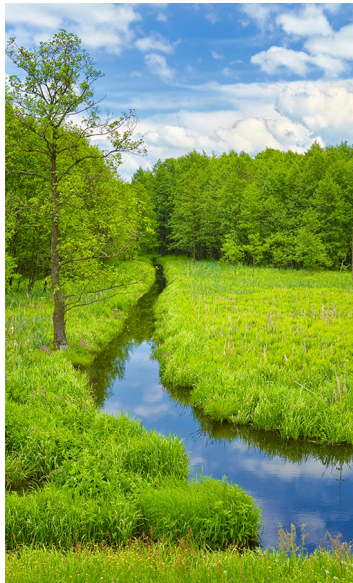




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Draft Report

2015 Annual Groundwater Monitoring Report PCC-Validation

Prepared for: RACER

Conestoga-Rovers & Associates

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Section 1.0 Introduction

Conestoga-Rovers & Associates, Inc. (CRA) has prepared this report to summarize the results of the annual groundwater monitoring conducted at the PCC-Validation Site in Pontiac, Michigan (Site). The Site Location Map is presented on Figure 1. The purpose of the annual groundwater sampling is to: (1) monitor site conditions; (2) monitor natural attenuation associated with the LNAPL area and dissolved phase constituents; and (3) verify that the dissolved phase plume is stable and not expanding beyond the monitoring well network. An Administrative Order on Consent (AOC) with the United States Environmental Protection Agency (U.S. EPA) was enacted on September 3, 2011 which included goals for completing the Environmental Indicator (EI) Report - Determination for Current Human Exposures (CA725), Migration of Contaminated Groundwater (CA750) and a Corrective Measures Proposal (CMP). This report represents the second monitoring event conducted to comply with the proposed corrective measure described in the draft 2013 CMP and in accordance with the July 25, 2014 Sampling and Analysis Plan (SAP) (CRA 2014a) and January 13, 2015 Supplemental Sampling and Analysis Plan (SSAP) (CRA, 2015). Additionally, this report summarizes well abandonment activities that were completed prior to Site redevelopment activities by both CRA on behalf of RACER and SME on behalf of the new Site owner, M1 Concourse, LLC (M1).

Section 2.0 Site Background

The Site is comprised of asphalt paved parking areas, landscaped areas, Building 30, and concrete floor slabs remaining from the demolition of Plants 3, 4, and 5. The Site is vacant and no operations are conducted at the Site with the exception of investigation-related activities. Site redevelopment is planned for the third quarter of 2015.

General Motors Corporation (GMC) began operation of the Site in 1906 after it purchased the northern half of the Site from the Rapid Motor Car Company. The acquired area was developed into Plant 1, which was one of the original buildings on Site. Based on the review of available information, historical operations conducted at former Plant 1 included metal finishing operations (plating, phosphating, heat treating, pickling, and painting), stamping, machining, grinding, polishing, solvent and oil storage, and several other manufacturing processes.

GMC acquired Plants 3 and 4 in 1940 and 1937, respectively, and Plant 5 was purchased in 1963 (each Plant was formerly located in the south portion of the Site). These Plants became part of the GMC Truck and Bus Group in 1983 and part of North American Truck Platforms in 1993. The Site operated concurrently with the GMC Truck Product Center (on South Boulevard, Pontiac, Michigan), to run prototypes for utility vehicle assembly line production. The Site also ran prototype production for painting processes, including usage rates, coating effectiveness,

and actual viability of the process. Ancillary operations included research and development and engineering for individual components for new utility vehicle models. Based on the review of available information, GMC purchased the southern parking lot and vacant area, located at the southeast corner of Howland Street and South Boulevard (lots 49 to 120 of the Woodward Estates Subdivision) in 1944 from the City of Pontiac. Operations at the Site ceased in August 2005. A detailed Site history is provided in the Phase I ESA Report (CRA, 2006).

2.1 Historical Investigations and Field Activities

CRA completed a Phase I Environmental Site Assessment (ESA) of the Site in 2006. A detailed Site history and historical field investigations (prior to 2007) are provided in the Phase I ESA Report (CRA, 2006). Between October 2007 and April 2008, a Phase II ESA was performed by CRA to further investigate the findings of the 2006 Phase I ESA. CRA also investigated an area of fill located in the north-central portion of the Site as part of the Phase II ESA. The investigations, methods and analytical results were presented and discussed in the August 29, 2011 Draft Current Conditions Report (CCR) (CRA, 2011a) and December 12, 2011 Supplemental CCR (CRA, 2011b).

Based on the information presented in the Draft Current Conditions Report (CCR) and Supplemental CCR, nine of the 28 Areas of Interest (AOIs) were investigated following the U.S. EPA approved Sampling and Analysis Plan and Fundamental Quality Assurance Project Plan dated August 20, 2012 (SAP/QAPP) (CRA, 2012). A Phase III Environmental Site Assessment (ESA) was completed in August 2012 and a Supplemental Phase III ESA was completed in December 2012. The investigations, methods and analytical results were presented and discussed in the January 25, 2013 RCRA EI CA725 Report (CRA, 2013a).

On January 24, 2013, two monitoring wells were installed off Site in the right-of-way (ROW) located along the north side of Rapid and Franklin Street. A groundwater monitoring event was completed in February 2013 and included the sampling of 26 groundwater monitoring wells (including the two recently installed wells). The groundwater monitoring event was completed at the request of the U.S. EPA to provide more recent data to support the 2013 RCRA EI CA750 determination. The investigations, methods and analytical results were presented and discussed in the March 2013 (updated September 20, 2013) EI CA750 Report (CRA, 2013b).

From July 10 through July 20, 2013 an additional field investigation was conducted at the request of the U.S. EPA to sample monitoring well MW38-07 for analysis of semi-volatile organic compounds (SVOCs); and, install, develop and sample monitoring well MW93I-13 for analysis volatile organic compounds (VOCs). The purpose of re-sampling monitoring well MW38-07 was to confirm historic SVOC impacts. The purpose of installation and sampling of monitoring well MW93I-13 was to delineate the off-Site VOC impacts in groundwater. The

investigations, methods and analytical results were presented and discussed in the September 20, 2013 addendum to the RCRA CA EI750 Report (CRA, 2013b).

On July 9, 2014 bulkheading of storm sewer lines was completed near the LNAPL area of the Site. The decision to bulkhead storm sewer lines was first discussed during the July 1, 2013 conference call and the scope of work (SOW) was submitted to U.S. EPA on January 15, 2014, updated in April 2014 and approved in May 2014 by the U.S. EPA. The bulkheading was conducted to prevent impacts from potentially discharging to a surface water of the State via storm sewer lines. Upon completion of the bulkheading, there is no connected storm sewer present within the LNAPL area or the Southern dissolved VOC area above GSI Criteria that could vent to a surface water body. The bulkheading activities were presented and discussed in the September 12, 2014 Storm Sewer Bulkhead Completion Memorandum (CRA, 2014b).

A well search was requested by U.S. EPA on January 15, 2014, during a meeting at CRA's office. The well search was completed to determine the number of wells in the vicinity of the Site in support of RCRA Corrective Action being completed for the Site. On July 21, 2014, CRA visited the Oakland County Environmental Health Department and requested (via FOIA) well logs surrounding the Site within a radius of 2 miles. The results of the well search indicated no water wells in the immediate vicinity of the Site. The well search results were presented and discussed in the September 12, 2014 Water Well Search Memorandum (CRA, 2014c).

The 2014 annual groundwater sampling event was completed from July 29 through July 31, 2014. Twenty of the 24 planned monitoring wells were sampled. Two wells (MW48-07 and MW88-12) were not able to be located and two had LNAPL (MW69-08 and MW84-12). The investigations, methods and analytical results were presented and discussed in the October 2014 Annual Groundwater Monitoring Report (CRA, 2014d).

As per the SSAP and U.S. EPA correspondence, two monitoring wells were installed at the request of the U.S. EPA to vertically and horizontally delineate the Southern dissolved VOC area impacts. MW74D-15 and MW94-15 were installed in April 2015. The two wells were included in the 2015 annual groundwater sampling scope of work. Locations of the monitoring wells are identified on Figure 2 and soil boring/well installation logs are included in Appendix A.

Section 3.0 Screening Criteria

The screening criteria for the on-Site and off-Site groundwater data is based on MDEQ Part 201 Cleanup Criteria and Screening Levels. The following were used for screening groundwater data:

- Residential and Non-Residential Drinking Water Criteria (DWC) (only applicable off Site)
- Residential and Non-Residential Groundwater Volatilization to Indoor Air Inhalation (GVIAI)
- Water Solubility
- Flammability/Explosivity Screening Level (FESL)
- Acute Inhalation Screening Level (AISL)

As identified in the draft CCR, addendum to the CCR and EI CA725/CA750, groundwater to surface water interface (GSI) pathway was evaluated for the Site and the conclusion was reached that the GSI pathway does not apply at the Site. During the Phase III ESA, storm sewer depths were measured and two monitoring wells (MW82-12 and MW83-12) were installed in or immediately adjacent to the bedding of the utility corridor along the western boundary of the Site and represent potential Site exit points. In July 2014 bulkheading of sewers was completed resulting in no connected storm sewer through impacted areas above GSI or LNAPL that vent to a surface water body. Based on the distance to the nearest water body (the Clinton River is located approximately 0.75 miles north of the Site), bulkheading and monitoring of potential Site exit points, GSI is not a screening criterion for the on-Site and off-Site groundwater data.

Historically, the drinking water pathway has only been applicable to monitoring off-Site wells. For the purposes of this report, we will compare on-Site groundwater data against MDEQ Part 201 Drinking Water Criteria to monitor for the potential off-Site migration of groundwater (above the drinking water standards); however, drinking water is not a potential exposure pathway on Site as described below.

- Current land use restrictions for the Site include a Site-wide deed restriction to prevent the installation of drinking water wells.
- In addition, the City of Pontiac's source water comes from the lower Lake Huron watershed, and the Lake Huron Water Treatment Plant in Port Huron.
- The Site and the surrounding properties are exclusively provided with municipal water as a source of drinking water, and it is not anticipated that future drinking water wells will be installed in the vicinity of the Site.
- The upper water bearing unit has shown limited connectivity and limited recharge in several monitoring wells and is not used for drinking water.
- It is unlikely that impacts within the upper water bearing unit would migrate to an aquifer that would be considered a usable drinking water aquifer.

Historically, the vapor intrusion exposure pathway has been considered applicable; however, potential on-Site vapor intrusion is addressed by the site deed restriction which includes soil vapor management as follows:

- Future land use restrictions include soil vapor management. Soil vapor management will prohibit construction or occupying any building on the Property without first completing one of the following: Option 1) Evaluate and determine, in accordance with applicable environmental laws rules or regulations that no unacceptable vapor intrusion risks to human health exist in any existing or newly constructed site buildings; or Option 2) Install, operate and maintain a vapor barrier and/or mitigation system designed to eliminate the potential for subsurface vapor phase hazardous substances to migrate into any building at concentrations greater than applicable criteria.

Therefore, the vapor intrusion exposure pathway for on-Site soil and groundwater impacts is not an applicable pathway. However, to evaluate for potential future vapor intrusion issues and potential off-Site concerns, we will compare on-Site and off-Site groundwater data against MDEQ Part 201 GVIAI Criteria.

Section 4.0 Annual Groundwater Monitoring Activities and Results

Two rounds of sampling were conducted during the 2015 annual groundwater monitoring activities. Monitoring wells were sampled using standard low-flow purge (LFP) techniques (as per SAP/QAP). A groundwater sample was collected from each monitoring well and analyzed for VOCs and/or aluminum, lead and vanadium. Groundwater samples were submitted under chain-of-custody protocols to ALS Environmental, located in Holland, Michigan. Field and laboratory quality control samples were also collected and analyzed.

The first round was conducted on April 5 and April 6, 2015 and 21 of the 23 monitoring wells were sampled following methods described in the approved SAP/QAPP. Two wells (MW21-07 and MW94-15) had insufficient groundwater to collect a sample.

The second round of sampling was conducted on May 13, 2015 and six of the eight monitoring wells were sampled following methods described in the approved SAP/QAPP. Two monitoring wells (MW10-07 and MW94-15) had insufficient groundwater to collect a sample. Table 1 provides a summary of the 2015 annual groundwater sampling activities.

4.1 LNAPL

Two of the monitoring wells (MW69-08 and MW84-12) had LNAPL (as previously observed) and were not sampled. As discussed in the EI CA750 Report (CRA, 2013b), an LIF survey was conducted in 2009 to delineate the vertical and horizontal extent of the LNAPL. Additional evaluation of the LNAPL was conducted during the Phase III ESA. It was concluded (in the EI CA725 and 750) that the LNAPL is not mobile or expanding. Upon review of the 2015 LNAPL thickness (less than 1 inch) and LNAPL encountered at only MW69-08 and MW84-12, the results from the 2015 annual groundwater sampling event are consistent with historic results and confirm the LNAPL is not mobile or expanding.

4.2 Hydrogeological Results

Groundwater collected at the Site is from an upper unit which tends to be present but not continuous or interconnected throughout the Site. The upper unit is comprised of sand, silt and fill material interbedded with clay. For the purpose of this report, groundwater elevations in the upper unit are contoured (Figure 3) and the contours show generalized flow patterns at the Site. Groundwater contours were generated using the groundwater elevations measured on May 13, 2015 and show a general trending flow to the north or northwest with mounding near the LNAPL area and a depression along the southwestern border. Table 2 and Figure 3 present a groundwater elevation summary and a groundwater contour map from May 13, 2015, respectively.

4.3 Comparison of Analytical Results to Criteria

The analytical results from the two rounds of Annual sampling are summarized below:

Round One (April 5 and April 6, 2015):

- Trichloroethylene (TCE) was detected at MW2-07, MW74-08 and MW91-12 above MDEQ Generic Residential and Non-Residential Drinking Water Criteria
- 1,1,1-Trichloroethane (1,1,1-TCA) and 1,1-Dichloroethene (1,1-DCE) was detected at MW74-08 above MDEQ Generic Residential and Non-Residential Drinking Water Criteria
- TCE and 1,1,1-TCA was detected at MW74-08 above MDEQ Generic Part 201 GSI Criteria
- Carbon tetrachloride was detected at MW85-14 above MDEQ Generic Residential and Non-Residential Drinking Water Criteria
- Aluminum was detected at MW33-07, MW38-07, MW82-12 and MW83-12 above MDEQ Generic Residential and Non-Residential Drinking Water Criteria
- Lead was detected at MW33-07 and MW38-07 above MDEQ Generic Residential and Non-Residential Drinking Water Criteria
- Lead was detected at MW33-07 above MDEQ Generic Part 201 GSI Criteria

- Vanadium was detected at MW33-07 and MW82-12 above MDEQ Generic Residential Drinking Water Criteria

Round Two (May 13, 2015):

- Aluminum was detected at MW21-07, MW33-07, MW38-07 and MW82-12 above MDEQ Generic Residential and Non-Residential Drinking Water Criteria
- Lead was detected at MW21-07 and MW33-07 above MDEQ Generic Residential and Non-Residential Drinking Water Criteria
- Lead was detected at MW33-07 above MDEQ Generic Part 201 GSI Criteria
- Vanadium was detected at MW21-07, MW33-07 and MW82-12 above MDEQ Generic Residential Drinking Water Criteria

The metal and VOC analytical results and locations are shown on Figures 4 and 5, respectively. Tables 3 and 4 present the current and historical analytical results against all MDEQ Part 201 Cleanup Criteria and Screening Levels, respectively. The laboratory analytical data is included as Appendix B.

4.4 Data Validation

Upon receipt of the final data packages from ALS Environmental, all data was subjected to a reduced data validation. ALS Environmental provided expanded reports for all samples and 10 percent of the samples were subjected to full validation. Validation of the analytical data was performed using the "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA 540/R-99/008, October 1999 and "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", EPA-540/R-94-013, February 1994, as applicable. All data was validated using the QC deliverables specified in Section 5.3.3 of this approved SAP/QAPP. The results of the reduced and full data review and validation process are documented in Appendix C that identifies all limitations on the usability of the analytical data.

Section 5.0 Discussion

5.1 LNAPL

LNAPL was encountered at monitoring wells MW69-08 and MW84-12. Historically, LNAPL has been present in the two wells and the presence of LNAPL was anticipated prior to sampling. LNAPL was not encountered in any other monitoring well during this sampling event. As identified in Section 4.1, the 2015 LNAPL data are consistent with historic results and confirms the LNAPL is not mobile or expanding. A detailed discussion of the LNAPL is presented in the

September 20, 2013 RCRA EI CA750 Report (CRA, 2013a) and January 25, 2013 RCRA EI CA725 Report (CRA, 2013b).

5.2 VOCs

VOC concentrations exceeding MDEQ Part 201 Cleanup Criteria were encountered at MW02-07, MW74-08, MW85-12 and MW91-12 and discussed below:

- MW02-07 is located in the northern portion of the Site and historically exceeded drinking water criteria. The groundwater impacts are delineated and stable.
- Carbon tetrachloride was detected at MW85-14 and appears localized and a one-time exceedance. There is no source of carbon tetrachloride and the site is currently in-active.
- Monitoring wells MW74-08 and MW91-12 are located in the Southern VOC Area. The Southern VOC Area is delineated vertically and horizontally on Site. A detailed discussion of the Southern dissolved VOC area is presented in the September 12, 2014 Southern Dissolved VOC Area Memorandum (CRA, 2014d). Following U.S. EPA review of the September 12, 2014 Southern Dissolved VOC Area Memorandum, U.S. EPA requested additional vertical and up-gradient delineation. The vertical and up-gradient delineation was confirmed with the installation of monitoring wells MW74D-15 and MW94-15, respectively. Based on the July 2015 groundwater monitoring event, there are no changes to the extent of impacts described in the September 12, 2014 Southern Dissolved VOC Area Memorandum to U.S. EPA (CRA, 2014d).

Overall, concentrations of VOCs appear to be decreasing at monitoring wells throughout the Site. The following identifies the percent decreases in concentrations of dissolved VOCs detected at the Site that historically or currently exceed MDEQ Part 201 Cleanup Criteria:

- From 2007-2015: TCE decreased 86 percent at MW02-07
- From 2013-2015: vinyl chloride (VC) decreased 57 percent at off-Site well MW92I-13 (no longer exceeds criteria)
- From 2008-2015: 1,1,1-TCA decreased 68 percent at MW74-08
- From 2008-2015: 1,1-DCE decreased 75 percent at MW74-08
- From 2008-2015: cis-1,2-Dichloroethene (1,2-DCE) decreased 84 percent at MW74-08 (no longer exceeds criteria)
- From 2008-2015: TCE decreased 48 percent at MW74-08
- From 2012-2015: TCE increased 61 percent at MW91-12

MW91-12 increased in concentration compared to historical results. The increase did not cause an exceedance of additional Part 201 Cleanup Criteria. In addition, the well is located in the Southern dissolved VOC area which is delineated both vertically and laterally and the likelihood of the extent of VOC contaminated groundwater expanding on-site or migrating to an off-Site receptor is very low to non-existent (CRA, 2014d).

Based on the results and the VOC decreases described above, concentrations can vary somewhat from sampling event to sampling event but there is strong evidence that natural attenuation is occurring at the Site and the extent of VOC impacts is not expanding.

5.3 Metals

During the 2015 annual sampling events, metal concentrations exceeding MDEQ Part 201 Cleanup Criteria were encountered at MW21-07, MW33-07, MW38-07, MW82-12 and MW83-12. However, three of the locations with concentrations exceeding MDEQ Part 201 Cleanup Criteria (MW38-07, MW82-12 and MW83-12) decreased in concentrations in comparison to historical sampling events. In addition, one location (MW10-07) decreased in concentrations below MDEQ Part 201 Cleanup Criteria. One location (MW33-07) increased in concentration in comparison to historical sampling events, but only exceeded DWC and GSI. The overall trend of metal concentrations appears to be decreasing or stable along the western property boundary.

Section 6.0 Monitoring Well Abandonment

In email correspondence dated March 3, 2015, the U.S. EPA approved abandonment of monitoring wells in anticipation of upcoming Site re-development. Monitoring well abandonment details are summarized in Table 5 and shown on Figure 6.

On May 26, 2015, CRA abandoned 19 monitoring wells (MW4-07, MW7-07, MW11-07, MW28-07, MW13-07, MW15-07, MW17-07, MW19-07, MW20-07, MW27-07, MW34-07, MW35-07, MW37-07, MW40-07, MW43-07, MW63-08, MW64-08, MW78-08, and MW89-12) via pressure grouting the wells to within 5 feet of the surface. The flush mounted well covers were not removed at the time as per M1's request to help with redevelopment of the Site. M1 will remove the well covers as part of Site redevelopment.

