECW-2, CECW-6I, and CECW-10R, exceed the antimony GPS of 6.0 ug/L.

5.2 Beta-BHC delineation

Beta-BHC concentrations from the sampling events used in this investigation are plotted on Drawing 4. The plotted beta-BHC concentrations are not contoured since the sample results, including the surface water sample results, are less than the method reporting limit. As presented, the method detection limits are less than the beta-BHC GPS of 0.025 ug/L for this Facility, which is based on the Alternate Concentration Limit (ACL) as listed in the DEQ November 2018 (effective January 18, 2019) ACL for groundwater table.

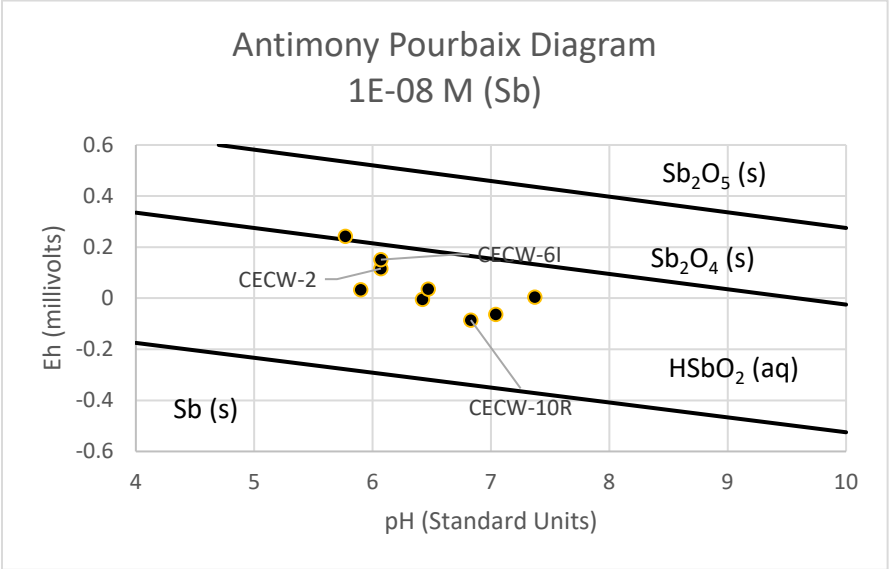
Cross Sections A-A' and B-B', presented on Drawing 6, illustrate the beta-BHC concentrations in profile with a groundwater flow net that illustrates the approximate direction of groundwater flow in the aquifers underlying the Facility. As shown, the depicted groundwater flow regime is consistent with historical interpretations with groundwater flow down through the landfill and out under the berms up into the surface water system. As with the plan view, the beta-BHC concentrations in the cross sections are not contoured as the sample results are less than the method reporting limit.

6.0 FATE AND TRANSPORT EVALUATION

The expected fate and transport conditions for the constituents of concern are discussed in the following sections.

6.1 Antimony

The mobility of antimony in the subsurface environment is controlled by the pH and Eh of the groundwater, the organic content of the aquifer matrix, and its oxidation state (speciation). Sequestering of antimony has also been documented with oxyhydroxides of iron, manganese, and aluminum (Herath, 2017). As shown in the inset Eh-pH diagram, the mobility of antimony generally increases in an acidic environment under normal and expected redox potential for shallow groundwater (typically expected to be in the positive Eh range).



A summary table of observed pH and Eh (corrected to Eh readings from the June 2019 sampling event using a standard hydrogen electrode correction is presented below.

Well	pH (standard units)	Oxidation-Reduction Potential (millivolts)	Standard Hydrogen Electrode Corrected Eh (millivolts)
CECW-2	6.07	-91.1	115.9

Well	pH (standard units)	Oxidation-Reduction Potential (millivolts)	Standard Hydrogen Electrode Corrected Eh (millivolts)
CECW-4	7.04	-270.5	-63.5
CECW-5	6.42	-211.7	-4.7
CECW-6I	6.07	-56.0	151
CECW-10R	6.83	-292.5	-85.5
PO-8	6.47	-171.0	36
PO-9	5.90	-174.3	32.7
PO-10	7.37	-203.3	3.7
PO-11	5.77	35.6	242.6

As plotted on the Pourbaix Diagram, these data indicate that the geochemical conditions in the uppermost aquifer are present along the antimonious acid (soluble) / antimony tetroxide boundary (insoluble) such that antimony, if present in the aquifer matrix, is expected to go into solution as antimonious acid.

The migration rate of antimony in solution is expected to be retarded relative to the groundwater flow rate due to sorption and desorption processes. Using published soil-water partitioning coefficient (Kd; 45) from the United States Environmental Protection Agency's (EPA) online Soil Screening Level guidance, the retardation factor for antimony is estimated as follows:

$$R(unitless) = 1 + \frac{p * Kd}{\theta} = \frac{Vgw}{Vcont} = 1 + \frac{\left(2.0\ \frac{grams}{cm\text{^}3} *\ 45\ \frac{cm\text{^}3}{grams}\right)}{0.25} = 361$$

$$V\ contaminant = \frac{Vgw}{R} = \frac{\left(21\ \frac{feet}{year}\right)}{361} = 0.058\ feet/year$$

As presented, antimony is expected to migrate at a much slower rate (approximately 0.28%) than the advective groundwater flow velocity. As such, antimony is expected to attenuate naturally consistent with other inorganic COCs.

6.2 Beta-BHC

Unlike alpha-BHC, beta-BHC is a recalcitrant pesticide that is resistant to biodegradation under both anaerobic and aerobic conditions. Most pesticides by design are relatively immobile and are designed to adsorb to organic matter.

Using the octanol-water partitioning coefficient (Kow; 2,139) for beta-BHC, the soil-water partitioning coefficient (Kd) was estimated as follows assuming a total organic carbon concentration in the aquifer matrix of approximately 2,000 milligrams per kilogram.

$$Kd = Koc * Foc$$

Where Foc = fraction of organic carbon

$$foc = \frac{\left(2{,}000\ \frac{milligrams}{kilogram}\right)}{1{,}000{,}000\ \frac{milligrams}{kilogram}} = 2.0E-03$$

$$Kd = 2{,}139\ \frac{L}{Kg} * 2.0E-03 = 4.28\ \frac{L}{Kg}\ or\ 4.28\ \frac{cm\text{^}3}{grams}$$

$$R(unitless) = 1 + \frac{p * Kd}{\theta} = \frac{Vgw}{Vcont} = 1 + \frac{\left(2.0\ \frac{grams}{cm\text{^}3} *\ 4.28\ \frac{cm\text{^}3}{grams}\right)}{0.25} = 35.2$$

$$V\ contaminant = \frac{Vgw}{R} = \frac{\left(21\ \frac{feet}{year}\right)}{35.2} = 0.6\ feet/year$$

As presented, beta-BHC is expected to migrate at a much slower rate (approximately 2.8%) than the advective groundwater flow velocity. As such, it is expected that beta-BHC will attenuate in the subsurface. It should be noted that beta-BHC is not a COC of CCR material.

7.0 RISK EVALUATION

Antimony and beta-BHC detections in 2018 initially triggered the NES/ACM; however, data collected during this investigation does not support any possible risk issues associated with these two COCs. This finding is demonstrated in a preliminary evaluation of risk for the COCs using the established GPS as the risk assessment screening levels (*i.e.*, concentrations that are below the GPS are expected to pose an acceptable level of risk). The evaluation was performed by evaluating the three components of risk for the Facility as follows:

Component of Risk	Data	Risk Component is Complete?
Constituents of Concern	Groundwater: Antimony, Beta-BHC detections above GPS	Complete (COCs detected at concentration above GPS in 2018)
	Surface Water: Antimony and beta-BHC not detected	Incomplete (COCs not detected at concentration above GPS)
Receptor	Groundwater Users	Incomplete (none known)
	Surface Water Users	Complete
Exposure Pathway	Groundwater Users	Complete
	Surface Water Users	Complete (dermal contact expected)

Based on the three components of risk, no real risk is expected to be present in association with the observed groundwater impacts since there are no known groundwater users and concentrations are less than Federal drinking water standards.

The risk pathway for surface water is also not complete since neither antimony nor beta-BHC were detected in the surface water samples at concentrations that exceed the risk assessment screening levels based on the established Facility GPS.

8.0 ASSESSMENT OF CORRECTIVE MEASURE

Although the COCs were not detected during the NES addendum work, Golder completed an evaluation of the existing Corrective Action Plan (CAP) to determine if the current remedial strategy of MNA is appropriate for the new COCs consistent with the requirements in the VSWMR. Details for this evaluation are presented in the following sections.

8.1 Remedy Performance

Based on review of the existing MNA remedy monitoring results as documented in the CASE reports that have been submitted for the Facility, Golder believes that MNA is an appropriate remedy for the new COCs and that the performance of MNA as a remedy will be equal to or greater than other remedial alternatives.

8.2 Remedy Reliability

MNA as a remedy is extremely reliable for meeting remedial goals when appropriate aquifer conditions are present to support the attenuation of the COCs. Based on review of the existing MNA remedy monitoring results as documented in the CASE reports that have been submitted for the Facility in addition to subsequent sampling for these specific COCs, Golder believes that MNA will be a reliable remedy for the new COCs.

8.3 Remedy Implementation Ease

The existing MNA program, which is based on a series of performance and sentinel wells coupled with periodic sampling and analysis activities, has already been established and with the addition of the new COCs to the analyte list is sufficient to address the remediation of the new COCs.

8.4 Remedy Impacts

As discussed in the existing CAP, there are no major remediation related impacts expected with MNA (including no impacts to the existing synthetic liner or cap). Specifically, MNA does not require any intrusive activities that could impact the unit and the COCs are attenuated via destruction or sorption or precipitation within the uppermost aquifer beneath the unit. Minor operational impacts may include the generation of contaminated purge water, which would have to be disposed of at an appropriately permitted wastewater disposal facility. Potential safety impacts for commercial and industrial workers via contamination exposure would also be present on site, since the source would not be removed.

8.5 Remedy Exposure Control

As the Facility is a closed lined landfill, no potential for COC exposure under the MNA remedy is expected, with the exception of potential exposure during well installation and groundwater sampling activities. Provided site personnel are appropriately trained in the hazards of the COCs and that they use appropriate personal protection equipment (PPE) for onsite activities, the exposures to hazards associated with the MNA remedy can be minimized.

8.6 Remedy Time to Completion

As discussed in the 2011 CAP, the existing MNA remedy is expected to require at least 17.4 years to complete. Based on the addition of the new COCs, coupled with the 2019 sampling results for the new COCs, Golder does not expect the existing MNA remedy timeframe to be impacted by the new COCs.

8.7 Remedy Institutional Requirements

No significant institutional requirements for implementation of the MNA remedy are required other than DEQ permitting of the remedial alternative. The existing MNA remedy was permitted by the DEQ (most recent amendment for the corrective action program was on March 10, 2011). Since the existing MNA remedy is deemed sufficient for the new COCs, no new institutional requirements are identified.

9.0 CONCLUSION

Based on the results presented herein, the extent of the groundwater impacts associated with GPS exceedances for antimony and beta-BHC in 2018 has been delineated. There are currently no detections of antimony or beta-BHC at concentrations above the GPS in sampled groundwater wells or adjacent surface water.

Based on the investigation results, Golder believes that the existing Facility corrective action as outlined in the Corrective Action Plan (CAP; Revision 1 dated June 2011), the Corrective Action Monitoring Plan (CAMP; 2nd Revision dated March 2015), and the Facility's solid waste permit is sufficient for remediation of the new COCs. Specifically, Golder believes that the MNA remedy presented in the CAP and the associated monitoring activities presented in the CAMP are sufficient to meet the regulatory requirements for corrective action with respect to the new COCs. Consistent with the CAMP conditions, the COCs have been added to the constituent list for performance and sentinel wells, as well as the surface water monitoring locations that are monitored under the existing corrective action program. Therefore, no modifications to the existing CAP or CAMP are proposed at this time.

10.0 SIGNATURE SECTION

The Report has been prepared on behalf of Dominion Energy for the closed Chesapeake Energy Center Industrial Landfill, Permit No. 440 to satisfy the requirements specified in 9VAC20-81-260 of the VSWMR. This document was prepared by qualified groundwater scientists and engineers who have received baccalaureate and/or post-graduate degrees in the natural sciences or engineering and who have sufficient training and experience in groundwater hydrology, engineering, statistical evaluations, and related fields as demonstrated by state professional registrations and completion of an accredited university program that enables sound professional judgments consistent with the industry standard of care for groundwater monitoring, contaminant fate and transport, environmental corrective actions, and cost estimate development.

GOLDER ASSOCIATES INC.

FOR Rachel Powell, EIT
Project Engineer

COMMONWEALTH OF VIRGINIA
12/4/19
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No. 1260
CERTIFIED PROFESSIONAL GEOLOGIST

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11.0 REFERENCES

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Smith, B.S., and G.E. Harlow, Jr. 2002. *Conceptual Hydrogeologic Framework of the Shallow Aquifer System at Virginia Beach, Virginia*. Water-Resources Investigations Report 01-4262. United States Geological Survey.

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Table 1

Summary of Static Water Level Measurements (February 2019)

Chesapeake Energy Center Industrial Landfill

Measurement Date	Well Identification	Top of Casing Elevation (feet MSL)	Depth to Water (feet)	Groundwater Elevation (feet MSL)
2/25/2019	CECW-1	22.94	10.40	12.54
2/26/2019	CECW-1D	21.85	18.61	3.24
2/25/2019	CECW-2	23.35	13.40	9.95
2/26/2019	CECW-2D	21.79	20.67	1.12
2/25/2019	CECW-3	28.75	BTOP	<8.26
2/26/2019	CECW-3D	27.42	20.20	7.22
2/25/2019	CECW-4	23.40	16.81	6.59
2/25/2019	CECW-5	21.87	20.93	0.94
2/26/2019	CECW-6D	22.14	21.19	0.95
2/25/2019	CECW-6I	22.12	20.30	1.82
2/25/2019	CECW-8	3.87	2.33	1.54
2/26/2019	CECW-8D	4.58	3.35	1.23
2/26/2019	CECW-10R	5.52	3.63	1.89
2/26/2019	CECW-15	6.45	6.35	0.10
2/25/2019	MW-4R	14.12	5.20	8.92
2/25/2019	MW-5	14.43	8.52	5.91
2/25/2019	MW-5D	12.41	8.18	4.23
2/25/2019	PO-10	7.49	3.00	4.49
2/27/2019	PO-10D	6.04	3.51	2.53
2/25/2019	PO-11	20.70	12.13	8.57
2/25/2019	PO-8	14.68	7.45	7.23
2/27/2019	PO-8D	23.23	22.51	0.72
2/25/2019	PO-9	9.99	4.43	5.56

Note: MSL = Mean Sea Level

Table 2
Summary of Nature Extent Monitoring Results (June 2019)
Chesapeake Energy Center Industrial Landfill - Permit #440
Chesapeake, Virginia

		MW-4R 6/27/2019				MW-5 6/27/2019				MW-5D 6/27/2019				CECW-1 6/26/2019				CECW-1D 6/26/2019				CECW-2 6/26/2019			
Parameter Name	**Units**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**
Antimony, Total	ug/L	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0
Antimony, Dissolved	ug/L	NS		--	--	**0.57**	J	0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0
beta-BHC	ug/L	< 0.0046		0.0046	0.050	< 0.0044		0.0044	0.048	< 0.0049		0.0049	0.054	< 0.0044		0.0044	0.048	< 0.0046		0.0046	0.050	< 0.0044		0.0044	0.048
pH	S.U.	5.69		0.10	0.10	5.81		0.10	0.10	5.86		0.10	0.10	6.29		0.10	0.10	6.27		0.10	0.10	6.07		0.10	0.10
Conductivity	µS/cm	965		0.1	0.1	269.7		0.1	0.1	2478		0.1	0.1	3253		0.1	0.1	18126		0.1	0.1	8091		0.1	0.1
Turbidity	NTU	17.72		0.1	0.1	8.5		0.1	0.1	8.2		0.1	0.1	13.27		0.1	0.1	6.0		0.1	0.1	32.1		0.1	0.1
Dissolved Oxygen	mg/L	0.70		0.1	0.1	0.15		0.1	0.1	0.74		0.1	0.1	0.57		0.1	0.1	0.37		0.1	0.1	0.13		0.1	0.1
Temperature	°C	22.6		0.01	0.01	18.5		0.01	0.01	18.9		0.01	0.01	19.6		0.01	0.01	18.3		0.01	0.01	18.7		0.01	0.01
ORP	mV	-24.5		0.1	0.1	-11.9		0.1	0.1	76.8		0.1	0.1	-54.1		0.1	0.1	-19.5		0.1	0.1	-91.1		0.1	0.1

		CECW-2D 6/26/2019				CECW-3 6/26/2019				CECW-3D 6/26/2019				CECW-4 6/27/2019				CECW-5 6/27/2019				CECW-6D 6/27/2019			
Parameter Name	**Units**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**
Antimony, Total	ug/L	< 0.57		0.57	2.0	NS		--	--	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0
Antimony, Dissolved	ug/L	< 0.57		0.57	2.0	NS		--	--	< 0.57		0.57	2.0	NS		--	--	NS		--	--	< 0.57		0.57	2.0
beta-BHC	ug/L	< 0.0046		0.0046	0.051	NS		--	--	< 0.0047		0.0047	0.051	< 0.0044		0.0044	0.048	< 0.0044		0.0044	0.048	< 0.0046		0.0046	0.050
pH	S.U.	6.46		0.10	0.10	NS		0.10	0.10	7.46		0.10	0.10	7.04		0.10	0.10	6.42		0.10	0.10	5.92		0.10	0.10
Conductivity	µS/cm	25217		0.1	0.1	NS		0.1	0.1	1438		0.1	0.1	1227		0.1	0.1	3370		0.1	0.1	17410		0.1	0.1
Turbidity	NTU	5.6		0.1	0.1	NS		0.1	0.1	10.5		0.1	0.1	7.65		0.1	0.1	6.9		0.1	0.1	4.7		0.1	0.1
Dissolved Oxygen	mg/L	1.93		0.1	0.1	NS		0.1	0.1	1.97		0.1	0.1	0.42		0.1	0.1	0.30		0.1	0.1	1.10		0.1	0.1
Temperature	°C	20.3		0.01	0.01	NS		0.01	0.01	21.6		0.01	0.01	21.4		0.01	0.01	18.5		0.01	0.01	20.1		0.01	0.01
ORP	mV	-114.0		0.1	0.1	NS		0.1	0.1	-77.3		0.1	0.1	-270.5		0.1	0.1	-211.7		0.1	0.1	57.4		0.1	0.1

		CECW-6I 6/27/2019				CECW-8 6/27/2019				CECW-8D 6/27/2019				CECW-10R 6/27/2019				CECW-15 6/27/2019				PO-8 6/27/2019			
Parameter Name	**Units**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**
Antimony, Total	ug/L	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0
Antimony, Dissolved	ug/L	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0
beta-BHC	ug/L	< 0.0046		0.0046	0.050	< 0.046		0.046	0.51	< 0.0048		0.0048	0.053	< 0.0046		0.0046	0.050	< 0.0044		0.0044	0.048	< 0.0044		0.0044	0.048
pH	S.U.	6.07		0.10	0.10	7.03		0.10	0.10	6.11		0.10	0.10	6.83		0.10	0.10	4.93		0.10	0.10	6.47		0.10	0.10
Conductivity	µS/cm	1560		0.1	0.1	22647		0.1	0.1	23991		0.1	0.1	2223		0.1	0.1	25672		0.1	0.1	2483		0.1	0.1
Turbidity	NTU	4.9		0.1	0.1	2.6		0.1	0.1	9.4		0.1	0.1	5.3		0.1	0.1	14.1		0.1	0.1	3.6		0.1	0.1
Dissolved Oxygen	mg/L	1.26		0.1	0.1	0.13		0.1	0.1	0.58		0.1	0.1	0.13		0.1	0.1	0.15		0.1	0.1	1.41		0.1	0.1
Temperature	°C	20.4		0.01	0.01	25.4		0.01	0.01	19.1		0.01	0.01	20.4		0.01	0.01	18.4		0.01	0.01	20.5		0.01	0.01
ORP	mV	-56.0		0.1	0.1	-341.5		0.1	0.1	14.4		0.1	0.1	-292.5		0.1	0.1	-127.3		0.1	0.1	-171.0		0.1	0.1

		PO-8D 6/27/2019				PO-9 6/27/2019				PO-10 6/27/2019				PO-10D 6/27/2019				PO-11 6/26/2019			
Parameter Name	**Units**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**	**Result**	**Qual**	**MDL**	**RL**
Antimony, Total	ug/L	< 0.57		0.57	2.0	< 0.57		0.57	2.0	< 0.57		0.57	2.0	**4.8**		0.57	2.0	< 0.57		0.57	2.0
Antimony, Dissolved	ug/L	< 0.57		0.57	2.0	NS		--	--	< 0.57		0.57	2.0	**3.6**		0.57	2.0	NS		--	--
beta-BHC	ug/L	< 0.0048		0.0048	0.053	< 0.0046		0.0046	0.051	< 0.0044		0.0044	0.048	< 0.0051		0.0051	0.055	< 0.0045		0.0045	0.049
pH	S.U.	6.61		0.10	0.10	5.90		0.10	0.10	7.37		0.10	0.10	7.87		0.10	0.10	5.77		0.10	0.10
Conductivity	µS/cm	1480		0.1	0.1	2174		0.1	0.1	2425		0.1	0.1	1472		0.1	0.1	2995		0.1	0.1
Turbidity	NTU	6.1		0.1	0.1	8.3		0.1	0.1	7.14		0.1	0.1	198.33		0.1	0.1	3.6		0.1	0.1
Dissolved Oxygen	mg/L	2.04		0.1	0.1	0.24		0.1	0.1	0.46		0.1	0.1	0.67		0.1	0.1	0.62		0.1	0.1
Temperature	°C	21.2		0.01	0.01	19.9		0.01	0.01	20.7		0.01	0.01	22.0		0.01	0.01	20.2		0.01	0.01
ORP	mV	78.7		0.1	0.1	-174.3		0.1	0.1	-203.3		0.1	0.1	-124.2		0.1	0.1	35.6		0.1	0.1

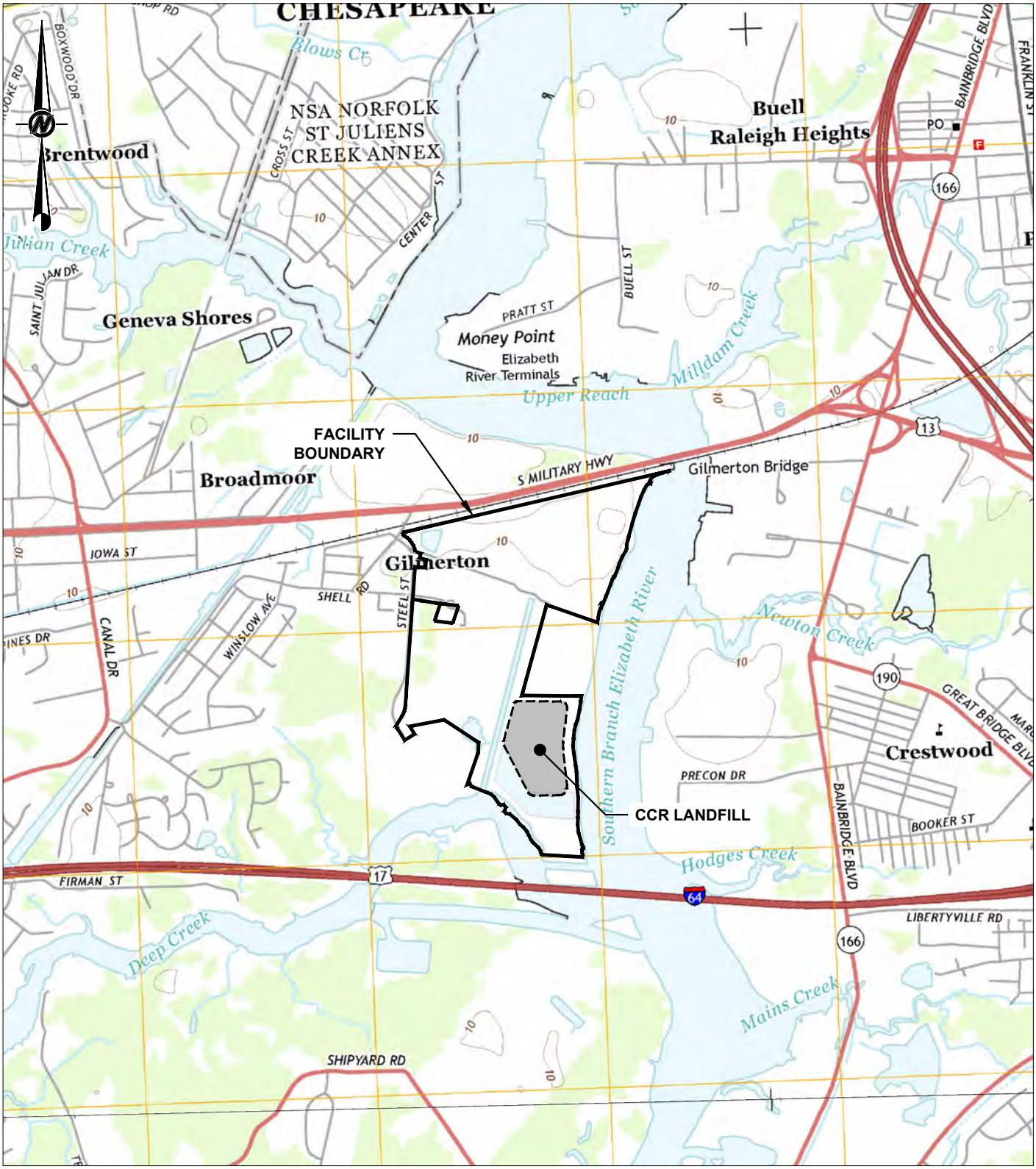
Notes:
MDL = Method detection limit
RL = Reporting limit
Qual = Data qualifiers
mg/L = Milligram per liter
µg/L = Microgram per liter
< = Less than reporting MDL
NS = Not sampled; dry
µS/cm = MicroSiemen per centimeter
S.U. = Standard Unit
NTU = Nephelometric Turbidity Unit
mV = milliVolt
°C = Degrees Celsius
Bold = Detected laboratory constituent

Table 3
Summary of CCR Groundwater Background Monitoring Results - Antimony
Chesapeake Energy Center - Bottom Ash Pond (including Historic Pond area)
Chesapeake, Virginia