On June 11 and 12, 2015, M1 abandoned the remaining 21 monitoring wells (MW2-07, MW10-07, MW21-07, MW33-07, MW38-07, MW48-07, MW68-07, MW69-07, MW74-07, MW74D-15, MW79-12, MW82-12, MW83-12, MW84-12, MW85-12, MW86-12, MW87-12, MW88-12, MW90-12, MW91-12 and MW94-15) via pressure grouting the wells to within 5 feet

of the surface. The flush mounted well covers were not removed at the time as per M1's request to help with redevelopment of the Site. M1 will remove the well covers as part of Site redevelopment.

Section 7.0 Conclusion

The 2015 annual sampling event was completed as per the July 25, 2014 SAP (CRA, 2014a) and January 13, 2015 SSAP (CRA, 2015). The July 2015 analytical results are generally consistent with historical results; however, VOC levels have undergone attenuation. Historical off-Site monitoring wells with dissolved VOCs are non-detect or below MDEQ Part 201 Cleanup Criteria and Screening Levels. The Southern dissolved VOC and LNAPL areas are delineated on Site, stable and not expanding.

Metal concentrations collected along the western property boundary generally decreased in concentrations compared to historical data with one exception (MW33-07). The general trend of stable to decreasing concentrations is likely due to natural processes.

As described in the July 25, 2014 SAP and draft CMP, the two rounds of annual groundwater sampling has been completed, no future sampling events are scheduled or recommended, and there are no active monitoring wells located on Site.

Section 8.0 References

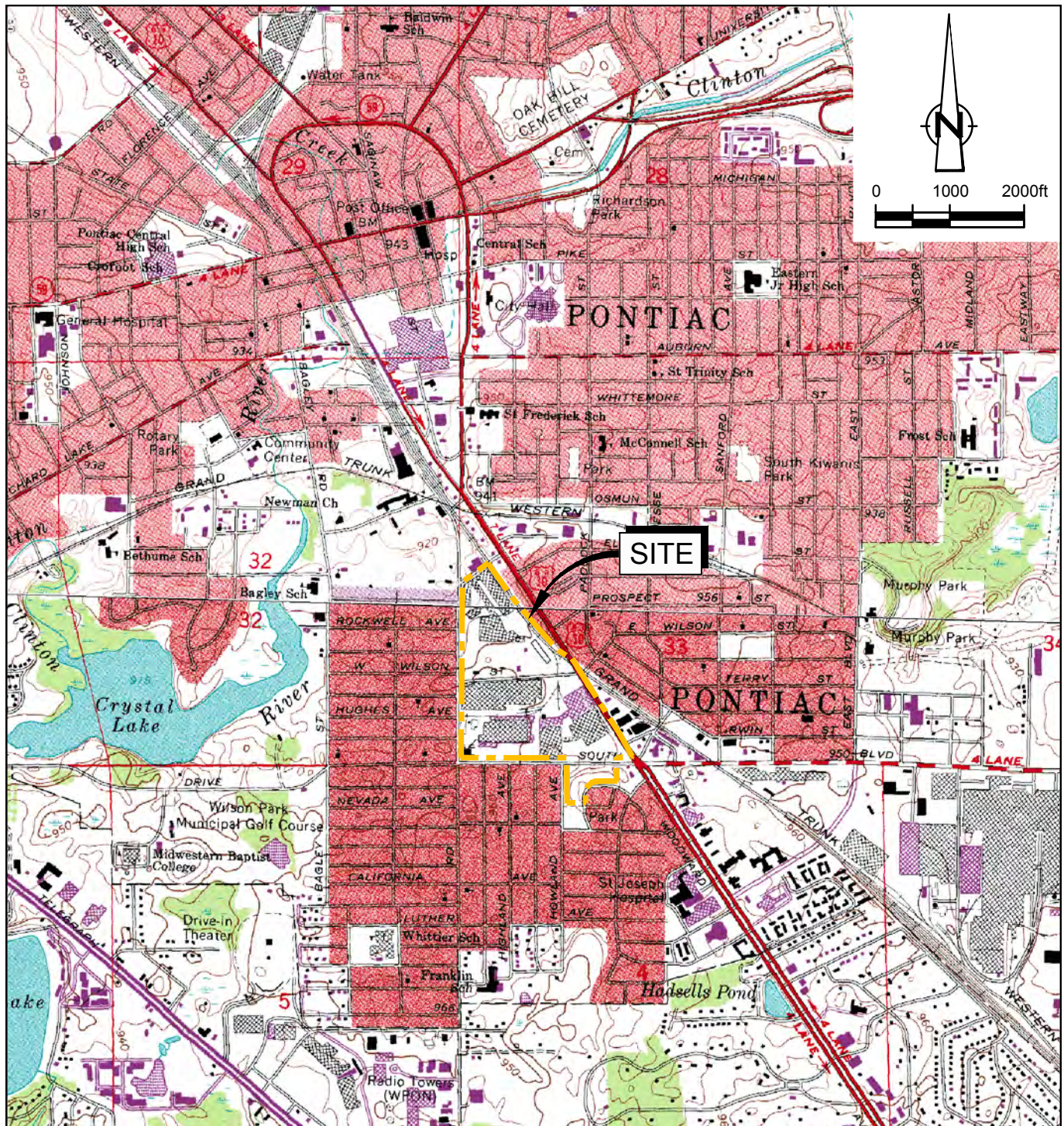
- CRA, Phase I Environmental Site Assessment, General Motors Pontiac Centerpoint Campus – Validation Center, Pontiac, Michigan, 2006
- CRA, Draft Current Conditions Report, PCC-Validation, Pontiac, Michigan, 2011a
- CRA, Supplemental Current Conditions Report, PCC-Validation, Pontiac, Michigan, 2011b
- CRA, Sampling and Analysis Plan and Fundamental Quality Assurance Project Plan, PCC-Validation, Pontiac, Michigan, 2012
- CRA, Environmental Indicator (EI) Report - Determination for Current Human Exposures (CA725), PCC-Validation, Pontiac, Michigan, 2013a
- CRA, Migration of Contaminated Groundwater (CA750), PCC-Validation, Pontiac, Michigan, 2013b
- CRA, Corrective Measures Proposal (CMP), PCC-Validation, Pontiac, Michigan, 2013c
- CRA, Sampling and analysis Plan, PCC-Validation, Pontiac, Michigan, 2014a

CRA, Storm Sewer Bulkhead Completion Memorandum, PCC-Validation, Pontiac, Michigan, 2014b

CRA, Water Well Search Memorandum, PCC-Validation, Pontiac, Michigan, 2014c

CRA, Southern Dissolved VOC Area Memorandum, PCC-Validation, Pontiac, Michigan, 2014d

CRA, Supplemental Sampling and Analysis Plan, PCC-Validation, Pontiac, Michigan, 2015



SOURCE: USGS □ UADRANGLE MAPS □
PONTIAC NORTH AND SOUTH, MICHIGAN □ 1968

LEGEND

— — — — — APPROXIMATE SITE BOUNDARY

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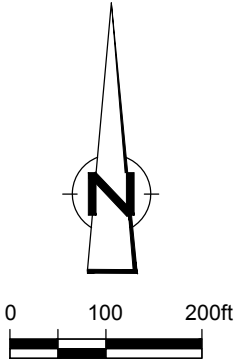
figure 1

SITE LOCATION
PCC-VALIDATION
Pontiac, Michigan





No	Revision	Date	Initial



LEGEND

- MW28-07 COMPLETED MONITORING WELL LOCATION
- APPROXIMATE SITE BOUNDARY
- EXISTING STRUCTURE
- FORMER SITE STRUCTURE
- M.H. MANHOLE
- C.B. CATCH BASIN

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.



Approved

DRAWING STATUS DRAFT

Status Date Initial

SITE PLAN WITH WELL LOCATIONS

PCC-VALIDATION

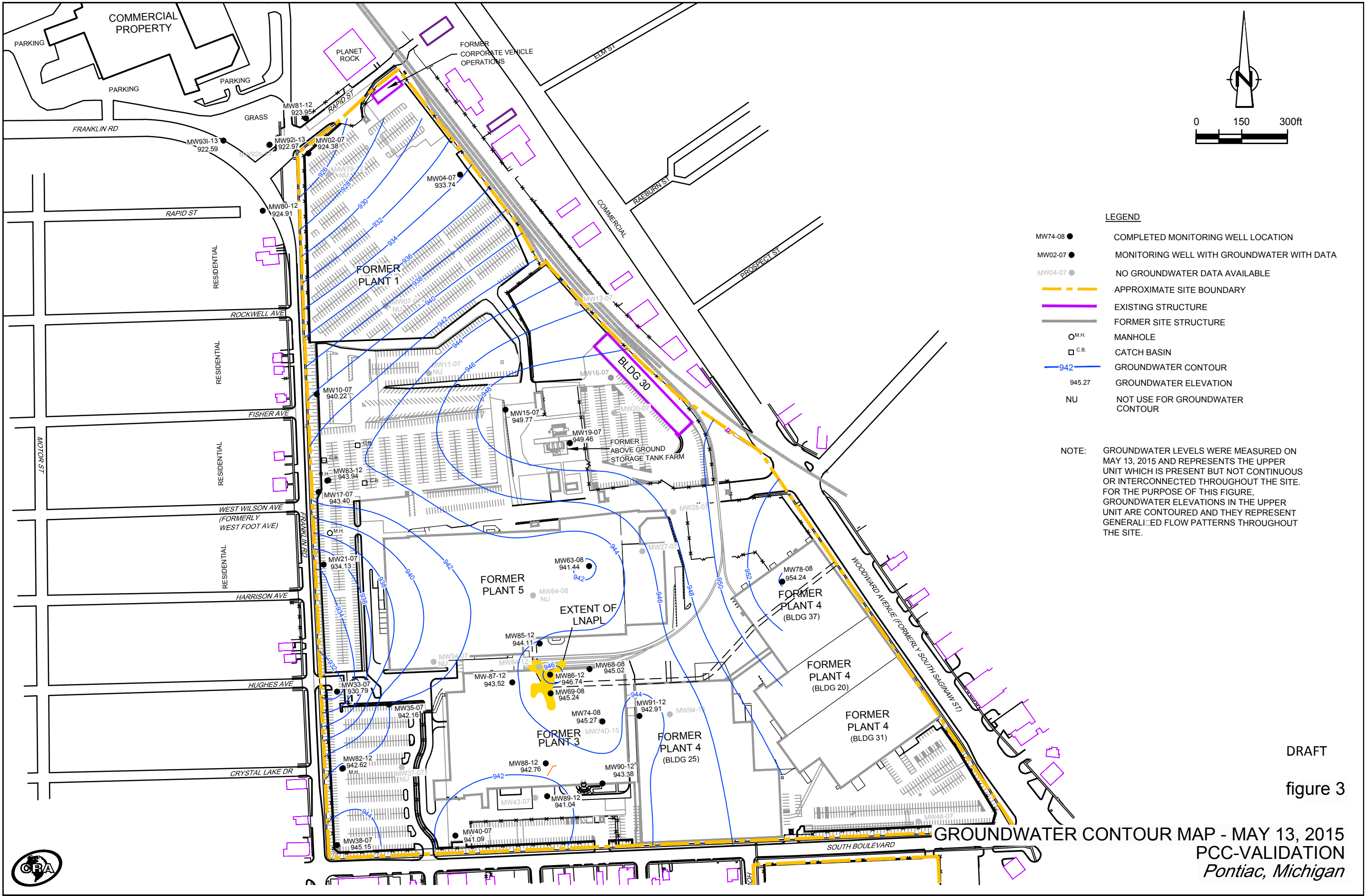
PONTIAC, MICHIGAN



CONESTOGA-ROVERS & ASSOCIATES

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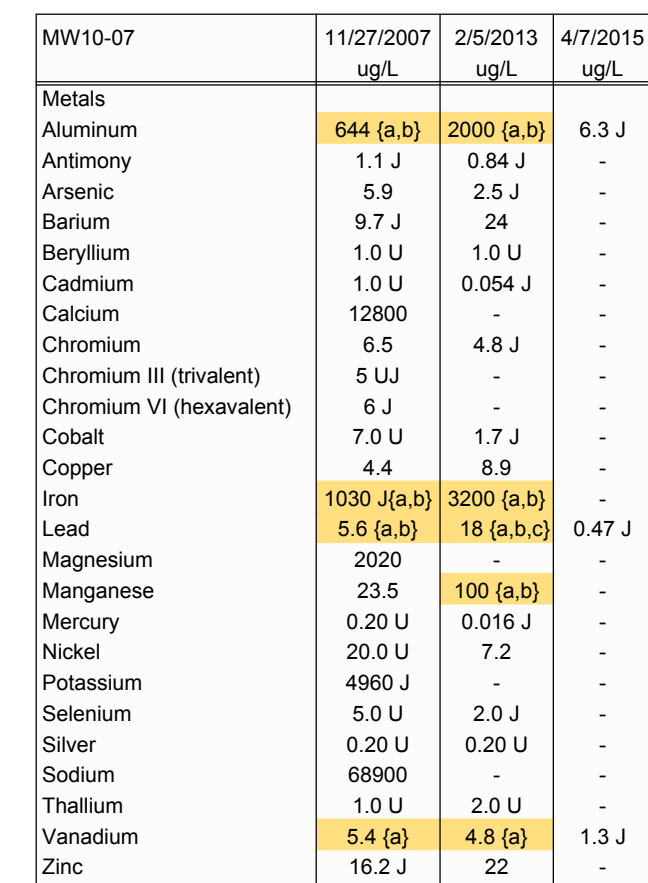
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		Drawing N°: figure 2



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figure 3



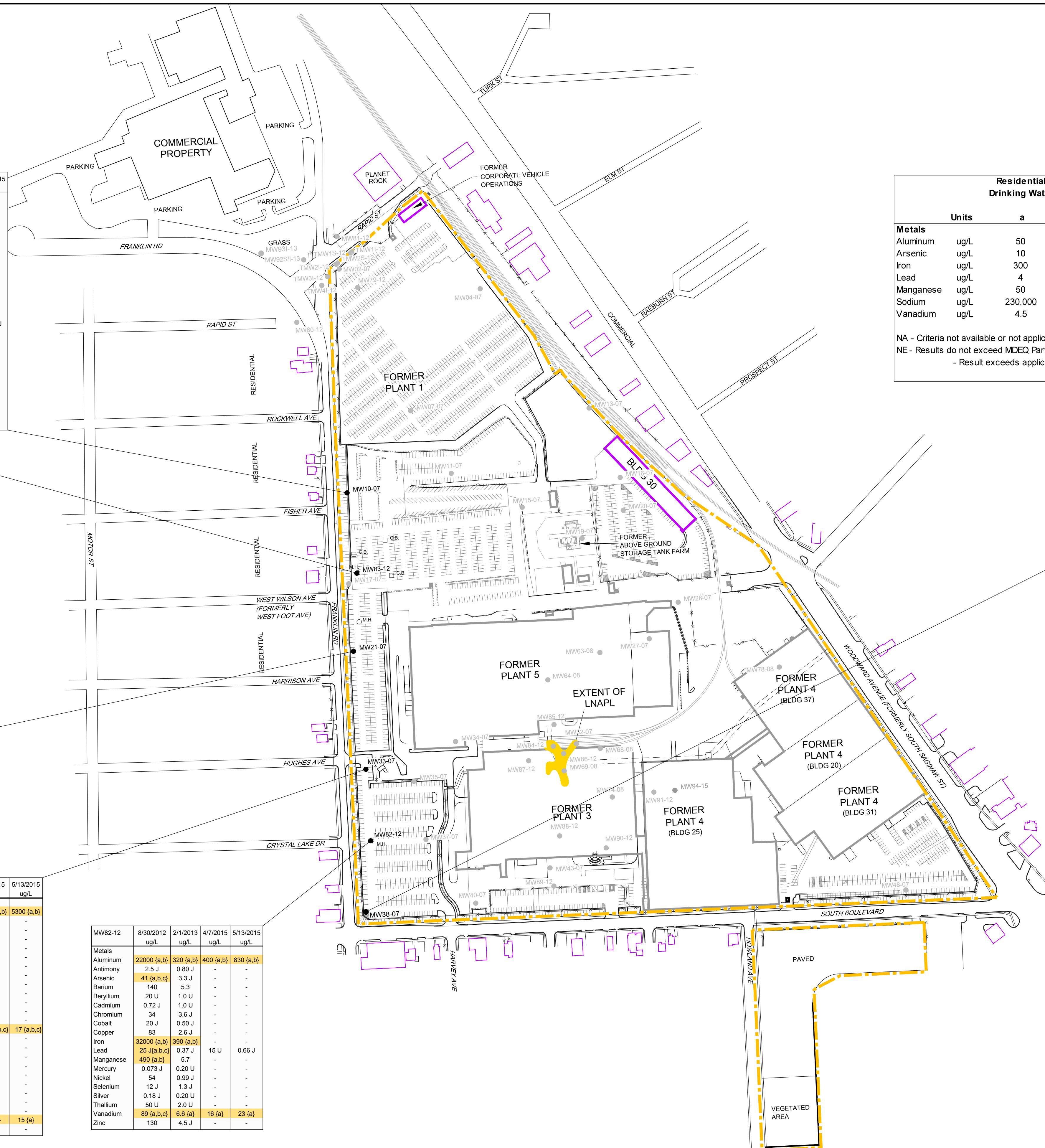


MW-132	8/29/2012	2/4/2013	4/7/2015	5/13/2015
	ug/L	ug/L	ug/L	ug/L
Metals				
Aluminum	120 (a,b)	360 (a,b)	140 J(a,b)	28
Antimony	1.1 J	1.2 J	-	-
Arsenic	6.6	2.3 J	-	-
Barium	25	16	-	-
Beryllium	2 U	1.0 U	-	-
Cadmium	0.12 J	0.043 J	-	-
Chromium	5 U	2.1 J	-	-
Cobalt	0.62 J	0.25 J	-	-
Copper	3.4 J	3.6 J	-	-
Iron	130	400 (a,b)	-	-
Lead	0.9 J	0.85 J	15 U	0.24 J
Manganese	19	6.7	-	-
Mercury	0.2 U	0.0090 J	-	-
Nickel	5.2	1.5 J	-	-
Selenium	5 U	0.6 J	-	-
Silver	5 U	0.20 U	-	-
Thallium	0.27 J	2.0 U	-	-
Vanadium	0.67 J	2.6 J	1.9 J	1.0 J
Zinc	10 U	110	-	-

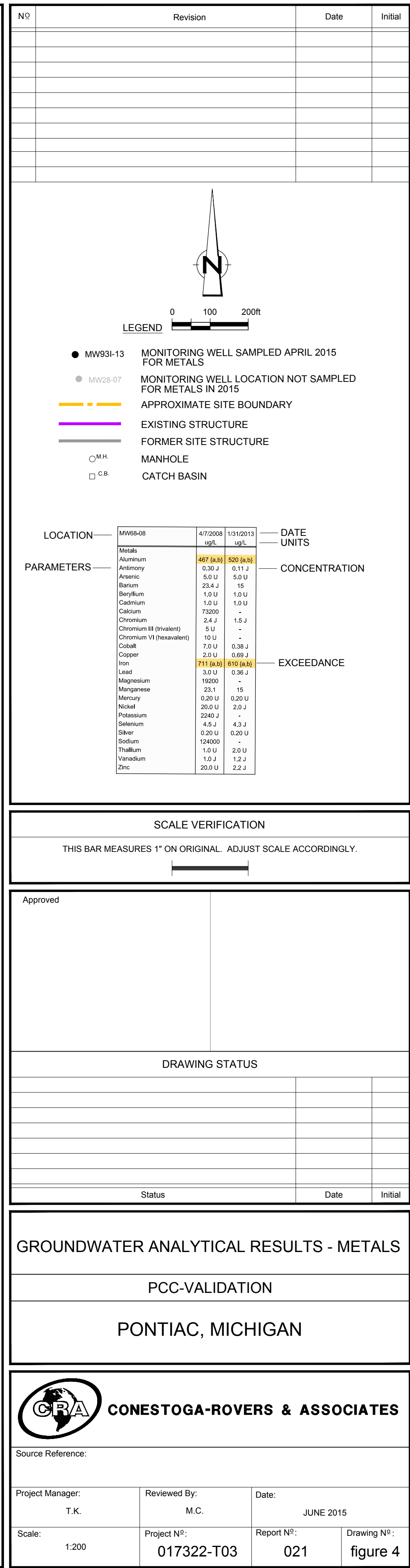
MW21-07	5/13/2015 ug/L
Metals	
Aluminum	2000 {a,b}
Lead	8.9 {a,b}
Vanadium	6.8 {a}

MW33-07	1/9/2008 ug/L	2/5/2013 ug/L	4/7/2015 ug/L	5/13/2015 ug/L
Metals				
Aluminum	929 (a,b)	2500 (a,b)	5200 (a,b)	5300 (a,b)
Antimony	1.9 J	1.6 J	-	-
Arsenic	5.0 U	3.4 J	-	-
Barium	448	280	-	-
Beryllium	1.0 U	1.0 U	-	-
Cadmium	1.0 U	0.18 J	-	-
Calcium	221000	-	-	-
Chromium	41.4	8.3	-	-
Chromium III (trivalent)	9.9 J	-	-	-
Chromium VI (hexavalent)	30 J	-	-	-
Cobalt	7.0 U	24 J	-	-
Copper	7.5	14	-	-
Iron	102	4900 (a,b)	-	-
Lead	3.0 U	9.1 (a,b)	19 (a,b,c)	17 (a,b,c)
Magnesium	1000 U	-	-	-
Manganese	2.5 J	730 (a,b)	-	-
Mercury	0.20 U	0.016 J	-	-
Nickel	20.0 U	-	-	-
Potassium	20900	-	-	-
Selenium	5.0 U	1.2 J	-	-
Silver	0.20 U	0.20 U	-	-
Sodium	277000 (a)	-	-	-
Thallium	1.0 U	2.0 U	-	-
Vanadium	7.2 (a)	7.3 (a)	11 (a)	15 (a)
Zinc	20.0 U	53	-	-

MW82-12	8/30/2012 ug/L	2/1/2013 ug/L	4/7/2015 ug/L	5/13/2015 ug/L
Metals				
Aluminum	22000 (a,b)	320 (a,b)	400 (a,b)	830 (a,b)
Antimony	2.5 J	0.80 J	-	-
Arsenic	41 (a,b,c)	3.3 J	-	-
Barium	140	5.3	-	-
Beryllium	20	1.0 U	-	-
Cadmium	0.72 J	1.0	-	-
Cadmium	34	3.6 J	-	-
Chromium	20	0.50 J	-	-
Copper	83	2.6 J	-	-
Iron	32000 (a,b)	390 (a,b)	-	-
Lead	25 (a,b,c)	0.37 J	15 U	0.66 J
Manganese	490 (a,b)	5.7	-	-
Mercury	0.073 J	0.20 U	-	-
Nickel	54	0.99 J	-	-
Selenium	12 J	1.3 J	-	-
Silver	0.18 U	0.20 U	-	-
Thallium	50	2.0 U	-	-
Vanadium	89 (a,b,c)	6.6 (a)	16 (a)	23 (a)
Zinc	130	4.5 J	-	-



		Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface
	Units	a	b	c
Metals				
Aluminum	ug/L	50	50	NA
Arsenic	ug/L	10	10	10
Iron	ug/L	300	300	NA
Lead	ug/L	4	4	14
Manganese	ug/L	50	50	NA
Sodium	ug/L	230,000	350,000	NA
Vanadium	ug/L	4.5	62	27
NA - Criteria not available or not applicable				
NE - Results do not exceed MDEQ Part 201 Criteria				
- Result exceeds applicable MDEQ Part 201 Criteria				



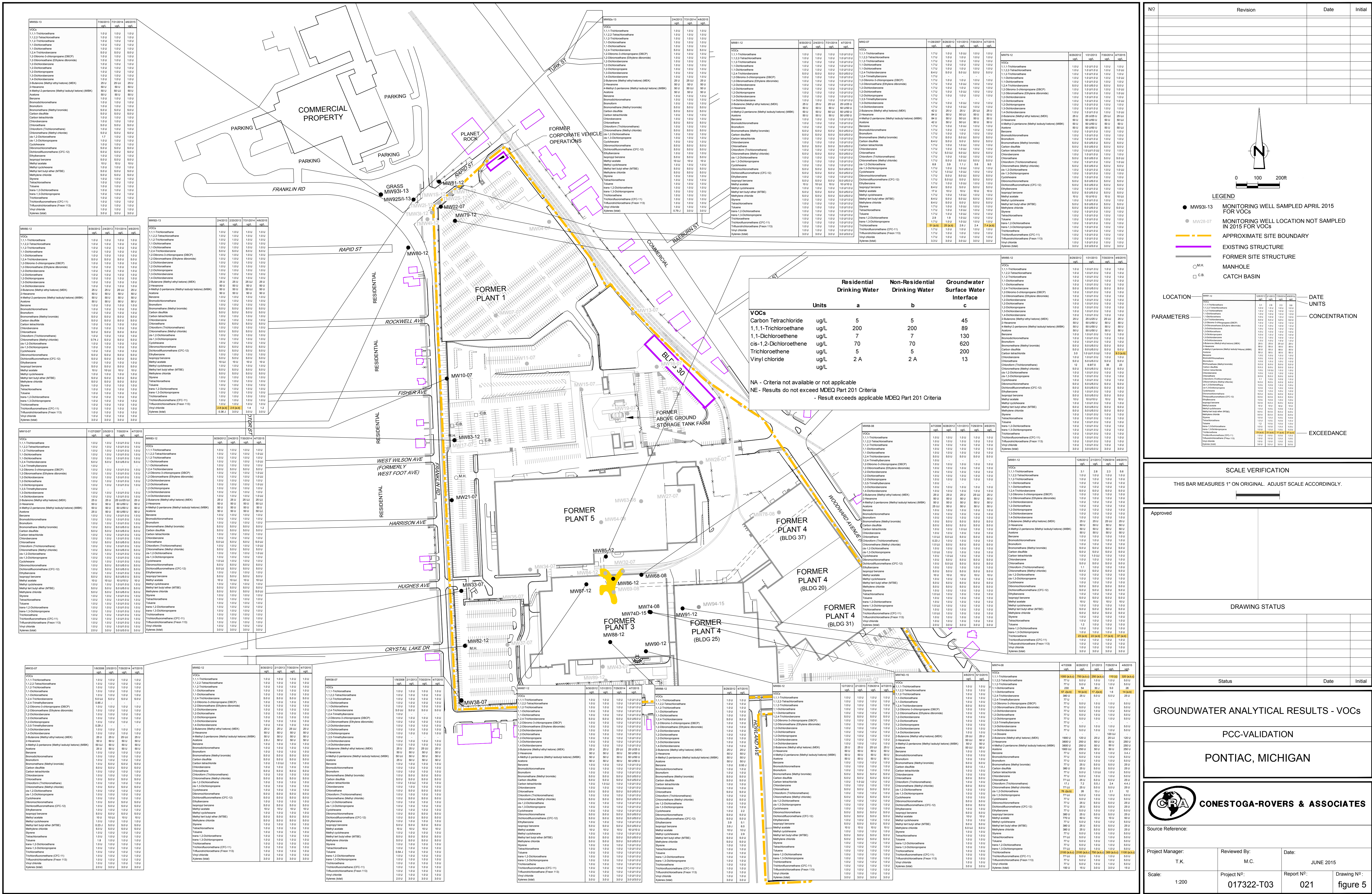


TABLE 1

ANNUAL GROUNDWATER SAMPLING SUMMARY - 2015
PCC VALIDATION CENTER
PONTIAC, MICHIGAN

<i>Sample ID</i>	<i>Sample Location</i>	<i>Sample Matrix</i>	<i>Date</i>	<i>Time</i>	<i>QA/QC</i>	<i>Analysis</i>
GW-17322-040615-DN-001	MW48-07	Ground Water	4/6/2015	12:00		TCL VOC's
GW-17322-040615-DN-002	MW92I-13	Ground Water	4/6/2015	15:10		TCL VOC's
GW-17322-040615-DN-003	MW92S-13	Ground Water	4/6/2015	15:45		TCL VOC's
GW-17322-040615-DN-004	MW93I-13	Ground Water	4/6/2015	16:50		TCL VOC's
GW-17322-040615-DN-005	MW74D-15	Ground Water	4/6/2015	12:00		TCL VOC's
GW-17322-040615-DN-006	MW74-08	Ground Water	4/6/2015	13:15		TCL VOC's
GW-17322-040615-DN-007	MW91-12	Ground Water	4/6/2015	15:20		TCL VOC's
GW-17322-040615-DN-008	MW85-12	Ground Water	4/6/2015	16:40		TCL VOC's
GW-17322-040615-DN-009	MW68-08	Ground Water	4/6/2015	17:50		TCL VOC's
GW-17322-040615-DN-010	MW80-12	Ground Water	4/6/2015	17:55		TCL VOC's
GW-17322-040715-DN-011	MW87-12	Ground Water	4/6/2015	08:45		TCL VOC's
GW-17322-040715-DN-012	MW87-12	Ground Water	4/6/2015	9:15	Duplicate	TCL VOC's
GW-17322-040715-DN-013	MW81-12	Ground Water	4/6/2015	11:15		TCL VOC's
GW-17322-040715-DN-014	MW81-12	Ground Water	4/6/2015	11:35	Duplicate	TCL VOC's
GW-17322-040715-DN-015	MW79-12	Ground Water	4/6/2015	12:35		TCL VOC's
GW-17322-040715-DN-016	MW90-12	Ground Water	4/6/2015	10:30		TCL VOC's
GW-17322-040715-DN-017	MW38-07	Ground Water	4/6/2015	12:40		TCL VOC's, Al, Pb, Va
GW-17322-040715-DN-018	MW02-07	Ground Water	4/6/2015	13:55		TCL VOC's
GW-17322-040715-DN-019	MW10-07	Ground Water	4/6/2015	15:05	MS/MSD	TCL VOC's, Al, Pb, Va
GW-17322-040715-DN-020	MW33-07	Ground Water	4/6/2015	13:50		TCL VOC's, Al, Pb, Va
GW-17322-040715-DN-021	MW83-12	Ground Water	4/6/2015	16:15		TCL VOC's, Al, Pb, Va
GW-17322-040715-DN-022	MW82-12	Ground Water	4/6/2015	16:25		TCL VOC's, Al, Pb, Va
GW-17322-040715-DN-023	MW88-12	Ground Water	4/6/2015	16:50		TCL VOC's
GW-17322-051315-EM-001	MW38-07	Ground Water	5/13/2015	10:00		Al, Pb, Va
GW-17322-051315-EM-002	MW38-07	Ground Water	5/13/2015	10:30	Duplicate	Al, Pb, Va
GW-17322-051315-EM-003	MW82-12	Ground Water	5/13/2015	10:45		Al, Pb, Va
GW-17322-051315-EM-004	MW33-07	Ground Water	5/13/2015	16:10		Al, Pb, Va
GW-17322-051315-EM-005	MW21-07	Ground Water	5/13/2015	16:30	Limited Amount	Al, Pb, Va
GW-17322-051315-EM-006	MW83-12	Ground Water	5/13/2015	13:55		Al, Pb, Va
GW-17322-051315-EM-007	MW74D-15	Ground Water	5/13/2015	15:30	MS/MSD	TCL VOC's

Notes :

ft. BGS - Feet below ground surface.

ft. AMSL - Feet above mean sea level.

ft. BTOC - Feet below top of casing.

FM - Flushmount

ST - Stick up

-- Data Not Available

Datum: State Plane Coordinate System MI South NAD83/NAVD88 International feet.

NA - Data not available, well could not be located.

TABLE 2

GROUNDWATER ELEVATION DATA SUMMARY - MAY 13, 2015
PCC VALIDATION CENTER
PONTIAC, MICHIGAN

DRAFT

Monitoring Well ID	Borehole or Well Completion Date	Ground Surface Elevation (ft. AMSL)	Top of Casing (TOC) Elevation (ft. AMSL)	Screened Interval (ft bgs)		Screened Interval (ft. AMSL)		Depth to Water (ft BTOC) (5/13/15)	Groundwater Elevation (ft BTOC) (5/13/15)
MW02-07	10/12/2007	936.88	936.77	12	-	25	924.88 - 911.88	12.39	924.38
MW04-07	10/11/2007	938.15	937.82	5.5	-	15.5	932.65 - 922.65	4.08	933.74
MW07-07	10/11/2007	937.94	937.55	10	-	15	927.94 - 922.94	10.6	926.95
MW10-07	10/15/2007	941.43	941.02	3.5	-	13.5	937.93 - 927.93	0.8	940.22
MW11-07	10/16/2007	954.59	954.11	7	-	12	947.59 - 942.59	6.05	948.06
MW13-07	10/18/2007	953.04	956.28	7	-	14	946.04 - 939.04	NA	NA
MW15-07	10/16/2007	960.74	960.42	9	-	14	951.74 - 946.74	10.65	949.77
MW16-07	10/18/2007	956.06	955.87	6	-	16	950.06 - 940.06	NA	NA
MW17-07	10/16/2007	952.54	952.08	3	-	10	949.54 - 942.54	8.68	943.40
MW19-07	10/17/2007	959.95	959.68	8	-	13	951.95 - 946.95	10.22	949.46
MW20-07	10/17/2007	960.21	960.03	6.5	-	13	953.71 - 947.21	NA	NA
MW21-07	12/4/2007	952.28	952.08	10.5	-	20.5	941.78 - 931.78	17.95	934.13
MW27-07	12/7/2007	946.92	946.56	3	-	13	943.92 - 933.92	NA	NA
MW28-07	10/18/2007	960.20	960.07	10	-	20	950.20 - 940.20	NA	NA
MW33-07	12/4/2007	947.01	946.49	10.5	-	20.5	936.51 - 926.51	15.7	930.79
MW34-07	12/4/2007	951.11	950.80	11	-	16	940.11 - 935.11	5.69	945.11
MW35-07	12/4/2007	946.58	946.39	6	-	11	940.58 - 935.58	4.23	942.16
MW37-07	12/4/2007	947.22	946.87	12.5	-	25.5	934.72 - 921.72	16.42	930.45
MW38-07	12/4/2007	949.38	949.15	9.5	-	14.5	939.88 - 934.88	4	945.15
MW40-07	12/6/2007	948.74	948.41	11	-	16	937.74 - 932.74	7.32	941.09
MW43-07	12/6/2007	950.05	949.75	7	-	15	943.05 - 935.05	NA	NA
MW48-07	10/9/2007	960.96	960.63	5	-	15	955.96 - 945.96	NA	NA
MW63-08	3/10/2008	947.74	947.45	9.5	-	15.5	938.24 - 932.24	6.01	941.44
MW64-08	3/10/2008	947.71	947.52	9.5	-	14.5	938.21 - 933.21	7.92	939.60
MW68-08	3/12/2008	956.87	956.53	9	-	19	947.87 - 937.87	11.51	945.02
MW69-08	3/13/2008	956.92	956.46	10	-	20	946.92 - 936.92	11.22	945.24
MW74-08	3/14/2008	956.98	956.77	8	-	16	948.98 - 940.98	11.5	945.27
MW74D-15	3/12/2015	956.89	956.53	39	-	44	917.89 - 912.89	26.52	930.01
MW78-08	3/11/2008	964.06	963.96	8	-	13	956.06 - 951.06	9.72	954.24
MW-79-12	8/22/2012	936.77	936.45	25	-	30	911.77 - 906.77	9.99	926.46
MW-80-12	8/28/2012	930.14	929.72	7	-	12	923.14 - 918.14	4.81	924.91
MW-81-12	8/28/2012	932.16	931.54	14	-	19	918.16 - 913.16	7.59	923.95
MW-82-12	8/23/2012	946.83	946.53	2.5	-	7.5	944.33 - 939.33	3.91	942.62
MW-83-12	8/23/2012	951.98	951.74	6	-	11	945.98 - 940.98	7.8	943.94
MW-84-12	8/28/2012	956.12	955.86	5	-	20	951.12 - 936.12	LNAPL	LNAPL
MW-85-12	8/23/2012	947.69	947.13	5	-	10	942.69 - 937.69	3.02	944.11
MW-86-12	8/24/2012	956.82	956.56	8	-	18	948.82 - 938.82	9.82	946.74
MW-87-12	8/23/2012	946.14	945.70	4	-	9	942.14 - 937.14	2.18	943.52
MW-88-12	8/20/2012	956.88	956.29	15.5	-	20.5	941.38 - 936.38	13.53	942.76
MW89-12	12/3/2012	950.12	949.74	6	-	11	944.12 - 939.12	8.7	941.04
MW90-12	12/3/2012	956.80	956.16	10	-	15	946.80 - 941.80	12.78	943.38
MW91-12	12/3/2012	961.87	961.26	16.5	-	21.5	945.37 - 940.37	18.35	942.91
MW92s-13	1/24/2013	929.85	929.48	4.8	-	9.8	925.05 - 920.05	6.52	922.96
MW92i-13	1/24/2013	929.80	929.22	12	-	17	917.80 - 912.80	6.25	922.97
MW93i-13	7/26/2013	930.55	930.00	12	-	17	918.55 - 913.55	7.41	922.59
MW94-15	3/12/2015	961.85	961.51	18.66	-	23.66	943.19 - 938.19	NA	NA

Notes :

ft. BGS - Feet below ground surface.

ft. AMSL - Feet above mean sea level.

ft. BTOC - Feet below top of casing.

Datum: State Plane Coordinate System MI South NAD83/NAVD88 International feet.

NA - Data not available. Well could not be located or well dry.

LNAPL - LNAPL encountered

TABLE 3
GROUNDWATER ANALYTICAL RESULTS - 2015
PCC VALIDATION CENTER
PONTIAC, MICHIGAN

Sample Location:		MDEQ Generic Groundwater Cleanup Criteria: Residential and Nonresidential ⁽¹⁾							MW2-07	MW10-07	MW21-07	MW33-07	MW33-07	MW38-07	MW38-07	MW38-07	MW48-07	MW68-08
Sample Date:		Residential	Nonresidential	Groundwater	Residential Groundwater	Nonresidential Groundwater	Water	Flammability	04/07/2015	04/07/2015	05/13/2015	04/07/2015	05/13/2015	04/07/2015	05/13/2015	05/13/2015	04/06/2015	04/06/2015
Sample Type:		Drinking Water	Drinking Water	Surface Water	Volatilizationto Indoor	Volatilizationto Indoor Air	Solubility	and Explosivity										
Parameters	Units	Criteria	Criteria	Interface Criteria	Air Inhalation Criteria	Inhalation Criteria		Screening Level										
		a	b	c	d	e	f	g										
VOCs																		
1,1,1-Trichloroethane	ug/L	200 A	200 A	89	660000	1300000 S	1330000	ID	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	8.5	35	78 X	12000	77000	2970000	ID	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	5 A	5 A	330 X	17000	110000	4420000	NA	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	880	2500	740	1000000	2300000	5060000	380000	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	7 A	7 A	130	200	1300	2250000	97000	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	70 A	70 A	99 X	300000 S	300000 S	300000	NA	5.0 U	5.0 U	--	5.0 U	--	5.0 U	--	--	5.0 UJ	5.0 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	0.2 A	0.2 A	NA	220 S	1200 S	1230	NA	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
1,2-Dibromoethane (Ethylene dibromide)	ug/L	0.05 A	0.05 A	5.7 X	2400	15000	4200000	ID	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 UJ	1.0 U
1,2-Dichlorobenzene	ug/L	600 A	600 A	13	160000 S	160000 S	156000	NA	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	5 A	5 A	360 X	9600	59000	8520000	2500000	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	5 A	5 A	230 X	16000	36000	2800000	550000	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	6.6	19	28	18000	41000	111000	ID	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	75 A	75 A	17	16000	74000 S	73800	NA	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	13000	38000	2200	240000000 S	240000000 S	240000000	ID	25 U	25 U	--	25 U	--	25 U	--	--	25 UJ	25 U
2-Hexanone	ug/L	1000	2900	ID	4200000	8700000	16000000	NA	50 U	50 U	--	50 U	--	50 U	--	--	50 U	50 U
Acetone	ug/L	730	2100	1700	1000000000 D,S	1000000000 D,S	1000000000	150000000	50 U	50 U	--	50 U	--	50 U	--	--	50 UJ	50 U
Benzene	ug/L	5 A	5 A	200 X	5600	35000	1750000	68000	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
Bromodichloromethane	ug/L	80 A,W	80 A,W	ID	4800	37000	6740000	ID	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
Bromoform	ug/L	80 A,W	80 A,W	ID	470000	3100000 S	3100000	ID	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	10	29	35	4000	9000	14500000	ID	5.0 U	5.0 U	--	5.0 U	--	5.0 U	--	--	5.0 U	5.0 U
Carbon disulfide	ug/L	800	2300	ID	250000	550000	1190000	13000	5.0 U	5.0 U	--	5.0 U	--	5.0 U	--	--	5.0 U	5.0 U
Carbon tetrachloride	ug/L	5 A	5 A	45 X	370	2400	793000	ID	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
Chlorobenzene	ug/L	100 A	100 A	25	210000	470000 S	472000	160000	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
Chloroethane	ug/L	430	1700	1100 X	5700000 S	5700000 S	5740000	110000	5.0 U	5.0 U	--	5.0 U	--	5.0 U	--	--	5.0 U	5.0 U
Chloroform (Trichloromethane)	ug/L	80 A,W	80 A,W	350	28000	180000	7920000	ID	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
Chloromethane (Methyl chloride)	ug/L	260	1100	ID	8600	45000	6340000	36000	5.0 U	5.0 U	--	5.0 U	--	5.0 U	--	--	5.0 U	5.0 U
cis-1,2-Dichloroethene	ug/L	70 A	70 A	620	93000	210000	3500000	530000	9.0	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	NA	NA	NA	NA	NA	NA	NA	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
Cyclohexane	ug/L	NA	NA	NA	NA	NA	NA	NA	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
Dibromochloromethane	ug/L	80 A,W	80 A,W	ID	14000	110000	2600000	ID	5.0 U	5.0 U	--	5.0 U	--	5.0 U	--	--	5.0 U	5.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	1700	4800	ID	220000	300000 S	300000	ID	5.0 U	5.0 U	--	5.0 U	--	5.0 U	--	--	5.0 U	5.0 U
Ethylbenzene	ug/L	74 E	74 E	18	110000	170000 S	169000	43000	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
Isopropyl benzene	ug/L	800	2300	28	56000 S	56000 S	56000	29000	5.0 U	5.0 U	--	5.0 U	--	5.0 U	--	--	5.0 U	5.0 U
Methyl tert butyl ether (MTBE)	ug/L	40 E	40 E	7100 X	47000000 S	47000000 S	46800000	ID	5.0 U	5.0 U	--	5.0 U	--	5.0 U	--	--	5.0 U	5.0 U
Methylene chloride	ug/L	5 A	5 A	1500 X	220000	1400000	17000000	ID	5.0 U	5.0 U	--	5.0 U	--	5.0 U	--	--	5.0 U	5.0 U
Styrene	ug/L	100 A	100 A	80	170000	310000 S	310000	140000	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
Tetrachloroethene	ug/L	5 A	5 A	60 X	25000	170000	200000	ID	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
Toluene	ug/L	790 E	790 E	270	530000 S	530000 S	526000	61000	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	100 A	100 A	1500 X	85000	200000	6300000	230000	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	NA	NA	NA	NA	NA	NA	NA	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
Trichloroethene	ug/L	5 A	5 A	200 X	2200	4900	1100000	ID	7.4 ^{ab}	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	ug/L	2600	7300	NA	1100000 S	1100000 S	1100000	ID	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
Trifluorotrichloroethane (Freon 113)	ug/L	170000 S	170000 S	32	170000 S	170000 S	170000	ID	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
Vinyl chloride	ug/L	2 A	2 A	13 X	1100	13000	2760000	33000	1.0 U	1.0 U	--	1.0 U	--	1.0 U	--	--	1.0 U	1.0 U
Xylenes (total)	ug/L	280 E	280 E	41	190000 S	190000 S	186000	70000	3.0 U	3.0 U	--	3.0 U	--	3.0 U	--	--	3.0 U	3.0 U
Metals																		
Aluminum	ug/L	50 V	50 V	NA	NLV	NLV	NA	ID	--	6.3 J					38 J			
Lead	ug/L	4 L	4 L	14	NLV	NLV	NA	ID	--	0.47 J					0.30 J			
Vanadium	ug/L	4.5	62	27	NLV	NLV	NA	ID	--	1.3 J					4.0 U			

Footnotes:

- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J The associated value is qualified as an estimated quantity.
UJ The analyte was reported or qualified as not detected however, the sample report limit is qualified as an estimated value and may be inaccurate or imprecise.