Well ID	Well Location	June 1-12, 2018				July 16-18, 2018				August 27-31, 2018				October 8-12, 2018				November 5-9, 2018				December 10-13, 2018				January 7-9, 2019				February 4-7, 2019			
		Result	Qual	MDL	RL	Result	Qual	MDL	RL	Result	Qual	MDL	RL	Result	Qual	MDL	RL	Result	Qual	MDL	RL	Result	Qual	MDL	RL	Result	Qual	MDL	RL	Result	Qual	MDL	RL
CECW-21D	Upgradient	**0.13**	J	0.12	0.50	<0.077		0.077	0.50	**0.21**	J	0.077	0.50	<0.38		0.38	2.5	<0.38		0.38	2.5	<0.077		0.077	0.50	<0.077		0.077	0.50	<0.38		0.38	2.5
CECW-21YP	Upgradient	**0.15**	J	0.12	0.50	<0.077		0.077	0.50	<0.077	UJ	0.077	0.50	<0.38		0.38	2.5	<0.38		0.38	2.5	<0.077		0.077	0.50	<0.38		0.38	2.5	<0.38		0.38	2.5
CECW-22D	Upgradient	<0.12		0.12	0.50	<0.077		0.077	0.50	<0.077	UJ	0.077	0.50	<0.38		0.38	2.5	<0.38		0.38	2.5	<0.077		0.077	0.50	<0.077		0.077	0.50	<0.38		0.38	2.5
CW-01S	Downgradient	<1.2		1.2	5.0	<0.077		0.077	0.50	<0.77	UJ	0.77	5.0	<0.77		0.77	5.0	**0.68**	J	0.38	2.5	<0.077		0.077	0.50	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-01D	Downgradient	<0.58		0.58	2.5	<0.077		0.077	0.50	<0.77	UJ	0.77	5.0	<0.77		0.77	5.0	<1.5		1.5	10.0	<0.077		0.077	0.50	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-02S	Downgradient	**0.17**	J	0.12	0.50	<0.077		0.077	0.50	<0.77	UJ	0.77	5.0	<1.5		1.5	10.0	<1.5		1.5	10.0	<0.77		0.77	5.0	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-02D	Downgradient	<0.12		0.12	0.50	<0.077		0.077	0.50	<0.77	UJ	0.77	5.0	<1.5		1.5	10.0	<1.5		1.5	10.0	<0.77		0.77	5.0	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-03S	Downgradient	**0.24**	J	0.12	0.50	**0.18**	J	0.077	0.50	<0.77	UJ	0.77	5.0	**0.23**	J	0.077	0.50	<0.38		0.38	2.5	<0.77		0.77	5.0	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-03D	Downgradient	<0.58		0.58	2.5	<0.077		0.077	0.50	<0.77	UJ	0.77	5.0	<0.077		0.077	0.50	<0.38		0.38	2.5	<0.77		0.77	5.0	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-04S	Downgradient	<0.58		0.58	2.5	<0.077		0.077	0.50	<0.77	UJ	0.77	5.0	<0.38		0.38	2.5	<0.38		0.38	2.5	<0.77		0.77	5.0	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-04D	Downgradient	<0.58		0.58	2.5	<0.077		0.077	0.50	<0.77	UJ	0.77	5.0	<0.77		0.77	5.0	<0.38		0.38	2.5	<0.077		0.077	0.50	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-05S	Downgradient	**0.85**	J	0.58	2.5	**1.3**		0.077	0.5	<0.77	UJ	0.77	5.0	**1.2**	J	0.77	5.0	<0.38		0.38	2.5	**1.0**	J	0.77	5.0	**0.55**	J	0.38	2.5	**0.60**	J	0.38	2.5
CW-05D	Downgradient	<0.12		0.12	0.50	<0.077		0.077	0.50	<0.77	UJ	0.77	5.0	<0.77		0.77	5.0	**0.62**	J	0.38	2.5	<0.077		0.077	0.50	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-06S	Downgradient	<0.12		0.12	0.50	<0.077		0.077	0.50	<1.5	UJ	1.5	10.0	<0.077		0.077	0.50	<0.38		0.38	2.5	<0.77		0.77	5.0	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-06D	Downgradient	**0.12**	J	0.12	0.50	**0.26**	J	0.077	0.50	<0.38	UJ	0.38	2.5	<0.077		0.077	0.50	<0.38		0.38	2.5	0.50	U	0.077	0.50	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-07S	Downgradient	<0.58		0.58	2.5	<0.077		0.077	0.50	<0.38	UJ	0.38	2.5	<0.077		0.077	0.50	<0.38		0.38	2.5	<0.077		0.077	0.50	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-07D	Downgradient	<0.58		0.58	2.5	<0.077		0.077	0.50	<1.5	UJ	1.5	10.0	<0.38		0.38	2.5	<0.38		0.38	2.5	0.50	U	0.077	0.50	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-08S	Downgradient	<0.58		0.58	2.5	<0.077		0.077	0.50	<1.5	UJ	1.5	10.0	<0.38		0.38	2.5	<0.38		0.38	2.5	<0.077		0.077	0.50	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-08D	Downgradient	<0.58		0.58	2.5	<0.077		0.077	0.50	<1.5	UJ	1.5	10.0	<0.38		0.38	2.5	<0.38		0.38	2.5	<0.38		0.38	2.5	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-09S	Downgradient	<0.12		0.12	0.50	<0.077		0.077	0.50	<0.77	UJ	0.77	5.0	<0.77		0.77	5.0	<0.38		0.38	2.5	<0.077		0.077	0.50	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-09D	Downgradient	<0.58		0.58	2.5	**0.32**	J	0.077	0.50	<0.77	UJ	0.77	5.0	<0.077		0.077	0.50	<0.38		0.38	2.5	<0.77		0.77	5.0	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-10S	Downgradient	<0.12		0.12	0.50	<0.077		0.077	0.50	<0.077	UJ	0.077	0.50	<0.077		0.077	0.50	<0.38		0.38	2.5	<0.077		0.077	0.50	<0.077		0.077	0.50	<0.38		0.38	2.5
CW-10D	Downgradient	<0.12		0.12	0.50	<0.077		0.077	0.50	<0.077	UJ	0.077	0.50	<0.077		0.077	0.50	<0.38		0.38	2.5	<0.077		0.077	0.50	<0.077		0.077	0.50	<0.38		0.38	2.5
CW-11S	Downgradient	<0.12		0.12	0.50	<0.077		0.077	0.50	<0.077	UJ	0.077	0.50	<0.077		0.077	0.50	<0.38		0.38	2.5	<0.077		0.077	0.50	<0.077		0.077	0.50	<0.38		0.38	2.5
CW-11D	Downgradient	<0.12		0.12	0.50	<0.077		0.077	0.50	<0.077	UJ	0.077	0.50	<0.077		0.077	0.50	<0.38		0.38	2.5	<0.077		0.077	0.50	<0.077		0.077	0.50	<0.38		0.38	2.5
CW-12S	Downgradient	<0.12		0.12	0.50	<0.077		0.077	0.50	<0.077	UJ	0.077	0.50	<0.38		0.38	2.5	<0.38		0.38	2.5	<0.38		0.38	2.5	<0.38		0.38	2.5	<0.38		0.38	2.5
CW-12D	Downgradient	<0.12		0.12	0.50	<0.077		0.077	0.50	<0.77	UJ	0.77	5.0	<0.38		0.38	2.5	<0.38		0.38	2.5	<0.38		0.38	2.5	<0.38		0.38	2.5	<0.38		3.80	2.5

Notes:
Antimony concentrations in micrograms per liter (µg/L)
MDL = Method detection limit
RL = Reporting limit
< = Not detected; value represents the method detection limit
Bold font = Detected concentration

Qualifiers (Qual):
Laboratory qualifiers:
J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
Data validation qualifiers:
U = not detected, value is the compound quantitation limit or the minimum detectable concentration
UJ = compound was not detected above the reported sample quantitation limit; however, the reported limit is approximate and may or may not represent the actual limit of quantitation



REFERENCE

BASE MAP CONSISTS OF USGS 7.5 MINUTE QUADRANGLES NAMED NORFOLK SOUTH AND DEEP CREEK, VIRGINIA, DATED 2013.

2000 0 2000

SCALE FEET

CLIENT
DOMINION ENERGY

CONSULTANT
GOLDER

YYYY-MM-DD	2019-11-04
DESIGNED	
PREPARED	SIB
REVIEWED	
APPROVED	

PROJECT
CHESAPEAKE ENERGY CENTER
CHESAPEAKE, VIRGINIA
NATURE AND EXTENT STUDY ADDENDUM

TITLE
SITE LOCATION MAP

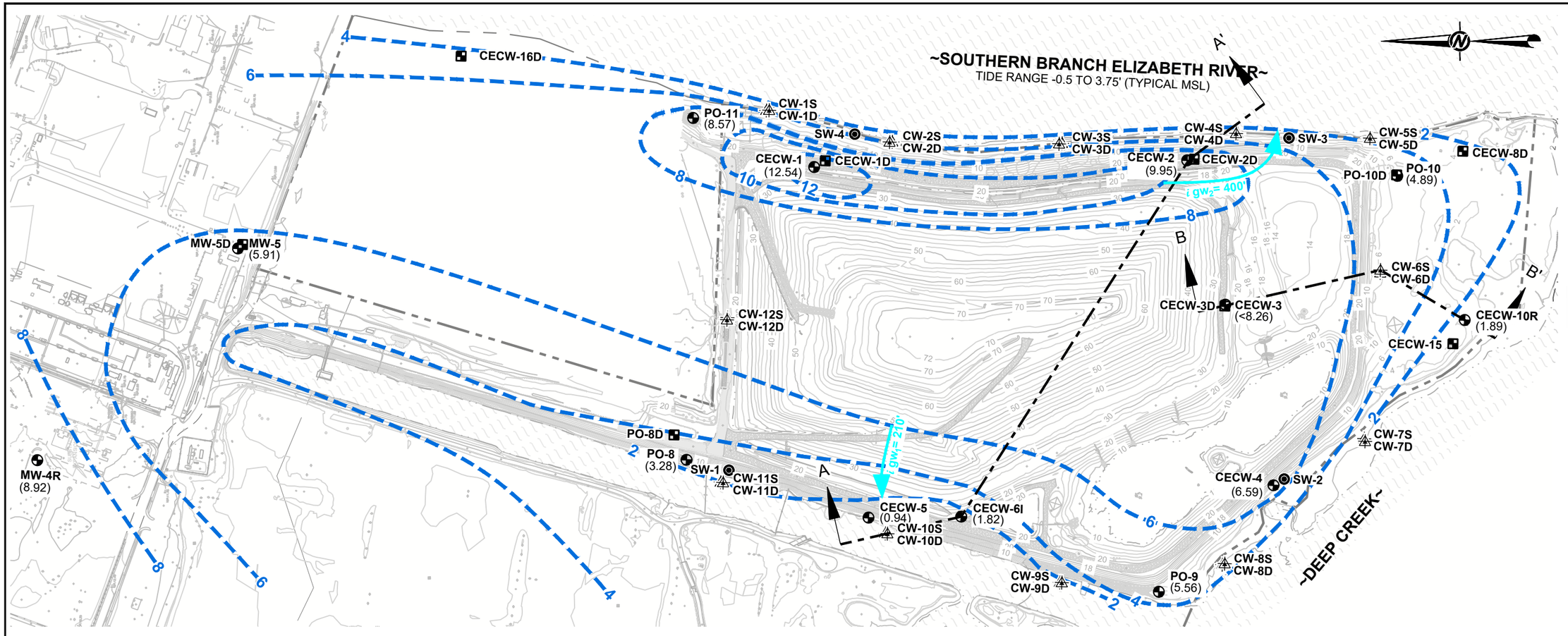
PROJECT NO.	REV.	DRAWING
19-117210	0	1

Path: G:\Plan Production Data Files\Drawing Data Files\19-117210\B - Nature + Extent\Active Drawings\19117210B01.dwg

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

1 in

0



LEGEND

	PROPERTY LINE
	ADJACENT PARCEL PROPERTY LINE
50	MAJOR TOPOGRAPHIC CONTOUR
48	MINOR TOPOGRAPHIC CONTOUR
10	GROUNDWATER SURFACE CONTOUR [FEET ABOVE MEAN SEA LEVEL (AMSL)]
	APPROXIMATE GROUNDWATER FLOW LINE
$i\ gw_i$= 210'	GROUNDWATER FLOW PATH LENGTH (FEET)
PO-8	MONITORING WELL LOCATION AND IDENTIFICATION
(7.23)	STATIC WATER LEVEL ELEVATION (FEET AMSL)
(NM)	NOT MEASURED
CW-12S	CCR WELL
CECW-15	OBSERVATION WELL
SW-3	SURFACE WATER POINTS
A A'	CROSS SECTION

NOTES

1. EXISTING TOPOGRAPHY SHOWN IN THIS DRAWING SET IS PREPARED BY PHOTOGRAMMETRIC METHODS BASED ON AERIAL PHOTOGRAPHY PREPARED BY MCKENZIE & SNYDER INC., FOR H&B SURVEYING, DATED APRIL, 2016. BOTTOM ASH GRADES SHOWN ARE FROM FIELD SURVEY COMPLETED ON JANUARY 15, 2018 BY D & M SURVEYORS, P.C.
2. NORTH SHOWN IN REFERENCE TO VIRGINIA STATE PLANE, NAD27 DATUM, VIRGINIA SOUTH ZONE. VERTICAL DATUM IS NGVD 29.
3. GROUNDWATER CONTOURS BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATUM, TOPOGRAPHIC CONTOURS, AND KNOWN FIELD CONDITIONS. THEREFORE, GROUNDWATER CONTOURS MAY NOT REFLECT ACTUAL GROUNDWATER CONDITIONS.
4. 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.
5. PO-8 GROUNDWATER LEVEL POSSIBLY ERRONEOUS. SUBSEQUENT FEBRUARY 27, 2019, MEASUREMENT USED IN CREATION OF THE FEBRUARY 25, 2019, POTENTIOMETRIC SURFACE MAP.

CLIENT
DOMINION ENERGY

CONSULTANT
GOLDER

YYYY-MM-DD	2019-11-05
DESIGNED	
PREPARED	SIB
REVIEWED	
APPROVED	

PROJECT
CHESAPEAKE ENERGY CENTER
CHESAPEAKE, VIRGINIA
NATURE AND EXTENT STUDY ADDENDUM

TITLE
SITE MAP
POTENTIOMETRIC SURFACE MAP
FEBRUARY 25, 2019 (SEE NOTES)

PROJECT NO.
19117210

REV.
0

DRAWING
2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

1 in
0

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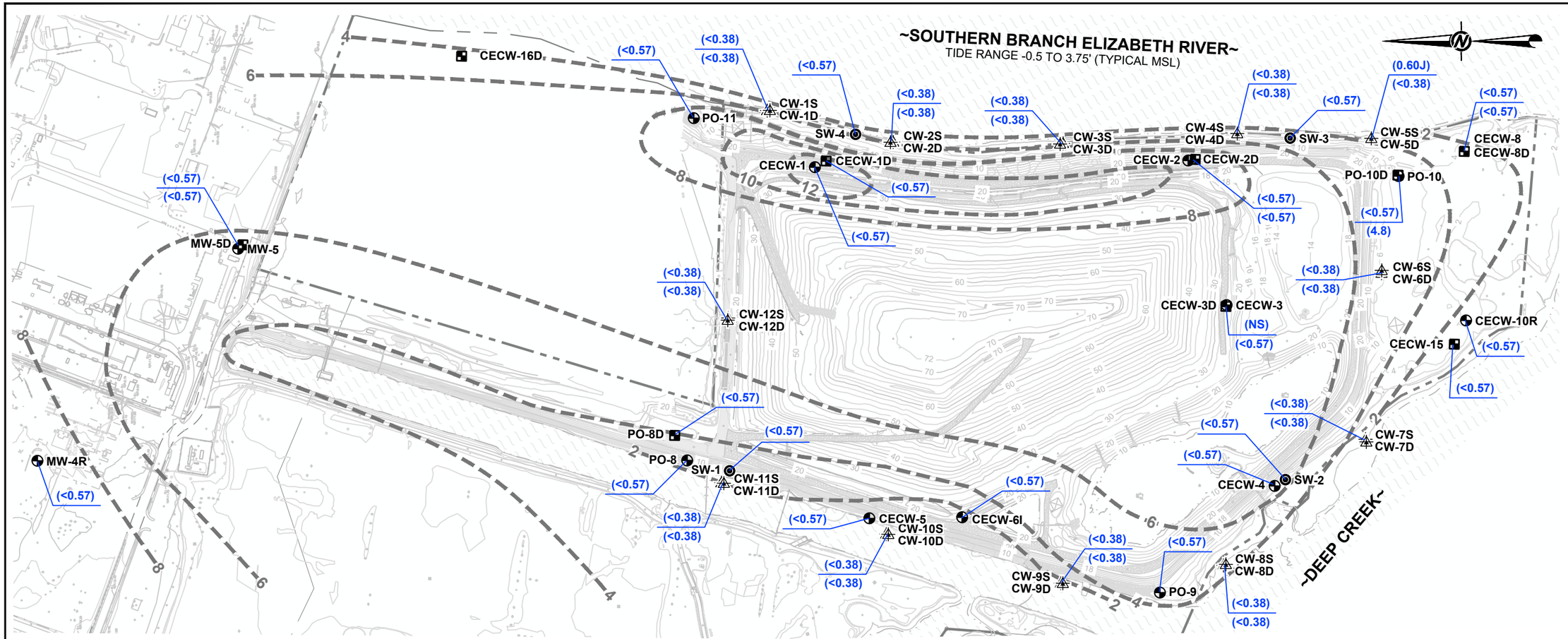

LEGEND

———	PROPERTY LINE
———	ADJACENT PARCEL PROPERTY LINE
50	MAJOR TOPOGRAPHIC CONTOUR
48	MINOR TOPOGRAPHIC CONTOUR
10	GROUNDWATER SURFACE CONTOUR [FEET ABOVE MEAN SEA LEVEL (AMSL)]
PO-8	MONITORING WELL LOCATION AND IDENTIFICATION
(NS)	NOT SAMPLED
CW-12S	CCR WELL
CECW-15	OBSERVATION WELL
SW-3	SURFACE WATER POINTS
(<0.57) / (<0.57)	SHALLOW WELL ANTIMONY RESULTS (TOP) DEEP WELL ANTIMONY RESULTS (BOTTOM)

NOTES

1. EXISTING TOPOGRAPHY SHOWN IN THIS DRAWING SET IS PREPARED BY PHOTOGRAMMETRIC METHODS BASED ON AERIAL PHOTOGRAPHY PREPARED BY MCKENZIE & SNYDER INC., FOR H&B SURVEYING, DATED APRIL, 2016. BOTTOM ASH GRADES SHOWN ARE FROM FIELD SURVEY COMPLETED ON JANUARY 15, 2018 BY D & M SURVEYORS, P.C.
2. NORTH SHOWN IN REFERENCE TO VIRGINIA STATE PLANE, NAD27 DATUM, VIRGINIA SOUTH ZONE. VERTICAL DATUM IS NGVD 29.
3. GROUNDWATER CONTOURS BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATUM, TOPOGRAPHIC CONTOURS, AND KNOWN FIELD CONDITIONS. THEREFORE, GROUNDWATER CONTOURS MAY NOT REFLECT ACTUAL GROUNDWATER CONDITIONS.
4. 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.
5. PO-8 GROUNDWATER LEVEL POSSIBLY ERRONEOUS. SUBSEQUENT FEBRUARY 27, 2019, MEASUREMENT USED IN CREATION OF THE FEBRUARY 25, 2019, POTENTIOMETRIC SURFACE MAP.
6. ANTIMONY RESULTS FOR SW-1, SW-2, SW-3, AND SW-4 FROM SEPTEMBER 17, 2019 SAMPLING EVENT.
7. ANTIMONY RESULTS FROM CW-SERIES WELLS FROM FEBRUARY 4, 2019 EVENT.
8. ANTIMONY RESULTS FROM COMPLIANCE WELLS FROM SEPTEMBER 2019 EVENT.
9. ALL ANALYTICAL RESULTS IN OR PARTS PER BILLION ug/L. J FLAG INDICATES ESTIMATED CONCENTRATION.
10. DATA NOT CONTOURED SINCE ALL RESULTS LESS THEN GPS BASED ON THE MAXIMUM CONTAMINANT LEVEL OF 6.0 ug/L.

CLIENT
DOMINION ENERGY

CONSULTANT
GOLDER

	YYYY-MM-DD	2019-11-05
DESIGNED		RIP
PREPARED		SIB
REVIEWED		MGW
APPROVED		MGW

PROJECT
CHESAPEAKE ENERGY CENTER
CHESAPEAKE, VIRGINIA
NATURE AND EXTENT STUDY ADDENDUM

TITLE
ANTIMONY ISOCONCENTRATION CONTOUR MAP

PROJECT NO.
19117210

REV.
0

DRAWING
3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

1 in
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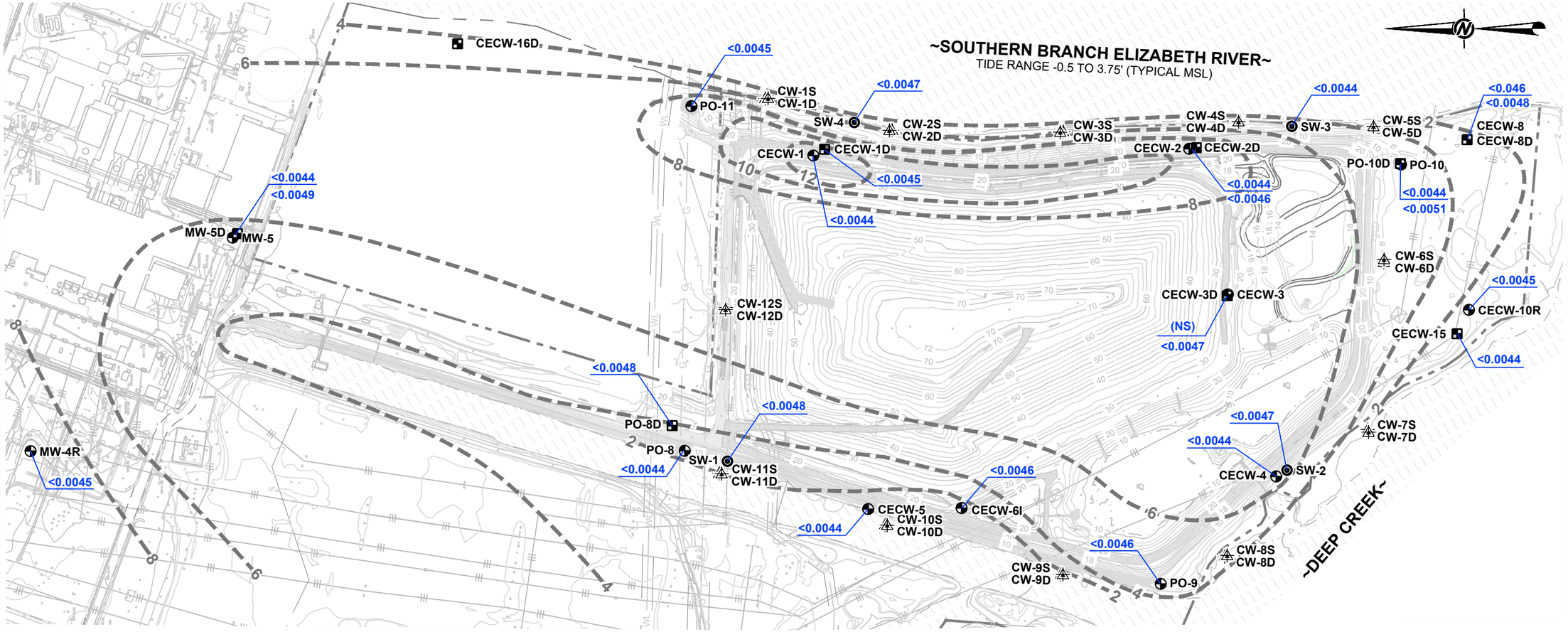

LEGEND

———	PROPERTY LINE
———	ADJACENT PARCEL PROPERTY LINE
50	MAJOR TOPOGRAPHIC CONTOUR
48	MINOR TOPOGRAPHIC CONTOUR
10	GROUNDWATER SURFACE CONTOUR [FEET ABOVE MEAN SEA LEVEL (AMSL)]
PO-8	MONITORING WELL LOCATION AND IDENTIFICATION
(NS)	NOT SAMPLED
CW-12S	CCR WELL
CECW-15	OBSERVATION WELL
SW-3	SURFACE WATER POINTS
<0.0044	SHALLOW WELL BETA-BHC RESULTS
<0.0044	DEEP WELL BETA-BHC RESULTS

NOTES

1. EXISTING TOPOGRAPHY SHOWN IN THIS DRAWING SET IS PREPARED BY PHOTOGRAMMETRIC METHODS BASED ON AERIAL PHOTOGRAPHY PREPARED BY MCKENZIE & SNYDER INC., FOR H&B SURVEYING, DATED APRIL, 2016. BOTTOM ASH GRADES SHOWN ARE FROM FIELD SURVEY COMPLETED ON JANUARY 15, 2018 BY D & M SURVEYORS, P.C.
2. NORTH SHOWN IN REFERENCE TO VIRGINIA STATE PLANE, NAD27 DATUM, VIRGINIA SOUTH ZONE. VERTICAL DATUM IS NGVD 29.
3. GROUNDWATER CONTOURS BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATUM, TOPOGRAPHIC CONTOURS, AND KNOWN FIELD CONDITIONS. THEREFORE, GROUNDWATER CONTOURS MAY NOT REFLECT ACTUAL GROUNDWATER CONDITIONS.
4. 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.
5. PO-8 GROUNDWATER LEVEL POSSIBLY ERRONEOUS. SUBSEQUENT FEBRUARY 27, 2019, MEASUREMENT USED IN CREATION OF THE FEBRUARY 25, 2019, POTENTIOMETRIC SURFACE MAP.
6. BETA-BHC RESULTS FOR SW-1, SW-2, SW-3, AND SW-4 FROM SEPTEMBER 17, 2019 SAMPLING EVENT.
7. BETA-BHC RESULTS FROM COMPLIANCE WELLS FROM SEPTEMBER 2019 EVENT.
8. ALL ANALYTICAL RESULTS IN ug/L OR PARTS PER BILLION. J FLAG INDICATES ESTIMATED CONCENTRATION.
9. DATA NOT CONTOURED SINCE ALL RESULTS ARE LESS THAN THE GPS BASED ON THE LABORATORY QUANTITATIVE LIMIT.
10. THE CW SERIES WELLS WERE NOT SAMPLED (NS) FOR BETA-BHC.