⁽¹⁾ MDEQ (Michigan) Generic groundwater cleanup criteria, administrative rule R 299.44 effective December 30, 2013, pursuant to Part 201 of 1994 PA 451 as amended

NA Criteria not available or not applicable

7.4^{ab} Indicates concentration exceeded Part 201 Cleanup Criteria

-- Sample not analyzed
ID Insufficient data to develop criterion
NLV Not likely to volitilize under most conditions

TABLE 3
GROUNDWATER ANALYTICAL RESULTS - 2015
PCC VALIDATION CENTER
PONTIAC, MICHIGAN

Sample Location:		MDEQ Generic Groundwater Cleanup Criteria: Residential and Nonresidential ⁽¹⁾							MW83-12	MW85-12	MW87-12	MW87-12	MW88-12	MW90-12	MW91-12	MW92i-13	MW92s-13	MW93i-13
Sample Date:		Residential	Nonresidential	Groundwater	Residential Groundwater	Nonresidential Groundwater	Water	Flammability	05/13/2015	04/06/2015	04/07/2015	04/07/2015	04/07/2015	04/07/2015	04/06/2015	04/06/2015	04/06/2015	04/06/2015
Sample Type:		Drinking Water	Drinking Water	Surface Water	Volatilizationto Indoor	Volatilizationto Indoor Air	Solubility	and Explosivity										
Parameters	Units	Criteria	Criteria	Interface Criteria	Air Inhalation Criteria	Inhalation Criteria		Screening Level					Duplicate					
		a	b	c	d	e	f	g										
VOCs																		
1,1,1-Trichloroethane	ug/L	200 A	200 A	89	660000	1300000 S	1330000	ID	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.6	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	8.5	35	78 X	12000	77000	2970000	ID	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	5 A	5 A	330 X	17000	110000	4420000	NA	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	880	2500	740	1000000	2300000	5060000	380000	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	7 A	7 A	130	200	1300	2250000	97000	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	70 A	70 A	99 X	300000 S	300000 S	300000	NA	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	0.2 A	0.2 A	NA	220 S	1200 S	1230	NA	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane (Ethylene dibromide)	ug/L	0.05 A	0.05 A	5.7 X	2400	15000	4200000	ID	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	600 A	600 A	13	160000 S	160000 S	156000	NA	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	5 A	5 A	360 X	9600	59000	8520000	2500000	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	5 A	5 A	230 X	16000	36000	2800000	550000	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	6.6	19	28	18000	41000	111000	ID	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	75 A	75 A	17	16000	74000 S	73800	NA	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	13000	38000	2200	240000000 S	240000000 S	240000000	ID	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
2-Hexanone	ug/L	1000	2900	ID	4200000	8700000	16000000	NA	--	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Acetone	ug/L	730	2100	1700	1000000000 D,S	1000000000 D,S	1000000000	15000000	--	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Benzene	ug/L	5 A	5 A	200 X	5600	35000	1750000	68000	--	1.0 U	1.0 U	1.0 U	0.93 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	80 A,W	80 A,W	ID	4800	37000	6740000	ID	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	80 A,W	80 A,W	ID	470000	3100000 S	3100000	ID	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	10	29	35	4000	9000	14500000	ID	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide	ug/L	800	2300	ID	250000	550000	1190000	13000	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon tetrachloride	ug/L	5 A	5 A	45 X	370	2400	793000	ID	--	9.3 ^{ab}	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	100 A	100 A	25	210000	470000 S	472000	160000	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	430	1700	1100 X	5700000 S	5700000 S	5740000	110000	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chloroform (Trichloromethane)	ug/L	80 A,W	80 A,W	350	28000	180000	7920000	ID	--	23	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	ug/L	260	1100	ID	8600	45000	6340000	36000	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	ug/L	70 A	70 A	620	93000	210000	3500000	530000	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	NA	NA	NA	NA	NA	NA	NA	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	ug/L	NA	NA	NA	NA	NA	NA	NA	--	1.0 U	1.0 U	1.0 U	2.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	80 A,W	80 A,W	ID	14000	110000	2600000	ID	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	1700	4800	ID	220000	300000 S	300000	ID	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Ethylbenzene	ug/L	74 E	74 E	18	110000	170000 S	169000	43000	--	1.0 U	1.0 U	1.0 U	5.1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Isopropyl benzene	ug/L	800	2300	28	56000 S	56000 S	56000	29000	--	5.0 U	5.0 U	5.0 U	6.0	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl tert butyl ether (MTBE)	ug/L	40 E	40 E	7100 X	47000000 S	47000000 S	46800000	ID	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene chloride	ug/L	5 A	5 A	1500 X	220000	1400000	17000000	ID	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	ug/L	100 A	100 A	80	170000	310000 S	310000	140000	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	5 A	5 A	60 X	25000	170000	200000	ID	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	790 E	790 E	270	530000 S	530000 S	526000	61000	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	100 A	100 A	1500 X	85000	200000	6300000	230000	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	NA	NA	NA	NA	NA	NA	NA	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	5 A	5 A	200 X	2200	4900	1100000	ID	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	37 ^{ab}	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	ug/L	2600	7300	NA	1100000 S	1100000 S	1100000	ID	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (Freon 113)	ug/L	170000 S	170000 S	32	170000 S	170000 S	170000	ID	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	2 A	2 A	13 X	1100	13000	2760000	33000	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2	1.0 U	1.0 U
Xylenes (total)	ug/L	280 E	280 E	41	190000 S	190000 S	186000	70000	--	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Metals																		
Aluminum	ug/L	50 V	50 V	NA	NLV	NLV	NA	ID	28	--	--	--	--	--	--	--	--	--
Lead	ug/L	4 L	4 L	14	NLV	NLV	NA	ID	0.24 J	--	--	--	--	--	--	--	--	--
Vanadium	ug/L	4.5	62	27	NLV	NLV	NA	ID	1.0 J	--	--	--	--	--	--	--	--	--

Footnotes:

- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J The associated value is qualified as an estimated quantity.
UJ The analyte was reported or qualified as not detected however, the sample report limit is qualified as an estimated value and may be inaccurate or imprecise.

⁽¹⁾ MDEQ (Michigan) Generic groundwater cleanup criteria, administrative rule R 299.44 effective December 30, 2013, pursuant to Part 201 of 1994 PA 451 as amended

NA Criteria not available or not applicable

7.4^{ab} Indicates concentration exceeded Part 201 Cleanup Criteria

-- Sample not analyzed
ID Insufficient data to develop criterion
NLV Not likely to volitilize under most conditions

TABLE 4

HISTORICAL GROUNDWATER ANALYTICAL RESULTS - 2007 - 2015
PCC VALIDATION CENTER
PONTIAC, MICHIGAN

Sample Location:		MDEQ Generic Groundwater Cleanup Criteria: Residential and Nonresidential ⁽¹⁾							MW92s-13	MW92s-13	MW92s-13	MW93i-13	MW93i-13	MW93i-13
Sample Date:		Residential	Nonresidential	Groundwater	Residential Groundwater	Nonresidential Groundwater	Water	Flammability	MW92s-13 02/04/2013	MW92s-13 07/31/2014	MW92s-13 04/06/2015	MW93i-13 07/30/2013	MW93i-13 07/31/2014	MW93i-13 04/06/2015
Sample Type:		Drinking Water	Drinking Water	Surface Water	Volatilizationto Indoor	Volatilizationto Indoor Air	Solubility	and Explosivity						
Parameters		Criteria	Criteria	Interface Criteria	Air Inhalation Criteria	Inhalation Criteria		Screening Level						
	Units	a	b	c	d	e	f	g						
VOCS														
1,1,1-Trichloroethane	ug/L	200 A	200 A	89	660000	1300000 S	1330000	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	8.5	35	78 X	12000	77000	2970000	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	5 A	5 A	330 X	17000	110000	4420000		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	880	2500	740	1000000	2300000	5060000	380000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	7 A	7 A	130	200	1300	2250000	97000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	70 A	70 A	99 X	300000 S	300000 S	300000		5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trimethylbenzene	ug/L	63 E	63 E	17	56000 S	56000 S	55890	56000 S	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	0.2 A	0.2 A		220 S	1200 S	1230		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane (Ethylene dibromide)	ug/L	0.05 A	0.05 A	5.7 X	2400	15000	4200000	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	600 A	600 A	13	160000 S	160000 S	156000		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	5 A	5 A	360 X	9600	59000	8520000	2500000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	5 A	5 A	230 X	16000	36000	2800000	550000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3,5-Trimethylbenzene	ug/L	72 E	72 E	45	61000 S	61000 S	61150	ID	--	--	--	--	--	--
1,3-Dichlorobenzene	ug/L	6.6	19	28	18000	41000	111000	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	75 A	75 A	17	16000	74000 S	73800		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dioxane	ug/L	85	350	2800 X	NLV	NLV	900000000	140000000	--	--	--	--	--	--
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	13000	38000	2200	240000000 S	240000000 S	240000000	ID	25 U	25 UJ	25 U	25 U	25 UJ	25 U
2-Hexanone	ug/L	1000	2900	ID	4200000	8700000	16000000		50 U	50 U	50 U	50 U	50 U	50 U
Acetone	ug/L	730	2100	1700	1000000000 D,S	1000000000 D,S	1000000000	15000000	50 U	50 U	50 U	50 U	50 U	50 U
Benzene	ug/L	5 A	5 A	200 X	5600	35000	1750000	68000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	80 A,W	80 A,W	ID	4800	37000	6740000	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	80 A,W	80 A,W	ID	470000	3100000 S	3100000	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	10	29	35	4000	9000	14500000	ID	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon disulfide	ug/L	800	2300	ID	250000	550000	1190000	13000	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon tetrachloride	ug/L	5 A	5 A	45 X	370	2400	793000	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	100 A	100 A	25	210000	470000 S	472000	160000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	430	1700	1100 X	5700000 S	5700000 S	5740000	110000	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chloroform (Trichloromethane)	ug/L	80 A,W	80 A,W	350	28000	180000	7920000	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	ug/L	260	1100	ID	8600	45000	6340000	36000	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	ug/L	70 A	70 A	620	93000	210000	3500000	530000	1.0 U	1.0 U	1.0 U	1.7	1.0 U	1.0 U
Dibromochloromethane	ug/L	80 A,W	80 A,W	ID	14000	110000	2600000	ID	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	1700	4800	ID	220000	300000 S	300000	ID	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Ethylbenzene	ug/L	74 E	74 E	18	110000	170000 S	169000	43000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Isopropyl benzene	ug/L	800	2300	28	56000 S	56000 S	56000	29000	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl acetate	ug/L								10 UJ	10 U	10 U	10 U	10 U	10 U
Methyl tert butyl ether (MTBE)	ug/L	40 E	40 E	7100 X	47000000 S	47000000 S	46800000	ID	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene chloride	ug/L	5 A	5 A	1500 X	220000	1400000	17000000	ID	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	ug/L	100 A	100 A	80	170000	310000 S	310000	140000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	5 A	5 A	60 X	25000	170000	200000	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	790 E	790 E	270	530000 S	530000 S	526000	61000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	100 A	100 A	1500 X	85000	200000	6300000	230000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L								1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	5 A	5 A	200 X	2200	4900	1100000	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	ug/L	2600	7300		1100000 S	1100000 S	1100000	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (Freon 113)	ug/L	170000 S	170000 S	32	170000 S	170000 S	170000	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	2 A	2 A	13 X	1100	13000	2760000	33000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	280 E	280 E	41	190000 S	190000 S	186000	70000	0.79 J	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Metals														
Aluminum	ug/L	50 V	50 V		NLV	NLV		ID	66 ^{ab}	--	--	--	--	--
Lead	ug/L	4 L	4 L	14	NLV	NLV		ID	0.24 J	--	--	--	--	--
Vanadium	ug/L	4.5	62	27	NLV	NLV		ID	0.32 J	--	--	--	--	--

Footnotes:

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J The associated value is qualified as an estimated quantity.

UJ The analyte was reported or qualified as not detected however, the sample report limit is qualified as an estimated value and may be inaccurate or imprecise.

⁽¹⁾ MDEQ (Michigan) Generic groundwater cleanup criteria, administrative rule R 299.44 effective December 30, 2013, pursuant to Part 201 of 1994 PA 451 as amended

NA Criteria not available or not applicable

7.4^{ab} Indicates concentration exceeded Part 201 Cleanup Criteria

-- Sample not analyzed

ID Insufficient data to develop criterion

NLV Not likely to volitalize under most conditions

TABLE 5

DRAFT

MONITORING WELL ABANDONMENT SUMMARY - 2015
PCC VALIDATION CENTER
PONTIAC, MICHIGAN

Well ID	Date Installed	Date Abandoned	Method Used	Screened Interval	
				Top (ft bgs)	Bottom (ft bgs)
MW4-07	10/11/2007	5/26/2015	Pressure Grout	5.5	15.5
MW7-07	10/12/2007	5/26/2015	Pressure Grout	10	15
MW11-07	10/16/2007	5/26/2015	Pressure Grout	7	12
MW13-07	10/18/2007	5/26/2015	Pressure Grout	7	14
MW15-07	10/16/2007	5/26/2015	Pressure Grout	9	14
MW17-07	10/16/2007	5/26/2015	Pressure Grout	3	10
MW19-07	10/17/2007	5/26/2015	Pressure Grout	8	13
MW20-07	10/17/2007	5/26/2015	Pressure Grout	6.5	13
MW27-07	12/7/2007	5/26/2015	Pressure Grout	3	13
MW28-07	10/18/2007	5/26/2015	Pressure Grout	10	20
MW34-07	12/4/2007	5/26/2015	Pressure Grout	11	16
MW35-07	12/4/2007	5/26/2015	Pressure Grout	6	11
MW37-07	12/4/2007	5/26/2015	Pressure Grout	12.5	25.5
MW40-07	12/6/2007	5/26/2015	Pressure Grout	11	16
MW43-07	12/6/2007	5/26/2015	Pressure Grout	7	15
MW63-08	3/10/2008	5/26/2015	Pressure Grout	9.5	15.5
MW64-08	3/10/2008	5/26/2015	Pressure Grout	9.5	14.5
MW78-08	3/11/2008	5/26/2015	Pressure Grout	8	13
MW89-12	12/3/2012	5/26/2015	Pressure Grout	6	11
MW02-07	10/12/2007	6/11/2015 or 6/21/2015	Pressure Grout	12	25
MW10-07	10/15/2007	6/11/2015 or 6/21/2015	Pressure Grout	3.5	13.5
MW21-07	12/4/2007	6/11/2015 or 6/21/2015	Pressure Grout	10.5	20.5
MW33-07	12/4/2007	6/11/2015 or 6/21/2015	Pressure Grout	10.5	20.5
MW38-07	12/4/2007	6/11/2015 or 6/21/2015	Pressure Grout	9.5	14.5
MW48-07	10/9/2007	6/11/2015 or 6/21/2015	Pressure Grout	5	15
MW68-08	3/12/2008	6/11/2015 or 6/21/2015	Pressure Grout	9	19
MW69-08	3/13/2008	6/11/2015 or 6/21/2015	Pressure Grout	10	20
MW74-08	3/14/2008	6/11/2015 or 6/21/2015	Pressure Grout	8	16
MW74D-15	3/13/2015	6/11/2015 or 6/21/2015	Pressure Grout	39-44	NA
MW79-12	8/22/2012	6/11/2015 or 6/21/2015	Pressure Grout	25	30
MW82-12	8/23/2012	6/11/2015 or 6/21/2015	Pressure Grout	2.5	7.5
MW83-12	8/23/2012	6/11/2015 or 6/21/2015	Pressure Grout	6	11
MW84-12	8/28/2012	6/11/2015 or 6/21/2015	Pressure Grout	5	20
MW85-12	8/23/2012	6/11/2015 or 6/21/2015	Pressure Grout	5	10
MW86-12	8/24/2012	6/11/2015 or 6/21/2015	Pressure Grout	8	18
MW87-12	8/23/2012	6/11/2015 or 6/21/2015	Pressure Grout	4	9
MW88-12	8/20/2012	6/11/2015 or 6/21/2015	Pressure Grout	15.5	20.5
MW90-12	12/3/2012	6/11/2015 or 6/21/2015	Pressure Grout	10	15
MW91-12	12/3/2012	6/11/2015 or 6/21/2015	Pressure Grout	16.5	21.5
MW94-15	3/13/2015	6/11/2015 or 6/21/2015	Pressure Grout	18.66	23.66

Notes:

ft AMSL - Feet Above Mean Sea Level.

ft bgs - Feet below ground surface.

MW - Monitoring well.

TMW - Temporary monitoring well.

Dry - Groundwater was not encountered in the well during the last groundwater elevation survey.

NS - Wells currently have not been surveyed.