YYYY-MM-DD 2019-11-05
DESIGNED RIP
PREPARED SIB
REVIEWED MGW
APPROVED MGW

CLIENT
DOMINION ENERGY

CONSULTANT
GOLDER

PROJECT
CHESAPEAKE ENERGY CENTER
CHESAPEAKE, VIRGINIA
NATURE AND EXTENT STUDY ADDENDUM

TITLE
BETA-BHC ISOCONCENTRATION CONTOUR MAP

PROJECT NO.
19117210

REV.
0

DRAWING
4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

1 in

0

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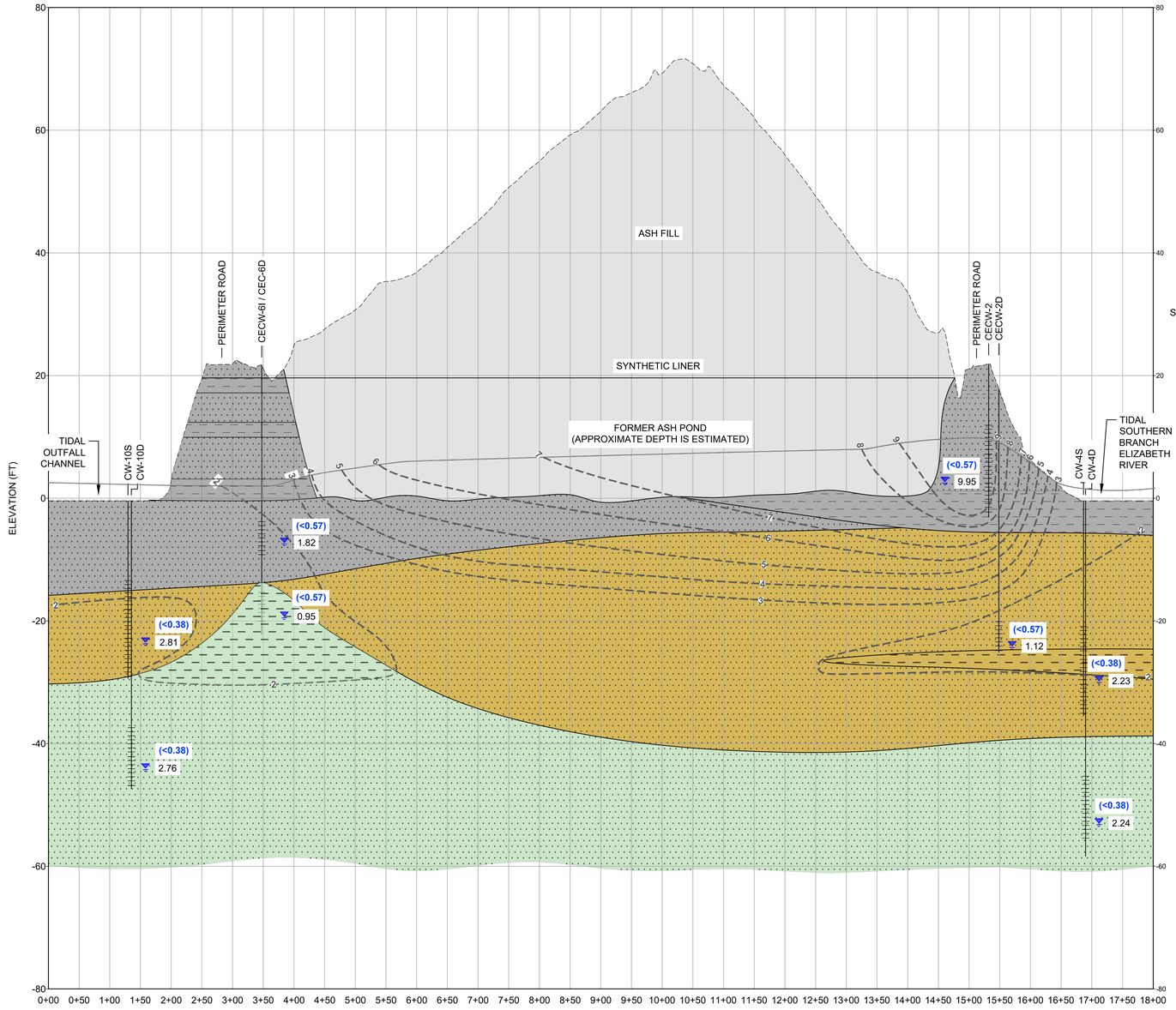

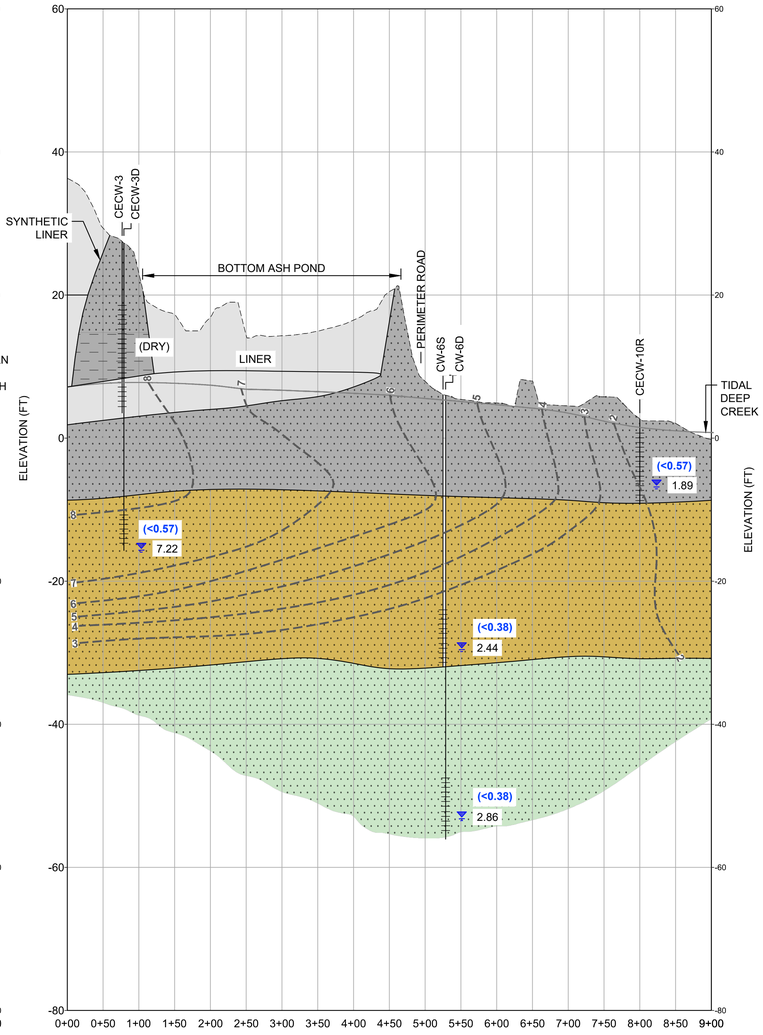

LEGEND

- EXISTING GROUND
- YORKTOWN FORMATION
- NORFOLK FORMATION
- ALLUVIUM / FILL
- ASH
- (NS) NOT SAMPLED
- POTENTIOMETRIC SURFACE ELEVATION (ASSUMED SEMI-CONFINED CONDITIONS)
- EQUIPOTENTIAL LINES OF EQUAL PRESSURE
- MONITORING WELL IDENTIFICATION WITH GROUND SURFACE ELEVATION (PW-2)
- STATIC WATER LEVEL ELEVATION (1.12)
- SCREENED INTERVAL
- ANTIMONY (UG/L) (<0.57)

SCALE 10 0 10 FEET

SCALE 100 0 100 200 FEET

REV.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW
0	11/13/19	DRAFT	MGW	SIB	MGW	MGW

SEAL

CLIENT
DOMINION ENERGY

CONSULTANT
GOLDER
GOLDER ASSOCIATES
2108 WEST LABURNUM AVENUE
SUITE 200
RICHMOND, VA 23227
(804) 358-7900
www.golder.com

PROJECT
CHESAPEAKE ENERGY CENTER
CHESAPEAKE, VIRGINIA
NATURE AND EXTENT STUDY ADDENDUM

TITLE
VERTICAL ISOCONCENTRATION CROSS-SECTIONS ANTIMONY

PROJECT NO.
19-117210

REV. 0 of DRAWING 5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ARCH D

1 in 0

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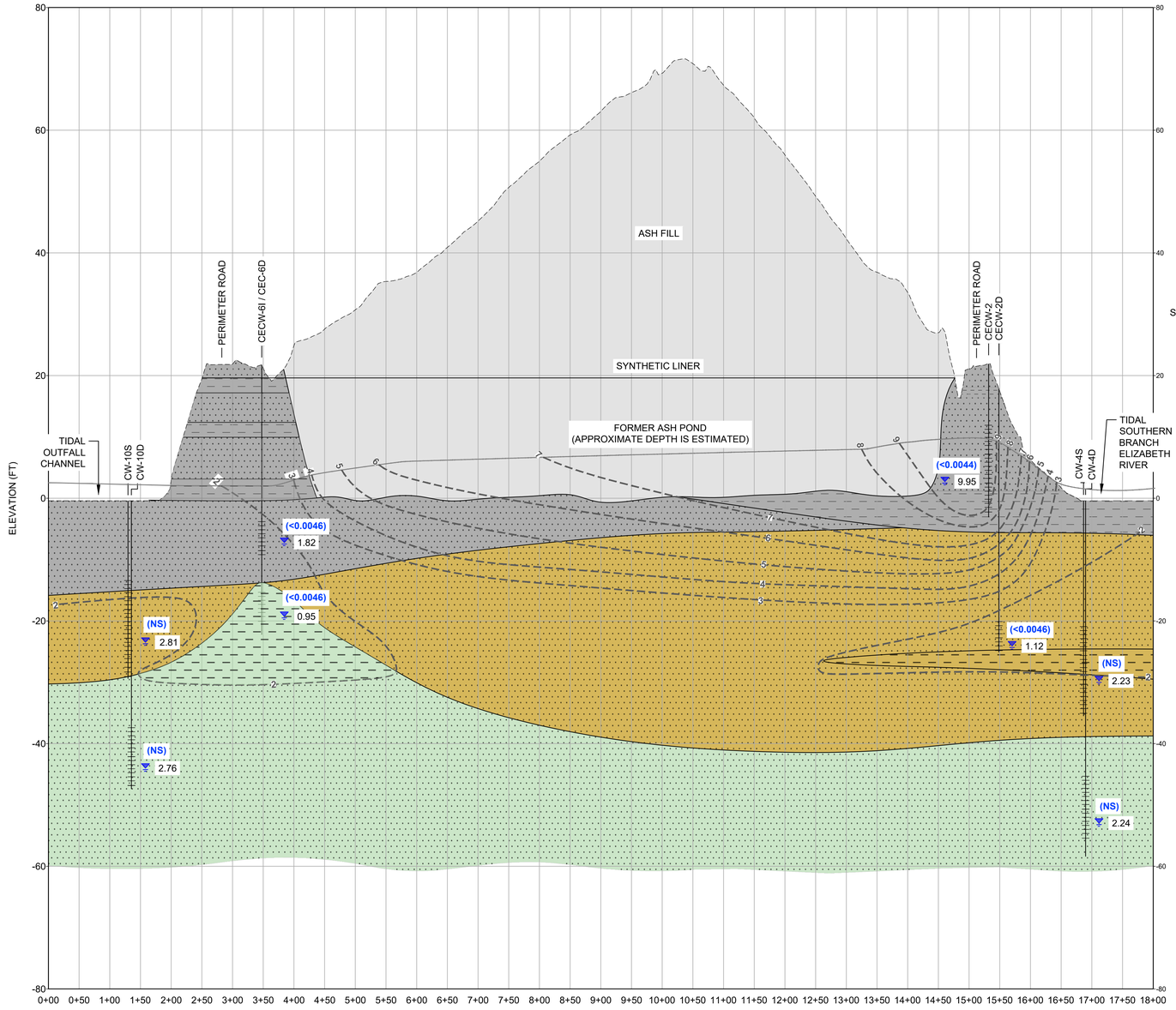
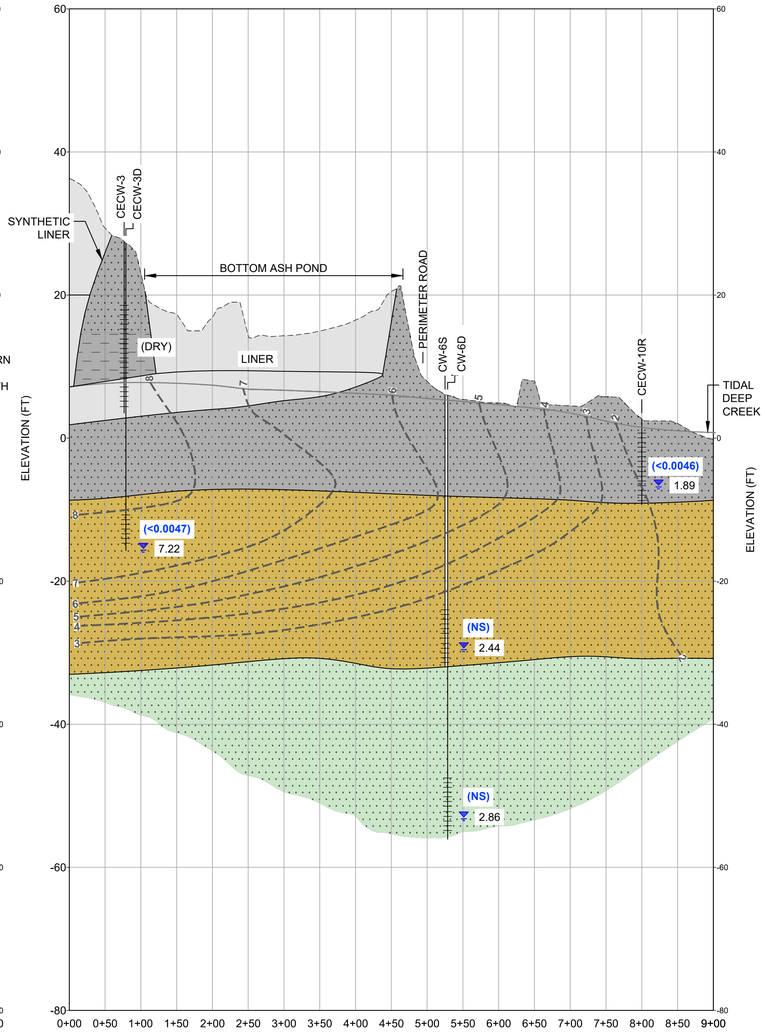


A (SOUTH) CROSS SECTION A - A' A' (NORTH)



B (EAST) CROSS SECTION B - B' B' (WEST)

LEGEND

- EXISTING GROUND
- YORKTOWN FORMATION
- NORFOLK FORMATION
- ALLUVIUM / FILL
- ASH
- (NS) NOT SAMPLED
- POTENTIOMETRIC SURFACE ELEVATION (ASSUMED SEMI-CONFINED CONDITIONS)
- 7 EQUIPOTENTIAL LINES OF EQUAL PRESSURE
- MONITORING WELL IDENTIFICATION WITH GROUND SURFACE ELEVATION (PW-2)
- STATIC WATER LEVEL ELEVATION (1.12)
- SCREENED INTERVAL
- BETA-BHC (UG/L) (<0.0045)

SCALE 100 0 100 200 FEET

SCALE 10 0 10 FEET

REV.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW
0	11/13/19	DRAFT	MGW	SIB	MGW	MGW

SEAL

CLIENT
DOMINION ENERGY

CONSULTANT
GOLDER ASSOCIATES
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RICHMOND, VA 23227
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GOLDER

PROJECT
CHESAPEAKE ENERGY CENTER
CHESAPEAKE, VIRGINIA
NATURE AND EXTENT STUDY ADDENDUM

TITLE
VERTICAL ISOCONCENTRATION CROSS-SECTIONS BETA-BHC

PROJECT NO.
19-117210

REV. 0 of DRAWING 6

1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ARCH D

Path: G:\Plan Production Data Files\Drawing Data Files\19-117210\B - Nature + Extent\Active Drawings\19117210B02.dwg

Appendix A

June 2019 Sampling Event Laboratory Certificates of Analysis and

Chain-of-Custody Forms

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-115234-2
Client Project/Site: 1SA19 CEC Makeup (C) - Beta-BHC

For:
Golder Associates Inc.
2108 W Laburnum Ave,
Suite 200
Richmond, Virginia 23227

Attn: Mr. Mike Williams

Authorized for release by:
7/17/2019 12:31:33 PM

Eric Lang, Manager of Project Management
(708)534-5200
eric.lang@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Golder Associates Inc. Job ID: 240-115234-2
Project/Site: 1SA19 CEC Makeup (C) - Beta-BHC

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Golder Associates Inc.
Project/Site: 1SA19 CEC Makeup (C) - Beta-BHC

Job ID: 240-115234-2

Job ID: 240-115234-2

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-115234-2

Comments
No additional comments.

Receipt
The samples were received on 6/29/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 13 coolers at receipt time were 1.5º C, 2.3º C, 2.3º C, 2.5º C, 3.1º C, 3.7º C, 4.1º C, 4.7º C, 4.9º C, 4.9º C, 4.9º C, 5.7º C and 5.7º C.

GC Semi VOA
Method(s) 8081B: The following sample was diluted due to the nature of the sample matrix: DUPLICATE (240-115234-5). As such, surrogate recoveries may be below the calibration range, and elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: Golder Associates Inc.
Job ID: 240-115234-2
Project/Site: 1SA19 CEC Makeup (C) - Beta-BHC

Method	Method Description	Protocol	Laboratory
8081B	Organochlorine Pesticides (GC)	SW846	TAL CAN
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL CAN

Protocol References:

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

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Golder Associates Inc.
Job ID: 240-115234-2
Project/Site: 1SA19 CEC Makeup (C) - Beta-BHC

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-115234-1	SW-1	Surface Water	06/27/19 16:30	06/29/19 09:30	
240-115234-2	SW-2	Surface Water	06/27/19 16:10	06/29/19 09:30	
240-115234-3	SW-3	Surface Water	06/27/19 15:50	06/29/19 09:30	
240-115234-4	SW-4	Surface Water	06/27/19 15:20	06/29/19 09:30	
240-115234-5	DUPLICATE	Surface Water	06/27/19 15:35	06/29/19 09:30	
240-115234-6	FIELD BLANK	Surface Water	06/27/19 14:25	06/29/19 09:30	

Detection Summary

Client: Golder Associates Inc.
Job ID: 240-115234-2
Project/Site: 1SA19 CEC Makeup (C) - Beta-BHC

Client Sample ID: SW-1 — Lab Sample ID: 240-115234-1

No Detections.

Client Sample ID: SW-2 — Lab Sample ID: 240-115234-2

No Detections.

Client Sample ID: SW-3 — Lab Sample ID: 240-115234-3

No Detections.

Client Sample ID: SW-4 — Lab Sample ID: 240-115234-4

No Detections.

Client Sample ID: DUPLICATE — Lab Sample ID: 240-115234-5

No Detections.

Client Sample ID: FIELD BLANK — Lab Sample ID: 240-115234-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115234-2
Project/Site: 1SA19 CEC Makeup (C) - Beta-BHC

Client Sample ID: SW-1
Lab Sample ID: 240-115234-1
Date Collected: 06/27/19 16:30
Matrix: Surface Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0048		0.053	0.0048	ug/L		07/03/19 11:16	07/09/19 19:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*70*		*10 - 120*	*07/03/19 11:16*	*07/09/19 19:51*	*1*
DCB Decachlorobiphenyl	*68*		*10 - 120*	*07/03/19 11:16*	*07/09/19 19:51*	*1*
Tetrachloro-m-xylene	*69*		*33 - 120*	*07/03/19 11:16*	*07/09/19 19:51*	*1*
Tetrachloro-m-xylene	*75*		*33 - 120*	*07/03/19 11:16*	*07/09/19 19:51*	*1*

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115234-2
Project/Site: 1SA19 CEC Makeup (C) - Beta-BHC

Client Sample ID: SW-2
Lab Sample ID: 240-115234-2
Date Collected: 06/27/19 16:10
Matrix: Surface Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0047		0.051	0.0047	ug/L		07/03/19 11:16	07/09/19 20:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*63*		*10 - 120*	*07/03/19 11:16*	*07/09/19 20:03*	*1*
DCB Decachlorobiphenyl	*63*		*10 - 120*	*07/03/19 11:16*	*07/09/19 20:03*	*1*
Tetrachloro-m-xylene	*66*		*33 - 120*	*07/03/19 11:16*	*07/09/19 20:03*	*1*
Tetrachloro-m-xylene	*69*		*33 - 120*	*07/03/19 11:16*	*07/09/19 20:03*	*1*

Client: Golder Associates Inc.
Job ID: 240-115234-2
Project/Site: 1SA19 CEC Makeup (C) - Beta-BHC

Client Sample ID: SW-3
Lab Sample ID: 240-115234-3
Date Collected: 06/27/19 15:50
Matrix: Surface Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:16	07/09/19 20:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*67*		*10 - 120*	*07/03/19 11:16*	*07/09/19 20:15*	*1*
DCB Decachlorobiphenyl	*67*		*10 - 120*	*07/03/19 11:16*	*07/09/19 20:15*	*1*
Tetrachloro-m-xylene	*72*		*33 - 120*	*07/03/19 11:16*	*07/09/19 20:15*	*1*
Tetrachloro-m-xylene	*75*		*33 - 120*	*07/03/19 11:16*	*07/09/19 20:15*	*1*

Client: Golder Associates Inc.
Job ID: 240-115234-2
Project/Site: 1SA19 CEC Makeup (C) - Beta-BHC

Client Sample ID: SW-4
Lab Sample ID: 240-115234-4
Date Collected: 06/27/19 15:20
Matrix: Surface Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0047		0.051	0.0047	ug/L		07/03/19 11:16	07/09/19 20:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*58*		*10 - 120*	*07/03/19 11:16*	*07/09/19 20:28*	*1*
DCB Decachlorobiphenyl	*59*		*10 - 120*	*07/03/19 11:16*	*07/09/19 20:28*	*1*
Tetrachloro-m-xylene	*54*		*33 - 120*	*07/03/19 11:16*	*07/09/19 20:28*	*1*
Tetrachloro-m-xylene	*60*		*33 - 120*	*07/03/19 11:16*	*07/09/19 20:28*	*1*

Client: Golder Associates Inc.
Job ID: 240-115234-2
Project/Site: 1SA19 CEC Makeup (C) - Beta-BHC

Client Sample ID: DUPLICATE
Lab Sample ID: 240-115234-5
Date Collected: 06/27/19 15:35
Matrix: Surface Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.048		0.52	0.048	ug/L		07/03/19 11:16	07/09/19 21:05	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*69*		*10 - 120*	*07/03/19 11:16*	*07/09/19 21:05*	*10*
DCB Decachlorobiphenyl	*69*		*10 - 120*	*07/03/19 11:16*	*07/09/19 21:05*	*10*
Tetrachloro-m-xylene	*69*		*33 - 120*	*07/03/19 11:16*	*07/09/19 21:05*	*10*
Tetrachloro-m-xylene	*68*		*33 - 120*	*07/03/19 11:16*	*07/09/19 21:05*	*10*

Client: Golder Associates Inc.
Job ID: 240-115234-2
Project/Site: 1SA19 CEC Makeup (C) - Beta-BHC

Client Sample ID: FIELD BLANK
Lab Sample ID: 240-115234-6
Date Collected: 06/27/19 14:25
Matrix: Surface Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:16	07/09/19 21:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*21*		*10 - 120*	*07/03/19 11:16*	*07/09/19 21:18*	*1*
DCB Decachlorobiphenyl	*19*		*10 - 120*	*07/03/19 11:16*	*07/09/19 21:18*	*1*
Tetrachloro-m-xylene	*71*		*33 - 120*	*07/03/19 11:16*	*07/09/19 21:18*	*1*
Tetrachloro-m-xylene	*64*		*33 - 120*	*07/03/19 11:16*	*07/09/19 21:18*	*1*

Surrogate Summary

Client: Golder Associates Inc.
Job ID: 240-115234-2
Project/Site: 1SA19 CEC Makeup (C) - Beta-BHC

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Surface Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	DCBP1 (10-120)	DCBP2 (10-120)	TCX1 (33-120)	TCX2 (33-120)
240-115234-1	SW-1	70	68	69	75
240-115234-2	SW-2	63	63	66	69
240-115234-3	SW-3	67	67	72	75
240-115234-4	SW-4	58	59	54	60
240-115234-4 MS	SW-4	56	54	56	61
240-115234-4 MSD	SW-4	73	66	64	66
240-115234-5	DUPLICATE	69	69	69	68
240-115234-6	FIELD BLANK	21	19	71	64

Surrogate Legend

DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	DCBP1 (10-120)	DCBP2 (10-120)	TCX1 (33-120)	TCX2 (33-120)
LCS 240-389622/23-A	Lab Control Sample	97	101	78	81
MB 240-389622/22-A	Method Blank	99	108	92	88

Surrogate Legend

DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 240-389622/22-A
Matrix: Water
Analysis Batch: 390389

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389622

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/03/19 11:16	07/09/19 18:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*99*		*10 - 120*	*07/03/19 11:16*	*07/09/19 18:47*	*1*
DCB Decachlorobiphenyl	*108*		*10 - 120*	*07/03/19 11:16*	*07/09/19 18:47*	*1*
Tetrachloro-m-xylene	*92*		*33 - 120*	*07/03/19 11:16*	*07/09/19 18:47*	*1*
Tetrachloro-m-xylene	*88*		*33 - 120*	*07/03/19 11:16*	*07/09/19 18:47*	*1*

Lab Sample ID: LCS 240-389622/23-A
Matrix: Water
Analysis Batch: 390389

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389622

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
beta-BHC			0.250	0.262		ug/L		105	36 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*97*		*10 - 120*
DCB Decachlorobiphenyl	*101*		*10 - 120*
Tetrachloro-m-xylene	*78*		*33 - 120*
Tetrachloro-m-xylene	*81*		*33 - 120*

Lab Sample ID: 240-115234-4 MS
Matrix: Surface Water
Analysis Batch: 390389

Client Sample ID: SW-4
Prep Type: Total/NA
Prep Batch: 389622

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
beta-BHC	<0.0047		0.238	0.194		ug/L		82	31 - 120		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*56*		*10 - 120*
DCB Decachlorobiphenyl	*54*		*10 - 120*
Tetrachloro-m-xylene	*56*		*33 - 120*
Tetrachloro-m-xylene	*61*		*33 - 120*

Lab Sample ID: 240-115234-4 MSD
Matrix: Surface Water
Analysis Batch: 390389

Client Sample ID: SW-4
Prep Type: Total/NA
Prep Batch: 389622

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
beta-BHC	<0.0047		0.250	0.236		ug/L		94	31 - 120	19	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*73*		*10 - 120*
DCB Decachlorobiphenyl	*66*		*10 - 120*
Tetrachloro-m-xylene	*64*		*33 - 120*
Tetrachloro-m-xylene	*66*		*33 - 120*

QC Association Summary

Client: Golder Associates Inc.
Job ID: 240-115234-2
Project/Site: 1SA19 CEC Makeup (C) - Beta-BHC

GC Semi VOA

Prep Batch: 389622

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115234-1	SW-1	Total/NA	Surface Water	3510C	
240-115234-2	SW-2	Total/NA	Surface Water	3510C	
240-115234-3	SW-3	Total/NA	Surface Water	3510C	
240-115234-4	SW-4	Total/NA	Surface Water	3510C	
240-115234-5	DUPLICATE	Total/NA	Surface Water	3510C	
240-115234-6	FIELD BLANK	Total/NA	Surface Water	3510C	
MB 240-389622/22-A	Method Blank	Total/NA	Water	3510C	
LCS 240-389622/23-A	Lab Control Sample	Total/NA	Water	3510C	
240-115234-4 MS	SW-4	Total/NA	Surface Water	3510C	
240-115234-4 MSD	SW-4	Total/NA	Surface Water	3510C	

Analysis Batch: 390389

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115234-1	SW-1	Total/NA	Surface Water	8081B	389622
240-115234-2	SW-2	Total/NA	Surface Water	8081B	389622
240-115234-3	SW-3	Total/NA	Surface Water	8081B	389622
240-115234-4	SW-4	Total/NA	Surface Water	8081B	389622
240-115234-5	DUPLICATE	Total/NA	Surface Water	8081B	389622
240-115234-6	FIELD BLANK	Total/NA	Surface Water	8081B	389622
MB 240-389622/22-A	Method Blank	Total/NA	Water	8081B	389622
LCS 240-389622/23-A	Lab Control Sample	Total/NA	Water	8081B	389622
240-115234-4 MS	SW-4	Total/NA	Surface Water	8081B	389622
240-115234-4 MSD	SW-4	Total/NA	Surface Water	8081B	389622

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: 1SA19 CEC Makeup (C) - Beta-BHC

Job ID: 240-115234-2

Client Sample ID: SW-1
Date Collected: 06/27/19 16:30
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115234-1
Matrix: Surface Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/09/19 19:51	BPM	TAL CAN

Client Sample ID: SW-2
Date Collected: 06/27/19 16:10
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115234-2
Matrix: Surface Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/09/19 20:03	BPM	TAL CAN

Client Sample ID: SW-3
Date Collected: 06/27/19 15:50
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115234-3
Matrix: Surface Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/09/19 20:15	BPM	TAL CAN

Client Sample ID: SW-4
Date Collected: 06/27/19 15:20
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115234-4
Matrix: Surface Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/09/19 20:28	BPM	TAL CAN

Client Sample ID: DUPLICATE
Date Collected: 06/27/19 15:35
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115234-5
Matrix: Surface Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		10	390389	07/09/19 21:05	BPM	TAL CAN

Client Sample ID: FIELD BLANK
Date Collected: 06/27/19 14:25
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115234-6
Matrix: Surface Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/09/19 21:18	BPM	TAL CAN

Laboratory References:
TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Golder Associates Inc.
Job ID: 240-115234-2
Project/Site: 1SA19 CEC Makeup (C) - Beta-BHC

Laboratory: Eurofins TestAmerica, Canton

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Virginia	NELAP	3	460175	09-14-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Canton
4101 Shuffel Street NW

North Canton, OH 44720-6900
phone 330 497 9396 fax 330 497 0772

Chain of Custody Record

eurofins

Regulatory Program: DW NPDES RCRA Other: **VSWMR/CAP**

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Mike Williams/Rachel Powell	Site Contact: Rachel Powell	Date: 6/27/19	COC No
Golder Associates Inc	Email: rpowell@golder.com	Lab Contact: Eric Lang	Carrier: FedEx	1 of 1 COCs
2108 West Laburnum Ave, Suite 200	Tel/Fax: 804-517-3381			Sampler: Kevin Weissgold/Nathan Chien
Richmond, VA 23227	Analysis Turnaround Time			For Lab Use Only: Rachel Powell
(804) 358-7900 Phone	CALENDAR DAYS / WORKING DAYS			Walk-in Client
(xxx) xxx-xxxx FAX	TAT if different from Below: 10			Lab Sampling
Project Name: 1SA19 CEC Makeup Sampling Event	2 weeks			Job / SDG No
Site: Chesapeake Energy Center, Virginia	1 week			
P O # 19117210	2 days			
	1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	beta-BHC - SW846 8081B	Sample Specific Notes
SW-1	6/27/19	1630	G	SW	2	N	N	X	
SW-2	6/27/19	1610	G	SW	2	N	N	X	
SW-3	6/27/19	1550	G	SW	2	N	N	X	
SW-4	6/27/19	1520	G	SW	4	N	Y	X	
Duplicate	6/27/19	1535	G	SW	2	N	N	X	
Field Blank	6/27/19	1425	G	SW	2	N	N	X	
								1	

240-115234 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other Zinc Acetate + NaOH

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample

Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client Disposal by Lab Archive for Months

Special Instructions/QC Requirements & Comments: All samples preserved on ice. Please provide a Level II Data package. Please see sample memo. Reporting Group C.

Custody Seals Intact: Yes No | Custody Seal No. | Cooler Temp. (°C): Obs'd: Corr'd: | Therm ID No.

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Rachel Powell	Golder	6/29/19 1400	FedEx		
Relinquished by	Company	Date/Time	Received by	Company	Date/Time
					6/29/19 1730
Relinquished by	Company	Date/Time	Received in Laboratory by	Company	Date/Time

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # :

Client: Golder Site Name: ___ Cooler unpacked by:

Cooler Received on 6/19/19 Opened on 6/19/19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # ___ Foam Box Client Cooler Box Other ___

Packing material used: Bubble Wrap Foam Plastic Bag None Other ___

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0.1 °C) Observed Cooler Temp. ___ °C Corrected Cooler Temp. ___ °C
   IR GUN #36 (CF +0.6°C) Observed Cooler Temp. ___ °C Corrected Cooler Temp. ___ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity ___ Yes No
   - Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   - Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   - Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Ins. legible Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# <u>HC984738</u>
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # ___ Yes No
16. Was a LL Hg or Me Hg trip blank present? ___ Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM ___ Date ___ by ___ via Verbal Voice Mail Other

Concerning ___

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

18. SAMPLE CONDITION

Sample(s) ___ were received after the recommended holding time had expired.

Sample(s) ___ were received in a broken container.

Sample(s) ___ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) ___ were further preserved in the laboratory.

Time preserved: ___ Preservative(s) added/Lot number(s): ___

VOA Sample Preservation - Date/Time VOAs Frozen: ___

WI-NC-099

Login # : ____________

TestAmerica Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-8 #36	-.7	[illegible]	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	0.9	[illegible]	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	1.4	1.5	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	4.8	4.9	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	4.8	4.9	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	5.6	5.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	4.0	4.1	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	3.6	3.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	3.0	3.1	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	5.6	5.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	2.2	2.3	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	2.4	2.5	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	4.8	4.9	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

Login Container Summary Report

240-115234

Temperature readings:

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
SW-1	240-115234-A-1	Plastic 500ml - with Zn Acetate and	>12		
SW-1	240-115234-B-1	Plastic 500ml - with Nitric Acid	<2		
SW-2	240-115234-A-2	Plastic 500ml - with Zn Acetate and	>12		
SW-2	240-115234-B-2	Plastic 500ml - with Nitric Acid	<2		
SW-3	240-115234-A-3	Plastic 500ml - with Zn Acetate and	>12		
SW-3	240-115234-B-3	Plastic 500ml - with Nitric Acid	<2		
SW-4	240-115234-A-4	Plastic 500ml - with Zn Acetate and	>12		
SW-4	240-115234-B-4	Plastic 500ml - with Zn Acetate and	>12		
SW-4	240-115234-C-4	Plastic 500ml - with Nitric Acid	<2		
SW-4	240-115234-D-4	Plastic 500ml - with Nitric Acid	<2		
DUPLICATE	240-115234-A-5	Plastic 500ml - with Zn Acetate and	>12		
DUPLICATE	240-115234-B-5	Plastic 500ml - with Nitric Acid	<2		
FIELD BLANK	240-115234-A-6	Plastic 500ml - with Zn Acetate and	>12		
FIELD BLANK	240-115234-B-6	Plastic 500ml - with Nitric Acid	<2		

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-115234-3
Client Project/Site: 1SA19 CEC Makeup (C) - Antimony

For:
Golder Associates Inc.
2108 W Laburnum Ave,
Suite 200
Richmond, Virginia 23227

Attn: Mr. Mike Williams

Authorized for release by:
7/18/2019 10:54:50 AM

Eric Lang, Manager of Project Management
(708)534-5200
eric.lang@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Golder Associates Inc. Job ID: 240-115234-3
Project/Site: 1SA19 CEC Makeup (C) - Antimony

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-115234-3

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-115234-3

Comments
No additional comments.

Receipt
The samples were received on 6/29/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 13 coolers at receipt time were 1.5º C, 2.3º C, 2.3º C, 2.5º C, 3.1º C, 3.7º C, 4.1º C, 4.7º C, 4.9º C, 4.9º C, 4.9º C, 5.7º C and 5.7º C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: Golder Associates Inc.
Job ID: 240-115234-3
Project/Site: 1SA19 CEC Makeup (C) - Antimony

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

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

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Golder Associates Inc.
Job ID: 240-115234-3
Project/Site: 1SA19 CEC Makeup (C) - Antimony

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-115234-1	SW-1	Surface Water	06/27/19 16:30	06/29/19 09:30	
240-115234-2	SW-2	Surface Water	06/27/19 16:10	06/29/19 09:30	
240-115234-3	SW-3	Surface Water	06/27/19 15:50	06/29/19 09:30	
240-115234-4	SW-4	Surface Water	06/27/19 15:20	06/29/19 09:30	
240-115234-5	DUPLICATE	Surface Water	06/27/19 15:35	06/29/19 09:30	
240-115234-6	FIELD BLANK	Surface Water	06/27/19 14:25	06/29/19 09:30	

Detection Summary

Client: Golder Associates Inc.
Job ID: 240-115234-3
Project/Site: 1SA19 CEC Makeup (C) - Antimony

Client Sample ID: SW-1 — Lab Sample ID: 240-115234-1

No Detections.

Client Sample ID: SW-2 — Lab Sample ID: 240-115234-2

No Detections.

Client Sample ID: SW-3 — Lab Sample ID: 240-115234-3

No Detections.

Client Sample ID: SW-4 — Lab Sample ID: 240-115234-4

No Detections.

Client Sample ID: DUPLICATE — Lab Sample ID: 240-115234-5

No Detections.

Client Sample ID: FIELD BLANK — Lab Sample ID: 240-115234-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115234-3
Project/Site: 1SA19 CEC Makeup (C) - Antimony

Client Sample ID: SW-1
Lab Sample ID: 240-115234-1
Date Collected: 06/27/19 16:30
Matrix: Surface Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 20:04	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115234-3
Project/Site: 1SA19 CEC Makeup (C) - Antimony

Client Sample ID: SW-2
Lab Sample ID: 240-115234-2
Date Collected: 06/27/19 16:10
Matrix: Surface Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 20:06	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115234-3
Project/Site: 1SA19 CEC Makeup (C) - Antimony

Client Sample ID: SW-3
Lab Sample ID: 240-115234-3
Date Collected: 06/27/19 15:50
Matrix: Surface Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 20:09	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115234-3
Project/Site: 1SA19 CEC Makeup (C) - Antimony

Client Sample ID: SW-4
Lab Sample ID: 240-115234-4
Date Collected: 06/27/19 15:20
Matrix: Surface Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 19:47	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115234-3
Project/Site: 1SA19 CEC Makeup (C) - Antimony

Client Sample ID: DUPLICATE
Lab Sample ID: 240-115234-5
Date Collected: 06/27/19 15:35
Matrix: Surface Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 20:11	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115234-3
Project/Site: 1SA19 CEC Makeup (C) - Antimony

Client Sample ID: FIELD BLANK
Lab Sample ID: 240-115234-6
Date Collected: 06/27/19 14:25
Matrix: Surface Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 20:14	1

QC Sample Results

Client: Golder Associates Inc.
Project/Site: 1SA19 CEC Makeup (C) - Antimony

Job ID: 240-115234-3

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-389203/1-A
Matrix: Water
Analysis Batch: 391579

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389203

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 19:43	1

Lab Sample ID: LCS 240-389203/2-A
Matrix: Water
Analysis Batch: 391579

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389203

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	100	101		ug/L		101	80 - 120

Lab Sample ID: 240-115234-4 MS
Matrix: Surface Water
Analysis Batch: 391579

Client Sample ID: SW-4
Prep Type: Total Recoverable
Prep Batch: 389203

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	<0.57		100	102		ug/L		102	75 - 125

Lab Sample ID: 240-115234-4 MSD
Matrix: Surface Water
Analysis Batch: 391579

Client Sample ID: SW-4
Prep Type: Total Recoverable
Prep Batch: 389203

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	<0.57		100	102		ug/L		102	75 - 125	0	20

QC Association Summary

Client: Golder Associates Inc.
Job ID: 240-115234-3
Project/Site: 1SA19 CEC Makeup (C) - Antimony

Metals

Prep Batch: 389203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115234-1	SW-1	Total Recoverable	Surface Water	3005A	
240-115234-2	SW-2	Total Recoverable	Surface Water	3005A	
240-115234-3	SW-3	Total Recoverable	Surface Water	3005A	
240-115234-4	SW-4	Total Recoverable	Surface Water	3005A	
240-115234-5	DUPLICATE	Total Recoverable	Surface Water	3005A	
240-115234-6	FIELD BLANK	Total Recoverable	Surface Water	3005A	
MB 240-389203/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-389203/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
240-115234-4 MS	SW-4	Total Recoverable	Surface Water	3005A	
240-115234-4 MSD	SW-4	Total Recoverable	Surface Water	3005A	

Analysis Batch: 391579

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115234-1	SW-1	Total Recoverable	Surface Water	6020A	389203
240-115234-2	SW-2	Total Recoverable	Surface Water	6020A	389203
240-115234-3	SW-3	Total Recoverable	Surface Water	6020A	389203
240-115234-4	SW-4	Total Recoverable	Surface Water	6020A	389203
240-115234-5	DUPLICATE	Total Recoverable	Surface Water	6020A	389203
240-115234-6	FIELD BLANK	Total Recoverable	Surface Water	6020A	389203
MB 240-389203/1-A	Method Blank	Total Recoverable	Water	6020A	389203
LCS 240-389203/2-A	Lab Control Sample	Total Recoverable	Water	6020A	389203
240-115234-4 MS	SW-4	Total Recoverable	Surface Water	6020A	389203
240-115234-4 MSD	SW-4	Total Recoverable	Surface Water	6020A	389203

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: 1SA19 CEC Makeup (C) - Antimony

Job ID: 240-115234-3

Client Sample ID: SW-1
Date Collected: 06/27/19 16:30
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115234-1
Matrix: Surface Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389203	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 20:04	DSH	TAL CAN

Client Sample ID: SW-2
Date Collected: 06/27/19 16:10
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115234-2
Matrix: Surface Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389203	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 20:06	DSH	TAL CAN

Client Sample ID: SW-3
Date Collected: 06/27/19 15:50
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115234-3
Matrix: Surface Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389203	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 20:09	DSH	TAL CAN

Client Sample ID: SW-4
Date Collected: 06/27/19 15:20
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115234-4
Matrix: Surface Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389203	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 19:47	DSH	TAL CAN

Client Sample ID: DUPLICATE
Date Collected: 06/27/19 15:35
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115234-5
Matrix: Surface Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389203	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 20:11	DSH	TAL CAN

Client Sample ID: FIELD BLANK
Date Collected: 06/27/19 14:25
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115234-6
Matrix: Surface Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389203	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 20:14	DSH	TAL CAN

Laboratory References:
TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Golder Associates Inc. Job ID: 240-115234-3
Project/Site: 1SA19 CEC Makeup (C) - Antimony

Laboratory: Eurofins TestAmerica, Canton

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Virginia	NELAP	3	460175	09-14-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Canton
4101 Shuffel Street NW

North Canton, OH 44720-6900
phone 330 497 9396 fax 330 497 0772

Chain of Custody Record

eurofins

Regulatory Program: DW NPDES RCRA Other: **VSWMR/CAP**

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Mike Williams/Rachel Powell	Site Contact: Rachel Powell	Date: 6/27/19	COC No
Golder Associates Inc	Email: rpowell@golder.com	Lab Contact: Eric Lang	Carrier: FedEx	1 of 1 COCs
2108 West Laburnum Ave, Suite 200	Tel/Fax: 804-517-3381			Sampler: Kevin Weissgold/Nathan Chien
Richmond, VA 23227	Analysis Turnaround Time			For Lab Use Only: Rachel Powell
(804) 358-7900 Phone	CALENDAR DAYS WORKING DAYS			Walk-in Client
(xxx) xxx-xxxx FAX	TAT if different from Below °C			Lab Sampling
Project Name: 1SA19 CEC Makeup Sampling Event	2 weeks			Job / SDG No.
Site: Chesapeake Energy Center, Virginia	1 week			
P O # 19117210	2 days			
	1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Antimony - SW846 6010	Sample Specific Notes
SW-1	6/27/19	1630	G	Sw	1	N	N	X	
SW-2	6/27/19	1610	G	Sw	1	N	N	X	
SW-3	6/27/19	1550	G	Sw	1	N	N	X	
SW-4	6/27/19	1520	G	Sw	2	N	Y	X	
Duplicate	6/27/19	1535	G	Sw	1	N	N	X	
Field Blank	6/27/19	1425	G	Sw	1	N	N	X	
								4	

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other Zinc Acetate + NaOH

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample

Non Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client Disposal by Lab Archive for Months

Special Instructions/QC Requirements & Comments: All samples preserved on ice. Please provide a Level II Data package. Please see sample memo. Reporting Group C.

Custody Seals Intact: Yes No | Custody Seal No | Cooler Temp. (°C): Obs'd Corr'd Therm ID No.:

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Rachel Powell	Golder	6/29/19 1100	FedEx		
Relinquished by	Company	Date/Time	Received by	Company	Date/Time
					6/27/19 936
Relinquished by	Company	Date/Time	Received in Laboratory by	Company	Date/Time

7/18/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : [illegible]

Client [illegible] Site Name _____ Cooler unpacked by:

Cooler Received on 6/03/19 Opened on 6/04/19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # [illegible] Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0.1 °C) Observed Cooler Temp _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #36 (CF +0.6°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity _____ Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes. Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC984738
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● = Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: [illegible]

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : ______________

TestAmerica Canton Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-8 #36	[illegible]	[illegible]	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	0.9	[illegible]	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	1.4	1.5	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	4.8	4.9	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	4.8	4.9	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	5.6	5.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	4.0	4.1	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	3.6	3.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	3.0	3.1	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	5.6	5.7	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	2.2	2.3	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	2.4	2.5	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	4.8	4.9	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None

☐ See Temperature Excursion Form

Login Container Summary Report

Temperature readings

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
SW-1	240-115234-A-1	Plastic 500ml - with Zn Acetate and	>12		
SW-1	240-115234-B-1	Plastic 500ml - with Nitric Acid	<2		
SW-2	240-115234-A-2	Plastic 500ml - with Zn Acetate and	>12		
SW-2	240-115234-B-2	Plastic 500ml - with Nitric Acid	<2		
SW-3	240-115234-A-3	Plastic 500ml - with Zn Acetate and	>12		
SW-3	240-115234-B-3	Plastic 500ml - with Nitric Acid	<2		
SW-4	240-115234-A-4	Plastic 500ml - with Zn Acetate and	>12		
SW-4	240-115234-B-4	Plastic 500ml - with Zn Acetate and	>12		
SW-4	240-115234-C-4	Plastic 500ml - with Nitric Acid	<2		
SW-4	240-115234-D-4	Plastic 500ml - with Nitric Acid	<2		
DUPLICATE	240-115234-A-5	Plastic 500ml - with Zn Acetate and	>12		
DUPLICATE	240-115234-B-5	Plastic 500ml - with Nitric Acid	<2		
FIELD BLANK	240-115234-A-6	Plastic 500ml - with Zn Acetate and	>12		
FIELD BLANK	240-115234-B-6	Plastic 500ml - with Nitric Acid	<2		

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-115237-2
Client Project/Site: 1SA19 Makeup - A - beta-BHC

For:
Golder Associates Inc.
2108 W Laburnum Ave,
Suite 200
Richmond, Virginia 23227

Attn: Mr. Mike Williams

Authorized for release by:
7/24/2019 6:55:32 AM

Eric Lang, Manager of Project Management
(708)534-5200
eric.lang@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-115237-2

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-115237-2

Comments
No additional comments.

Receipt
The samples were received on 6/29/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 13 coolers at receipt time were 1.5º C, 2.3º C, 2.3º C, 2.5º C, 3.1º C, 3.7º C, 4.1º C, 4.7º C, 4.9º C, 4.9º C, 4.9º C, 5.7º C and 5.7º C.

GC Semi VOA
Method(s) 8081B: The following samples required a tetrabutylammonium sulfite (TBA) clean-up to reduce matrix interferences caused by sulfur: CECW-4 (240-115237-9), CECW-5 (240-115237-10), PO-8 (240-115237-17), (LCS 240-389623/23-A) and (MB 240-389623/22-A). The analysis of the method blank, LCS and samples that have been subject to the TBA clean up will be reported with an RA suffix.

Method(s) 8081B: The following samples required a copper clean-up to reduce matrix interferences caused by sulfur: CECW-6I (240-115237-11), PO-9 (240-115237-19) and (MB 240-389623/22-A).

Method(s) 8081B: TBA was used to remove the sulfur interference. PO-10 (240-115237-20) TBA 4260529 Isopropyl Alcohol 3800132 HPLC Water 4160714

Method(s) 8081B: Surrogate recovery for the following samples was outside control limits: PO-10 (240-115237-20). Re-extraction and/or re-analysis was performed outside of holding time with acceptable results. Both sets of data are reported.

Method(s) 8081B: TBA was used to remove the sulfur interference. PO-10 (240-115237-20) TBA 4260529 Isopropyl Alcohol 3800132 HPLC Water 4160714

Method(s) 8081B: Re-extraction of the following sample was performed outside of the holding time due to the original extraction failing surrogate recovery. Both sets of data are reported. : PO-10 (240-115237-20) and DUPLICATE (240-115237-23).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Method	Method Description	Protocol	Laboratory
8081B	Organochlorine Pesticides (GC)	SW846	TAL CAN
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL CAN

Protocol References:

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

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-115237-1	MW-4R	Ground Water	06/27/19 08:55	06/29/19 09:30	
240-115237-2	MW-5	Ground Water	06/27/19 09:02	06/29/19 09:30	
240-115237-4	CECW-1	Ground Water	06/26/19 15:50	06/29/19 09:30	
240-115237-6	CECW-2	Ground Water	06/26/19 14:35	06/29/19 09:30	
240-115237-9	CECW-4	Ground Water	06/27/19 15:19	06/29/19 09:30	
240-115237-10	CECW-5	Ground Water	06/27/19 14:40	06/29/19 09:30	
240-115237-11	CECW-6I	Ground Water	06/27/19 12:32	06/29/19 09:30	
240-115237-15	CECW-10R	Ground Water	06/27/19 12:10	06/29/19 09:30	
240-115237-17	PO-8	Ground Water	06/27/19 13:31	06/29/19 09:30	
240-115237-19	PO-9	Ground Water	06/27/19 16:07	06/29/19 09:30	
240-115237-20	PO-10	Ground Water	06/27/19 11:15	06/29/19 09:30	
240-115237-22	PO-11	Ground Water	06/26/19 16:25	06/29/19 09:30	
240-115237-23	DUPLICATE	Ground Water	06/27/19 12:27	06/29/19 09:30	
240-115237-24	FIELD BLANK	Ground Water	06/26/19 16:25	06/29/19 09:30	

Detection Summary

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: MW-4R **Lab Sample ID: 240-115237-1**

No Detections.

Client Sample ID: MW-5 **Lab Sample ID: 240-115237-2**

No Detections.

Client Sample ID: CECW-1 **Lab Sample ID: 240-115237-4**

No Detections.

Client Sample ID: CECW-2 **Lab Sample ID: 240-115237-6**

No Detections.

Client Sample ID: CECW-4 **Lab Sample ID: 240-115237-9**

No Detections.

Client Sample ID: CECW-5 **Lab Sample ID: 240-115237-10**

No Detections.

Client Sample ID: CECW-6I **Lab Sample ID: 240-115237-11**

No Detections.

Client Sample ID: CECW-10R **Lab Sample ID: 240-115237-15**

No Detections.

Client Sample ID: PO-8 **Lab Sample ID: 240-115237-17**

No Detections.

Client Sample ID: PO-9 **Lab Sample ID: 240-115237-19**

No Detections.

Client Sample ID: PO-10 **Lab Sample ID: 240-115237-20**

No Detections.

Client Sample ID: PO-11 **Lab Sample ID: 240-115237-22**

No Detections.

Client Sample ID: DUPLICATE **Lab Sample ID: 240-115237-23**

No Detections.

Client Sample ID: FIELD BLANK **Lab Sample ID: 240-115237-24**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: MW-4R
Lab Sample ID: 240-115237-1
Date Collected: 06/27/19 08:55
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/03/19 11:16	07/09/19 21:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*19*		*10 - 120*	*07/03/19 11:16*	*07/09/19 21:30*	*1*
DCB Decachlorobiphenyl	*18*		*10 - 120*	*07/03/19 11:16*	*07/09/19 21:30*	*1*
Tetrachloro-m-xylene	*34*		*33 - 120*	*07/03/19 11:16*	*07/09/19 21:30*	*1*
Tetrachloro-m-xylene	*30*	*X*	*33 - 120*	*07/03/19 11:16*	*07/09/19 21:30*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: MW-5
Lab Sample ID: 240-115237-2
Date Collected: 06/27/19 09:02
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:16	07/09/19 21:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*16*		*10 - 120*	*07/03/19 11:16*	*07/09/19 21:54*	*1*
DCB Decachlorobiphenyl	*15*		*10 - 120*	*07/03/19 11:16*	*07/09/19 21:54*	*1*
Tetrachloro-m-xylene	*35*		*33 - 120*	*07/03/19 11:16*	*07/09/19 21:54*	*1*
Tetrachloro-m-xylene	*36*		*33 - 120*	*07/03/19 11:16*	*07/09/19 21:54*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: CECW-1
Lab Sample ID: 240-115237-4
Date Collected: 06/26/19 15:50
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:21	07/09/19 20:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*60*		*10 - 120*	*07/03/19 11:21*	*07/09/19 20:27*	*1*
DCB Decachlorobiphenyl	*52*		*10 - 120*	*07/03/19 11:21*	*07/09/19 20:27*	*1*
Tetrachloro-m-xylene	*75*		*33 - 120*	*07/03/19 11:21*	*07/09/19 20:27*	*1*
Tetrachloro-m-xylene	*62*		*33 - 120*	*07/03/19 11:21*	*07/09/19 20:27*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: CECW-2
Lab Sample ID: 240-115237-6
Date Collected: 06/26/19 14:35
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:16	07/09/19 22:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*13*		*10 - 120*	*07/03/19 11:16*	*07/09/19 22:44*	*1*
DCB Decachlorobiphenyl	*12*		*10 - 120*	*07/03/19 11:16*	*07/09/19 22:44*	*1*
Tetrachloro-m-xylene	*38*		*33 - 120*	*07/03/19 11:16*	*07/09/19 22:44*	*1*
Tetrachloro-m-xylene	*37*		*33 - 120*	*07/03/19 11:16*	*07/09/19 22:44*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: CECW-4
Lab Sample ID: 240-115237-9
Date Collected: 06/27/19 15:19
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:21	07/10/19 02:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*28*		*10 - 120*	*07/03/19 11:21*	*07/10/19 02:39*	*1*
DCB Decachlorobiphenyl	*24*		*10 - 120*	*07/03/19 11:21*	*07/10/19 02:39*	*1*
Tetrachloro-m-xylene	*45*		*33 - 120*	*07/03/19 11:21*	*07/10/19 02:39*	*1*
Tetrachloro-m-xylene	*43*		*33 - 120*	*07/03/19 11:21*	*07/10/19 02:39*	*1*

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - A - beta-BHC

Job ID: 240-115237-2

Client Sample ID: CECW-5
Date Collected: 06/27/19 14:40
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-10
Matrix: Ground Water

Method: 8081B - Organochlorine Pesticides (GC) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:21	07/10/19 02:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*51*		*10 - 120*	*07/03/19 11:21*	*07/10/19 02:52*	*1*
DCB Decachlorobiphenyl	*54*		*10 - 120*	*07/03/19 11:21*	*07/10/19 02:52*	*1*
Tetrachloro-m-xylene	*46*		*33 - 120*	*07/03/19 11:21*	*07/10/19 02:52*	*1*
Tetrachloro-m-xylene	*45*		*33 - 120*	*07/03/19 11:21*	*07/10/19 02:52*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: CECW-6I
Lab Sample ID: 240-115237-11
Date Collected: 06/27/19 12:32
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/03/19 11:21	07/09/19 23:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*93*		*10 - 120*	*07/03/19 11:21*	*07/09/19 23:00*	*1*
DCB Decachlorobiphenyl	*83*		*10 - 120*	*07/03/19 11:21*	*07/09/19 23:00*	*1*
Tetrachloro-m-xylene	*82*		*33 - 120*	*07/03/19 11:21*	*07/09/19 23:00*	*1*
Tetrachloro-m-xylene	*70*		*33 - 120*	*07/03/19 11:21*	*07/09/19 23:00*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: CECW-10R
Lab Sample ID: 240-115237-15
Date Collected: 06/27/19 12:10
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/03/19 11:21	07/10/19 00:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*35*		*10 - 120*	*07/03/19 11:21*	*07/10/19 00:43*	*1*
DCB Decachlorobiphenyl	*33*		*10 - 120*	*07/03/19 11:21*	*07/10/19 00:43*	*1*
Tetrachloro-m-xylene	*165*	*X*	*33 - 120*	*07/03/19 11:21*	*07/10/19 00:43*	*1*
Tetrachloro-m-xylene	*47*	*p*	*33 - 120*	*07/03/19 11:21*	*07/10/19 00:43*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: PO-8
Lab Sample ID: 240-115237-17
Date Collected: 06/27/19 13:31
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:21	07/10/19 03:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*76*		*10 - 120*	*07/03/19 11:21*	*07/10/19 03:17*	*1*
DCB Decachlorobiphenyl	*81*		*10 - 120*	*07/03/19 11:21*	*07/10/19 03:17*	*1*
Tetrachloro-m-xylene	*50*		*33 - 120*	*07/03/19 11:21*	*07/10/19 03:17*	*1*
Tetrachloro-m-xylene	*53*		*33 - 120*	*07/03/19 11:21*	*07/10/19 03:17*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: PO-9
Lab Sample ID: 240-115237-19
Date Collected: 06/27/19 16:07
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.051	0.0046	ug/L		07/03/19 11:21	07/10/19 02:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*64*		*10 - 120*	*07/03/19 11:21*	*07/10/19 02:00*	*1*
DCB Decachlorobiphenyl	*66*		*10 - 120*	*07/03/19 11:21*	*07/10/19 02:00*	*1*
Tetrachloro-m-xylene	*97*		*33 - 120*	*07/03/19 11:21*	*07/10/19 02:00*	*1*
Tetrachloro-m-xylene	*67*		*33 - 120*	*07/03/19 11:21*	*07/10/19 02:00*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: PO-10
Lab Sample ID: 240-115237-20
Date Collected: 06/27/19 11:15
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:16	07/10/19 01:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*14*		*10 - 120*	*07/03/19 11:16*	*07/10/19 01:50*	*1*
DCB Decachlorobiphenyl	*13*		*10 - 120*	*07/03/19 11:16*	*07/10/19 01:50*	*1*
Tetrachloro-m-xylene	*25*	*X*	*33 - 120*	*07/03/19 11:16*	*07/10/19 01:50*	*1*
Tetrachloro-m-xylene	*25*	*X*	*33 - 120*	*07/03/19 11:16*	*07/10/19 01:50*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046	H	0.051	0.0046	ug/L		07/18/19 10:24	07/19/19 15:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*52*		*10 - 120*	*07/18/19 10:24*	*07/19/19 15:21*	*1*
DCB Decachlorobiphenyl	*40*		*10 - 120*	*07/18/19 10:24*	*07/19/19 15:21*	*1*
Tetrachloro-m-xylene	*47*		*33 - 120*	*07/18/19 10:24*	*07/19/19 15:21*	*1*
Tetrachloro-m-xylene	*44*		*33 - 120*	*07/18/19 10:24*	*07/19/19 15:21*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: PO-11
Lab Sample ID: 240-115237-22
Date Collected: 06/26/19 16:25
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0045		0.049	0.0045	ug/L		07/03/19 11:16	07/10/19 00:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*25*		*10 - 120*	*07/03/19 11:16*	*07/10/19 00:11*	*1*
DCB Decachlorobiphenyl	*22*		*10 - 120*	*07/03/19 11:16*	*07/10/19 00:11*	*1*
Tetrachloro-m-xylene	*60*		*33 - 120*	*07/03/19 11:16*	*07/10/19 00:11*	*1*
Tetrachloro-m-xylene	*60*		*33 - 120*	*07/03/19 11:16*	*07/10/19 00:11*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: DUPLICATE
Lab Sample ID: 240-115237-23
Date Collected: 06/27/19 12:27
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0050		0.054	0.0050	ug/L		07/03/19 11:16	07/10/19 00:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*8*	*X*	*10 - 120*	*07/03/19 11:16*	*07/10/19 00:36*	*1*
DCB Decachlorobiphenyl	*7*	*X*	*10 - 120*	*07/03/19 11:16*	*07/10/19 00:36*	*1*
Tetrachloro-m-xylene	*17*	*X*	*33 - 120*	*07/03/19 11:16*	*07/10/19 00:36*	*1*
Tetrachloro-m-xylene	*24*	*X*	*33 - 120*	*07/03/19 11:16*	*07/10/19 00:36*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046	H	0.050	0.0046	ug/L		07/18/19 10:24	07/19/19 15:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*14*		*10 - 120*	*07/18/19 10:24*	*07/19/19 15:34*	*1*
DCB Decachlorobiphenyl	*18*		*10 - 120*	*07/18/19 10:24*	*07/19/19 15:34*	*1*
Tetrachloro-m-xylene	*41*		*33 - 120*	*07/18/19 10:24*	*07/19/19 15:34*	*1*
Tetrachloro-m-xylene	*30*	*X*	*33 - 120*	*07/18/19 10:24*	*07/19/19 15:34*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: FIELD BLANK
Lab Sample ID: 240-115237-24
Date Collected: 06/26/19 16:25
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:16	07/10/19 00:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*71*		*10 - 120*	*07/03/19 11:16*	*07/10/19 00:48*	*1*
DCB Decachlorobiphenyl	*74*		*10 - 120*	*07/03/19 11:16*	*07/10/19 00:48*	*1*
Tetrachloro-m-xylene	*62*		*33 - 120*	*07/03/19 11:16*	*07/10/19 00:48*	*1*
Tetrachloro-m-xylene	*65*		*33 - 120*	*07/03/19 11:16*	*07/10/19 00:48*	*1*