NA - Data not available

Appendix A

Soil Boring and Monitoring Well Installation Logs



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 3

PROJECT NAME: PCC VALIDATION
PROJECT NUMBER: 017322
CLIENT: RACER
LOCATION: PONTIAC, MICHIGAN

HOLE DESIGNATION: MW74D-15
DATE COMPLETED: March 12, 2015
DRILLING METHOD: ROTOSONIC
FIELD PERSONNEL: S. KIPPEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
2	CONCRETE	0.40	CONCRETE	1RS		50		0.9
	SP-GRAVELLY SAND (FILL), compact, fine grained, fine to coarse gravel, poorly graded, light brown, moist		BENTONITE GROUT					
4	SP-SAND (FILL), trace gravel, compact, fine grained, poorly graded, light yellowish brown, moist	2.80	2" PVC WELL CASING					2.4
6			6" BOREHOLE					6.2
8	CL-SANDY CLAY, trace silt, trace gravel, stiff, low plasticity, light brown, moist	7.00		2RS		95		
	SC-CLAYEY SAND, trace gravel, compact, fine grained, poorly graded, light yellowish brown, wet	8.00						10.4
10	CL-SANDY CLAY, trace silt, trace gravel, firm, low plasticity, light brown, moist	9.80						
	SP-GRAVELLY SAND, trace clay, compact, fine grained, fine to coarse gravel, poorly graded, brown, wet	10.60						18.7
12	CL-SILTY CLAY, trace gravel, stiff, low plasticity, brown, moist	12.00						
	SM-SILTY SAND, trace clay, trace gravel, compact, fine grained, poorly graded, light yellowish brown, wet	13.00						39.0
14	CL-SILTY CLAY, trace sand, stiff, low plasticity, light yellowish brown	14.20						
16	SP-GRAVELLY SAND, compact, fine grained, fine to coarse gravel, poorly graded, brown, wet	15.00						51.4
18	CL-SILTY CLAY, stiff, low plasticity, light gray, moist			3RS		95		7.1
20								
22	SM-SILTY SAND, compact, fine grained, poorly graded, gray, moist	22.00						4.1
	CL-SILTY CLAY, firm, low plasticity, gray, moist	23.00						
24	SM-SILTY SAND, compact, fine grained, poorly graded, gray, moist	24.00						4.6
	CL-SILTY CLAY, stiff, low plasticity, gray, moist	24.80						
26	SM-SILTY SAND, trace gravel, compact, fine grained, poorly graded, gray, moist	25.50						5.0
28	CL-SANDY CLAY, trace silt, few gravel, firm, low plasticity, light gray, moist	27.80						
	CL-SILTY CLAY, trace sand, very stiff, low	29.50						1.1

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 017322-RACER-WI.GPJ CRA CORP.GDT 3/20/15



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 3

PROJECT NAME: PCC VALIDATION
PROJECT NUMBER: 017322
CLIENT: RACER
LOCATION: PONTIAC, MICHIGAN

HOLE DESIGNATION: MW74D-15
DATE COMPLETED: March 12, 2015
DRILLING METHOD: ROTOSONIC
FIELD PERSONNEL: S. KIPPEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
32	plasticity, light gray, moist							1.4
	- sand seam at 31.8ft BGS							
	- sand seam at 33.4ft BGS							.4
34	SP-GRAVELLY SAND, trace silt, trace clay, compact, fine grained, poorly graded, brown, moist	34.00						
		34.80	BENTONITE CHIPS	4RS		95		
36	CL-SILTY CLAY, trace gravel, stiff, low plasticity, light gray, moist							1.7
38								
		39.00						1.9
40	SP-GRAVELLY SAND, compact, fine grained, poorly graded, dark gray, wet							
42			2" PVC WELL SCREEN					1.7
			SAND PACK					
44	SM-SILTY SAND, compact, fine grained, poorly graded, gray, wet	43.50						2.1
46				5RS		95		1.6
48								
50								2.1
52								1.8
54								2.1
56				6RS		95		2.1
58								2.0

WELL DETAILS

Screened interval:
39.00 to 44.00ft BGS

Length: 5ft

Diameter: 2in

Slot Size: 0.01

Material: PVC

Seal:

33.00 to 37.00ft BGS

Material: BENTONITE CHIPS

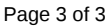
Sand Pack:

37.00 to 46.00ft BGS

Material: SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 017322-RACER-WI.GPJ CRA_CORP.GDT 3/20/15



HOLE DESIGNATION: MW74D-15
DATE COMPLETED: March 12, 2015
DRILLING METHOD: ROTOSONIC
FIELD PERSONNEL: S. KIPPEN

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 017322-RACER-WI.GPJ CRA CORP.GDT 3/20/15



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 2

PROJECT NAME: PCC VALIDATION
PROJECT NUMBER: 017322
CLIENT: RACER
LOCATION: PONTIAC, MICHIGAN

HOLE DESIGNATION: MW94-15
DATE COMPLETED: March 13, 2015
DRILLING METHOD: ROTOSONIC
FIELD PERSONNEL: S. KIPPEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
2	CONCRETE	0.90	CONCRETE	1RS		90		1.0
	SP-SAND (FILL), loose, fine grained, poorly graded, reddish brown, moist		BENTONITE GROUT					
4	ASPHALT (FILL), granular, black	3.50	2" PVC WELL CASING					1.2
	CONCRETE (FILL), white/light gray	4.00	6" BOREHOLE					
6	CL-SILTY CLAY, trace sand, few gravel, stiff, low plasticity, yellowish brown, moist	5.80		2RS		95		1.2
8								1.9
10	- very stiff, brown at 10.5ft BGS							1.6
12								2.1
14	- light brown at 13.0ft BGS			3RS		100		1.6
16			BENTONITE CHIPS					7.7
18		18.60						1.6
20	SP-SAND, with gravel, trace silt, compact, fine grained, poorly graded, light brown, wet	19.20	2" PVC WELL SCREEN					1.6
22	ML-SILT, trace sand, compact, fine grained, poorly graded, light yellowish brown, moist	21.20	SAND PACK					1.1
	SM-SILTY SAND, trace gravel, compact, fine grained, poorly graded, light brown, moist	22.40						1.6
24	ML-SANDY SILT, compact, fine grained, poorly graded, light brown, moist	23.60						1.6
	SP-SAND, with gravel, trace silt, trace clay, compact, fine grained, poorly graded, brown, wet	24.00						
26	CL-SILTY CLAY, trace gravel, compact, fine grained, poorly graded, brown, moist	25.00						
	SM-SILTY SAND, trace gravel, compact, fine grained, poorly graded, brown, moist	25.70						
28	CL-SILTY CLAY, stiff, low plasticity, light gray, moist	26.00						
	SM-SILTY SAND, trace gravel, compact, fine grained, poorly graded, gray, wet	26.80						
		27.20						
		27.60						
		28.00						

WELL DETAILS

Screened interval:

18.66 to 23.66ft BGS

Length: 5ft

Diameter: 2in

Slot Size: 0.010

Material: PVC

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 017322-RACER-WI.GPJ CRA_CORP.GDT 3/20/15



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 2

PROJECT NAME: PCC VALIDATION
PROJECT NUMBER: 017322
CLIENT: RACER
LOCATION: PONTIAC, MICHIGAN

HOLE DESIGNATION: MW94-15
DATE COMPLETED: March 13, 2015
DRILLING METHOD: ROTOSONIC
FIELD PERSONNEL: S. KIPPEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
32	CL-SILTY CLAY, trace gravel, stiff, low plasticity, gray, moist SM-SILTY SAND, compact, fine grained, poorly graded, gray, wet CL-SILTY CLAY, stiff, low plasticity, gray, moist		Seal: 13.66 to 16.66ft BGS Material: BENTONITE CHIPS Sand Pack: 16.66 to 26.00ft BGS Material: SAND					
34	END OF BOREHOLE @ 28.0ft BGS							
36								
38								
40								
42								
44								
46								
48								
50								
52								
54								
56								
58								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 017322-RACER-WI.GPJ CRA_CORP.GDT 3/20/15

Appendix B

Laboratory Analytical Report



09-Apr-2015

Rawa Fleisher
Conestoga-Rovers & Associates
14496 Sheldon Road
Suite 200
Plymouth, MI 48170

Re: **PCC-Validation (017322-T01Y13)**

Work Order: **1504351**

Dear Rawa,

ALS Environmental received 1 sample on 07-Apr-2015 09:45 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 16.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Chad Whelton

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager



Certificate No: MN 532786

Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Work Order: 1504351

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1504351-01	GW-17322-040615-DN-005	Groundwater		4/6/2015 12:00	4/7/2015 09:45	☐

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
WorkOrder: 1504351

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
µg/L	Micrograms per Liter

ALS Group USA, Corp

Date: 09-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-005
Collection Date: 4/6/2015 12:00 PM

Work Order: 1504351
Lab ID: 1504351-01
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
BatchID: <u>R160842</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/8/2015 19:58
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/8/2015 19:58
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/8/2015 19:58
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/8/2015 19:58
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/8/2015 19:58
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/8/2015 19:58
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/8/2015 19:58
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/8/2015 19:58
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/8/2015 19:58
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/8/2015 19:58
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/8/2015 19:58
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/8/2015 19:58
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/8/2015 19:58
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/8/2015 19:58
2-Butanone	U		0.87	25	µg/L	1	4/8/2015 19:58
2-Hexanone	U		0.15	50	µg/L	1	4/8/2015 19:58
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/8/2015 19:58
Acetone	U		3.1	50	µg/L	1	4/8/2015 19:58
Benzene	U		0.25	1.0	µg/L	1	4/8/2015 19:58
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/8/2015 19:58
Bromoform	U		0.099	1.0	µg/L	1	4/8/2015 19:58
Bromomethane	U		1.0	5.0	µg/L	1	4/8/2015 19:58
Carbon disulfide	U		0.26	5.0	µg/L	1	4/8/2015 19:58
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/8/2015 19:58
Chlorobenzene	U		0.19	1.0	µg/L	1	4/8/2015 19:58
Chloroethane	U		0.21	5.0	µg/L	1	4/8/2015 19:58
Chloroform	U		0.25	1.0	µg/L	1	4/8/2015 19:58
Chloromethane	U		0.25	5.0	µg/L	1	4/8/2015 19:58
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/8/2015 19:58
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/8/2015 19:58
Cyclohexane	U		0.31	1.0	µg/L	1	4/8/2015 19:58
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/8/2015 19:58
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/8/2015 19:58
Ethylbenzene	U		0.22	1.0	µg/L	1	4/8/2015 19:58
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/8/2015 19:58
Methyl acetate	U		0.62	10	µg/L	1	4/8/2015 19:58
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/8/2015 19:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 09-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-005
Collection Date: 4/6/2015 12:00 PM

Work Order: 1504351
Lab ID: 1504351-01
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/8/2015 19:58
Methylene chloride	U		0.64	5.0	µg/L	1	4/8/2015 19:58
Styrene	U		0.18	1.0	µg/L	1	4/8/2015 19:58
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/8/2015 19:58
Toluene	U		0.20	1.0	µg/L	1	4/8/2015 19:58
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/8/2015 19:58
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/8/2015 19:58
Trichloroethene	U		0.34	1.0	µg/L	1	4/8/2015 19:58
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/8/2015 19:58
Vinyl chloride	U		0.19	1.0	µg/L	1	4/8/2015 19:58
Xylenes, Total	U		0.62	3.0	µg/L	1	4/8/2015 19:58
Surr: 1,2-Dichloroethane-d4	98.6			75-120	%REC	1	4/8/2015 19:58
Surr: 4-Bromofluorobenzene	97.8			80-110	%REC	1	4/8/2015 19:58
Surr: Dibromofluoromethane	92.2			85-115	%REC	1	4/8/2015 19:58
Surr: Toluene-d8	98.4			85-110	%REC	1	4/8/2015 19:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 09-Apr-15

Client: Conestoga-Rovers & Associates

Work Order: 1504351

Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **R160842**

Instrument ID **VMS6**

Method: **SW8260**

MBLK		Sample ID: VBK1-150408-R160842				Units: µg/L		Analysis Date: 4/8/2015 05:22 PM		
Client ID:		Run ID: VMS6_150408A				SeqNo: 3217863		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	U	1.0								
1,1,2,2-Tetrachloroethane	U	1.0								
1,1,2-Trichloroethane	U	1.0								
1,1,2-Trichlorotrifluoroethane	U	1.0								
1,1-Dichloroethane	U	1.0								
1,1-Dichloroethene	U	1.0								
1,2,4-Trichlorobenzene	U	1.0								
1,2-Dibromo-3-chloropropane	U	1.0								
1,2-Dibromoethane	U	1.0								
1,2-Dichlorobenzene	U	1.0								
1,2-Dichloroethane	U	1.0								
1,2-Dichloropropane	U	1.0								
1,3-Dichlorobenzene	U	1.0								
1,4-Dichlorobenzene	U	1.0								
2-Butanone	U	5.0								
2-Hexanone	U	5.0								
4-Methyl-2-pentanone	U	1.0								
Acetone	U	10								
Benzene	U	1.0								
Bromodichloromethane	U	1.0								
Bromoform	U	1.0								
Bromomethane	U	1.0								
Carbon disulfide	U	1.0								
Carbon tetrachloride	U	1.0								
Chlorobenzene	U	1.0								
Chloroethane	U	1.0								
Chloroform	U	1.0								
Chloromethane	U	1.0								
cis-1,2-Dichloroethene	U	1.0								
cis-1,3-Dichloropropene	U	1.0								
Cyclohexane	U	1.0								
Dibromochloromethane	U	1.0								
Dichlorodifluoromethane	U	1.0								
Ethylbenzene	U	1.0								
Isopropylbenzene	U	1.0								
Methyl acetate	U	2.0								
Methyl tert-butyl ether	U	1.0								
Methylcyclohexane	U	1.0								
Methylene chloride	U	5.0								
Styrene	U	1.0								
Tetrachloroethene	U	1.0								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504351
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: R160842	Instrument ID VMS6	Method: SW8260						
Toluene	U	1.0						
trans-1,2-Dichloroethene	U	1.0						
trans-1,3-Dichloropropene	U	1.0						
Trichloroethene	U	1.0						
Trichlorofluoromethane	U	1.0						
Vinyl chloride	U	1.0						
Xylenes, Total	U	3.0						
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>19.8</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>99</i>	<i>75-120</i>	<i>0</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>19.23</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>96.2</i>	<i>80-110</i>	<i>0</i>	
<i>Surr: Dibromofluoromethane</i>	<i>19.69</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>98.4</i>	<i>85-115</i>	<i>0</i>	
<i>Surr: Toluene-d8</i>	<i>19.47</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>97.4</i>	<i>85-110</i>	<i>0</i>	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504351
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **R160842** Instrument ID **VMS6** Method: **SW8260**

LCS		Sample ID: VLCSW1-150408-R160842				Units: µg/L		Analysis Date: 4/8/2015 04:05 PM		
Client ID:		Run ID: VMS6_150408A				SeqNo: 3217862		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	22.27	1.0	20	0	111	75-130	0			
1,1,2,2-Tetrachloroethane	20.87	1.0	20	0	104	75-130	0			
1,1,2-Trichloroethane	21.87	1.0	20	0	109	75-125	0			
1,1-Dichloroethane	21.76	1.0	20	0	109	75-133	0			
1,1-Dichloroethene	22.26	1.0	20	0	111	70-145	0			
1,2,4-Trichlorobenzene	23.57	1.0	20	0	118	70-135	0			
1,2-Dibromo-3-chloropropane	18.55	1.0	20	0	92.8	60-130	0			
1,2-Dibromoethane	22.92	1.0	20	0	115	80-150	0			
1,2-Dichlorobenzene	21.63	1.0	20	0	108	70-130	0			
1,2-Dichloroethane	22.38	1.0	20	0	112	78-125	0			
1,2-Dichloropropane	20.89	1.0	20	0	104	75-125	0			
1,3-Dichlorobenzene	22.09	1.0	20	0	110	75-130	0			
1,4-Dichlorobenzene	22.07	1.0	20	0	110	75-130	0			
2-Butanone	18.33	5.0	20	0	91.6	55-150	0			
2-Hexanone	17.36	5.0	20	0	86.8	60-135	0			
4-Methyl-2-pentanone	20.89	1.0	20	0	104	77-178	0			
Acetone	18.44	10	20	0	92.2	60-160	0			
Benzene	22.01	1.0	20	0	110	85-125	0			
Bromodichloromethane	23.26	1.0	20	0	116	75-125	0			
Bromoform	16.74	1.0	20	0	83.7	60-125	0			
Bromomethane	25.43	1.0	20	0	127	30-185	0			
Carbon disulfide	20.44	1.0	20	0	102	60-165	0			
Carbon tetrachloride	20.87	1.0	20	0	104	65-140	0			
Chlorobenzene	21.32	1.0	20	0	107	80-120	0			
Chloroethane	19.24	1.0	20	0	96.2	50-140	0			
Chloroform	21.09	1.0	20	0	105	80-130	0			
Chloromethane	20.37	1.0	20	0	102	50-130	0			
cis-1,2-Dichloroethene	22.38	1.0	20	0	112	75-134	0			
cis-1,3-Dichloropropene	20.37	1.0	20	0	102	70-130	0			
Dibromochloromethane	19.51	1.0	20	0	97.6	60-115	0			
Dichlorodifluoromethane	15.06	1.0	20	0	75.3	20-120	0			
Ethylbenzene	21.31	1.0	20	0	107	85-125	0			
Isopropylbenzene	20.62	1.0	20	0	103	80-127	0			
Methyl tert-butyl ether	20.99	1.0	20	0	105	80-130	0			
Methylene chloride	21.66	5.0	20	0	108	75-140	0			
Styrene	21.3	1.0	20	0	106	85-125	0			
Tetrachloroethene	22.05	1.0	20	0	110	77-138	0			
Toluene	21.74	1.0	20	0	109	85-125	0			
trans-1,2-Dichloroethene	22.76	1.0	20	0	114	80-140	0			
trans-1,3-Dichloropropene	18.89	1.0	20	0	94.4	81-123	0			
Trichloroethene	21.27	1.0	20	0	106	84-130	0			
Trichlorofluoromethane	21.64	1.0	20	0	108	60-140	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504351
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: R160842	Instrument ID VMS6		Method: SW8260				
Vinyl chloride	22.42	1.0	20	0	112	50-136	0
Xylenes, Total	63.13	3.0	60	0	105	80-126	0
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>19.31</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>96.6</i>	<i>75-120</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>19.71</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>98.6</i>	<i>80-110</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>20.37</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>102</i>	<i>85-115</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>19.88</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>99.4</i>	<i>85-110</i>	<i>0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504351
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **R160842** Instrument ID **VMS6** Method: **SW8260**

MS Sample ID: 1504323-01A MS				Units: µg/L		Analysis Date: 4/9/2015 02:01 AM				
Client ID:		Run ID: VMS6_150408A		SeqNo: 3217874		Prep Date:		DF: 100		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1997	100	2000	0	99.8	75-130	0			
1,1,2,2-Tetrachloroethane	1692	100	2000	0	84.6	75-130	0			
1,1,2-Trichloroethane	1812	100	2000	0	90.6	75-125	0			
1,1-Dichloroethane	2094	100	2000	84	100	75-133	0			
1,1-Dichloroethene	2114	100	2000	0	106	70-145	0			
1,2,4-Trichlorobenzene	1721	100	2000	0	86	70-135	0			
1,2-Dibromo-3-chloropropane	1150	100	2000	0	57.5	60-130	0			S
1,2-Dibromoethane	1840	100	2000	0	92	80-150	0			
1,2-Dichlorobenzene	1816	100	2000	0	90.8	70-130	0			
1,2-Dichloroethane	1891	100	2000	0	94.6	78-125	0			
1,2-Dichloropropane	1861	100	2000	0	93	75-125	0			
1,3-Dichlorobenzene	1877	100	2000	0	93.8	75-130	0			
1,4-Dichlorobenzene	1835	100	2000	0	91.8	75-130	0			
2-Butanone	1564	500	2000	0	78.2	55-150	0			
2-Hexanone	1329	500	2000	0	66.4	60-135	0			
4-Methyl-2-pentanone	1714	100	2000	0	85.7	77-178	0			
Acetone	2009	1,000	2000	379	81.5	60-160	0			
Benzene	2022	100	2000	0	101	85-125	0			
Bromodichloromethane	1809	100	2000	0	90.4	75-125	0			
Bromoform	1137	100	2000	0	56.8	60-125	0			S
Bromomethane	1768	100	2000	0	88.4	30-185	0			
Carbon disulfide	1642	100	2000	0	82.1	60-165	0			
Carbon tetrachloride	1682	100	2000	0	84.1	65-140	0			
Chlorobenzene	1876	100	2000	0	93.8	80-120	0			
Chloroethane	1967	100	2000	0	98.4	50-140	0			
Chloroform	1925	100	2000	0	96.2	80-130	0			
Chloromethane	2009	100	2000	0	100	50-130	0			
cis-1,2-Dichloroethene	2015	100	2000	0	101	75-134	0			
cis-1,3-Dichloropropene	1569	100	2000	0	78.4	70-130	0			
Dibromochloromethane	1336	100	2000	0	66.8	60-115	0			
Dichlorodifluoromethane	1382	100	2000	0	69.1	20-120	0			
Ethylbenzene	1973	100	2000	28	97.2	85-125	0			
Isopropylbenzene	1918	100	2000	0	95.9	80-127	0			
Methyl tert-butyl ether	1832	100	2000	0	91.6	80-130	0			
Methylene chloride	2067	500	2000	57	100	75-140	0			
Styrene	1841	100	2000	0	92	85-125	0			
Tetrachloroethene	2033	100	2000	0	102	77-138	0			
Toluene	2031	100	2000	66	98.2	85-125	0			
trans-1,2-Dichloroethene	2125	100	2000	0	106	80-140	0			
trans-1,3-Dichloropropene	1343	100	2000	0	67.2	81-123	0			S
Trichloroethene	1930	100	2000	0	96.5	84-130	0			
Trichlorofluoromethane	2036	100	2000	0	102	60-140	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504351
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: R160842	Instrument ID VMS6		Method: SW8260				
Vinyl chloride	2173	100	2000	0	109	50-136	0
Xylenes, Total	5887	300	6000	139	95.8	80-126	0
<i>Surr: 1,2-Dichloroethane-d4</i>	1959	0	2000	0	98	75-120	0
<i>Surr: 4-Bromofluorobenzene</i>	2009	0	2000	0	100	80-110	0
<i>Surr: Dibromofluoromethane</i>	1951	0	2000	0	97.6	85-115	0
<i>Surr: Toluene-d8</i>	1932	0	2000	0	96.6	85-110	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504351
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **R160842** Instrument ID **VMS6** Method: **SW8260**