Surrogate Summary

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - A - beta-BHC

Job ID: 240-115237-2

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Ground Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCBP1	DCBP2	TCX1	TCX2
Lab Sample ID	Client Sample ID	(10-120)	(10-120)	(33-120)	(33-120)
240-115237-1	MW-4R	19	18	34	30 X
240-115237-2	MW-5	16	15	35	36
240-115237-4	CECW-1	60	52	75	62
240-115237-4 MS	CECW-1	67	58	75	61
240-115237-4 MSD	CECW-1	78	69	72	58
240-115237-6	CECW-2	13	12	38	37
240-115237-9 - RA	CECW-4	28	24	45	43
240-115237-10 - RA	CECW-5	51	54	46	45
240-115237-11	CECW-6I	93	83	82	70
240-115237-15	CECW-10R	35	33	165 X	47 p
240-115237-17 - RA	PO-8	76	81	50	53
240-115237-19	PO-9	64	66	97	67
240-115237-20	PO-10	14	13	25 X	25 X
240-115237-20 - RE	PO-10	52	40	47	44
240-115237-22	PO-11	25	22	60	60
240-115237-23	DUPLICATE	8 X	7 X	17 X	24 X
240-115237-23 - RE	DUPLICATE	18	14	30 X	41
240-115237-24	FIELD BLANK	71	74	62	65

Surrogate Legend

DCBP = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCBP1	DCBP2	TCX1	TCX2
Lab Sample ID	Client Sample ID	(10-120)	(10-120)	(33-120)	(33-120)
LCS 240-389622/23-A	Lab Control Sample	93	96	74	76
LCS 240-389622/23-A	Lab Control Sample	97	101	78	81
LCS 240-389623/23-A - RA	Lab Control Sample	98	99	73	70
LCS 240-389623/23-A	Lab Control Sample	93	82	72	66
LCS 240-391827/20-A	Lab Control Sample	61	50	79	72
LCS 240-391827/20-A	Lab Control Sample	43	39	63	61
MB 240-389622/22-A	Method Blank	85	89	75	75
MB 240-389622/22-A	Method Blank	99	108	92	88
MB 240-389623/22-A - RA	Method Blank	110	118	86	83
MB 240-389623/22-A	Method Blank	116	113	92	85
MB 240-391827/19-A	Method Blank	64	51	66	61
MB 240-391827/19-A	Method Blank	64	51	68	62

Surrogate Legend

DCBP = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 240-389622/22-A
Matrix: Water
Analysis Batch: 390389

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389622

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/03/19 11:16	07/09/19 18:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*99*		*10 - 120*	*07/03/19 11:16*	*07/09/19 18:47*	*1*
DCB Decachlorobiphenyl	*108*		*10 - 120*	*07/03/19 11:16*	*07/09/19 18:47*	*1*
Tetrachloro-m-xylene	*92*		*33 - 120*	*07/03/19 11:16*	*07/09/19 18:47*	*1*
Tetrachloro-m-xylene	*88*		*33 - 120*	*07/03/19 11:16*	*07/09/19 18:47*	*1*

Lab Sample ID: MB 240-389622/22-A
Matrix: Water
Analysis Batch: 390389

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389622

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/03/19 11:16	07/10/19 01:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*85*		*10 - 120*	*07/03/19 11:16*	*07/10/19 01:13*	*1*
DCB Decachlorobiphenyl	*89*		*10 - 120*	*07/03/19 11:16*	*07/10/19 01:13*	*1*
Tetrachloro-m-xylene	*75*		*33 - 120*	*07/03/19 11:16*	*07/10/19 01:13*	*1*
Tetrachloro-m-xylene	*75*		*33 - 120*	*07/03/19 11:16*	*07/10/19 01:13*	*1*

Lab Sample ID: LCS 240-389622/23-A
Matrix: Water
Analysis Batch: 390389

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389622

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
beta-BHC			0.250	0.262		ug/L		105	36 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*97*		*10 - 120*
DCB Decachlorobiphenyl	*101*		*10 - 120*
Tetrachloro-m-xylene	*78*		*33 - 120*
Tetrachloro-m-xylene	*81*		*33 - 120*

Lab Sample ID: LCS 240-389622/23-A
Matrix: Water
Analysis Batch: 390389

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389622

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
beta-BHC			0.250	0.244		ug/L		98	36 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*93*		*10 - 120*
DCB Decachlorobiphenyl	*96*		*10 - 120*
Tetrachloro-m-xylene	*74*		*33 - 120*
Tetrachloro-m-xylene	*76*		*33 - 120*

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: MB 240-389623/22-A
Matrix: Water
Analysis Batch: 390394

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389623

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/03/19 11:21	07/09/19 19:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*116*		*10 - 120*	*07/03/19 11:21*	*07/09/19 19:09*	*1*
DCB Decachlorobiphenyl	*113*		*10 - 120*	*07/03/19 11:21*	*07/09/19 19:09*	*1*
Tetrachloro-m-xylene	*92*		*33 - 120*	*07/03/19 11:21*	*07/09/19 19:09*	*1*
Tetrachloro-m-xylene	*85*		*33 - 120*	*07/03/19 11:21*	*07/09/19 19:09*	*1*

Lab Sample ID: LCS 240-389623/23-A
Matrix: Water
Analysis Batch: 391592

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389623

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
beta-BHC			0.250	0.238		ug/L		95	36 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*82*		*10 - 120*
DCB Decachlorobiphenyl	*93*		*10 - 120*
Tetrachloro-m-xylene	*66*		*33 - 120*
Tetrachloro-m-xylene	*72*		*33 - 120*

Lab Sample ID: 240-115237-4 MS
Matrix: Ground Water
Analysis Batch: 390394

Client Sample ID: CECW-1
Prep Type: Total/NA
Prep Batch: 389623

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
beta-BHC	<0.0044		0.248	0.256		ug/L		103	31 - 120		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*67*		*10 - 120*
DCB Decachlorobiphenyl	*58*		*10 - 120*
Tetrachloro-m-xylene	*75*		*33 - 120*
Tetrachloro-m-xylene	*61*		*33 - 120*

Lab Sample ID: 240-115237-4 MSD
Matrix: Ground Water
Analysis Batch: 390394

Client Sample ID: CECW-1
Prep Type: Total/NA
Prep Batch: 389623

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
beta-BHC	<0.0044		0.238	0.237		ug/L		100	31 - 120	6	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*78*		*10 - 120*
DCB Decachlorobiphenyl	*69*		*10 - 120*
Tetrachloro-m-xylene	*72*		*33 - 120*
Tetrachloro-m-xylene	*58*		*33 - 120*

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: MB 240-391827/19-A
Matrix: Water
Analysis Batch: 391994

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 391827

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/18/19 10:24	07/19/19 14:44	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*64*		*10 - 120*	*07/18/19 10:24*	*07/19/19 14:44*	*1*
DCB Decachlorobiphenyl	*51*		*10 - 120*	*07/18/19 10:24*	*07/19/19 14:44*	*1*
Tetrachloro-m-xylene	*66*		*33 - 120*	*07/18/19 10:24*	*07/19/19 14:44*	*1*
Tetrachloro-m-xylene	*61*		*33 - 120*	*07/18/19 10:24*	*07/19/19 14:44*	*1*

Lab Sample ID: MB 240-391827/19-A
Matrix: Water
Analysis Batch: 391994

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 391827

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/18/19 10:24	07/19/19 15:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*51*		*10 - 120*	*07/18/19 10:24*	*07/19/19 15:58*	*1*
DCB Decachlorobiphenyl	*64*		*10 - 120*	*07/18/19 10:24*	*07/19/19 15:58*	*1*
Tetrachloro-m-xylene	*62*		*33 - 120*	*07/18/19 10:24*	*07/19/19 15:58*	*1*
Tetrachloro-m-xylene	*68*		*33 - 120*	*07/18/19 10:24*	*07/19/19 15:58*	*1*

Lab Sample ID: LCS 240-391827/20-A
Matrix: Water
Analysis Batch: 391994

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 391827

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
beta-BHC	0.250	0.243		ug/L		97	36 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*61*		*10 - 120*
DCB Decachlorobiphenyl	*50*		*10 - 120*
Tetrachloro-m-xylene	*79*		*33 - 120*
Tetrachloro-m-xylene	*72*		*33 - 120*

Lab Sample ID: LCS 240-391827/20-A
Matrix: Water
Analysis Batch: 391994

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 391827

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
beta-BHC	0.250	0.158		ug/L		63	36 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*39*		*10 - 120*
DCB Decachlorobiphenyl	*43*		*10 - 120*
Tetrachloro-m-xylene	*61*		*33 - 120*
Tetrachloro-m-xylene	*63*		*33 - 120*

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Method: 8081B - Organochlorine Pesticides (GC) - RA

Lab Sample ID: MB 240-389623/22-A
Matrix: Water
Analysis Batch: 390394

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389623

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC - RA	<0.0046		0.050	0.0046	ug/L		07/03/19 11:21	07/10/19 02:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl - RA	*110*		*10 - 120*	*07/03/19 11:21*	*07/10/19 02:13*	*1*
DCB Decachlorobiphenyl - RA	*118*		*10 - 120*	*07/03/19 11:21*	*07/10/19 02:13*	*1*
Tetrachloro-m-xylene - RA	*86*		*33 - 120*	*07/03/19 11:21*	*07/10/19 02:13*	*1*
Tetrachloro-m-xylene - RA	*83*		*33 - 120*	*07/03/19 11:21*	*07/10/19 02:13*	*1*

Lab Sample ID: LCS 240-389623/23-A
Matrix: Water
Analysis Batch: 390394

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389623

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
beta-BHC - RA	0.250	0.237		ug/L		95	36 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl - RA	*98*		*10 - 120*
DCB Decachlorobiphenyl - RA	*99*		*10 - 120*
Tetrachloro-m-xylene - RA	*73*		*33 - 120*
Tetrachloro-m-xylene - RA	*70*		*33 - 120*

GC Semi VOA

Prep Batch: 389622

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-1	MW-4R	Total/NA	Ground Water	3510C	
240-115237-2	MW-5	Total/NA	Ground Water	3510C	
240-115237-6	CECW-2	Total/NA	Ground Water	3510C	
240-115237-20	PO-10	Total/NA	Ground Water	3510C	
240-115237-22	PO-11	Total/NA	Ground Water	3510C	
240-115237-23	DUPLICATE	Total/NA	Ground Water	3510C	
240-115237-24	FIELD BLANK	Total/NA	Ground Water	3510C	
MB 240-389622/22-A	Method Blank	Total/NA	Water	3510C	
LCS 240-389622/23-A	Lab Control Sample	Total/NA	Water	3510C	

Prep Batch: 389623

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-4	CECW-1	Total/NA	Ground Water	3510C	
240-115237-9 - RA	CECW-4	Total/NA	Ground Water	3510C	
240-115237-10 - RA	CECW-5	Total/NA	Ground Water	3510C	
240-115237-11	CECW-6I	Total/NA	Ground Water	3510C	
240-115237-15	CECW-10R	Total/NA	Ground Water	3510C	
240-115237-17 - RA	PO-8	Total/NA	Ground Water	3510C	
240-115237-19	PO-9	Total/NA	Ground Water	3510C	
MB 240-389623/22-A - RA	Method Blank	Total/NA	Water	3510C	
MB 240-389623/22-A	Method Blank	Total/NA	Water	3510C	
LCS 240-389623/23-A	Lab Control Sample	Total/NA	Water	3510C	
LCS 240-389623/23-A - RA	Lab Control Sample	Total/NA	Water	3510C	
240-115237-4 MS	CECW-1	Total/NA	Ground Water	3510C	
240-115237-4 MSD	CECW-1	Total/NA	Ground Water	3510C	

Analysis Batch: 390389

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-1	MW-4R	Total/NA	Ground Water	8081B	389622
240-115237-2	MW-5	Total/NA	Ground Water	8081B	389622
240-115237-6	CECW-2	Total/NA	Ground Water	8081B	389622
240-115237-20	PO-10	Total/NA	Ground Water	8081B	389622
240-115237-22	PO-11	Total/NA	Ground Water	8081B	389622
240-115237-23	DUPLICATE	Total/NA	Ground Water	8081B	389622
240-115237-24	FIELD BLANK	Total/NA	Ground Water	8081B	389622
MB 240-389622/22-A	Method Blank	Total/NA	Water	8081B	389622
MB 240-389622/22-A	Method Blank	Total/NA	Water	8081B	389622
LCS 240-389622/23-A	Lab Control Sample	Total/NA	Water	8081B	389622
LCS 240-389622/23-A	Lab Control Sample	Total/NA	Water	8081B	389622

Analysis Batch: 390394

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-4	CECW-1	Total/NA	Ground Water	8081B	389623
240-115237-9 - RA	CECW-4	Total/NA	Ground Water	8081B	389623
240-115237-10 - RA	CECW-5	Total/NA	Ground Water	8081B	389623
240-115237-11	CECW-6I	Total/NA	Ground Water	8081B	389623
240-115237-15	CECW-10R	Total/NA	Ground Water	8081B	389623
240-115237-17 - RA	PO-8	Total/NA	Ground Water	8081B	389623
240-115237-19	PO-9	Total/NA	Ground Water	8081B	389623
MB 240-389623/22-A	Method Blank	Total/NA	Water	8081B	389623
MB 240-389623/22-A - RA	Method Blank	Total/NA	Water	8081B	389623

GC Semi VOA (Continued)

Analysis Batch: 390394 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 240-389623/23-A - RA	Lab Control Sample	Total/NA	Water	8081B	389623
240-115237-4 MS	CECW-1	Total/NA	Ground Water	8081B	389623
240-115237-4 MSD	CECW-1	Total/NA	Ground Water	8081B	389623

Analysis Batch: 391592

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 240-389623/23-A	Lab Control Sample	Total/NA	Water	8081B	389623

Prep Batch: 391827

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-20 - RE	PO-10	Total/NA	Ground Water	3510C	
240-115237-23 - RE	DUPLICATE	Total/NA	Ground Water	3510C	
MB 240-391827/19-A	Method Blank	Total/NA	Water	3510C	
LCS 240-391827/20-A	Lab Control Sample	Total/NA	Water	3510C	

Analysis Batch: 391994

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-20 - RE	PO-10	Total/NA	Ground Water	8081B	391827
240-115237-23 - RE	DUPLICATE	Total/NA	Ground Water	8081B	391827
MB 240-391827/19-A	Method Blank	Total/NA	Water	8081B	391827
MB 240-391827/19-A	Method Blank	Total/NA	Water	8081B	391827
LCS 240-391827/20-A	Lab Control Sample	Total/NA	Water	8081B	391827
LCS 240-391827/20-A	Lab Control Sample	Total/NA	Water	8081B	391827

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: MW-4R
Lab Sample ID: 240-115237-1
Date Collected: 06/27/19 08:55
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/09/19 21:30	BPM	TAL CAN

Client Sample ID: MW-5
Lab Sample ID: 240-115237-2
Date Collected: 06/27/19 09:02
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/09/19 21:54	BPM	TAL CAN

Client Sample ID: CECW-1
Lab Sample ID: 240-115237-4
Date Collected: 06/26/19 15:50
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390394	07/09/19 20:27	OCR	TAL CAN

Client Sample ID: CECW-2
Lab Sample ID: 240-115237-6
Date Collected: 06/26/19 14:35
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/09/19 22:44	BPM	TAL CAN

Client Sample ID: CECW-4
Lab Sample ID: 240-115237-9
Date Collected: 06/27/19 15:19
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C	RA		389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B	RA	1	390394	07/10/19 02:39	OCR	TAL CAN

Client Sample ID: CECW-5
Lab Sample ID: 240-115237-10
Date Collected: 06/27/19 14:40
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C	RA		389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B	RA	1	390394	07/10/19 02:52	OCR	TAL CAN

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: CECW-6I
Lab Sample ID: 240-115237-11
Date Collected: 06/27/19 12:32
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390394	07/09/19 23:00	OCR	TAL CAN

Client Sample ID: CECW-10R
Lab Sample ID: 240-115237-15
Date Collected: 06/27/19 12:10
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390394	07/10/19 00:43	OCR	TAL CAN

Client Sample ID: PO-8
Lab Sample ID: 240-115237-17
Date Collected: 06/27/19 13:31
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C	RA		389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B	RA	1	390394	07/10/19 03:17	OCR	TAL CAN

Client Sample ID: PO-9
Lab Sample ID: 240-115237-19
Date Collected: 06/27/19 16:07
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390394	07/10/19 02:00	OCR	TAL CAN

Client Sample ID: PO-10
Lab Sample ID: 240-115237-20
Date Collected: 06/27/19 11:15
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/10/19 01:50	BPM	TAL CAN
Total/NA	Prep	3510C	RE		391827	07/18/19 10:24	EMB	TAL CAN
Total/NA	Analysis	8081B	RE	1	391994	07/19/19 15:21	BPM	TAL CAN

Client Sample ID: PO-11
Lab Sample ID: 240-115237-22
Date Collected: 06/26/19 16:25
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/10/19 00:11	BPM	TAL CAN

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Client Sample ID: DUPLICATE
Lab Sample ID: 240-115237-23

Date Collected: 06/27/19 12:27
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/10/19 00:36	BPM	TAL CAN
Total/NA	Prep	3510C	RE		391827	07/18/19 10:24	EMB	TAL CAN
Total/NA	Analysis	8081B	RE	1	391994	07/19/19 15:34	BPM	TAL CAN

Client Sample ID: FIELD BLANK
Lab Sample ID: 240-115237-24

Date Collected: 06/26/19 16:25
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/10/19 00:48	BPM	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Golder Associates Inc.
Job ID: 240-115237-2
Project/Site: 1SA19 Makeup - A - beta-BHC

Laboratory: Eurofins TestAmerica, Canton

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Virginia	NELAP	3	460175	09-14-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Canton
4101 Shuffel Street NW

North Canton, OH 44720-6900
phone 330.497.9396 fax 330.497.0772

Chain of Custody Record

eurofins Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other: **VSWMR/CAP**

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Mike Williams/Rachel Powell	Site Contact: Rachel Powell	Date: 6/27/19	COC No:
Golder Associates Inc.	Email: ripowell@golder.com	Lab Contact: Eric Lang	Carrier: FedEx	1 of 1 COCs
2108 West Laburnum Ave, Suite 200	Tel/Fax: 804-517-3381			Sampler: Kevin Weissgold/Nathan Chien
Richmond, VA, 23227	Analysis Turnaround Time			For Lab Use Only: Rachel Powell
(804) 358-7900 Phone	☐ CALENDAR DAYS ☑ WORKING DAYS			Walk-in Client:
(xxx) xxx-xxxx FAX	TAT if different from Below 10			Lab Sampling:
Project Name: 1SA19 CEC Makeup Sampling Event	☐ 2 weeks			
Site: Chesapeake Energy Center, Virginia	☐ 1 week			Job / SDG No.:
P O # 19117210	☐ 2 days			
	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	beta-BHC - SW846 8081B	Sample Specific Notes:
MW-4R	6/27/19	0855	G	GW	2	N	N	X	
MW-5	6/27/19	0902	G	GW	2	N	N	X	
CECW-4	6/27/19	1519	G	GW	2	N	N	X	
CECW-5	6/27/19	1440	G	GW	2	N	N	X	
CECW-61	6/27/19	1232	G	GW	2	N	N	X	
CECW-10R	6/27/19	1210	G	GW	2	N	N	X	
PO-8	6/27/19	1331	G	GW	2	N	N	X	
PO-9	6/27/19	1607	G	GW	2	N	N	X	
PO-10	6/27/19	1115	G	GW	2	N	N	X	
Duplicate	6/27/19	1227	G	GW	2	N	N	X	

240-115237 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Zinc Acetate + NaOH — 1

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments: All samples preserved on ice. Please provide a Level II Data package. Please see sample memo. Reporting Group A.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ | Therm ID No.: ____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Rachel Powell Jr 4me	Golder	6/29/19 1100	FedEx		
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time: 6/29/19 937
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW

North Canton, OH 44720-6900
phone 330.497.9396 fax 330.497.0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other: VSWMR/CAP

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Mike Williams/Rachel Powell	Site Contact: Rachel Powell	Date: 6/26/19	COC No:
Golder Associates Inc.	Email: ripowell@golder.com	Lab Contact: Eric Lang	Carrier: FedEx	1 of 1 COCs
2108 West Laburnum Ave, Suite 200	Tel/Fax: 804-517-3381			Sampler: Kevin Weissgold/Nathan Chien
Richmond, VA, 23227	Analysis Turnaround Time			For Lab Use Only: Rachel Powell
(804) 358-7900 Phone	☐ CALENDAR DAYS ☑ WORKING DAYS			Walk-in Client:
(xxx) xxx-xxxx FAX	TAT if different from Below 10			Lab Sampling:
Project Name: 1SA19 CEC Makeup Sampling Event	☐ 2 weeks			Job / SDG No.:
Site: Chesapeake Energy Center, Virginia	☐ 1 week			
P O # 19117210	☐ 2 days			
	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Sulfide - SW846 9034	Sulfide, dissolved - SW846 9034	Sample Specific Notes:
CECW-1	6/26/19	1550	G	GW	4	Y	Y	X	X	
CECW-1D	6/26/19	1545	G	GW	2	Y	N	X	X	
CECW-2	6/26/19	1435	G	GW	2	Y	N	X	X	
CECW-2D	6/26/19	1345	G	GW	2	Y	N	X	X	
CECW-3D	6/26/19	1510	G	GW	2	Y	N	X	X	
Field Blank	6/26/19	1625	G	GW	2	N	N	X	X	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Zinc Acetate + NaOH								6	6	

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: All samples preserved on ice. Please provide a Level II Data package. Please see sample memo. Reporting Group B,

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Rachel Powell	Golder	6/28/19 1100	FedEx		
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
					6/29/19 930
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

7/24/2019

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-115237-3
Client Project/Site: 1SA19 Makeup - A - Antimony

For:
Golder Associates Inc.
2108 W Laburnum Ave,
Suite 200
Richmond, Virginia 23227

Attn: Mr. Mike Williams

Authorized for release by:
7/22/2019 10:16:15 AM

Eric Lang, Manager of Project Management
(708)534-5200
eric.lang@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - A - Antimony

Job ID: 240-115237-3

Job ID: 240-115237-3

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-115237-3

Comments
No additional comments.

Receipt
The samples were received on 6/29/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 13 coolers at receipt time were 1.5º C, 2.3º C, 2.3º C, 2.5º C, 3.1º C, 3.7º C, 4.1º C, 4.7º C, 4.9º C, 4.9º C, 4.9º C, 5.7º C and 5.7º C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

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

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-115237-1	MW-4R	Ground Water	06/27/19 08:55	06/29/19 09:30	
240-115237-2	MW-5	Ground Water	06/27/19 09:02	06/29/19 09:30	
240-115237-4	CECW-1	Ground Water	06/26/19 15:50	06/29/19 09:30	
240-115237-6	CECW-2	Ground Water	06/26/19 14:35	06/29/19 09:30	
240-115237-9	CECW-4	Ground Water	06/27/19 15:19	06/29/19 09:30	
240-115237-10	CECW-5	Ground Water	06/27/19 14:40	06/29/19 09:30	
240-115237-11	CECW-6I	Ground Water	06/27/19 12:32	06/29/19 09:30	
240-115237-15	CECW-10R	Ground Water	06/27/19 12:10	06/29/19 09:30	
240-115237-17	PO-8	Ground Water	06/27/19 13:31	06/29/19 09:30	
240-115237-19	PO-9	Ground Water	06/27/19 16:07	06/29/19 09:30	
240-115237-20	PO-10	Ground Water	06/27/19 11:15	06/29/19 09:30	
240-115237-22	PO-11	Ground Water	06/26/19 16:25	06/29/19 09:30	
240-115237-23	DUPLICATE	Ground Water	06/27/19 12:27	06/29/19 09:30	
240-115237-24	FIELD BLANK	Ground Water	06/26/19 16:25	06/29/19 09:30	

Detection Summary

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Client Sample ID: MW-4R — Lab Sample ID: 240-115237-1

No Detections.

Client Sample ID: MW-5 — Lab Sample ID: 240-115237-2

No Detections.

Client Sample ID: CECW-1 — Lab Sample ID: 240-115237-4

No Detections.

Client Sample ID: CECW-2 — Lab Sample ID: 240-115237-6

No Detections.

Client Sample ID: CECW-4 — Lab Sample ID: 240-115237-9

No Detections.

Client Sample ID: CECW-5 — Lab Sample ID: 240-115237-10

No Detections.

Client Sample ID: CECW-6I — Lab Sample ID: 240-115237-11

No Detections.

Client Sample ID: CECW-10R — Lab Sample ID: 240-115237-15

No Detections.

Client Sample ID: PO-8 — Lab Sample ID: 240-115237-17

No Detections.

Client Sample ID: PO-9 — Lab Sample ID: 240-115237-19

No Detections.

Client Sample ID: PO-10 — Lab Sample ID: 240-115237-20

No Detections.

Client Sample ID: PO-11 — Lab Sample ID: 240-115237-22

No Detections.

Client Sample ID: DUPLICATE — Lab Sample ID: 240-115237-23

No Detections.

Client Sample ID: FIELD BLANK — Lab Sample ID: 240-115237-24

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Client Sample ID: MW-4R
Lab Sample ID: 240-115237-1
Date Collected: 06/27/19 08:55
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:01	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Client Sample ID: MW-5
Lab Sample ID: 240-115237-2
Date Collected: 06/27/19 09:02
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:03	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Client Sample ID: CECW-1
Lab Sample ID: 240-115237-4
Date Collected: 06/26/19 15:50
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 20:49	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Client Sample ID: CECW-2
Lab Sample ID: 240-115237-6
Date Collected: 06/26/19 14:35
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:15	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Client Sample ID: CECW-4
Lab Sample ID: 240-115237-9
Date Collected: 06/27/19 15:19
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:22	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Client Sample ID: CECW-5
Lab Sample ID: 240-115237-10
Date Collected: 06/27/19 14:40
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:25	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Client Sample ID: CECW-6I
Lab Sample ID: 240-115237-11
Date Collected: 06/27/19 12:32
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:27	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Client Sample ID: CECW-10R
Lab Sample ID: 240-115237-15
Date Collected: 06/27/19 12:10
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:42	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Client Sample ID: PO-8
Lab Sample ID: 240-115237-17
Date Collected: 06/27/19 13:31
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:46	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Client Sample ID: PO-9
Lab Sample ID: 240-115237-19
Date Collected: 06/27/19 16:07
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:51	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Client Sample ID: PO-10
Lab Sample ID: 240-115237-20
Date Collected: 06/27/19 11:15
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:54	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Client Sample ID: PO-11
Lab Sample ID: 240-115237-22
Date Collected: 06/26/19 16:25
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 20:26	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Client Sample ID: DUPLICATE
Lab Sample ID: 240-115237-23
Date Collected: 06/27/19 12:27
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 20:33	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Client Sample ID: FIELD BLANK
Lab Sample ID: 240-115237-24
Date Collected: 06/26/19 16:25
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 12:18	07/09/19 20:35	1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-389196/1-A
Matrix: Water
Analysis Batch: 391579

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389196

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 20:45	1

Lab Sample ID: LCS 240-389196/2-A
Matrix: Water
Analysis Batch: 391579

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389196

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	100	96.5		ug/L		96	80 - 120

Lab Sample ID: 240-115237-4 MS
Matrix: Ground Water
Analysis Batch: 391579

Client Sample ID: CECW-1
Prep Type: Total Recoverable
Prep Batch: 389196

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	<0.57		100	100		ug/L		100	75 - 125

Lab Sample ID: 240-115237-4 MSD
Matrix: Ground Water
Analysis Batch: 391579

Client Sample ID: CECW-1
Prep Type: Total Recoverable
Prep Batch: 389196

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	<0.57		100	99.0		ug/L		99	75 - 125	1	20

Lab Sample ID: MB 240-389203/1-A
Matrix: Water
Analysis Batch: 391579

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389203

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 19:43	1

Lab Sample ID: LCS 240-389203/2-A
Matrix: Water
Analysis Batch: 391579

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389203

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	100	101		ug/L		101	80 - 120

QC Association Summary

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - A - Antimony

Job ID: 240-115237-3

Metals

Prep Batch: 389196

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-1	MW-4R	Total Recoverable	Ground Water	3005A	
240-115237-2	MW-5	Total Recoverable	Ground Water	3005A	
240-115237-4	CECW-1	Total Recoverable	Ground Water	3005A	
240-115237-6	CECW-2	Total Recoverable	Ground Water	3005A	
240-115237-9	CECW-4	Total Recoverable	Ground Water	3005A	
240-115237-10	CECW-5	Total Recoverable	Ground Water	3005A	
240-115237-11	CECW-6I	Total Recoverable	Ground Water	3005A	
240-115237-15	CECW-10R	Total Recoverable	Ground Water	3005A	
240-115237-17	PO-8	Total Recoverable	Ground Water	3005A	
240-115237-19	PO-9	Total Recoverable	Ground Water	3005A	
240-115237-20	PO-10	Total Recoverable	Ground Water	3005A	
MB 240-389196/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-389196/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
240-115237-4 MS	CECW-1	Total Recoverable	Ground Water	3005A	
240-115237-4 MSD	CECW-1	Total Recoverable	Ground Water	3005A	

Prep Batch: 389203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-22	PO-11	Total Recoverable	Ground Water	3005A	
240-115237-23	DUPLICATE	Total Recoverable	Ground Water	3005A	
240-115237-24	FIELD BLANK	Total Recoverable	Ground Water	3005A	
MB 240-389203/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-389203/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 391579

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-1	MW-4R	Total Recoverable	Ground Water	6020A	389196
240-115237-2	MW-5	Total Recoverable	Ground Water	6020A	389196
240-115237-4	CECW-1	Total Recoverable	Ground Water	6020A	389196
240-115237-6	CECW-2	Total Recoverable	Ground Water	6020A	389196
240-115237-9	CECW-4	Total Recoverable	Ground Water	6020A	389196
240-115237-10	CECW-5	Total Recoverable	Ground Water	6020A	389196
240-115237-11	CECW-6I	Total Recoverable	Ground Water	6020A	389196
240-115237-15	CECW-10R	Total Recoverable	Ground Water	6020A	389196
240-115237-17	PO-8	Total Recoverable	Ground Water	6020A	389196
240-115237-19	PO-9	Total Recoverable	Ground Water	6020A	389196
240-115237-20	PO-10	Total Recoverable	Ground Water	6020A	389196
240-115237-22	PO-11	Total Recoverable	Ground Water	6020A	389203
240-115237-23	DUPLICATE	Total Recoverable	Ground Water	6020A	389203
240-115237-24	FIELD BLANK	Total Recoverable	Ground Water	6020A	389203
MB 240-389196/1-A	Method Blank	Total Recoverable	Water	6020A	389196
MB 240-389203/1-A	Method Blank	Total Recoverable	Water	6020A	389203
LCS 240-389196/2-A	Lab Control Sample	Total Recoverable	Water	6020A	389196
LCS 240-389203/2-A	Lab Control Sample	Total Recoverable	Water	6020A	389203
240-115237-4 MS	CECW-1	Total Recoverable	Ground Water	6020A	389196
240-115237-4 MSD	CECW-1	Total Recoverable	Ground Water	6020A	389196

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - A - Antimony

Job ID: 240-115237-3

Client Sample ID: MW-4R
Date Collected: 06/27/19 08:55
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-1
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:01	DSH	TAL CAN

Client Sample ID: MW-5
Date Collected: 06/27/19 09:02
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-2
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:03	DSH	TAL CAN

Client Sample ID: CECW-1
Date Collected: 06/26/19 15:50
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-4
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 20:49	DSH	TAL CAN

Client Sample ID: CECW-2
Date Collected: 06/26/19 14:35
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-6
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:15	DSH	TAL CAN

Client Sample ID: CECW-4
Date Collected: 06/27/19 15:19
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-9
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:22	DSH	TAL CAN

Client Sample ID: CECW-5
Date Collected: 06/27/19 14:40
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-10
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:25	DSH	TAL CAN

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - A - Antimony

Job ID: 240-115237-3

Client Sample ID: CECW-6I
Date Collected: 06/27/19 12:32
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-11
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:27	DSH	TAL CAN

Client Sample ID: CECW-10R
Date Collected: 06/27/19 12:10
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-15
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:42	DSH	TAL CAN

Client Sample ID: PO-8
Date Collected: 06/27/19 13:31
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-17
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:46	DSH	TAL CAN

Client Sample ID: PO-9
Date Collected: 06/27/19 16:07
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-19
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:51	DSH	TAL CAN

Client Sample ID: PO-10
Date Collected: 06/27/19 11:15
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-20
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:54	DSH	TAL CAN

Client Sample ID: PO-11
Date Collected: 06/26/19 16:25
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-22
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389203	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 20:26	DSH	TAL CAN

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Client Sample ID: DUPLICATE
Lab Sample ID: 240-115237-23
Date Collected: 06/27/19 12:27
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389203	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 20:33	DSH	TAL CAN

Client Sample ID: FIELD BLANK
Lab Sample ID: 240-115237-24
Date Collected: 06/26/19 16:25
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			389203	07/01/19 12:18	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 20:35	DSH	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Golder Associates Inc.
Job ID: 240-115237-3
Project/Site: 1SA19 Makeup - A - Antimony

Laboratory: Eurofins TestAmerica, Canton

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Virginia	NELAP	3	460175	09-14-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Canton
4101 Shuffel Street NW

North Canton, OH 44720-6900
phone 330.497.9396 fax 330.497.0772

Chain of Custody Record

eurofins Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other: VSWMR/CAP

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Mike Williams/Rachel Powell	Site Contact: Rachel Powell	Date: ~~6/26/19~~ 6/27/19	COC No:
Golder Associates Inc.	Email: ripowell@golder.com	Lab Contact: Eric Lang	Carrier: FedEx	1 of 1 COCs
2108 West Laburnum Ave, Suite 200	Tel/Fax: 804-517-3381			Sampler: Kevin Weissgold/Nathan Chien
Richmond, VA, 23227	Analysis Turnaround Time			For Lab Use Only: Rachel Powell
(804) 358-7900 Phone	☐ CALENDAR DAYS ☑ WORKING DAYS			Walk-in Client:
(xxx) xxx-xxxx FAX	TAT if different from Below 10			Lab Sampling:
Project Name: 1SA19 CEC Makeup Sampling Event	☐ 2 weeks			Job / SDG No.:
Site: Chesapeake Energy Center, Virginia	☐ 1 week			
P O # 19117210	☐ 2 days ☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Antimony - SW846 6010	Sample Specific Notes:
MW-4R	6/27/19	0855	G	GW	1	N	N	X	
MW-5	6/27/19	0902	G	GW	1	N	N	X	
CECW-4	6/27/19	1519	G	GW	1	N	N	X	
CECW-5	6/27/19	1440	G	GW	1	N	N	X	
CECW-10R	6/27/19	1210	G	GW	1	N	N	X	
PO-8	6/27/19	1331	G	GW	1	N	N	X	
PO-9	6/27/19	1607	G	GW	1	N	N	X	
PO-10	6/27/19	1115	G	GW	1	N	N	X	
Duplicate	6/27/19	1227	G	GW	1	N	N	X	
CECW-61	6/27/19	1232	G	GW	1	N	N	X	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Zinc Acetate + NaOH								4	

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: All samples preserved on ice. Please provide a Level II Data package. Please see sample memo. Reporting Group A.

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by: Rachel Powell	Company: Golder	Date/Time: 6/29/19 1100	Received by: FedEx	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time: 6/29/19 930
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

7/22/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW

North Canton, OH 44720-6900
phone 330.497.9396 fax 330.497.0772

Chain of Custody Record

eurofins Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other: VSWMR/CAP

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Mike Williams/Rachel Powell	Site Contact: Rachel Powell	Date: 6/26/19	COC No:
Golder Associates Inc.	Email: ripowell@golder.com	Lab Contact: Eric Lang	Carrier: FedEx	1 of 1 COCs
2108 West Laburnum Ave, Suite 200	Tel/Fax: 804-517-3381			Sampler: Kevin Weissgold/Nathan Chien
Richmond, VA. 23227	Analysis Turnaround Time: ☐ CALENDAR DAYS ☑ WORKING DAYS			For Lab Use Only: Rachel Powell
(804) 358-7900 Phone	TAT if different from Below 10			Walk-in Client:
(xxx) xxx-xxxx FAX	☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day			Lab Sampling:
Project Name: 1SA19 CEC Makeup Sampling Event				Job / SDG No.:
Site: Chesapeake Energy Center, Virginia				
P O # 19117210				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Antimony - SW846 6010	Sample Specific Notes:
CECW-1	6/26/19	1550	G	GW	3	N	Y	X	
CECW-2	6/26/19	1435	G	GW	1	N	N	X	
PO-11	6/26/19	1625	G	GW	1	N	N	X	
Field Blank	6/26/19	1625	G	GW	2	N	N	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Zinc Acetate + NaOH — 4

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: All samples preserved on ice. Please provide a Level II Data package. Please see sample memo. Reporting Group A.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Rachel Powell	Golder	6/29/19 1100	FedEx		
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time: 6/26/19 950
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-115237-5
Client Project/Site: 1SA19 Makeup - B - beta BHC

For:
Golder Associates Inc.
2108 W Laburnum Ave,
Suite 200
Richmond, Virginia 23227

Attn: Mr. Mike Williams

Authorized for release by:
7/24/2019 6:58:20 AM

Eric Lang, Manager of Project Management
(708)534-5200
eric.lang@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-115237-5

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-115237-5

Comments
No additional comments.

Receipt
The samples were received on 6/29/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 13 coolers at receipt time were 1.5º C, 2.3º C, 2.3º C, 2.5º C, 3.1º C, 3.7º C, 4.1º C, 4.7º C, 4.9º C, 4.9º C, 4.9º C, 5.7º C and 5.7º C.

GC Semi VOA
Method(s) 8081B: The following samples required a tetrabutylammonium sulfite (TBA) clean-up to reduce matrix interferences caused by sulfur: CECW-8 (240-115237-13), PO-8 (240-115237-17), (LCS 240-389623/23-A) and (MB 240-389623/22-A). The analysis of the method blank, LCS and samples that have been subject to the TBA clean up will be reported with an RA suffix.

Method(s) 8081B: The following samples required a copper clean-up to reduce matrix interferences caused by sulfur: CECW-6I (240-115237-11), CECW-6D (240-115237-12) and (MB 240-389623/22-A).

Method(s) 8081B: The following sample was diluted due to the nature of the sample matrix: CECW-8 (240-115237-13). As such, surrogate recoveries may be below the calibration range, and elevated reporting limits (RLs) are provided.

Method(s) 8081B: The following sample required a tetrabutylammonium sulfite (TBA) clean-up to reduce matrix interferences caused by sulfur: CECW-8 (240-115237-13). TBA 4260529 HPLC Water 4160714 Isopropyl Alcohol 3800132

Method(s) 8081B: TBA was used to remove the sulfur interference. PO-10 (240-115237-20) TBA 4260529 Isopropyl Alcohol 3800132 HPLC Water 4160714

Method(s) 8081B: Surrogate recovery for the following samples was outside control limits: PO-10 (240-115237-20) and DUPLICATE (240-115237-23). Re-extraction and/or re-analysis was performed outside of holding time with acceptable results. Both sets of data are reported.

Method(s) 8081B: TBA was used to remove the sulfur interference. PO-10 (240-115237-20) TBA 4260529 Isopropyl Alcohol 3800132 HPLC Water 4160714

Method(s) 8081B: Re-extraction of the following sample was performed outside of the holding time due to the original extraction failing surrogate recovery. Both sets of data are reported. : PO-10 (240-115237-20) and DUPLICATE (240-115237-23).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
Method(s) 3510C, 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 240-391827.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Method	Method Description	Protocol	Laboratory
8081B	Organochlorine Pesticides (GC)	SW846	TAL CAN
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL CAN

Protocol References:

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

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-115237-2	MW-5	Ground Water	06/27/19 09:02	06/29/19 09:30	
240-115237-3	MW-5D	Ground Water	06/27/19 08:50	06/29/19 09:30	
240-115237-4	CECW-1	Ground Water	06/26/19 15:50	06/29/19 09:30	
240-115237-5	CECW-1D	Ground Water	06/26/19 15:45	06/29/19 09:30	
240-115237-6	CECW-2	Ground Water	06/26/19 14:35	06/29/19 09:30	
240-115237-7	CECW-2D	Ground Water	06/26/19 13:45	06/29/19 09:30	
240-115237-8	CECW-3D	Ground Water	06/26/19 15:10	06/29/19 09:30	
240-115237-11	CECW-6I	Ground Water	06/27/19 12:32	06/29/19 09:30	
240-115237-12	CECW-6D	Ground Water	06/27/19 12:20	06/29/19 09:30	
240-115237-13	CECW-8	Ground Water	06/27/19 10:20	06/29/19 09:30	
240-115237-14	CECW-8D	Ground Water	06/27/19 10:30	06/29/19 09:30	
240-115237-15	CECW-10R	Ground Water	06/27/19 12:10	06/29/19 09:30	
240-115237-16	CECW-15	Ground Water	06/27/19 13:17	06/29/19 09:30	
240-115237-17	PO-8	Ground Water	06/27/19 13:31	06/29/19 09:30	
240-115237-18	PO-8D	Ground Water	06/27/19 13:35	06/29/19 09:30	
240-115237-20	PO-10	Ground Water	06/27/19 11:15	06/29/19 09:30	
240-115237-21	PO-10D	Ground Water	06/27/19 12:35	06/29/19 09:30	
240-115237-23	DUPLICATE	Ground Water	06/27/19 12:27	06/29/19 09:30	
240-115237-24	FIELD BLANK	Ground Water	06/26/19 16:25	06/29/19 09:30	

Detection Summary

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: MW-5 **Lab Sample ID: 240-115237-2**

No Detections.

Client Sample ID: MW-5D **Lab Sample ID: 240-115237-3**

No Detections.

Client Sample ID: CECW-1 **Lab Sample ID: 240-115237-4**

No Detections.

Client Sample ID: CECW-1D **Lab Sample ID: 240-115237-5**

No Detections.

Client Sample ID: CECW-2 **Lab Sample ID: 240-115237-6**

No Detections.

Client Sample ID: CECW-2D **Lab Sample ID: 240-115237-7**

No Detections.

Client Sample ID: CECW-3D **Lab Sample ID: 240-115237-8**

No Detections.

Client Sample ID: CECW-6I **Lab Sample ID: 240-115237-11**

No Detections.

Client Sample ID: CECW-6D **Lab Sample ID: 240-115237-12**

No Detections.

Client Sample ID: CECW-8 **Lab Sample ID: 240-115237-13**

No Detections.

Client Sample ID: CECW-8D **Lab Sample ID: 240-115237-14**

No Detections.

Client Sample ID: CECW-10R **Lab Sample ID: 240-115237-15**

No Detections.

Client Sample ID: CECW-15 **Lab Sample ID: 240-115237-16**

No Detections.

Client Sample ID: PO-8 **Lab Sample ID: 240-115237-17**

No Detections.

Client Sample ID: PO-8D **Lab Sample ID: 240-115237-18**

No Detections.

Client Sample ID: PO-10 **Lab Sample ID: 240-115237-20**

No Detections.

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: PO-10D
Lab Sample ID: 240-115237-21

No Detections.

Client Sample ID: DUPLICATE
Lab Sample ID: 240-115237-23

No Detections.

Client Sample ID: FIELD BLANK
Lab Sample ID: 240-115237-24

No Detections.

This Detection Summary does not include radiochemical test results.

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: MW-5
Lab Sample ID: 240-115237-2
Date Collected: 06/27/19 09:02
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:16	07/09/19 21:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*15*		*10 - 120*	*07/03/19 11:16*	*07/09/19 21:42*	*1*
DCB Decachlorobiphenyl	*15*		*10 - 120*	*07/03/19 11:16*	*07/09/19 21:42*	*1*
Tetrachloro-m-xylene	*36*		*33 - 120*	*07/03/19 11:16*	*07/09/19 21:42*	*1*
Tetrachloro-m-xylene	*36*		*33 - 120*	*07/03/19 11:16*	*07/09/19 21:42*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: MW-5D
Lab Sample ID: 240-115237-3
Date Collected: 06/27/19 08:50
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0049		0.054	0.0049	ug/L		07/03/19 11:16	07/09/19 22:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*38*		*10 - 120*	*07/03/19 11:16*	*07/09/19 22:07*	*1*
DCB Decachlorobiphenyl	*39*		*10 - 120*	*07/03/19 11:16*	*07/09/19 22:07*	*1*
Tetrachloro-m-xylene	*47*		*33 - 120*	*07/03/19 11:16*	*07/09/19 22:07*	*1*
Tetrachloro-m-xylene	*51*		*33 - 120*	*07/03/19 11:16*	*07/09/19 22:07*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: CECW-1
Lab Sample ID: 240-115237-4
Date Collected: 06/26/19 15:50
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:21	07/09/19 20:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*60*		*10 - 120*	*07/03/19 11:21*	*07/09/19 20:27*	*1*
DCB Decachlorobiphenyl	*52*		*10 - 120*	*07/03/19 11:21*	*07/09/19 20:27*	*1*
DCB Decachlorobiphenyl	*53*		*10 - 120*	*07/03/19 11:21*	*07/09/19 20:39*	*1*
Tetrachloro-m-xylene	*75*		*33 - 120*	*07/03/19 11:21*	*07/09/19 20:27*	*1*
Tetrachloro-m-xylene	*62*		*33 - 120*	*07/03/19 11:21*	*07/09/19 20:27*	*1*
Tetrachloro-m-xylene	*62*		*33 - 120*	*07/03/19 11:21*	*07/09/19 20:39*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: CECW-1D
Lab Sample ID: 240-115237-5
Date Collected: 06/26/19 15:45
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/03/19 11:16	07/09/19 22:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*35*		*10 - 120*	*07/03/19 11:16*	*07/09/19 22:20*	*1*
DCB Decachlorobiphenyl	*36*		*10 - 120*	*07/03/19 11:16*	*07/09/19 22:20*	*1*
Tetrachloro-m-xylene	*58*		*33 - 120*	*07/03/19 11:16*	*07/09/19 22:20*	*1*
Tetrachloro-m-xylene	*60*		*33 - 120*	*07/03/19 11:16*	*07/09/19 22:20*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: CECW-2
Lab Sample ID: 240-115237-6
Date Collected: 06/26/19 14:35
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:16	07/09/19 22:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*11*		*10 - 120*	*07/03/19 11:16*	*07/09/19 22:32*	*1*
DCB Decachlorobiphenyl	*12*		*10 - 120*	*07/03/19 11:16*	*07/09/19 22:32*	*1*
Tetrachloro-m-xylene	*38*		*33 - 120*	*07/03/19 11:16*	*07/09/19 22:32*	*1*
Tetrachloro-m-xylene	*36*		*33 - 120*	*07/03/19 11:16*	*07/09/19 22:32*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: CECW-2D
Lab Sample ID: 240-115237-7
Date Collected: 06/26/19 13:45
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.051	0.0046	ug/L		07/03/19 11:21	07/09/19 22:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*84*		*10 - 120*	*07/03/19 11:21*	*07/09/19 22:09*	*1*
DCB Decachlorobiphenyl	*82*		*10 - 120*	*07/03/19 11:21*	*07/09/19 22:09*	*1*
Tetrachloro-m-xylene	*72*		*33 - 120*	*07/03/19 11:21*	*07/09/19 22:09*	*1*
Tetrachloro-m-xylene	*67*		*33 - 120*	*07/03/19 11:21*	*07/09/19 22:09*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: CECW-3D
Lab Sample ID: 240-115237-8
Date Collected: 06/26/19 15:10
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0047		0.051	0.0047	ug/L		07/03/19 11:21	07/09/19 22:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*80*		*10 - 120*	*07/03/19 11:21*	*07/09/19 22:22*	*1*
DCB Decachlorobiphenyl	*68*		*10 - 120*	*07/03/19 11:21*	*07/09/19 22:22*	*1*
Tetrachloro-m-xylene	*75*		*33 - 120*	*07/03/19 11:21*	*07/09/19 22:22*	*1*
Tetrachloro-m-xylene	*63*		*33 - 120*	*07/03/19 11:21*	*07/09/19 22:22*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: CECW-6I
Lab Sample ID: 240-115237-11
Date Collected: 06/27/19 12:32
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/03/19 11:21	07/09/19 23:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*94*		*10 - 120*	*07/03/19 11:21*	*07/09/19 23:13*	*1*
DCB Decachlorobiphenyl	*83*		*10 - 120*	*07/03/19 11:21*	*07/09/19 23:13*	*1*
Tetrachloro-m-xylene	*81*		*33 - 120*	*07/03/19 11:21*	*07/09/19 23:13*	*1*
Tetrachloro-m-xylene	*70*		*33 - 120*	*07/03/19 11:21*	*07/09/19 23:13*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: CECW-6D
Lab Sample ID: 240-115237-12
Date Collected: 06/27/19 12:20
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/03/19 11:21	07/10/19 00:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*82*		*10 - 120*	*07/03/19 11:21*	*07/10/19 00:04*	*1*
DCB Decachlorobiphenyl	*71*		*10 - 120*	*07/03/19 11:21*	*07/10/19 00:04*	*1*
Tetrachloro-m-xylene	*75*		*33 - 120*	*07/03/19 11:21*	*07/10/19 00:04*	*1*
Tetrachloro-m-xylene	*65*		*33 - 120*	*07/03/19 11:21*	*07/10/19 00:04*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: CECW-8
Lab Sample ID: 240-115237-13
Date Collected: 06/27/19 10:20
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.046		0.51	0.046	ug/L		07/03/19 11:21	07/18/19 11:09	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*34*		*10 - 120*	*07/03/19 11:21*	*07/18/19 11:09*	*10*
DCB Decachlorobiphenyl	*25*		*10 - 120*	*07/03/19 11:21*	*07/18/19 11:09*	*10*
Tetrachloro-m-xylene	*29*	*X*	*33 - 120*	*07/03/19 11:21*	*07/18/19 11:09*	*10*
Tetrachloro-m-xylene	*33*		*33 - 120*	*07/03/19 11:21*	*07/18/19 11:09*	*10*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: CECW-8D
Lab Sample ID: 240-115237-14
Date Collected: 06/27/19 10:30
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0048		0.053	0.0048	ug/L		07/03/19 11:21	07/10/19 00:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*50*		*10 - 120*	*07/03/19 11:21*	*07/10/19 00:30*	*1*
DCB Decachlorobiphenyl	*46*		*10 - 120*	*07/03/19 11:21*	*07/10/19 00:30*	*1*
Tetrachloro-m-xylene	*73*		*33 - 120*	*07/03/19 11:21*	*07/10/19 00:30*	*1*
Tetrachloro-m-xylene	*62*		*33 - 120*	*07/03/19 11:21*	*07/10/19 00:30*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: CECW-10R
Lab Sample ID: 240-115237-15
Date Collected: 06/27/19 12:10
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/03/19 11:21	07/10/19 00:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*35*		*10 - 120*	*07/03/19 11:21*	*07/10/19 00:43*	*1*
DCB Decachlorobiphenyl	*33*		*10 - 120*	*07/03/19 11:21*	*07/10/19 00:43*	*1*
Tetrachloro-m-xylene	*165*	*X*	*33 - 120*	*07/03/19 11:21*	*07/10/19 00:43*	*1*
Tetrachloro-m-xylene	*47*	*p*	*33 - 120*	*07/03/19 11:21*	*07/10/19 00:43*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: CECW-15
Lab Sample ID: 240-115237-16
Date Collected: 06/27/19 13:17
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:21	07/10/19 01:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*50*		*10 - 120*	*07/03/19 11:21*	*07/10/19 01:09*	*1*
DCB Decachlorobiphenyl	*51*		*10 - 120*	*07/03/19 11:21*	*07/10/19 01:09*	*1*
Tetrachloro-m-xylene	*63*		*33 - 120*	*07/03/19 11:21*	*07/10/19 01:09*	*1*
Tetrachloro-m-xylene	*57*		*33 - 120*	*07/03/19 11:21*	*07/10/19 01:09*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: PO-8
Lab Sample ID: 240-115237-17
Date Collected: 06/27/19 13:31
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:21	07/10/19 03:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*76*		*10 - 120*	*07/03/19 11:21*	*07/10/19 03:17*	*1*
DCB Decachlorobiphenyl	*81*		*10 - 120*	*07/03/19 11:21*	*07/10/19 03:17*	*1*
DCB Decachlorobiphenyl	*82*		*10 - 120*	*07/03/19 11:21*	*07/10/19 03:30*	*1*
Tetrachloro-m-xylene	*50*		*33 - 120*	*07/03/19 11:21*	*07/10/19 03:17*	*1*
Tetrachloro-m-xylene	*53*		*33 - 120*	*07/03/19 11:21*	*07/10/19 03:17*	*1*
Tetrachloro-m-xylene	*53*		*33 - 120*	*07/03/19 11:21*	*07/10/19 03:30*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: PO-8D
Lab Sample ID: 240-115237-18
Date Collected: 06/27/19 13:35
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0048		0.053	0.0048	ug/L		07/03/19 11:21	07/10/19 01:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*69*		*10 - 120*	*07/03/19 11:21*	*07/10/19 01:47*	*1*
DCB Decachlorobiphenyl	*71*		*10 - 120*	*07/03/19 11:21*	*07/10/19 01:47*	*1*
Tetrachloro-m-xylene	*55*		*33 - 120*	*07/03/19 11:21*	*07/10/19 01:47*	*1*
Tetrachloro-m-xylene	*51*		*33 - 120*	*07/03/19 11:21*	*07/10/19 01:47*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: PO-10
Lab Sample ID: 240-115237-20
Date Collected: 06/27/19 11:15
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:16	07/10/19 01:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*14*		*10 - 120*	*07/03/19 11:16*	*07/10/19 01:38*	*1*
DCB Decachlorobiphenyl	*14*		*10 - 120*	*07/03/19 11:16*	*07/10/19 01:38*	*1*
Tetrachloro-m-xylene	*25*	*X*	*33 - 120*	*07/03/19 11:16*	*07/10/19 01:38*	*1*
Tetrachloro-m-xylene	*26*	*X*	*33 - 120*	*07/03/19 11:16*	*07/10/19 01:38*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046	H	0.051	0.0046	ug/L		07/18/19 10:24	07/19/19 15:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*52*		*10 - 120*	*07/18/19 10:24*	*07/19/19 15:09*	*1*
DCB Decachlorobiphenyl	*39*		*10 - 120*	*07/18/19 10:24*	*07/19/19 15:09*	*1*
Tetrachloro-m-xylene	*48*		*33 - 120*	*07/18/19 10:24*	*07/19/19 15:09*	*1*
Tetrachloro-m-xylene	*44*		*33 - 120*	*07/18/19 10:24*	*07/19/19 15:09*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: PO-10D
Lab Sample ID: 240-115237-21
Date Collected: 06/27/19 12:35
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0051		0.055	0.0051	ug/L		07/03/19 11:16	07/09/19 23:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*20*		*10 - 120*	*07/03/19 11:16*	*07/09/19 23:59*	*1*
DCB Decachlorobiphenyl	*18*		*10 - 120*	*07/03/19 11:16*	*07/09/19 23:59*	*1*
Tetrachloro-m-xylene	*71*		*33 - 120*	*07/03/19 11:16*	*07/09/19 23:59*	*1*
Tetrachloro-m-xylene	*64*		*33 - 120*	*07/03/19 11:16*	*07/09/19 23:59*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: DUPLICATE
Lab Sample ID: 240-115237-23
Date Collected: 06/27/19 12:27
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0050		0.054	0.0050	ug/L		07/03/19 11:16	07/10/19 00:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*8*	*X*	*10 - 120*	*07/03/19 11:16*	*07/10/19 00:23*	*1*
DCB Decachlorobiphenyl	*8*	*X*	*10 - 120*	*07/03/19 11:16*	*07/10/19 00:23*	*1*
Tetrachloro-m-xylene	*18*	*X*	*33 - 120*	*07/03/19 11:16*	*07/10/19 00:23*	*1*
Tetrachloro-m-xylene	*24*	*X*	*33 - 120*	*07/03/19 11:16*	*07/10/19 00:23*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046	H	0.050	0.0046	ug/L		07/18/19 10:24	07/19/19 15:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*18*		*10 - 120*	*07/18/19 10:24*	*07/19/19 15:46*	*1*
DCB Decachlorobiphenyl	*15*		*10 - 120*	*07/18/19 10:24*	*07/19/19 15:46*	*1*
Tetrachloro-m-xylene	*33*		*33 - 120*	*07/18/19 10:24*	*07/19/19 15:46*	*1*
Tetrachloro-m-xylene	*43*		*33 - 120*	*07/18/19 10:24*	*07/19/19 15:46*	*1*