MSD				Sample ID: 1504323-01A MSD			Units: µg/L		Analysis Date: 4/9/2015 02:26 AM	
Client ID:				Run ID: VMS6_150408A			SeqNo: 3217875		Prep Date:	
									DF: 100	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1924	100	2000	0	96.2	75-130	1997	3.72	30	
1,1,2,2-Tetrachloroethane	1640	100	2000	0	82	75-130	1692	3.12	30	
1,1,2-Trichloroethane	1759	100	2000	0	88	75-125	1812	2.97	30	
1,1-Dichloroethane	1993	100	2000	84	95.4	75-133	2094	4.94	30	
1,1-Dichloroethene	1968	100	2000	0	98.4	70-145	2114	7.15	30	
1,2,4-Trichlorobenzene	1838	100	2000	0	91.9	70-135	1721	6.57	30	
1,2-Dibromo-3-chloropropane	1099	100	2000	0	55	60-130	1150	4.54	30	S
1,2-Dibromoethane	1809	100	2000	0	90.4	80-150	1840	1.7	30	
1,2-Dichlorobenzene	1815	100	2000	0	90.8	70-130	1816	0.0551	30	
1,2-Dichloroethane	1911	100	2000	0	95.6	78-125	1891	1.05	30	
1,2-Dichloropropane	1795	100	2000	0	89.8	75-125	1861	3.61	30	
1,3-Dichlorobenzene	1829	100	2000	0	91.4	75-130	1877	2.59	30	
1,4-Dichlorobenzene	1832	100	2000	0	91.6	75-130	1835	0.164	30	
2-Butanone	1421	500	2000	0	71	55-150	1564	9.58	30	
2-Hexanone	1268	500	2000	0	63.4	60-135	1329	4.7	30	
4-Methyl-2-pentanone	1670	100	2000	0	83.5	77-178	1714	2.6	30	
Acetone	1847	1,000	2000	379	73.4	60-160	2009	8.4	30	
Benzene	1922	100	2000	0	96.1	85-125	2022	5.07	30	
Bromodichloromethane	1745	100	2000	0	87.2	75-125	1809	3.6	30	
Bromoform	1130	100	2000	0	56.5	60-125	1137	0.618	30	S
Bromomethane	1763	100	2000	0	88.2	30-185	1768	0.283	30	
Carbon disulfide	1592	100	2000	0	79.6	60-165	1642	3.09	30	
Carbon tetrachloride	1668	100	2000	0	83.4	65-140	1682	0.836	30	
Chlorobenzene	1822	100	2000	0	91.1	80-120	1876	2.92	30	
Chloroethane	1736	100	2000	0	86.8	50-140	1967	12.5	30	
Chloroform	1858	100	2000	0	92.9	80-130	1925	3.54	30	
Chloromethane	1496	100	2000	0	74.8	50-130	2009	29.3	30	
cis-1,2-Dichloroethene	1919	100	2000	0	96	75-134	2015	4.88	30	
cis-1,3-Dichloropropene	1562	100	2000	0	78.1	70-130	1569	0.447	30	
Dibromochloromethane	1356	100	2000	0	67.8	60-115	1336	1.49	30	
Dichlorodifluoromethane	1328	100	2000	0	66.4	20-120	1382	3.99	30	
Ethylbenzene	1889	100	2000	28	93	85-125	1973	4.35	30	
Isopropylbenzene	1899	100	2000	0	95	80-127	1918	0.996	30	
Methyl tert-butyl ether	1787	100	2000	0	89.4	80-130	1832	2.49	30	
Methylene chloride	1986	500	2000	57	96.4	75-140	2067	4	30	
Styrene	1767	100	2000	0	88.4	85-125	1841	4.1	30	
Tetrachloroethene	1998	100	2000	0	99.9	77-138	2033	1.74	30	
Toluene	1959	100	2000	66	94.6	85-125	2031	3.61	30	
trans-1,2-Dichloroethene	1950	100	2000	0	97.5	80-140	2125	8.59	30	
trans-1,3-Dichloropropene	1361	100	2000	0	68	81-123	1343	1.33	30	S
Trichloroethene	1855	100	2000	0	92.8	84-130	1930	3.96	30	
Trichlorofluoromethane	1970	100	2000	0	98.5	60-140	2036	3.3	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504351
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: R160842	Instrument ID VMS6			Method: SW8260					
Vinyl chloride	1929	100	2000	0	96.4	50-136	2173	11.9	30
Xylenes, Total	5658	300	6000	139	92	80-126	5887	3.97	30
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>1959</i>	<i>0</i>	<i>2000</i>	<i>0</i>	<i>98</i>	<i>75-120</i>	<i>1959</i>	<i>0</i>	<i>30</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>1982</i>	<i>0</i>	<i>2000</i>	<i>0</i>	<i>99.1</i>	<i>80-110</i>	<i>2009</i>	<i>1.35</i>	<i>30</i>
<i>Surr: Dibromofluoromethane</i>	<i>1972</i>	<i>0</i>	<i>2000</i>	<i>0</i>	<i>98.6</i>	<i>85-115</i>	<i>1951</i>	<i>1.07</i>	<i>30</i>
<i>Surr: Toluene-d8</i>	<i>1971</i>	<i>0</i>	<i>2000</i>	<i>0</i>	<i>98.6</i>	<i>85-110</i>	<i>1932</i>	<i>2</i>	<i>30</i>

The following samples were analyzed in this batch: | 1504351-01A |

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



**CONESTOGA-ROVERS
& ASSOCIATES**

CHAIN OF CUSTODY RECORD

14496 Sheldon Road, Suite #200, Plymouth, Michigan 48170

Phone: (734) 453-5123

Fax: (734) 453-5201

1504351
COC NO.: PL-13522

PAGE 1 OF 1

(See Reverse Side for Instructions)

Project No/Phase/Task Code: 17322-T03-Y15				Laboratory Name: ALS				Lab Location: HOLLAND, MI				SSOW ID: 17322-004																																																																			
Project Name: PCC VALIDATION				Lab Contact: TB				Lab Quote No:				Cooler No:																																																																			
Project Location: PONTIAC, MI				SAMPLE TYPE				CONTAINER QUANTITY & PRESERVATION				ANALYSIS REQUESTED (See Back of COC for Definitions)																																																																			
Chemistry Contact: RF				Matrix Code (see back of COC) Grab (G) or Comp (C) Unpreserved Hydrochloric Acid (HCl) Nitric Acid (HNO ₃) Sulfuric Acid (H ₂ SO ₄) Sodium Hydroxide (NaOH) Methanol/Water (Sol VOC) EnCores 3x5-g 1x25-g Other: Total Containers/Sample				MS/MSD Request				Carrier: Fed Ex																																																																			
Sampler(s): DN, EM												Airbill No:																																																																			
Date Shipped: 4-6-15				COMMENTS/ SPECIAL INSTRUCTIONS:																																																																											
<table border="1"> <thead> <tr> <th>Sam</th> <th>SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)</th> <th>DATE (mm/dd/yy)</th> <th>TIME (hh:mm)</th> </tr> </thead> <tbody> <tr><td>1</td><td>GW 17322-040615-DN-005</td><td>4-6-15</td><td>1200</td></tr> <tr><td>2</td><td></td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td><td></td></tr> <tr><td>5</td><td></td><td></td><td></td></tr> <tr><td>6</td><td></td><td></td><td></td></tr> <tr><td>7</td><td></td><td></td><td></td></tr> <tr><td>8</td><td></td><td></td><td></td></tr> <tr><td>9</td><td></td><td></td><td></td></tr> <tr><td>10</td><td></td><td></td><td></td></tr> <tr><td>11</td><td></td><td></td><td></td></tr> <tr><td>12</td><td></td><td></td><td></td></tr> <tr><td>13</td><td></td><td></td><td></td></tr> <tr><td>14</td><td></td><td></td><td></td></tr> <tr><td>15</td><td></td><td></td><td></td></tr> </tbody> </table>				Sam	SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)	DATE (mm/dd/yy)	TIME (hh:mm)	1	GW 17322-040615-DN-005	4-6-15	1200	2				3				4				5				6				7				8				9				10				11				12				13				14				15															
Sam	SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)	DATE (mm/dd/yy)	TIME (hh:mm)																																																																												
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TAT Required in business days (use separate COCs for different TATs): ☐ 1 Day ☒ 2 Days ☐ 3 Days ☐ 1 Week ☐ 2 Week ☐ Other								Total Number of Containers: 3				Notes/ Special Requirements: 3.8c * 2-DAY-T-A-T																																																																			
All Samples in Cooler must be on COC																																																																															
RELINQUISHED BY		COMPANY		DATE		TIME		RECEIVED BY		COMPANY		DATE		TIME																																																																	
Don Newton		CRA		4-6-15		1900		D-7		ALS		4/7/15		0945																																																																	

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT - ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE - Fully Executed Copy (CRA)

YELLOW - Receiving Laboratory Copy

PINK - Shipper

GOLDENROD - Sampling Crew

CRA Form: COC-10A (20110804)

FedEx NEW Package
Express US Airbill

FedEx Tracking Number 8065 1269 0068

1 From

Date

4-6-15

Sender's Name

Don Newton

Phone

419 109-1337

Company

CRA

Address

1305 E Perkins Ave

City

Sandusky

State

OH

ZIP

44870

2 Your Internal Billing Reference

17322 - 103 - Y15

3 To

Recipient's Name

Receiving

Phone

616 399-1070

Company

ALS Lab

Address

3352 128th Ave.

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address

Use this line for the HOLD location address or for confirmation of your shipping address.

City

Holland

State

MI

ZIP

49421-

HOLD Weekday
FedEx location address
REQUIRED. NOT available for
FedEx First Overnight.

☐

HOLD Saturday
FedEx location address
REQUIRED. Available ONLY for
FedEx Priority Overnight and
FedEx 2Day to select locations.

☐



8065 1269 0068

Form ID No. 0200

GM

Recipient's Copy

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

Packages up to 150 lbs.
For packages over 150 lbs., use the new
FedEx Express Freight 35 Airbill.

Next Business Day

☐

FedEx First Overnight

Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☒

FedEx Priority Overnight

Next business morning. * Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐

FedEx Standard Overnight

Next business afternoon. * Saturday Delivery NOT available.

2 or 3 Business Days

☐

FedEx 2Day A.M.

Second business morning. * Saturday Delivery NOT available.

☐

FedEx 2Day

Second business afternoon. * Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐

FedEx Express Saver

Third business day. * Saturday Delivery NOT available.

5 Packaging

* Declared value limit \$500.

☐

FedEx Envelope*

☐

FedEx Pak*

☐

FedEx Box

☐

FedEx Tube

☒

Other

6 Special Handling and Delivery Signature Options

☐

SATURDAY Delivery

NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

☐

No Signature Required

Package may be left without obtaining a signature for delivery.

☐

Direct Signature

Business at recipient's address may sign for delivery. Fee applies.

☐

Indirect Signature

If no one is available at recipient's address, someone at a neighboring address may sign for delivery. Fee applies. For residential deliveries only. Fee applies.

Does this shipment contain dangerous goods?
One box must be checked.

☒

No

☐

Yes

As per attached

Shipper's Declaration.

☐

Yes

Shipper's Declaration

not required.

☐

Dry Ice

Dry Ice, 9, UN 1845

☐

Cargo Aircraft Only

7 Payment Bill to:

☒

Sender

Acct. No. in Section 7 will be billed.

☐

Recipient

☐

Third Party

☐

Credit Card

☐

Cash/Check

Total Packages

Total Weight

1

34

lbs.

Credit Card Auth.

Your liability is limited to US\$500 unless you declare a higher value. See the current FedEx Service Guide for details.

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644

FedEx.com 1.800.GoFedEx 1.800.463.3389

Align Open End of Reel to Mark

Sample Receipt Checklist

Client Name: CRA - PLYMOUTH

Date/Time Received: 07-Apr-15 09:45

Work Order: 1504351

Received by: DS

Checklist completed by Diane Shaw 07-Apr-15
eSignature Date

Reviewed by: Chad Whelton 07-Apr-15
eSignature Date

Matrices: Groundwater

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☒	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☒	No ☐	
Sample(s) received on ice?	Yes ☒	No ☐	
Temperature(s)/Thermometer(s):	<u>3.8 c</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>4/7/2015 12:22:30 PM</u>		
Water - VOA vials have zero headspace?	Yes ☒	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☒
pH adjusted?	Yes ☐	No ☐	N/A ☒
pH adjusted by:	<u>-</u>		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:



16-Apr-2015

Rawa Fleisher
Conestoga-Rovers & Associates
14496 Sheldon Road
Suite 200
Plymouth, MI 48170

Re: **PCC-Validation (017322-T01Y13)**

Work Order: **1504352**

Dear Rawa,

ALS Environmental received 10 samples on 07-Apr-2015 09:45 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 34.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Chad Whelton

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager



Certificate No: MN 532786

Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Work Order: 1504352

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1504352-01	GW-17322-040615-DN-001	Groundwater		4/6/2015 12:00	4/7/2015 09:45	☐
1504352-02	GW-17322-040615-DN-002	Groundwater		4/6/2015 15:10	4/7/2015 09:45	☐
1504352-03	GW-17322-040615-DN-003	Groundwater		4/6/2015 15:45	4/7/2015 09:45	☐
1504352-04	GW-17322-040615-DN-004	Groundwater		4/6/2015 16:50	4/7/2015 09:45	☐
1504352-05	GW-17322-040615-DN-006	Groundwater		4/6/2015 13:15	4/7/2015 09:45	☐
1504352-06	GW-17322-040615-DN-007	Groundwater		4/6/2015 15:20	4/7/2015 09:45	☐
1504352-07	GW-17322-040615-DN-008	Groundwater		4/6/2015 16:40	4/7/2015 09:45	☐
1504352-08	GW-17322-040615-DN-009	Groundwater		4/6/2015 17:50	4/7/2015 09:45	☐
1504352-09	GW-17322-040615-DN-010	Groundwater		4/6/2015 17:55	4/7/2015 09:45	☐
1504352-10	TB-001	Water		4/6/2015	4/7/2015 09:45	☐

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
WorkOrder: 1504352

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
µg/L	Micrograms per Liter

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-001
Collection Date: 4/6/2015 12:00 PM

Work Order: 1504352
Lab ID: 1504352-01
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161321</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 12:30
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 12:30
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 12:30
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 12:30
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 12:30
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 12:30
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 12:30
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 12:30
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 12:30
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 12:30
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 12:30
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 12:30
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 12:30
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 12:30
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 12:30
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 12:30
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 12:30
Acetone	U		3.1	50	µg/L	1	4/15/2015 12:30
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 12:30
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 12:30
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 12:30
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 12:30
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 12:30
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 12:30
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 12:30
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 12:30
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 12:30
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 12:30
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 12:30
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 12:30
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 12:30
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 12:30
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 12:30
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 12:30
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 12:30
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 12:30
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 12:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-001
Collection Date: 4/6/2015 12:00 PM

Work Order: 1504352
Lab ID: 1504352-01
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 12:30
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 12:30
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 12:30
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 12:30
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 12:30
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 12:30
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 12:30
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 12:30
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 12:30
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 12:30
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 12:30
Surr: 1,2-Dichloroethane-d4	104			75-120	%REC	1	4/15/2015 12:30
Surr: 4-Bromofluorobenzene	96.0			80-110	%REC	1	4/15/2015 12:30
Surr: Dibromofluoromethane	100			85-115	%REC	1	4/15/2015 12:30
Surr: Toluene-d8	101			85-110	%REC	1	4/15/2015 12:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-002
Collection Date: 4/6/2015 03:10 PM

Work Order: 1504352
Lab ID: 1504352-02
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161321</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 12:56
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 12:56
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 12:56
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 12:56
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 12:56
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 12:56
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 12:56
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 12:56
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 12:56
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 12:56
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 12:56
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 12:56
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 12:56
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 12:56
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 12:56
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 12:56
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 12:56
Acetone	U		3.1	50	µg/L	1	4/15/2015 12:56
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 12:56
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 12:56
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 12:56
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 12:56
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 12:56
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 12:56
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 12:56
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 12:56
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 12:56
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 12:56
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 12:56
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 12:56
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 12:56
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 12:56
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 12:56
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 12:56
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 12:56
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 12:56
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 12:56

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-002
Collection Date: 4/6/2015 03:10 PM

Work Order: 1504352
Lab ID: 1504352-02
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 12:56
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 12:56
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 12:56
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 12:56
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 12:56
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 12:56
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 12:56
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 12:56
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 12:56
Vinyl chloride	1.2		0.19	1.0	µg/L	1	4/15/2015 12:56
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 12:56
Surr: 1,2-Dichloroethane-d4	102			75-120	%REC	1	4/15/2015 12:56
Surr: 4-Bromofluorobenzene	95.8			80-110	%REC	1	4/15/2015 12:56
Surr: Dibromofluoromethane	99.4			85-115	%REC	1	4/15/2015 12:56
Surr: Toluene-d8	100			85-110	%REC	1	4/15/2015 12:56

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-003
Collection Date: 4/6/2015 03:45 PM

Work Order: 1504352
Lab ID: 1504352-03
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161321</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 01:21
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 01:21
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 01:21
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 01:21
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 01:21
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 01:21
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 01:21
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 01:21
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 01:21
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 01:21
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 01:21
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 01:21
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 01:21
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 01:21
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 01:21
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 01:21
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 01:21
Acetone	U		3.1	50	µg/L	1	4/15/2015 01:21
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 01:21
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 01:21
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 01:21
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 01:21
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 01:21
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 01:21
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 01:21
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 01:21
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 01:21
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 01:21
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 01:21
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 01:21
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 01:21
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 01:21
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 01:21
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 01:21
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 01:21
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 01:21
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 01:21

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-003
Collection Date: 4/6/2015 03:45 PM

Work Order: 1504352
Lab ID: 1504352-03
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 01:21
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 01:21
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 01:21
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 01:21
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 01:21
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 01:21
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 01:21
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 01:21
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 01:21
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 01:21
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 01:21
Surr: 1,2-Dichloroethane-d4	104			75-120	%REC	1	4/15/2015 01:21
Surr: 4-Bromofluorobenzene	93.8			80-110	%REC	1	4/15/2015 01:21
Surr: Dibromofluoromethane	102			85-115	%REC	1	4/15/2015 01:21
Surr: Toluene-d8	100			85-110	%REC	1	4/15/2015 01:21

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-004
Collection Date: 4/6/2015 04:50 PM

Work Order: 1504352
Lab ID: 1504352-04
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161321</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 01:46
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 01:46
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 01:46
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 01:46
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 01:46
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 01:46
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 01:46
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 01:46
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 01:46
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 01:46
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 01:46
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 01:46
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 01:46
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 01:46
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 01:46
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 01:46
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 01:46
Acetone	U		3.1	50	µg/L	1	4/15/2015 01:46
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 01:46
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 01:46
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 01:46
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 01:46
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 01:46
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 01:46
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 01:46
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 01:46
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 01:46
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 01:46
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 01:46
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 01:46
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 01:46
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 01:46
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 01:46
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 01:46
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 01:46
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 01:46
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 01:46

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-004
Collection Date: 4/6/2015 04:50 PM

Work Order: 1504352
Lab ID: 1504352-04
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 01:46
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 01:46
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 01:46
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 01:46
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 01:46
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 01:46
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 01:46
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 01:46
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 01:46
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 01:46
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 01:46
Surr: 1,2-Dichloroethane-d4	105			75-120	%REC	1	4/15/2015 01:46
Surr: 4-Bromofluorobenzene	95.5			80-110	%REC	1	4/15/2015 01:46
Surr: Dibromofluoromethane	99.2			85-115	%REC	1	4/15/2015 01:46
Surr: Toluene-d8	101			85-110	%REC	1	4/15/2015 01:46

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-006
Collection Date: 4/6/2015 01:15 PM

Work Order: 1504352
Lab ID: 1504352-05
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161321</u>							
1,1,1-Trichloroethane	320		0.96	5.0	µg/L	5	4/15/2015 05:09
1,1,2,2-Tetrachloroethane	U		1.7	5.0	µg/L	5	4/15/2015 05:09
1,1,2-Trichloroethane	U		1.3	5.0	µg/L	5	4/15/2015 05:09
1,1,2-Trichlorotrifluoroethane	U		2.3	5.0	µg/L	5	4/15/2015 05:09
1,1-Dichloroethane	26		1.1	5.0	µg/L	5	4/15/2015 05:09
1,1-Dichloroethene	14		1.2	5.0	µg/L	5	4/15/2015 05:09
1,2,4-Trichlorobenzene	U		0.96	25	µg/L	5	4/15/2015 05:09
1,2-Dibromo-3-chloropropane	U		2.1	5.0	µg/L	5	4/15/2015 05:09
1,2-Dibromoethane	U		1.7	5.0	µg/L	5	4/15/2015 05:09
1,2-Dichlorobenzene	U		1.1	5.0	µg/L	5	4/15/2015 05:09
1,2-Dichloroethane	U		1.3	5.0	µg/L	5	4/15/2015 05:09
1,2-Dichloropropane	U		1.3	5.0	µg/L	5	4/15/2015 05:09
1,3-Dichlorobenzene	U		1.0	5.0	µg/L	5	4/15/2015 05:09
1,4-Dichlorobenzene	U		1.0	5.0	µg/L	5	4/15/2015 05:09
2-Butanone	U		4.3	120	µg/L	5	4/15/2015 05:09
2-Hexanone	U		0.76	250	µg/L	5	4/15/2015 05:09
4-Methyl-2-pentanone	U		0.74	250	µg/L	5	4/15/2015 05:09
Acetone	U		16	250	µg/L	5	4/15/2015 05:09
Benzene	3.4	J	1.3	5.0	µg/L	5	4/15/2015 05:09
Bromodichloromethane	U		0.80	5.0	µg/L	5	4/15/2015 05:09
Bromoform	U		0.50	5.0	µg/L	5	4/15/2015 05:09
Bromomethane	U		5.0	25	µg/L	5	4/15/2015 05:09
Carbon disulfide	U		1.3	25	µg/L	5	4/15/2015 05:09
Carbon tetrachloride	U		0.69	5.0	µg/L	5	4/15/2015 05:09
Chlorobenzene	U		0.94	5.0	µg/L	5	4/15/2015 05:09
Chloroethane	U		1.1	25	µg/L	5	4/15/2015 05:09
Chloroform	4.4	J	1.2	5.0	µg/L	5	4/15/2015 05:09
Chloromethane	U		1.3	25	µg/L	5	4/15/2015 05:09
cis-1,2-Dichloroethene	12		1.2	5.0	µg/L	5	4/15/2015 05:09
cis-1,3-Dichloropropene	U		1.2	5.0	µg/L	5	4/15/2015 05:09
Cyclohexane	U		1.5	5.0	µg/L	5	4/15/2015 05:09
Dibromochloromethane	U		0.83	25	µg/L	5	4/15/2015 05:09
Dichlorodifluoromethane	U		2.0	25	µg/L	5	4/15/2015 05:09
Ethylbenzene	U		1.1	5.0	µg/L	5	4/15/2015 05:09
Isopropylbenzene	U		1.3	25	µg/L	5	4/15/2015 05:09
Methyl acetate	U		3.1	50	µg/L	5	4/15/2015 05:09
Methyl tert-butyl ether	U		0.59	25	µg/L	5	4/15/2015 05:09

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-006
Collection Date: 4/6/2015 01:15 PM

Work Order: 1504352
Lab ID: 1504352-05
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		1.6	5.0	µg/L	5	4/15/2015 05:09
Methylene chloride	U		3.2	25	µg/L	5	4/15/2015 05:09
Styrene	U		0.88	5.0	µg/L	5	4/15/2015 05:09
Tetrachloroethene	U		1.2	5.0	µg/L	5	4/15/2015 05:09
Toluene	U		0.98	5.0	µg/L	5	4/15/2015 05:09
trans-1,2-Dichloroethene	U		1.4	5.0	µg/L	5	4/15/2015 05:09
trans-1,3-Dichloropropene	U		0.94	5.0	µg/L	5	4/15/2015 05:09
Trichlorofluoromethane	U		1.9	5.0	µg/L	5	4/15/2015 05:09
Vinyl chloride	U		0.95	5.0	µg/L	5	4/15/2015 05:09
Xylenes, Total	U		3.1	15	µg/L	5	4/15/2015 05:09
Surr: 1,2-Dichloroethane-d4	98.8			75-120	%REC	5	4/15/2015 05:09
Surr: 4-Bromofluorobenzene	94.9			80-110	%REC	5	4/15/2015 05:09
Surr: Dibromofluoromethane	96.6			85-115	%REC	5	4/15/2015 05:09
Surr: Toluene-d8	99.6			85-110	%REC	5	4/15/2015 05:09
BatchID: R161321							
Trichloroethene	1,100		17	50	µg/L	50	4/15/2015 02:12
Surr: 1,2-Dichloroethane-d4	103			75-120	%REC	50	4/15/2015 02:12
Surr: 4-Bromofluorobenzene	94.8			80-110	%REC	50	4/15/2015 02:12
Surr: Dibromofluoromethane	99.4			85-115	%REC	50	4/15/2015 02:12
Surr: Toluene-d8	100			85-110	%REC	50	4/15/2015 02:12

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-007
Collection Date: 4/6/2015 03:20 PM

Work Order: 1504352
Lab ID: 1504352-06
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
BatchID: <u>R161321</u>							
1,1,1-Trichloroethane	5.6		0.19	1.0	µg/L	1	4/15/2015 02:37
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 02:37
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 02:37
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 02:37
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 02:37
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 02:37
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 02:37
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 02:37
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 02:37
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 02:37
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 02:37
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 02:37
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 02:37
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 02:37
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 02:37
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 02:37
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 02:37
Acetone	U		3.1	50	µg/L	1	4/15/2015 02:37
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 02:37
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 02:37
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 02:37
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 02:37
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 02:37
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 02:37
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 02:37
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 02:37
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 02:37
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 02:37
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 02:37
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 02:37
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 02:37
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 02:37
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 02:37
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 02:37
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 02:37
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 02:37
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 02:37

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-007
Collection Date: 4/6/2015 03:20 PM

Work Order: 1504352
Lab ID: 1504352-06
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 02:37
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 02:37
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 02:37
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 02:37
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 02:37
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 02:37
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 02:37
Trichloroethene	37		0.34	1.0	µg/L	1	4/15/2015 02:37
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 02:37
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 02:37
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 02:37
Surr: 1,2-Dichloroethane-d4	102			75-120	%REC	1	4/15/2015 02:37
Surr: 4-Bromofluorobenzene	96.3			80-110	%REC	1	4/15/2015 02:37
Surr: Dibromofluoromethane	99.0			85-115	%REC	1	4/15/2015 02:37
Surr: Toluene-d8	102			85-110	%REC	1	4/15/2015 02:37

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-008
Collection Date: 4/6/2015 04:40 PM

Work Order: 1504352
Lab ID: 1504352-07
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161321</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 03:02
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 03:02
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 03:02
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 03:02
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 03:02
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 03:02
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 03:02
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 03:02
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 03:02
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 03:02
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 03:02
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 03:02
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 03:02
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 03:02
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 03:02
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 03:02
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 03:02
Acetone	U		3.1	50	µg/L	1	4/15/2015 03:02
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 03:02
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 03:02
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 03:02
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 03:02
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 03:02
Carbon tetrachloride	9.3		0.14	1.0	µg/L	1	4/15/2015 03:02
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 03:02
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 03:02
Chloroform	23		0.25	1.0	µg/L	1	4/15/2015 03:02
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 03:02
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 03:02
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 03:02
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 03:02
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 03:02
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 03:02
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 03:02
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 03:02
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 03:02
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 03:02

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-008
Collection Date: 4/6/2015 04:40 PM

Work Order: 1504352
Lab ID: 1504352-07
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 03:02
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 03:02
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 03:02
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 03:02
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 03:02
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 03:02
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 03:02
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 03:02
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 03:02
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 03:02
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 03:02
Surr: 1,2-Dichloroethane-d4	104			75-120	%REC	1	4/15/2015 03:02
Surr: 4-Bromofluorobenzene	91.8			80-110	%REC	1	4/15/2015 03:02
Surr: Dibromofluoromethane	99.8			85-115	%REC	1	4/15/2015 03:02
Surr: Toluene-d8	98.8			85-110	%REC	1	4/15/2015 03:02

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-009
Collection Date: 4/6/2015 05:50 PM

Work Order: 1504352
Lab ID: 1504352-08
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161321</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 03:28
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 03:28
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 03:28
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 03:28
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 03:28
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 03:28
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 03:28
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 03:28
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 03:28
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 03:28
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 03:28
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 03:28
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 03:28
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 03:28
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 03:28
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 03:28
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 03:28
Acetone	U		3.1	50	µg/L	1	4/15/2015 03:28
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 03:28
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 03:28
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 03:28
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 03:28
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 03:28
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 03:28
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 03:28
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 03:28
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 03:28
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 03:28
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 03:28
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 03:28
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 03:28
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 03:28
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 03:28
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 03:28
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 03:28
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 03:28
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 03:28

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-009
Collection Date: 4/6/2015 05:50 PM

Work Order: 1504352
Lab ID: 1504352-08
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 03:28
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 03:28
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 03:28
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 03:28
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 03:28
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 03:28
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 03:28
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 03:28
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 03:28
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 03:28
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 03:28
Surr: 1,2-Dichloroethane-d4	101			75-120	%REC	1	4/15/2015 03:28
Surr: 4-Bromofluorobenzene	94.6			80-110	%REC	1	4/15/2015 03:28
Surr: Dibromofluoromethane	100			85-115	%REC	1	4/15/2015 03:28
Surr: Toluene-d8	99.6			85-110	%REC	1	4/15/2015 03:28

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-010
Collection Date: 4/6/2015 05:55 PM

Work Order: 1504352
Lab ID: 1504352-09
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161321</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 03:53
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 03:53
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 03:53
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 03:53
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 03:53
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 03:53
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 03:53
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 03:53
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 03:53
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 03:53
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 03:53
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 03:53
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 03:53
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 03:53
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 03:53
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 03:53
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 03:53
Acetone	U		3.1	50	µg/L	1	4/15/2015 03:53
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 03:53
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 03:53
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 03:53
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 03:53
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 03:53
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 03:53
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 03:53
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 03:53
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 03:53
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 03:53
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 03:53
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 03:53
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 03:53
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 03:53
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 03:53
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 03:53
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 03:53
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 03:53
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 03:53

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040615-DN-010
Collection Date: 4/6/2015 05:55 PM

Work Order: 1504352
Lab ID: 1504352-09
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 03:53
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 03:53
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 03:53
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 03:53
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 03:53
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 03:53
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 03:53
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 03:53
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 03:53
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 03:53
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 03:53
Surr: 1,2-Dichloroethane-d4	103			75-120	%REC	1	4/15/2015 03:53
Surr: 4-Bromofluorobenzene	93.8			80-110	%REC	1	4/15/2015 03:53
Surr: Dibromofluoromethane	97.5			85-115	%REC	1	4/15/2015 03:53
Surr: Toluene-d8	99.2			85-110	%REC	1	4/15/2015 03:53

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: TB-001
Collection Date: 4/6/2015

Work Order: 1504352
Lab ID: 1504352-10
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161321</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 12:05
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 12:05
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 12:05
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 12:05
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 12:05
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 12:05
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 12:05
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 12:05
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 12:05
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 12:05
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 12:05
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 12:05
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 12:05
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 12:05
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 12:05
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 12:05
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 12:05
Acetone	U		3.1	50	µg/L	1	4/15/2015 12:05
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 12:05
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 12:05
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 12:05
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 12:05
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 12:05
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 12:05
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 12:05
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 12:05
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 12:05
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 12:05
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 12:05
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 12:05
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 12:05
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 12:05
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 12:05
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 12:05
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 12:05
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 12:05
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 12:05

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: TB-001
Collection Date: 4/6/2015

Work Order: 1504352
Lab ID: 1504352-10
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 12:05
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 12:05
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 12:05
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 12:05
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 12:05
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 12:05
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 12:05
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 12:05
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 12:05
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 12:05
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 12:05
Surr: 1,2-Dichloroethane-d4	106			75-120	%REC	1	4/15/2015 12:05
Surr: 4-Bromofluorobenzene	97.3			80-110	%REC	1	4/15/2015 12:05
Surr: Dibromofluoromethane	100			85-115	%REC	1	4/15/2015 12:05
Surr: Toluene-d8	99.8			85-110	%REC	1	4/15/2015 12:05

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 16-Apr-15

Client: Conestoga-Rovers & Associates

Work Order: 1504352

Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **R161321A** Instrument ID **VMS5** Method: **SW8260**

MBLK		Sample ID: VBK2-150414-R161321A				Units: µg/L		Analysis Date: 4/14/2015 10:49 PM		
Client ID:		Run ID: VMS5_150414A				SeqNo: 3226388		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	U	1.0								
1,1,2,2-Tetrachloroethane	U	1.0								
1,1,2-Trichloroethane	U	1.0								
1,1,2-Trichlorotrifluoroethane	U	1.0								
1,1-Dichloroethane	U	1.0								
1,1-Dichloroethene	U	1.0								
1,2,4-Trichlorobenzene	U	1.0								
1,2-Dibromo-3-chloropropane	U	1.0								
1,2-Dibromoethane	U	1.0								
1,2-Dichlorobenzene	U	1.0								
1,2-Dichloroethane	U	1.0								
1,2-Dichloropropane	U	1.0								
1,3-Dichlorobenzene	U	1.0								
1,4-Dichlorobenzene	U	1.0								
2-Butanone	U	5.0								
2-Hexanone	U	5.0								
4-Methyl-2-pentanone	U	1.0								
Acetone	U	10								
Benzene	U	1.0								
Bromodichloromethane	U	1.0								
Bromoform	U	1.0								
Bromomethane	U	1.0								
Carbon disulfide	U	1.0								
Carbon tetrachloride	U	1.0								
Chlorobenzene	U	1.0								
Chloroethane	U	1.0								
Chloroform	U	1.0								
Chloromethane	U	1.0								
cis-1,2-Dichloroethene	U	1.0								
cis-1,3-Dichloropropene	U	1.0								
Cyclohexane	U	1.0								
Dibromochloromethane	U	1.0								
Dichlorodifluoromethane	U	1.0								
Ethylbenzene	U	1.0								
Isopropylbenzene	U	1.0								
Methyl acetate	U	2.0								
Methyl tert-butyl ether	U	1.0								
Methylcyclohexane	U	1.0								
Methylene chloride	U	5.0								
Styrene	U	1.0								
Tetrachloroethene	U	1.0								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504352
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: R161321A	Instrument ID VMS5	Method: SW8260						
Toluene	U	1.0						
trans-1,2-Dichloroethene	U	1.0						
trans-1,3-Dichloropropene	U	1.0						
Trichloroethene	U	1.0						
Trichlorofluoromethane	U	1.0						
Vinyl chloride	U	1.0						
Xylenes, Total	U	3.0						
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>20.41</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>102</i>	<i>75-120</i>	<i>0</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>19.26</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>96.3</i>	<i>80-110</i>	<i>0</i>	
<i>Surr: Dibromofluoromethane</i>	<i>20.58</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>103</i>	<i>85-115</i>	<i>0</i>	
<i>Surr: Toluene-d8</i>	<i>19.92</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>99.6</i>	<i>85-110</i>	<i>0</i>	

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Client: Conestoga-Rovers & Associates
Work Order: 1504352
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **R161321A** Instrument ID **VMS5** Method: **SW8260**

LCS		Sample ID: VLCSW1-150414-R161321A				Units: µg/L		Analysis Date: 4/14/2015 09:33 PM		
Client ID:		Run ID: VMS5_150414A				SeqNo: 3226387		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	21.16	1.0	20	0	106	75-130	0			
1,1,2,2-Tetrachloroethane	22.7	1.0	20	0	114	75-130	0			
1,1,2-Trichloroethane	20.95	1.0	20	0	105	75-125	0			
1,1-Dichloroethane	22.41	1.0	20	0	112	75-133	0			
1,1-Dichloroethene	21.19	1.0	20	0	106	70-145	0			
1,2,4-Trichlorobenzene	21.27	1.0	20	0	106	70-135	0			
1,2-Dibromo-3-chloropropane	22.25	1.0	20	0	111	60-130	0			
1,2-Dibromoethane	27.51	1.0	20	0	138	80-150	0			
1,2-Dichlorobenzene	21.43	1.0	20	0	107	70-130	0			
1,2-Dichloroethane	22.02	1.0	20	0	110	78-125	0			
1,2-Dichloropropane	21.22	1.0	20	0	106	75-125	0			
1,3-Dichlorobenzene	21.79	1.0	20	0	109	75-130	0			
1,4-Dichlorobenzene	22.22	1.0	20	0	111	75-130	0			
2-Butanone	23.92	5.0	20	0	120	55-150	0			
2-Hexanone	22.73	5.0	20	0	114	60-135	0			
4-Methyl-2-pentanone	31.36	1.0	20	0	157	77-178	0			
Acetone	24.38	10	20	0	122	60-160	0			
Benzene	21.36	1.0	20	0	107	85-125	0			
Bromodichloromethane	20.94	1.0	20	0	105	75-125	0			
Bromoform	22.34	1.0	20	0	112	60-125	0			
Bromomethane	20.98	1.0	20	0	105	30-185	0			
Carbon disulfide	22.72	1.0	20	0	114	60-165	0			
Carbon tetrachloride	20.32	1.0	20	0	102	65-140	0			
Chlorobenzene	21.04	1.0	20	0	105	80-120	0			
Chloroethane	18.44	1.0	20	0	92.2	50-140	0			
Chloroform	22.31	1.0	20	0	112	80-130	0			
Chloromethane	16.04	1.0	20	0	80.2	50-130	0			
cis-1,2-Dichloroethene	23.45	1.0	20	0	117	75-134	0			
cis-1,3-Dichloropropene	21.02	1.0	20	0	105	70-130	0			
Dibromochloromethane	19.49	1.0	20	0	97.4	60-115	0			
Dichlorodifluoromethane	12.25	1.0	20	0	61.2	20-120	0			
Ethylbenzene	21.51	1.0	20	0	108	85-125	0			
Isopropylbenzene	21.51	1.0	20	0	108	80-127	0			
Methyl tert-butyl ether	24.1	1.0	20	0	120	80-130	0			
Methylene chloride	21.81	5.0	20	0	109	75-140	0			
Styrene	21.14	1.0	20	0	106	85-125	0			
Tetrachloroethene	20.82	1.0	20	0	104	77-138	0			
Toluene	21.08	1.0	20	0	105	85-125	0			
trans-1,2-Dichloroethene	22.54	1.0	20	0	113	80-140	0			
trans-1,3-Dichloropropene	20.5	1.0	20	0	102	81-123	0			
Trichloroethene	20.84	1.0	20	0	104	84-130	0			
Trichlorofluoromethane	18.36	1.0	20	0	91.8	60-140	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504352
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: R161321A	Instrument ID VMS5		Method: SW8260				
Vinyl chloride	19.58	1.0	20	0	97.9	50-136	0
Xylenes, Total	64.36	3.0	60	0	107	80-126	0
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>20.32</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>102</i>	<i>75-120</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>20.71</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>104</i>	<i>80-110</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>20.09</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>100</i>	<i>85-115</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>20.07</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>100</i>	<i>85-110</i>	<i>0</i>

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Client: Conestoga-Rovers & Associates
Work Order: 1504352
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **R161321A** Instrument ID **VMS5** Method: **SW8260**