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: FIELD BLANK
Lab Sample ID: 240-115237-24
Date Collected: 06/26/19 16:25
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0044		0.048	0.0044	ug/L		07/03/19 11:16	07/10/19 01:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*71*		*10 - 120*	*07/03/19 11:16*	*07/10/19 01:01*	*1*
DCB Decachlorobiphenyl	*72*		*10 - 120*	*07/03/19 11:16*	*07/10/19 01:01*	*1*
Tetrachloro-m-xylene	*62*		*33 - 120*	*07/03/19 11:16*	*07/10/19 01:01*	*1*
Tetrachloro-m-xylene	*65*		*33 - 120*	*07/03/19 11:16*	*07/10/19 01:01*	*1*

Surrogate Summary

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - B - beta BHC

Job ID: 240-115237-5

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Ground Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCBP1	DCBP2	TCX1	TCX2
Lab Sample ID	Client Sample ID	(10-120)	(10-120)	(33-120)	(33-120)
240-115237-2	MW-5	15	15	36	36
240-115237-3	MW-5D	38	39	47	51
240-115237-4	CECW-1	60	52	75	62
240-115237-4	CECW-1		53		62
240-115237-4 MS	CECW-1	67	58	75	61
240-115237-4 MS	CECW-1		59		60
240-115237-4 MSD	CECW-1	78	69	72	58
240-115237-4 MSD	CECW-1	79	69	71	57
240-115237-5	CECW-1D	35	36	58	60
240-115237-6	CECW-2	11	12	38	36
240-115237-7	CECW-2D	84	82	72	67
240-115237-8	CECW-3D	80	68	75	63
240-115237-11	CECW-6I	94	83	81	70
240-115237-12	CECW-6D	82	71	75	65
240-115237-13	CECW-8	34	25	29 X	33
240-115237-14	CECW-8D	50	46	73	62
240-115237-15	CECW-10R	35	33	165 X	47 p
240-115237-16	CECW-15	50	51	63	57
240-115237-17 - RA	PO-8	76	81	50	53
240-115237-17 - RA	PO-8		82		53
240-115237-18	PO-8D	69	71	55	51
240-115237-20	PO-10	14	14	25 X	26 X
240-115237-20 - RE	PO-10	52	39	48	44
240-115237-21	PO-10D	20	18	71	64
240-115237-23	DUPLICATE	8 X	8 X	18 X	24 X
240-115237-23 - RE	DUPLICATE	18	15	33	43
240-115237-24	FIELD BLANK	71	72	62	65

Surrogate Legend

DCBP = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCBP1	DCBP2	TCX1	TCX2
Lab Sample ID	Client Sample ID	(10-120)	(10-120)	(33-120)	(33-120)
LCS 240-389622/23-A	Lab Control Sample	93	96	74	76
LCS 240-389622/23-A	Lab Control Sample	97	101	78	81
LCS 240-389623/23-A - RA	Lab Control Sample	98	99	73	70
LCS 240-389623/23-A	Lab Control Sample	93	82	72	66
LCS 240-391827/20-A	Lab Control Sample	61	50	79	72
LCS 240-391827/20-A	Lab Control Sample	43	39	63	61
MB 240-389622/22-A	Method Blank	85	89	75	75
MB 240-389622/22-A	Method Blank	99	108	92	88
MB 240-389623/22-A - RA	Method Blank	110	118	86	83
MB 240-389623/22-A	Method Blank	116	113	92	85
MB 240-391827/19-A	Method Blank	64	51	66	61
MB 240-391827/19-A	Method Blank	64	51	68	62

Surrogate Summary

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Surrogate Legend

DCBP = DCB Decachlorobiphenyl
TCX = Tetrachloro-m-xylene

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - B - beta BHC

Job ID: 240-115237-5

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 240-389622/22-A
Matrix: Water
Analysis Batch: 390389

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389622

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/03/19 11:16	07/09/19 18:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*99*		*10 - 120*	*07/03/19 11:16*	*07/09/19 18:47*	*1*
DCB Decachlorobiphenyl	*108*		*10 - 120*	*07/03/19 11:16*	*07/09/19 18:47*	*1*
Tetrachloro-m-xylene	*92*		*33 - 120*	*07/03/19 11:16*	*07/09/19 18:47*	*1*
Tetrachloro-m-xylene	*88*		*33 - 120*	*07/03/19 11:16*	*07/09/19 18:47*	*1*

Lab Sample ID: MB 240-389622/22-A
Matrix: Water
Analysis Batch: 390389

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389622

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/03/19 11:16	07/10/19 01:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*85*		*10 - 120*	*07/03/19 11:16*	*07/10/19 01:13*	*1*
DCB Decachlorobiphenyl	*89*		*10 - 120*	*07/03/19 11:16*	*07/10/19 01:13*	*1*
Tetrachloro-m-xylene	*75*		*33 - 120*	*07/03/19 11:16*	*07/10/19 01:13*	*1*
Tetrachloro-m-xylene	*75*		*33 - 120*	*07/03/19 11:16*	*07/10/19 01:13*	*1*

Lab Sample ID: LCS 240-389622/23-A
Matrix: Water
Analysis Batch: 390389

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389622

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
beta-BHC			0.250	0.262		ug/L		105	36 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*97*		*10 - 120*
DCB Decachlorobiphenyl	*101*		*10 - 120*
Tetrachloro-m-xylene	*78*		*33 - 120*
Tetrachloro-m-xylene	*81*		*33 - 120*

Lab Sample ID: LCS 240-389622/23-A
Matrix: Water
Analysis Batch: 390389

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389622

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
beta-BHC			0.250	0.244		ug/L		98	36 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*93*		*10 - 120*
DCB Decachlorobiphenyl	*96*		*10 - 120*
Tetrachloro-m-xylene	*74*		*33 - 120*
Tetrachloro-m-xylene	*76*		*33 - 120*

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: MB 240-389623/22-A
Matrix: Water
Analysis Batch: 390394

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389623

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/03/19 11:21	07/09/19 19:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*116*		*10 - 120*	*07/03/19 11:21*	*07/09/19 19:09*	*1*
DCB Decachlorobiphenyl	*113*		*10 - 120*	*07/03/19 11:21*	*07/09/19 19:09*	*1*
Tetrachloro-m-xylene	*92*		*33 - 120*	*07/03/19 11:21*	*07/09/19 19:09*	*1*
Tetrachloro-m-xylene	*85*		*33 - 120*	*07/03/19 11:21*	*07/09/19 19:09*	*1*

Lab Sample ID: LCS 240-389623/23-A
Matrix: Water
Analysis Batch: 391592

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389623

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
beta-BHC			0.250	0.238		ug/L		95	36 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*82*		*10 - 120*
DCB Decachlorobiphenyl	*93*		*10 - 120*
Tetrachloro-m-xylene	*66*		*33 - 120*
Tetrachloro-m-xylene	*72*		*33 - 120*

Lab Sample ID: 240-115237-4 MS
Matrix: Ground Water
Analysis Batch: 390394

Client Sample ID: CECW-1
Prep Type: Total/NA
Prep Batch: 389623

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
beta-BHC	<0.0044		0.248	0.256		ug/L		103	31 - 120		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*67*		*10 - 120*
DCB Decachlorobiphenyl	*58*		*10 - 120*
Tetrachloro-m-xylene	*75*		*33 - 120*
Tetrachloro-m-xylene	*61*		*33 - 120*

Lab Sample ID: 240-115237-4 MS
Matrix: Ground Water
Analysis Batch: 390394

Client Sample ID: CECW-1
Prep Type: Total/NA
Prep Batch: 389623

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*59*		*10 - 120*
Tetrachloro-m-xylene	*60*		*33 - 120*

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 240-115237-4 MSD
Matrix: Ground Water
Analysis Batch: 390394

Client Sample ID: CECW-1
Prep Type: Total/NA
Prep Batch: 389623

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
beta-BHC	<0.0044		0.238	0.237		ug/L		100	31 - 120	NC	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*78*		*10 - 120*
DCB Decachlorobiphenyl	*69*		*10 - 120*
Tetrachloro-m-xylene	*72*		*33 - 120*
Tetrachloro-m-xylene	*58*		*33 - 120*

Lab Sample ID: 240-115237-4 MSD
Matrix: Ground Water
Analysis Batch: 390394

Client Sample ID: CECW-1
Prep Type: Total/NA
Prep Batch: 389623

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
beta-BHC	<0.0044		0.238	0.239		ug/L		100	31 - 120	NC	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*79*		*10 - 120*
DCB Decachlorobiphenyl	*69*		*10 - 120*
Tetrachloro-m-xylene	*71*		*33 - 120*
Tetrachloro-m-xylene	*57*		*33 - 120*

Lab Sample ID: MB 240-391827/19-A
Matrix: Water
Analysis Batch: 391994

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 391827

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/18/19 10:24	07/19/19 14:44	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*64*		*10 - 120*	*07/18/19 10:24*	*07/19/19 14:44*	*1*
DCB Decachlorobiphenyl	*51*		*10 - 120*	*07/18/19 10:24*	*07/19/19 14:44*	*1*
Tetrachloro-m-xylene	*66*		*33 - 120*	*07/18/19 10:24*	*07/19/19 14:44*	*1*
Tetrachloro-m-xylene	*61*		*33 - 120*	*07/18/19 10:24*	*07/19/19 14:44*	*1*

Lab Sample ID: MB 240-391827/19-A
Matrix: Water
Analysis Batch: 391994

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 391827

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0046		0.050	0.0046	ug/L		07/18/19 10:24	07/19/19 15:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*64*		*10 - 120*	*07/18/19 10:24*	*07/19/19 15:58*	*1*
DCB Decachlorobiphenyl	*51*		*10 - 120*	*07/18/19 10:24*	*07/19/19 15:58*	*1*
Tetrachloro-m-xylene	*68*		*33 - 120*	*07/18/19 10:24*	*07/19/19 15:58*	*1*
Tetrachloro-m-xylene	*62*		*33 - 120*	*07/18/19 10:24*	*07/19/19 15:58*	*1*

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 240-391827/20-A
Matrix: Water
Analysis Batch: 391994

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 391827

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
beta-BHC			0.250	0.243		ug/L		97	36 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*61*		*10 - 120*
DCB Decachlorobiphenyl	*50*		*10 - 120*
Tetrachloro-m-xylene	*79*		*33 - 120*
Tetrachloro-m-xylene	*72*		*33 - 120*

Lab Sample ID: LCS 240-391827/20-A
Matrix: Water
Analysis Batch: 391994

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 391827

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
beta-BHC			0.250	0.158		ug/L		63	36 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*43*		*10 - 120*
DCB Decachlorobiphenyl	*39*		*10 - 120*
Tetrachloro-m-xylene	*63*		*33 - 120*
Tetrachloro-m-xylene	*61*		*33 - 120*

Method: 8081B - Organochlorine Pesticides (GC) - RA

Lab Sample ID: MB 240-389623/22-A
Matrix: Water
Analysis Batch: 390394

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389623

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC - RA	<0.0046		0.050	0.0046	ug/L		07/03/19 11:21	07/10/19 02:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl - RA	*110*		*10 - 120*	*07/03/19 11:21*	*07/10/19 02:13*	*1*
DCB Decachlorobiphenyl - RA	*118*		*10 - 120*	*07/03/19 11:21*	*07/10/19 02:13*	*1*
Tetrachloro-m-xylene - RA	*86*		*33 - 120*	*07/03/19 11:21*	*07/10/19 02:13*	*1*
Tetrachloro-m-xylene - RA	*83*		*33 - 120*	*07/03/19 11:21*	*07/10/19 02:13*	*1*

Lab Sample ID: LCS 240-389623/23-A
Matrix: Water
Analysis Batch: 390394

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389623

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
beta-BHC - RA			0.250	0.237		ug/L		95	36 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl - RA	*98*		*10 - 120*
DCB Decachlorobiphenyl - RA	*99*		*10 - 120*
Tetrachloro-m-xylene - RA	*73*		*33 - 120*

Method: 8081B - Organochlorine Pesticides (GC) - RA (Continued)

Lab Sample ID: LCS 240-389623/23-A
Matrix: Water
Analysis Batch: 390394

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389623

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene - RA	70		33 - 120

GC Semi VOA

Prep Batch: 389622

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-2	MW-5	Total/NA	Ground Water	3510C	
240-115237-3	MW-5D	Total/NA	Ground Water	3510C	
240-115237-5	CECW-1D	Total/NA	Ground Water	3510C	
240-115237-6	CECW-2	Total/NA	Ground Water	3510C	
240-115237-20	PO-10	Total/NA	Ground Water	3510C	
240-115237-21	PO-10D	Total/NA	Ground Water	3510C	
240-115237-23	DUPLICATE	Total/NA	Ground Water	3510C	
240-115237-24	FIELD BLANK	Total/NA	Ground Water	3510C	
MB 240-389622/22-A	Method Blank	Total/NA	Water	3510C	
LCS 240-389622/23-A	Lab Control Sample	Total/NA	Water	3510C	

Prep Batch: 389623

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-4	CECW-1	Total/NA	Ground Water	3510C	
240-115237-7	CECW-2D	Total/NA	Ground Water	3510C	
240-115237-8	CECW-3D	Total/NA	Ground Water	3510C	
240-115237-11	CECW-6I	Total/NA	Ground Water	3510C	
240-115237-12	CECW-6D	Total/NA	Ground Water	3510C	
240-115237-13	CECW-8	Total/NA	Ground Water	3510C	
240-115237-14	CECW-8D	Total/NA	Ground Water	3510C	
240-115237-15	CECW-10R	Total/NA	Ground Water	3510C	
240-115237-16	CECW-15	Total/NA	Ground Water	3510C	
240-115237-17 - RA	PO-8	Total/NA	Ground Water	3510C	
240-115237-18	PO-8D	Total/NA	Ground Water	3510C	
MB 240-389623/22-A	Method Blank	Total/NA	Water	3510C	
MB 240-389623/22-A - RA	Method Blank	Total/NA	Water	3510C	
LCS 240-389623/23-A	Lab Control Sample	Total/NA	Water	3510C	
LCS 240-389623/23-A - RA	Lab Control Sample	Total/NA	Water	3510C	
240-115237-4 MS	CECW-1	Total/NA	Ground Water	3510C	
240-115237-4 MSD	CECW-1	Total/NA	Ground Water	3510C	

Analysis Batch: 390389

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-2	MW-5	Total/NA	Ground Water	8081B	389622
240-115237-3	MW-5D	Total/NA	Ground Water	8081B	389622
240-115237-5	CECW-1D	Total/NA	Ground Water	8081B	389622
240-115237-6	CECW-2	Total/NA	Ground Water	8081B	389622
240-115237-20	PO-10	Total/NA	Ground Water	8081B	389622
240-115237-21	PO-10D	Total/NA	Ground Water	8081B	389622
240-115237-23	DUPLICATE	Total/NA	Ground Water	8081B	389622
240-115237-24	FIELD BLANK	Total/NA	Ground Water	8081B	389622
MB 240-389622/22-A	Method Blank	Total/NA	Water	8081B	389622
MB 240-389622/22-A	Method Blank	Total/NA	Water	8081B	389622
LCS 240-389622/23-A	Lab Control Sample	Total/NA	Water	8081B	389622
LCS 240-389622/23-A	Lab Control Sample	Total/NA	Water	8081B	389622

Analysis Batch: 390394

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-4	CECW-1	Total/NA	Ground Water	8081B	389623
240-115237-4	CECW-1	Total/NA	Ground Water	8081B	389623
240-115237-7	CECW-2D	Total/NA	Ground Water	8081B	389623

GC Semi VOA (Continued)

Analysis Batch: 390394 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-8	CECW-3D	Total/NA	Ground Water	8081B	389623
240-115237-11	CECW-6I	Total/NA	Ground Water	8081B	389623
240-115237-12	CECW-6D	Total/NA	Ground Water	8081B	389623
240-115237-14	CECW-8D	Total/NA	Ground Water	8081B	389623
240-115237-15	CECW-10R	Total/NA	Ground Water	8081B	389623
240-115237-16	CECW-15	Total/NA	Ground Water	8081B	389623
240-115237-17 - RA	PO-8	Total/NA	Ground Water	8081B	389623
240-115237-17 - RA	PO-8	Total/NA	Ground Water	8081B	389623
240-115237-18	PO-8D	Total/NA	Ground Water	8081B	389623
MB 240-389623/22-A	Method Blank	Total/NA	Water	8081B	389623
MB 240-389623/22-A - RA	Method Blank	Total/NA	Water	8081B	389623
LCS 240-389623/23-A - RA	Lab Control Sample	Total/NA	Water	8081B	389623
240-115237-4 MS	CECW-1	Total/NA	Ground Water	8081B	389623
240-115237-4 MS	CECW-1	Total/NA	Ground Water	8081B	389623
240-115237-4 MSD	CECW-1	Total/NA	Ground Water	8081B	389623
240-115237-4 MSD	CECW-1	Total/NA	Ground Water	8081B	389623

Analysis Batch: 391592

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 240-389623/23-A	Lab Control Sample	Total/NA	Water	8081B	389623

Analysis Batch: 391796

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-13	CECW-8	Total/NA	Ground Water	8081B	389623

Prep Batch: 391827

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-20 - RE	PO-10	Total/NA	Ground Water	3510C	
240-115237-23 - RE	DUPLICATE	Total/NA	Ground Water	3510C	
MB 240-391827/19-A	Method Blank	Total/NA	Water	3510C	
LCS 240-391827/20-A	Lab Control Sample	Total/NA	Water	3510C	

Analysis Batch: 391994

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-20 - RE	PO-10	Total/NA	Ground Water	8081B	391827
240-115237-23 - RE	DUPLICATE	Total/NA	Ground Water	8081B	391827
MB 240-391827/19-A	Method Blank	Total/NA	Water	8081B	391827
MB 240-391827/19-A	Method Blank	Total/NA	Water	8081B	391827
LCS 240-391827/20-A	Lab Control Sample	Total/NA	Water	8081B	391827
LCS 240-391827/20-A	Lab Control Sample	Total/NA	Water	8081B	391827

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: MW-5
Lab Sample ID: 240-115237-2
Date Collected: 06/27/19 09:02
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/09/19 21:42	BPM	TAL CAN

Client Sample ID: MW-5D
Lab Sample ID: 240-115237-3
Date Collected: 06/27/19 08:50
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/09/19 22:07	BPM	TAL CAN

Client Sample ID: CECW-1
Lab Sample ID: 240-115237-4
Date Collected: 06/26/19 15:50
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390394	07/09/19 20:27	OCR	TAL CAN
Total/NA	Prep	3510C			389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390394	07/09/19 20:39	OCR	TAL CAN

Client Sample ID: CECW-1D
Lab Sample ID: 240-115237-5
Date Collected: 06/26/19 15:45
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/09/19 22:20	BPM	TAL CAN

Client Sample ID: CECW-2
Lab Sample ID: 240-115237-6
Date Collected: 06/26/19 14:35
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/09/19 22:32	BPM	TAL CAN

Client Sample ID: CECW-2D
Lab Sample ID: 240-115237-7
Date Collected: 06/26/19 13:45
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390394	07/09/19 22:09	OCR	TAL CAN

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: CECW-3D
Lab Sample ID: 240-115237-8
Date Collected: 06/26/19 15:10
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390394	07/09/19 22:22	OCR	TAL CAN

Client Sample ID: CECW-6I
Lab Sample ID: 240-115237-11
Date Collected: 06/27/19 12:32
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390394	07/09/19 23:13	OCR	TAL CAN

Client Sample ID: CECW-6D
Lab Sample ID: 240-115237-12
Date Collected: 06/27/19 12:20
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390394	07/10/19 00:04	OCR	TAL CAN

Client Sample ID: CECW-8
Lab Sample ID: 240-115237-13
Date Collected: 06/27/19 10:20
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B		10	391796	07/18/19 11:09	BPM	TAL CAN

Client Sample ID: CECW-8D
Lab Sample ID: 240-115237-14
Date Collected: 06/27/19 10:30
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390394	07/10/19 00:30	OCR	TAL CAN

Client Sample ID: CECW-10R
Lab Sample ID: 240-115237-15
Date Collected: 06/27/19 12:10
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390394	07/10/19 00:43	OCR	TAL CAN

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: CECW-15
Lab Sample ID: 240-115237-16
Date Collected: 06/27/19 13:17
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390394	07/10/19 01:09	OCR	TAL CAN

Client Sample ID: PO-8
Lab Sample ID: 240-115237-17
Date Collected: 06/27/19 13:31
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C	RA		389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B	RA	1	390394	07/10/19 03:17	OCR	TAL CAN
Total/NA	Prep	3510C	RA		389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B	RA	1	390394	07/10/19 03:30	OCR	TAL CAN

Client Sample ID: PO-8D
Lab Sample ID: 240-115237-18
Date Collected: 06/27/19 13:35
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389623	07/03/19 11:21	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390394	07/10/19 01:47	OCR	TAL CAN

Client Sample ID: PO-10
Lab Sample ID: 240-115237-20
Date Collected: 06/27/19 11:15
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/10/19 01:38	BPM	TAL CAN
Total/NA	Prep	3510C	RE		391827	07/18/19 10:24	EMB	TAL CAN
Total/NA	Analysis	8081B	RE	1	391994	07/19/19 15:09	BPM	TAL CAN

Client Sample ID: PO-10D
Lab Sample ID: 240-115237-21
Date Collected: 06/27/19 12:35
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/09/19 23:59	BPM	TAL CAN

Client Sample ID: DUPLICATE
Lab Sample ID: 240-115237-23
Date Collected: 06/27/19 12:27
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/10/19 00:23	BPM	TAL CAN

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Client Sample ID: DUPLICATE
Lab Sample ID: 240-115237-23

Date Collected: 06/27/19 12:27
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C	RE		391827	07/18/19 10:24	EMB	TAL CAN
Total/NA	Analysis	8081B	RE	1	391994	07/19/19 15:46	BPM	TAL CAN

Client Sample ID: FIELD BLANK
Lab Sample ID: 240-115237-24

Date Collected: 06/26/19 16:25
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			389622	07/03/19 11:16	BMB	TAL CAN
Total/NA	Analysis	8081B		1	390389	07/10/19 01:01	BPM	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Golder Associates Inc. Job ID: 240-115237-5
Project/Site: 1SA19 Makeup - B - beta BHC

Laboratory: Eurofins TestAmerica, Canton

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Virginia	NELAP	3	460175	09-14-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Canton
4101 Shuffel Street NW

North Canton, OH 44720-6900
phone 330.497.9396 fax 330.497.0772

Chain of Custody Record

eurofins Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other: VSWMR/CAP

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Mike Williams/Rachel Powell	Site Contact: Rachel Powell	Date: 6/27/19	COC No:
Golder Associates Inc.	Email: ripowell@golder.com	Lab Contact: Eric Lang	Carrier: FedEx	2 of 2 COCs
2108 West Laburnum Ave, Suite 200	Tel/Fax: 804-517-3381			Sampler: Kevin Weissgold/Nathan Chien
Richmond, VA, 23227	Analysis Turnaround Time			For Lab Use Only: Rachel Powell
(804) 358-7900 Phone	☐ CALENDAR DAYS ☑ WORKING DAYS			Walk-in Client:
(xxx) xxx-xxxx FAX	TAT if different from Below 10			Lab Sampling:
Project Name: 1SA19 CEC Makeup Sampling Event	☐ 2 weeks			Job / SDG No.:
Site: Chesapeake Energy Center, Virginia	☐ 1 week			
P O # 19117210	☐ 2 days			
	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	beta-BHC - SW846 8081B	Sample Specific Notes:
Duplicate	6/27/19	1227	G	GW	2	N	N	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Zinc Acetate + NaOH — 1

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: All samples preserved on ice. Please provide a Level II Data package. Please see sample memo. Reporting Group B.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Rachel Powell	Golder	6/29/19 1100	FedEx		
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
				TA	6/29/19 0931
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW

North Canton, OH 44720-6900
phone 330.497.9396 fax 330.497.0772

Chain of Custody Record

eurofins Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other: VSWMR/CAP

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Mike Williams/Rachel Powell	Site Contact: Rachel Powell	Date: ~~6/26/19~~ 6/27/19	COC No:
Golder Associates Inc.	Email: ripowell@golder.com	Lab Contact: Eric Lang	Carrier: FedEx	1 of 2 COCs
2108 West Laburnum Ave, Suite 200	Tel/Fax: 804-517-3381			Sampler: Kevin Weissgold/Nathan Chien
Richmond, VA, 23227	Analysis Turnaround Time			For Lab Use Only: Rachel Powell
(804) 358-7900 Phone	☐ CALENDAR DAYS ☑ WORKING DAYS			Walk-in Client:
(xxx) xxx-xxxx FAX	TAT if different from Below 10			Lab Sampling:
Project Name: 1SA19 CEC Makeup Sampling Event	☐ 2 weeks			Job / SDG No.:
Site: Chesapeake Energy Center, Virginia	☐ 1 week			
P O # 19117210	☐ 2 days			
	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	beta-BHC - SW846 8081B	Sample Specific Notes:
MW-5	6/27/19	0902	G	GW	2	N	N	X	
MW-5D	6/27/19	0856	G	GW	2	N	N	X	
CECW-6I	6/27/19	1232	G	GW	2	N	N	X	
CECW-6D	6/27/19	1220	G	GW	2	N	N	X	
CECW-8	6/27/19	1020	G	GW	2	N	N	X	
CECW-8D	6/27/19	1030	G	GW	2	N	N	X	
CECW-10R	6/27/19	1210	G	GW	2	N	N	X	
CECW-15	6/27/19	1317	G	GW	2	N	N	X	
PO-8	6/27/19	1331	G	GW	2	N	N	X	
PO-8D	6/27/19	1335	G	GW	2	N	N	X	
PO-10	6/27/19	1115	G	GW	2	N	N	X	
PO-10D	6/27/19	1235	G	GW	2	N	N	X	
								1	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Zinc Acetate + NaOH

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: All samples preserved on ice. Please provide a Level II Data package. Please see sample memo. Reporting Group 6.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Rachel Powell	Golder	6/29/19 1100	FedEx		
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time: 6/29/19 930
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

7/24/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW

North Canton, OH 44720-6900
phone 330.497.9396 fax 330.497.0772

Chain of Custody Record

eurofins Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other: **VSWMR/CAP**

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Mike Williams/Rachel Powell	Site Contact: Rachel Powell	Date: 6/26/19	COC No:
Golder Associates Inc.	Email: ripowell@golder.com	Lab Contact: Eric Lang	Carrier: FedEx	1 of 1 COCs
2108 West Laburnum Ave, Suite 200	Tel/Fax: 804-517-3381			Sampler: Kevin Weissgold/Nathan Chien
Richmond, VA, 23227	**Analysis Turnaround Time**			**For Lab Use Only:** Rachel Powell
(804) 358-7900 Phone	☐ CALENDAR DAYS ☑ WORKING DAYS			Walk-in Client:
(xxx) xxx-xxxx FAX	TAT if different from Below 10			Lab Sampling:
Project Name: 1SA19 CEC Makeup Sampling Event	☐ 2 weeks			Job / SDG No.:
Site: Chesapeake Energy Center, Virginia	☐ 1 week			
P O # 19117210	☐ 2 days			
	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	beta-BHC - SW846 8081B	Sample Specific Notes:
CECW-1	6/26/19	1550	G	GW	4	N	Y	X	
CECW-1D	6/26/19	1545	G	GW	2	N	N	X	
CECW-2	6/26/19	1435	G	GW	2	N	N	X	
CECW-2D	6/26/19	1345	G	GW	2	N	N	X	
CECW-3D	6/26/19	1510	G	GW	2	N	N	X	
Field Blank	6/26/19	1625	G	GW	2	N	N	X	
								1	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Zinc Acetate + NaOH

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: All samples preserved on ice. Please provide a Level II Data package. Please see sample memo. Reporting Group B.

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd:	Corr'd:	Therm ID No.:
Relinquished by: Rachel Powell	Company: Golder	Date/Time: 6/29/19 1100	Received by: FedEx	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time: 6/27/19 930
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-115237-6
Client Project/Site: 1SA19 Makeup - B - Antimony

For:
Golder Associates Inc.
2108 W Laburnum Ave,
Suite 200
Richmond, Virginia 23227

Attn: Mr. Mike Williams

Authorized for release by:
7/22/2019 10:20:11 AM

Eric Lang, Manager of Project Management
(708)534-5200
eric.lang@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - B - Antimony

Job ID: 240-115237-6

Job ID: 240-115237-6

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-115237-6

Comments
No additional comments.

Receipt
The samples were received on 6/29/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 13 coolers at receipt time were 1.5º C, 2.3º C, 2.3º C, 2.5º C, 3.1º C, 3.7º C, 4.1º C, 4.7º C, 4.9º C, 4.9º C, 4.9º C, 5.7º C and 5.7º C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Field Service / Mobile Lab
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

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

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-115237-2	MW-5	Ground Water	06/27/19 09:02	06/29/19 09:30	
240-115237-3	MW-5D	Ground Water	06/27/19 08:50	06/29/19 09:30	
240-115237-4	CECW-1	Ground Water	06/26/19 15:50	06/29/19 09:30	
240-115237-5	CECW-1D	Ground Water	06/26/19 15:45	06/29/19 09:30	
240-115237-6	CECW-2	Ground Water	06/26/19 14:35	06/29/19 09:30	
240-115237-7	CECW-2D	Ground Water	06/26/19 13:45	06/29/19 09:30	
240-115237-8	CECW-3D	Ground Water	06/26/19 15:10	06/29/19 09:30	
240-115237-11	CECW-6I	Ground Water	06/27/19 12:32	06/29/19 09:30	
240-115237-12	CECW-6D	Ground Water	06/27/19 12:20	06/29/19 09:30	
240-115237-13	CECW-8	Ground Water	06/27/19 10:20	06/29/19 09:30	
240-115237-14	CECW-8D	Ground Water	06/27/19 10:30	06/29/19 09:30	
240-115237-15	CECW-10R	Ground Water	06/27/19 12:10	06/29/19 09:30	
240-115237-16	CECW-15	Ground Water	06/27/19 13:17	06/29/19 09:30	
240-115237-17	PO-8	Ground Water	06/27/19 13:31	06/29/19 09:30	
240-115237-18	PO-8D	Ground Water	06/27/19 13:35	06/29/19 09:30	
240-115237-20	PO-10	Ground Water	06/27/19 11:15	06/29/19 09:30	
240-115237-21	PO-10D	Ground Water	06/27/19 12:35	06/29/19 09:30	
240-115237-23	DUPLICATE	Ground Water	06/27/19 12:27	06/29/19 09:30	
240-115237-24	FIELD BLANK	Ground Water	06/26/19 16:25	06/29/19 09:30	

Detection Summary

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - B - Antimony

Job ID: 240-115237-6

Client Sample ID: MW-5 — Lab Sample ID: 240-115237-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.57	J	2.0	0.57	ug/L	1		6020A	Dissolved

Client Sample ID: MW-5D — Lab Sample ID: 240-115237-3

No Detections.

Client Sample ID: CECW-1 — Lab Sample ID: 240-115237-4

No Detections.

Client Sample ID: CECW-1D — Lab Sample ID: 240-115237-5

No Detections.

Client Sample ID: CECW-2 — Lab Sample ID: 240-115237-6

No Detections.

Client Sample ID: CECW-2D — Lab Sample ID: 240-115237-7

No Detections.

Client Sample ID: CECW-3D — Lab Sample ID: 240-115237-8

No Detections.

Client Sample ID: CECW-6I — Lab Sample ID: 240-115237-11

No Detections.

Client Sample ID: CECW-6D — Lab Sample ID: 240-115237-12

No Detections.

Client Sample ID: CECW-8 — Lab Sample ID: 240-115237-13

No Detections.

Client Sample ID: CECW-8D — Lab Sample ID: 240-115237-14

No Detections.

Client Sample ID: CECW-10R — Lab Sample ID: 240-115237-15

No Detections.

Client Sample ID: CECW-15 — Lab Sample ID: 240-115237-16

No Detections.

Client Sample ID: PO-8 — Lab Sample ID: 240-115237-17

No Detections.

Client Sample ID: PO-8D — Lab Sample ID: 240-115237-18

No Detections.

Client Sample ID: PO-10 — Lab Sample ID: 240-115237-20

No Detections.

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - B - Antimony

Job ID: 240-115237-6

Client Sample ID: PO-10D — Lab Sample ID: 240-115237-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	4.8		2.0	0.57	ug/L	1		6020A	Total Recoverable
Antimony	3.6		2.0	0.57	ug/L	1		6020A	Dissolved

Client Sample ID: DUPLICATE — Lab Sample ID: 240-115237-23

No Detections.

Client Sample ID: FIELD BLANK — Lab Sample ID: 240-115237-24

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - B - Antimony

Job ID: 240-115237-6

Client Sample ID: MW-5
Date Collected: 06/27/19 09:02
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-2
Matrix: Ground Water

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:03	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.57**	**J**	2.0	0.57	ug/L		07/01/19 14:00	07/09/19 18:10	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: MW-5D
Lab Sample ID: 240-115237-3
Date Collected: 06/27/19 08:50
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:10	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 18:12	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: CECW-1
Lab Sample ID: 240-115237-4
Date Collected: 06/26/19 15:50
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 20:49	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 17:59	1

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: CECW-1D
Lab Sample ID: 240-115237-5
Date Collected: 06/26/19 15:45
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:13	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 18:20	1

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: CECW-2
Lab Sample ID: 240-115237-6
Date Collected: 06/26/19 14:35
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:15	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 18:22	1

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: CECW-2D
Lab Sample ID: 240-115237-7
Date Collected: 06/26/19 13:45
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:17	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 18:24	1

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: CECW-3D
Lab Sample ID: 240-115237-8
Date Collected: 06/26/19 15:10
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:20	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 18:27	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: CECW-6I
Lab Sample ID: 240-115237-11
Date Collected: 06/27/19 12:32
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:27	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 18:29	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: CECW-6D
Lab Sample ID: 240-115237-12

Date Collected: 06/27/19 12:20
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:29	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 18:32	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: CECW-8
Lab Sample ID: 240-115237-13

Date Collected: 06/27/19 10:20
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:32	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 18:34	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: CECW-8D
Lab Sample ID: 240-115237-14
Date Collected: 06/27/19 10:30
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:39	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 18:37	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: CECW-10R
Lab Sample ID: 240-115237-15

Date Collected: 06/27/19 12:10
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:42	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 18:39	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: CECW-15
Lab Sample ID: 240-115237-16
Date Collected: 06/27/19 13:17
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:44	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 18:41	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: PO-8
Lab Sample ID: 240-115237-17
Date Collected: 06/27/19 13:31
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:46	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 18:49	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: PO-8D
Lab Sample ID: 240-115237-18
Date Collected: 06/27/19 13:35
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:49	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 18:51	1

Client Sample Results

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: PO-10
Lab Sample ID: 240-115237-20
Date Collected: 06/27/19 11:15
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 21:54	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 18:54	1

Client Sample Results

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - B - Antimony

Job ID: 240-115237-6

Client Sample ID: PO-10D

Date Collected: 06/27/19 12:35
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-21

Matrix: Ground Water

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	4.8		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 20:23	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	3.6		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 20:16	1

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: DUPLICATE
Lab Sample ID: 240-115237-23
Date Collected: 06/27/19 12:27
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 20:33	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 20:18	1

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: FIELD BLANK
Lab Sample ID: 240-115237-24
Date Collected: 06/26/19 16:25
Matrix: Ground Water
Date Received: 06/29/19 09:30

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 12:18	07/09/19 20:35	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 20:21	1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-389196/1-A
Matrix: Water
Analysis Batch: 391579

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389196

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 20:45	1

Lab Sample ID: LCS 240-389196/2-A
Matrix: Water
Analysis Batch: 391579

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389196

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	100	96.5		ug/L		96	80 - 120

Lab Sample ID: 240-115237-4 MS
Matrix: Ground Water
Analysis Batch: 391579

Client Sample ID: CECW-1
Prep Type: Total Recoverable
Prep Batch: 389196

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	<0.57		100	100		ug/L		100	75 - 125

Lab Sample ID: 240-115237-4 MSD
Matrix: Ground Water
Analysis Batch: 391579

Client Sample ID: CECW-1
Prep Type: Total Recoverable
Prep Batch: 389196

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	<0.57		100	99.0		ug/L		99	75 - 125	1	20

Lab Sample ID: MB 240-389197/1-A
Matrix: Water
Analysis Batch: 391579

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389197

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 17:54	1

Lab Sample ID: LCS 240-389197/2-A
Matrix: Water
Analysis Batch: 391579

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389197

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	100	101		ug/L		101	80 - 120

Lab Sample ID: MB 240-389203/1-A
Matrix: Water
Analysis Batch: 391579

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389203

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.57		2.0	0.57	ug/L		07/01/19 14:00	07/09/19 19:43	1

Lab Sample ID: LCS 240-389203/2-A
Matrix: Water
Analysis Batch: 391579

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389203

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	100	101		ug/L		101	80 - 120

QC Sample Results

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - B - Antimony

Job ID: 240-115237-6

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: 240-115237-4 MS
Matrix: Ground Water
Analysis Batch: 391579

Client Sample ID: CECW-1
Prep Type: Dissolved
Prep Batch: 389197

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Antimony	<0.57		100	106		ug/L		106	75 - 125		

Lab Sample ID: 240-115237-4 MSD
Matrix: Ground Water
Analysis Batch: 391579

Client Sample ID: CECW-1
Prep Type: Dissolved
Prep Batch: 389197

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	<0.57		100	104		ug/L		104	75 - 125	2	20

QC Association Summary

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - B - Antimony

Job ID: 240-115237-6

Metals

Prep Batch: 389196

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-2	MW-5	Total Recoverable	Ground Water	3005A	
240-115237-3	MW-5D	Total Recoverable	Ground Water	3005A	
240-115237-4	CECW-1	Total Recoverable	Ground Water	3005A	
240-115237-5	CECW-1D	Total Recoverable	Ground Water	3005A	
240-115237-6	CECW-2	Total Recoverable	Ground Water	3005A	
240-115237-7	CECW-2D	Total Recoverable	Ground Water	3005A	
240-115237-8	CECW-3D	Total Recoverable	Ground Water	3005A	
240-115237-11	CECW-6I	Total Recoverable	Ground Water	3005A	
240-115237-12	CECW-6D	Total Recoverable	Ground Water	3005A	
240-115237-13	CECW-8	Total Recoverable	Ground Water	3005A	
240-115237-14	CECW-8D	Total Recoverable	Ground Water	3005A	
240-115237-15	CECW-10R	Total Recoverable	Ground Water	3005A	
240-115237-16	CECW-15	Total Recoverable	Ground Water	3005A	
240-115237-17	PO-8	Total Recoverable	Ground Water	3005A	
240-115237-18	PO-8D	Total Recoverable	Ground Water	3005A	
240-115237-20	PO-10	Total Recoverable	Ground Water	3005A	
MB 240-389196/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-389196/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
240-115237-4 MS	CECW-1	Total Recoverable	Ground Water	3005A	
240-115237-4 MSD	CECW-1	Total Recoverable	Ground Water	3005A	

Prep Batch: 389197

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-2	MW-5	Dissolved	Ground Water	3005A	
240-115237-3	MW-5D	Dissolved	Ground Water	3005A	
240-115237-4	CECW-1	Dissolved	Ground Water	3005A	
240-115237-5	CECW-1D	Dissolved	Ground Water	3005A	
240-115237-6	CECW-2	Dissolved	Ground Water	3005A	
240-115237-7	CECW-2D	Dissolved	Ground Water	3005A	
240-115237-8	CECW-3D	Dissolved	Ground Water	3005A	
240-115237-11	CECW-6I	Dissolved	Ground Water	3005A	
240-115237-12	CECW-6D	Dissolved	Ground Water	3005A	
240-115237-13	CECW-8	Dissolved	Ground Water	3005A	
240-115237-14	CECW-8D	Dissolved	Ground Water	3005A	
240-115237-15	CECW-10R	Dissolved	Ground Water	3005A	
240-115237-16	CECW-15	Dissolved	Ground Water	3005A	
240-115237-17	PO-8	Dissolved	Ground Water	3005A	
240-115237-18	PO-8D	Dissolved	Ground Water	3005A	
240-115237-20	PO-10	Dissolved	Ground Water	3005A	
MB 240-389197/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-389197/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
240-115237-4 MS	CECW-1	Dissolved	Ground Water	3005A	
240-115237-4 MSD	CECW-1	Dissolved	Ground Water	3005A	

Prep Batch: 389203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-21	PO-10D	Dissolved	Ground Water	3005A	
240-115237-21	PO-10D	Total Recoverable	Ground Water	3005A	
240-115237-23	DUPLICATE	Dissolved	Ground Water	3005A	
240-115237-23	DUPLICATE	Total Recoverable	Ground Water	3005A	
240-115237-24	FIELD BLANK	Dissolved	Ground Water	3005A	

Metals (Continued)

Prep Batch: 389203 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-24	FIELD BLANK	Total Recoverable	Ground Water	3005A	
MB 240-389203/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-389203/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 391579

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-2	MW-5	Dissolved	Ground Water	6020A	389197
240-115237-2	MW-5	Total Recoverable	Ground Water	6020A	389196
240-115237-3	MW-5D	Dissolved	Ground Water	6020A	389197
240-115237-3	MW-5D	Total Recoverable	Ground Water	6020A	389196
240-115237-4	CECW-1	Dissolved	Ground Water	6020A	389197
240-115237-4	CECW-1	Total Recoverable	Ground Water	6020A	389196
240-115237-5	CECW-1D	Dissolved	Ground Water	6020A	389197
240-115237-5	CECW-1D	Total Recoverable	Ground Water	6020A	389196
240-115237-6	CECW-2	Dissolved	Ground Water	6020A	389197
240-115237-6	CECW-2	Total Recoverable	Ground Water	6020A	389196
240-115237-7	CECW-2D	Dissolved	Ground Water	6020A	389197
240-115237-7	CECW-2D	Total Recoverable	Ground Water	6020A	389196
240-115237-8	CECW-3D	Dissolved	Ground Water	6020A	389197
240-115237-8	CECW-3D	Total Recoverable	Ground Water	6020A	389196
240-115237-11	CECW-6I	Dissolved	Ground Water	6020A	389197
240-115237-11	CECW-6I	Total Recoverable	Ground Water	6020A	389196
240-115237-12	CECW-6D	Dissolved	Ground Water	6020A	389197
240-115237-12	CECW-6D	Total Recoverable	Ground Water	6020A	389196
240-115237-13	CECW-8	Dissolved	Ground Water	6020A	389197
240-115237-13	CECW-8	Total Recoverable	Ground Water	6020A	389196
240-115237-14	CECW-8D	Dissolved	Ground Water	6020A	389197
240-115237-14	CECW-8D	Total Recoverable	Ground Water	6020A	389196
240-115237-15	CECW-10R	Dissolved	Ground Water	6020A	389197
240-115237-15	CECW-10R	Total Recoverable	Ground Water	6020A	389196
240-115237-16	CECW-15	Dissolved	Ground Water	6020A	389197
240-115237-16	CECW-15	Total Recoverable	Ground Water	6020A	389196
240-115237-17	PO-8	Dissolved	Ground Water	6020A	389197
240-115237-17	PO-8	Total Recoverable	Ground Water	6020A	389196
240-115237-18	PO-8D	Dissolved	Ground Water	6020A	389197
240-115237-18	PO-8D	Total Recoverable	Ground Water	6020A	389196
240-115237-20	PO-10	Dissolved	Ground Water	6020A	389197
240-115237-20	PO-10	Total Recoverable	Ground Water	6020A	389196
240-115237-21	PO-10D	Dissolved	Ground Water	6020A	389203
240-115237-21	PO-10D	Total Recoverable	Ground Water	6020A	389203
240-115237-23	DUPLICATE	Dissolved	Ground Water	6020A	389203
240-115237-23	DUPLICATE	Total Recoverable	Ground Water	6020A	389203
240-115237-24	FIELD BLANK	Dissolved	Ground Water	6020A	389203
240-115237-24	FIELD BLANK	Total Recoverable	Ground Water	6020A	389203
MB 240-389196/1-A	Method Blank	Total Recoverable	Water	6020A	389196
MB 240-389197/1-A	Method Blank	Total Recoverable	Water	6020A	389197
MB 240-389203/1-A	Method Blank	Total Recoverable	Water	6020A	389203
LCS 240-389196/2-A	Lab Control Sample	Total Recoverable	Water	6020A	389196
LCS 240-389197/2-A	Lab Control Sample	Total Recoverable	Water	6020A	389197
LCS 240-389203/2-A	Lab Control Sample	Total Recoverable	Water	6020A	389203
240-115237-4 MS	CECW-1	Dissolved	Ground Water	6020A	389197

Metals (Continued)

Analysis Batch: 391579 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115237-4 MS	CECW-1	Total Recoverable	Ground Water	6020A	389196
240-115237-4 MSD	CECW-1	Dissolved	Ground Water	6020A	389197
240-115237-4 MSD	CECW-1	Total Recoverable	Ground Water	6020A	389196

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Client Sample ID: MW-5
Lab Sample ID: 240-115237-2
Date Collected: 06/27/19 09:02
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389197	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 18:10	DSH	TAL CAN
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:03	DSH	TAL CAN

Client Sample ID: MW-5D
Lab Sample ID: 240-115237-3
Date Collected: 06/27/19 08:50
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389197	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 18:12	DSH	TAL CAN
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:10	DSH	TAL CAN

Client Sample ID: CECW-1
Lab Sample ID: 240-115237-4
Date Collected: 06/26/19 15:50
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389197	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 17:59	DSH	TAL CAN
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 20:49	DSH	TAL CAN

Client Sample ID: CECW-1D
Lab Sample ID: 240-115237-5
Date Collected: 06/26/19 15:45
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389197	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 18:20	DSH	TAL CAN
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:13	DSH	TAL CAN

Client Sample ID: CECW-2
Lab Sample ID: 240-115237-6
Date Collected: 06/26/19 14:35
Matrix: Ground Water
Date Received: 06/29/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389197	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 18:22	DSH	TAL CAN
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:15	DSH	TAL CAN

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - B - Antimony

Job ID: 240-115237-6

Client Sample ID: CECW-2D
Date Collected: 06/26/19 13:45
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-7
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389197	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 18:24	DSH	TAL CAN
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:17	DSH	TAL CAN

Client Sample ID: CECW-3D
Date Collected: 06/26/19 15:10
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-8
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389197	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 18:27	DSH	TAL CAN
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:20	DSH	TAL CAN

Client Sample ID: CECW-6I
Date Collected: 06/27/19 12:32
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-11
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389197	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 18:29	DSH	TAL CAN
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:27	DSH	TAL CAN

Client Sample ID: CECW-6D
Date Collected: 06/27/19 12:20
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-12
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389197	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 18:32	DSH	TAL CAN
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:29	DSH	TAL CAN

Client Sample ID: CECW-8
Date Collected: 06/27/19 10:20
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-13
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389197	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 18:34	DSH	TAL CAN
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:32	DSH	TAL CAN

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - B - Antimony

Job ID: 240-115237-6

Client Sample ID: CECW-8D
Date Collected: 06/27/19 10:30
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-14
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389197	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 18:37	DSH	TAL CAN
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:39	DSH	TAL CAN

Client Sample ID: CECW-10R
Date Collected: 06/27/19 12:10
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-15
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389197	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 18:39	DSH	TAL CAN
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:42	DSH	TAL CAN

Client Sample ID: CECW-15
Date Collected: 06/27/19 13:17
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-16
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389197	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 18:41	DSH	TAL CAN
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:44	DSH	TAL CAN

Client Sample ID: PO-8
Date Collected: 06/27/19 13:31
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-17
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389197	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 18:49	DSH	TAL CAN
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:46	DSH	TAL CAN

Client Sample ID: PO-8D
Date Collected: 06/27/19 13:35
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-18
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389197	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 18:51	DSH	TAL CAN
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:49	DSH	TAL CAN

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: 1SA19 Makeup - B - Antimony

Job ID: 240-115237-6

Client Sample ID: PO-10
Date Collected: 06/27/19 11:15
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-20
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389197	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 18:54	DSH	TAL CAN
Total Recoverable	Prep	3005A			389196	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 21:54	DSH	TAL CAN

Client Sample ID: PO-10D
Date Collected: 06/27/19 12:35
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-21
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389203	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 20:16	DSH	TAL CAN
Total Recoverable	Prep	3005A			389203	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 20:23	DSH	TAL CAN

Client Sample ID: DUPLICATE
Date Collected: 06/27/19 12:27
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-23
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389203	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 20:18	DSH	TAL CAN
Total Recoverable	Prep	3005A			389203	07/01/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 20:33	DSH	TAL CAN

Client Sample ID: FIELD BLANK
Date Collected: 06/26/19 16:25
Date Received: 06/29/19 09:30

Lab Sample ID: 240-115237-24
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			389203	07/01/19 14:00	MRL	TAL CAN
Dissolved	Analysis	6020A		1	391579	07/09/19 20:21	DSH	TAL CAN
Total Recoverable	Prep	3005A			389203	07/01/19 12:18	MRL	TAL CAN
Total Recoverable	Analysis	6020A		1	391579	07/09/19 20:35	DSH	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Golder Associates Inc. Job ID: 240-115237-6
Project/Site: 1SA19 Makeup - B - Antimony

Laboratory: Eurofins TestAmerica, Canton

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Virginia	NELAP	3	460175	09-14-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Canton
4101 Shuffel Street NW

North Canton, OH 44720-6900
phone 330.497.9396 fax 330.497.0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other: **VSWMR/CAP**

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Mike Williams/Rachel Powell	Site Contact: Rachel Powell	Date: 6/27/19	COC No:
Golder Associates Inc.	Email: ripowell@golder.com	Lab Contact: Eric Lang	Carrier: FedEx	1 of 2 COCs
2108 West Laburnum Ave, Suite 200	Tel/Fax: 804-517-3381			Sampler: Kevin Weissgold/Nathan Chien
Richmond, VA, 23227	**Analysis Turnaround Time**			For Lab Use Only: Rachel Powell
(804) 358-7900 Phone	☐ CALENDAR DAYS ☑ WORKING DAYS			Walk-in Client:
(xxx) xxx-xxxx FAX	TAT if different from Below 10			Lab Sampling:
Project Name: 1SA19 CEC Makeup Sampling Event	☐ 2 weeks			
Site: Chesapeake Energy Center, Virginia	☐ 1 week			Job / SDG No.:
P O # 19117210	☐ 2 days			
	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Antimony - SW846 6010	Antimony, dissolved - SW846 6010	Sample Specific Notes:
Duplicate	6/27/19	1227	G	GW	2	Y	N	X	X	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Zinc Acetate + NaOH								4	4	

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: All samples preserved on ice. Please provide a Level II Data package. Please see sample memo. Reporting Group B.

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd:	Corr'd:	Therm ID No.:
Relinquished by: Rachel Powell	Company: Golder	Date/Time: 6/27/19 1110	Received by: FedEx	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time: 6/28/19 0730
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW

North Canton, OH 44720-6900
phone 330.497.9396 fax 330.497.0772

Chain of Custody Record

eurofins Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other: VSWMR/CAP

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Mike Williams/Rachel Powell	Site Contact: Rachel Powell	Date: 6/26/19 6/27/19	COC No:
Golder Associates Inc.	Email: rlpowell@golder.com	Lab Contact: Eric Lang	Carrier: FedEx	1 of 2 COCs
2108 West Laburnum Ave, Suite 200	Tel/Fax: 804-517-3381			Sampler: Kevin Weissgold/Nathan Chien
Richmond, VA, 23227	Analysis Turnaround Time			For Lab Use Only: Rachel Powell
(804) 358-7900 Phone	☐ CALENDAR DAYS ☑ WORKING DAYS			Walk-in Client:
(xxx) xxx-xxxx FAX	TAT if different from Below 10			Lab Sampling:
Project Name: 1SA19 CEC Makeup Sampling Event	☐ 2 weeks			Job / SDG No.:
Site: Chesapeake Energy Center, Virginia	☐ 1 week			
P O # 19117210	☐ 2 days ☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Antimony - SW846 6010	Antimony, dissolved - SW846 601	Sample Specific Notes:
MW-5	6/27/19	0902	G	GW	2	Y	N	X	X	
MW-5D	6/27/19	0850	G	GW	2	Y	N	X	X	
CECW-6I	6/27/19	1232	G	GW	2	Y	N	X	X	
CECW-6D	6/27/19	1220	G	GW	2	Y	N	X	X	
CECW-8	6/27/19	1020	G	GW	2	Y	N	X	X	
CECW-8D	6/27/19	1030	G	GW	2	Y	N	X	X	
CECW-10R	6/27/19	1210	G	GW	2	Y	N	X	X	
CECW-15	6/27/19	1317	G	GW	2	Y	N	X	X	
PO-8	6/27/19	1331	G	GW	2	Y	N	X	X	
PO-8D	6/27/19	1335	G	GW	2	Y	N	X	X	
PO-10	6/27/19	1115	G	GW	2	Y	N	X	X	
PO-10D	6/27/19	1235	G	GW	2	Y	N	X	X	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Zinc Acetate + NaOH								4	4	

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments: ***All samples preserved on ice. Please provide a Level II Data package. Please see sample memo. Reporting Group B.***

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: ____ Corr'd: ____		Therm ID No.: ____
Relinquished by: Rachel Powell	Company: Golder	Date/Time: 6/29/19 1100	Received by: FedEx	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW

North Canton, OH 44720-6900
phone 330.497.9396 fax 330.497.0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other: **VSWMR/CAP**

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager: Mike Williams/Rachel Powell	Site Contact: Rachel Powell	Date: 6/26/19	COC No:
Golder Associates Inc.	Email: ripowell@golder.com	Lab Contact: Eric Lang	Carrier: FedEx	1 of 1 COCs
2108 West Laburnum Ave, Suite 200	Tel/Fax: 804-517-3381			Sampler: Kevin Weissgold/Nathan Chien
Richmond, VA, 23227	**Analysis Turnaround Time**			**For Lab Use Only:** Rachel Powell
(804) 358-7900 Phone	☐ CALENDAR DAYS ☑ WORKING DAYS			Walk-in Client:
(xxx) xxx-xxxx FAX	TAT if different from Below 10			Lab Sampling:
Project Name: 1SA19 CEC Makeup Sampling Event	☐ 2 weeks			Job / SDG No.:
Site: Chesapeake Energy Center, Virginia	☐ 1 week			
P O # 19117210	☐ 2 days			
	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Antimony - SW846 6010	Antimony, dissolved - SW846 6010	Sample Specific Notes:
CECW-1	6/26/19	1550	G	GW	5	Y	X	X	X	
CECW-1D	6/26/19	1545	G	GW	2	Y	N	X	X	
CECW-2	6/26/19	1435	G	GW	2	Y	N	X	X	
CECW-2D	6/26/19	1345	G	GW	2	Y	N	X	X	
CECW-3D	6/26/19	1510	G	GW	2	Y	N	X	X	
Field Blank	6/26/19	1625	G	GW	3	N	N	X	X	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Zinc Acetate + NaOH								4	4	

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: All samples preserved on ice. Please provide a Level II Data package. Please see sample memo. Reporting Group B.

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by: Rachel Powell	Company: Golder	Date/Time: 6/29/19 1100	Received by: FedEx	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time: 6/29/19 950
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

golder.com