MS				Sample ID: 1504352-05A MS			Units: µg/L		Analysis Date: 4/15/2015 07:16 AM	
Client ID: GW-17322-040615-DN-006				Run ID: VMS5_150414A			SeqNo: 3226401		Prep Date:	
									DF: 50	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1358	50	1000	381.5	97.6	75-130	0			
1,1,2,2-Tetrachloroethane	999	50	1000	0	99.9	75-130	0			
1,1,2-Trichloroethane	965	50	1000	0	96.5	75-125	0			
1,1-Dichloroethane	919	50	1000	57	86.2	75-133	0			
1,1-Dichloroethene	947.5	50	1000	0	94.8	70-145	0			
1,2,4-Trichlorobenzene	925	50	1000	0	92.5	70-135	0			
1,2-Dibromo-3-chloropropane	848	50	1000	0	84.8	60-130	0			
1,2-Dibromoethane	1213	50	1000	0	121	80-150	0			
1,2-Dichlorobenzene	968.5	50	1000	0	96.8	70-130	0			
1,2-Dichloroethane	1014	50	1000	0	101	78-125	0			
1,2-Dichloropropane	967	50	1000	0	96.7	75-125	0			
1,3-Dichlorobenzene	981	50	1000	0	98.1	75-130	0			
1,4-Dichlorobenzene	987.5	50	1000	0	98.8	75-130	0			
2-Butanone	892	250	1000	0	89.2	55-150	0			
2-Hexanone	985	250	1000	0	98.5	60-135	0			
4-Methyl-2-pentanone	1343	50	1000	0	134	77-178	0			
Acetone	1024	500	1000	0	102	60-160	0			
Benzene	1003	50	1000	0	100	85-125	0			
Bromodichloromethane	957	50	1000	0	95.7	75-125	0			
Bromoform	995.5	50	1000	0	99.6	60-125	0			
Bromomethane	760	50	1000	0	76	30-185	0			
Carbon disulfide	941.5	50	1000	0	94.2	60-165	0			
Carbon tetrachloride	1019	50	1000	0	102	65-140	0			
Chlorobenzene	950.5	50	1000	0	95	80-120	0			
Chloroethane	746.5	50	1000	0	74.6	50-140	0			
Chloroform	873.5	50	1000	0	87.4	80-130	0			
Chloromethane	640.5	50	1000	0	64	50-130	0			
cis-1,2-Dichloroethene	910.5	50	1000	0	91	75-134	0			
cis-1,3-Dichloropropene	920	50	1000	0	92	70-130	0			
Dibromochloromethane	877	50	1000	0	87.7	60-115	0			
Dichlorodifluoromethane	477.5	50	1000	0	47.8	20-120	0			
Ethylbenzene	994	50	1000	0	99.4	85-125	0			
Isopropylbenzene	990	50	1000	0	99	80-127	0			
Methyl tert-butyl ether	914.5	50	1000	0	91.4	80-130	0			
Methylene chloride	875	250	1000	0	87.5	75-140	0			
Styrene	941	50	1000	0	94.1	85-125	0			
Tetrachloroethene	989.5	50	1000	0	99	77-138	0			
Toluene	1006	50	1000	0	101	85-125	0			
trans-1,2-Dichloroethene	901	50	1000	0	90.1	80-140	0			
trans-1,3-Dichloropropene	904.5	50	1000	0	90.4	81-123	0			
Trichloroethene	2008	50	1000	1104	90.4	84-130	0			
Trichlorofluoromethane	831.5	50	1000	0	83.2	60-140	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504352
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: R161321A	Instrument ID VMS5		Method: SW8260				
Vinyl chloride	840.5	50	1000	0	84	50-136	0
Xylenes, Total	2961	150	3000	0	98.7	80-126	0
<i>Surr: 1,2-Dichloroethane-d4</i>	993	0	1000	0	99.3	75-120	0
<i>Surr: 4-Bromofluorobenzene</i>	1022	0	1000	0	102	80-110	0
<i>Surr: Dibromofluoromethane</i>	940	0	1000	0	94	85-115	0
<i>Surr: Toluene-d8</i>	993.5	0	1000	0	99.4	85-110	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504352
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **R161321A** Instrument ID **VMS5** Method: **SW8260**

MSD				Sample ID: 1504352-05A MSD			Units: µg/L		Analysis Date: 4/15/2015 07:41 AM	
Client ID: GW-17322-040615-DN-006				Run ID: VMS5_150414A			SeqNo: 3226402		Prep Date:	
									DF: 50	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1388	50	1000	381.5	101	75-130	1358	2.18	30	
1,1,2,2-Tetrachloroethane	981.5	50	1000	0	98.2	75-130	999	1.77	30	
1,1,2-Trichloroethane	967.5	50	1000	0	96.8	75-125	965	0.259	30	
1,1-Dichloroethane	907.5	50	1000	57	85	75-133	919	1.26	30	
1,1-Dichloroethene	924.5	50	1000	0	92.4	70-145	947.5	2.46	30	
1,2,4-Trichlorobenzene	930	50	1000	0	93	70-135	925	0.539	30	
1,2-Dibromo-3-chloropropane	845	50	1000	0	84.5	60-130	848	0.354	30	
1,2-Dibromoethane	1232	50	1000	0	123	80-150	1213	1.51	30	
1,2-Dichlorobenzene	977.5	50	1000	0	97.8	70-130	968.5	0.925	30	
1,2-Dichloroethane	1006	50	1000	0	101	78-125	1014	0.792	30	
1,2-Dichloropropane	960.5	50	1000	0	96	75-125	967	0.674	30	
1,3-Dichlorobenzene	990.5	50	1000	0	99	75-130	981	0.964	30	
1,4-Dichlorobenzene	1002	50	1000	0	100	75-130	987.5	1.41	30	
2-Butanone	914.5	250	1000	0	91.4	55-150	892	2.49	30	
2-Hexanone	933	250	1000	0	93.3	60-135	985	5.42	30	
4-Methyl-2-pentanone	1200	50	1000	0	120	77-178	1343	11.2	30	
Acetone	996.5	500	1000	0	99.6	60-160	1024	2.72	30	
Benzene	1013	50	1000	0	101	85-125	1003	0.992	30	
Bromodichloromethane	956	50	1000	0	95.6	75-125	957	0.105	30	
Bromoform	989.5	50	1000	0	99	60-125	995.5	0.605	30	
Bromomethane	801	50	1000	0	80.1	30-185	760	5.25	30	
Carbon disulfide	925	50	1000	0	92.5	60-165	941.5	1.77	30	
Carbon tetrachloride	1008	50	1000	0	101	65-140	1019	1.13	30	
Chlorobenzene	968	50	1000	0	96.8	80-120	950.5	1.82	30	
Chloroethane	743	50	1000	0	74.3	50-140	746.5	0.47	30	
Chloroform	851	50	1000	0	85.1	80-130	873.5	2.61	30	
Chloromethane	629	50	1000	0	62.9	50-130	640.5	1.81	30	
cis-1,2-Dichloroethene	899	50	1000	0	89.9	75-134	910.5	1.27	30	
cis-1,3-Dichloropropene	927	50	1000	0	92.7	70-130	920	0.758	30	
Dibromochloromethane	891.5	50	1000	0	89.2	60-115	877	1.64	30	
Dichlorodifluoromethane	447	50	1000	0	44.7	20-120	477.5	6.6	30	
Ethylbenzene	1004	50	1000	0	100	85-125	994	1.05	30	
Isopropylbenzene	993	50	1000	0	99.3	80-127	990	0.303	30	
Methyl tert-butyl ether	896	50	1000	0	89.6	80-130	914.5	2.04	30	
Methylene chloride	855.5	250	1000	0	85.6	75-140	875	2.25	30	
Styrene	950	50	1000	0	95	85-125	941	0.952	30	
Tetrachloroethene	1013	50	1000	0	101	77-138	989.5	2.35	30	
Toluene	1010	50	1000	0	101	85-125	1006	0.447	30	
trans-1,2-Dichloroethene	899.5	50	1000	0	90	80-140	901	0.167	30	
trans-1,3-Dichloropropene	900	50	1000	0	90	81-123	904.5	0.499	30	
Trichloroethene	2040	50	1000	1104	93.6	84-130	2008	1.61	30	
Trichlorofluoromethane	797	50	1000	0	79.7	60-140	831.5	4.24	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504352
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: R161321A	Instrument ID VMS5			Method: SW8260					
Vinyl chloride	813.5	50	1000	0	81.4	50-136	840.5	3.26	30
Xylenes, Total	2956	150	3000	0	98.5	80-126	2961	0.186	30
Surr: 1,2-Dichloroethane-d4	975	0	1000	0	97.5	75-120	993	1.83	30
Surr: 4-Bromofluorobenzene	1006	0	1000	0	101	80-110	1022	1.53	30
Surr: Dibromofluoromethane	943	0	1000	0	94.3	85-115	940	0.319	30
Surr: Toluene-d8	1000	0	1000	0	100	85-110	993.5	0.652	30

The following samples were analyzed in this batch:	1504352-01A	1504352-02A	1504352-03A
	1504352-04A	1504352-05A	1504352-06A
	1504352-07A	1504352-08A	1504352-09A
	1504352-10A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



**CONESTOGA-ROVERS
& ASSOCIATES**

CHAIN OF CUSTODY RECORD

14496 Sheldon Road, Suite #200, Plymouth, Michigan 48170

Phone: (734) 453-5123

Fax: (734) 453-5201

1504352
COC NO.: **PL-13526**

PAGE 1 OF 1

(See Reverse Side for Instructions)

Project No./Phase/Task Code: 17322-TD3-Y15				Laboratory Name: ALS				Lab Location: Holland, MI				SSOW ID: 17322-004							
Project Name: PCC Validation				Lab Contact: TB				Lab Quote No:				Cooler No:							
Project Location: Pontiac, MI				SAMPLE TYPE				CONTAINER QUANTITY & PRESERVATION				ANALYSIS REQUESTED (See Back of COC for Definitions)							
Chemistry Contact: RF				Matrix Code (see back of COC) Grab (G) or Comp (C) Unpreserved Hydrochloric Acid (HCl) Nitric Acid (HNO ₃) Sulfuric Acid (H ₂ SO ₄) Sodium Hydroxide (NaOH) Methanol/Water (Soil VOC) EnCores 31.5-g/1x25-g Other: Total Containers/Sample TEL-VOL				Carrier: Fed Ex				Airbill No:							
Sampler(s): DN, EM												Date Shipped: 4-6-15				COMMENTS/ SPECIAL INSTRUCTIONS:			
Item	SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)		DATE (mm/dd/yy)	TIME (hh:mm)	Matrix Code	Grab (G) or Comp (C)	Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO ₃)	Sulfuric Acid (H ₂ SO ₄)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 31.5-g/1x25-g	Other:	Total Containers/Sample	TEL-VOL	MS/MSD Request	COMMENTS/ SPECIAL INSTRUCTIONS:	
1	GW: 17322-04-0015-DN-001		4-6-15	1200	WG	G		X							3	X			
2	-002			1510				X							3	X			
3	-003			1545				X							3	X			
4	-004			1650				X							3	X			
5	-006			1315				X							3	X			
6	-007			1520				X							3	X			
7	-008			1640				X							3	X			
8	-009			1750				X							3	X			
9	-010			1750				X							3	X			
10	TB-001				TB			X							1	X			
11																			
12																			
13																			
14																			
15																			
TAT Required in business days (use separate COCs for different TATs): ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☒ 2 Week ☐ Other:																Total Number of Containers: 28		Notes/ Special Requirements: 3.8fc (u)	
All Samples in Cooler must be on COC.																			
RELINQUISHED BY		COMPANY		DATE		TIME		RECEIVED BY		COMPANY		DATE		TIME					
1 - Don Norton		CRA		4-6-15		1900		2 - [Signature]		ALS		4/7/15		0945					
2								3											
3								4											

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT - ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE - Fully Executed Copy (CRA)

YELLOW - Receiving Laboratory Copy

PINK - Shipper

GOLDENROD - Sampling Crew

CRA Form: COC-10A (20110804)

FedEx NEW Package Express US Airbill

FedEx Tracking Number 8065 1269 0068

1 From

Date 4-6-15

Sender's Name Don Newton

Phone 419 629-1339

Company CRA

Address 1305 E Perkins Ave

City Sandusky

State OH ZIP 44870

2 Your Internal Billing Reference

17322 - 103 - Y15

3 To Recipient's Name

Receiving

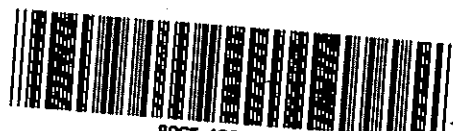
Phone 616 399-1070

Company ALS Lab

Address 3352 128th Ave.

City Holland

State MI ZIP 49424-7263



8065 1269 0068

Form ID No. 0200

Recipient's Copy

Packages up to 150 lbs. For packages over 150 lbs., use the new FedEx Express Freight SM Airbill.

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

Next Business Day

- ☐ FedEx First Overnight
Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☒ FedEx Priority Overnight
Next business morning. * Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☐ FedEx Standard Overnight
Next business afternoon. * Saturday Delivery NOT available.

2 or 3 Business Days

- ☐ FedEx 2Day A.M.
Second business morning. * Saturday Delivery NOT available.
- ☐ FedEx 2Day
Second business afternoon. * Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☐ FedEx Express Saver
Third business day. * Saturday Delivery NOT available.

5 Packaging

* Declared value limit \$500.

- ☐ FedEx Envelope*
- ☐ FedEx Pak*
- ☐ FedEx Box
- ☐ FedEx Tube
- ☒ Other

6 Special Handling and Delivery Signature Options

- ☐ SATURDAY Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.
- ☐ No Signature Required
Package may be left without obtaining a signature for delivery.
- ☐ Direct Signature
Someone at recipient's address may sign for delivery. Fee applies.
- ☐ Indirect Signature
If not one is available at recipient's address, someone at a neighboring address may sign for delivery. For confidential deliveries only. Fee applies.
- ☒ No
Does this shipment contain dangerous goods? One box must be checked.
- ☐ Yes
As per attached Shipper's Declaration.
- ☐ Yes
Shipper's Declaration not required.
- ☐ Dry Ice
Dry Ice, I, UN 1845
- ☐ Cargo Aircraft Only

7 Payment Bill to:

- ☒ Sender
Account No. in Section I will be billed.
 - ☐ Recipient
 - ☐ Third Party
 - ☐ Credit Card
 - ☐ Cash/Check
- Total Packages 1 Total Weight 34 lbs.
- Credit Card Auth.

Your liability is limited to USD\$500 unless you declare a higher value. See the current FedEx Service Guide for details.

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644

fedex.com 1800.fedex 1800.463.3339



Align Open End of FEDEX 1 with this mark

Sample Receipt Checklist

Client Name: CRA - PLYMOUTH

Date/Time Received: 07-Apr-15 09:45

Work Order: 1504352

Received by: DS

Checklist completed by Diane Shaw 07-Apr-15
eSignature Date

Reviewed by: Chad Whelton 07-Apr-15
eSignature Date

Matrices: Groundwater

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☒	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☒	No ☐	
Sample(s) received on ice?	Yes ☒	No ☐	
Temperature(s)/Thermometer(s):	<u>3.8 c</u> <u>SR2</u>		
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>4/7/2015 12:31:27 PM</u>		
Water - VOA vials have zero headspace?	Yes ☒	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☒
pH adjusted?	Yes ☐	No ☐	N/A ☒
pH adjusted by:	<u>-</u>		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:



17-Apr-2015

Rawa Fleisher
Conestoga-Rovers & Associates
14496 Sheldon Road
Suite 200
Plymouth, MI 48170

Re: **PCC-Validation (017322-T01Y13)**

Work Order: **1504433**

Dear Rawa,

ALS Environmental received 14 samples on 08-Apr-2015 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 46.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Chad Whelton

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager



Certificate No: MN 532786

Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Work Order: 1504433

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1504433-01	GW-17322-040715-DN-011	Groundwater		4/7/2015 08:45	4/8/2015 09:30	☐
1504433-02	GW-17322-040715-DN-012	Groundwater		4/7/2015 09:15	4/8/2015 09:30	☐
1504433-03	GW-17322-040715-DN-013	Groundwater		4/7/2015 11:15	4/8/2015 09:30	☐
1504433-04	GW-17322-040715-DN-014	Groundwater		4/7/2015 11:35	4/8/2015 09:30	☐
1504433-05	GW-17322-040715-DN-015	Groundwater		4/7/2015 12:35	4/8/2015 09:30	☐
1504433-06	GW-17322-040715-DN-016	Groundwater		4/7/2015 10:30	4/8/2015 09:30	☐
1504433-07	GW-17322-040715-DN-017	Groundwater		4/7/2015 12:40	4/8/2015 09:30	☐
1504433-08	GW-17322-040715-DN-018	Groundwater		4/7/2015 13:55	4/8/2015 09:30	☐
1504433-09	GW-17322-040715-DN-019	Groundwater		4/7/2015 15:05	4/8/2015 09:30	☐
1504433-10	GW-17322-040715-DN-020	Groundwater		4/7/2015 13:50	4/8/2015 09:30	☐
1504433-11	GW-17322-040715-DN-021	Groundwater		4/7/2015 16:15	4/8/2015 09:30	☐
1504433-12	GW-17322-040715-DN-022	Groundwater		4/7/2015 16:25	4/8/2015 09:30	☐
1504433-13	GW-17322-040715-DN-023	Groundwater		4/7/2015 16:50	4/8/2015 09:30	☐
1504433-14	GW-17322-040715-TB002	Water		4/7/2015	4/8/2015 09:30	☐

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Work Order: 1504433

Case Narrative

Batch R161332A, Method VOC_8260_W, Sample 1504433-09A MS: The MS recovery was below the lower control limit for Methyl tert-butyl ether. However, the MSD recovery and RPD between the MS and MSD were within control limits. No qualification is required.

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
WorkOrder: 1504433

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
µg/L	Micrograms per Liter

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-011
Collection Date: 4/7/2015 08:45 AM

Work Order: 1504433
Lab ID: 1504433-01
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161332</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 13:55
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 13:55
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 13:55
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 13:55
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 13:55
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 13:55
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 13:55
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 13:55
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 13:55
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 13:55
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 13:55
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 13:55
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 13:55
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 13:55
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 13:55
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 13:55
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 13:55
Acetone	U		3.1	50	µg/L	1	4/15/2015 13:55
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 13:55
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 13:55
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 13:55
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 13:55
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 13:55
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 13:55
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 13:55
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 13:55
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 13:55
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 13:55
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 13:55
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 13:55
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 13:55
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 13:55
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 13:55
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 13:55
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 13:55
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 13:55
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 13:55

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-011
Collection Date: 4/7/2015 08:45 AM

Work Order: 1504433
Lab ID: 1504433-01
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 13:55
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 13:55
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 13:55
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 13:55
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 13:55
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 13:55
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 13:55
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 13:55
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 13:55
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 13:55
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 13:55
Surr: 1,2-Dichloroethane-d4	103			75-120	%REC	1	4/15/2015 13:55
Surr: 4-Bromofluorobenzene	96.2			80-110	%REC	1	4/15/2015 13:55
Surr: Dibromofluoromethane	96.0			85-115	%REC	1	4/15/2015 13:55
Surr: Toluene-d8	100			85-110	%REC	1	4/15/2015 13:55

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-012
Collection Date: 4/7/2015 09:15 AM

Work Order: 1504433
Lab ID: 1504433-02
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161332</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 14:20
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 14:20
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 14:20
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 14:20
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 14:20
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 14:20
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 14:20
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 14:20
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 14:20
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 14:20
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 14:20
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 14:20
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 14:20
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 14:20
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 14:20
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 14:20
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 14:20
Acetone	U		3.1	50	µg/L	1	4/15/2015 14:20
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 14:20
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 14:20
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 14:20
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 14:20
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 14:20
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 14:20
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 14:20
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 14:20
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 14:20
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 14:20
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 14:20
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 14:20
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 14:20
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 14:20
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 14:20
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 14:20
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 14:20
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 14:20
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 14:20

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-012
Collection Date: 4/7/2015 09:15 AM

Work Order: 1504433
Lab ID: 1504433-02
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 14:20
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 14:20
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 14:20
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 14:20
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 14:20
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 14:20
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 14:20
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 14:20
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 14:20
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 14:20
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 14:20
Surr: 1,2-Dichloroethane-d4	101			75-120	%REC	1	4/15/2015 14:20
Surr: 4-Bromofluorobenzene	96.2			80-110	%REC	1	4/15/2015 14:20
Surr: Dibromofluoromethane	93.9			85-115	%REC	1	4/15/2015 14:20
Surr: Toluene-d8	98.8			85-110	%REC	1	4/15/2015 14:20

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-013
Collection Date: 4/7/2015 11:15 AM

Work Order: 1504433
Lab ID: 1504433-03
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161332</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 14:45
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 14:45
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 14:45
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 14:45
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 14:45
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 14:45
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 14:45
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 14:45
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 14:45
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 14:45
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 14:45
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 14:45
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 14:45
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 14:45
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 14:45
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 14:45
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 14:45
Acetone	U		3.1	50	µg/L	1	4/15/2015 14:45
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 14:45
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 14:45
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 14:45
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 14:45
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 14:45
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 14:45
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 14:45
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 14:45
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 14:45
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 14:45
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 14:45
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 14:45
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 14:45
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 14:45
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 14:45
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 14:45
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 14:45
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 14:45
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 14:45

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-013
Collection Date: 4/7/2015 11:15 AM

Work Order: 1504433
Lab ID: 1504433-03
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 14:45
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 14:45
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 14:45
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 14:45
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 14:45
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 14:45
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 14:45
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 14:45
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 14:45
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 14:45
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 14:45
Surr: 1,2-Dichloroethane-d4	98.4			75-120	%REC	1	4/15/2015 14:45
Surr: 4-Bromofluorobenzene	95.2			80-110	%REC	1	4/15/2015 14:45
Surr: Dibromofluoromethane	94.8			85-115	%REC	1	4/15/2015 14:45
Surr: Toluene-d8	100			85-110	%REC	1	4/15/2015 14:45

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-014
Collection Date: 4/7/2015 11:35 AM

Work Order: 1504433
Lab ID: 1504433-04
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161332</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 15:10
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 15:10
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 15:10
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 15:10
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 15:10
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 15:10
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 15:10
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 15:10
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 15:10
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 15:10
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 15:10
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 15:10
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 15:10
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 15:10
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 15:10
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 15:10
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 15:10
Acetone	U		3.1	50	µg/L	1	4/15/2015 15:10
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 15:10
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 15:10
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 15:10
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 15:10
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 15:10
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 15:10
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 15:10
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 15:10
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 15:10
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 15:10
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 15:10
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 15:10
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 15:10
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 15:10
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 15:10
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 15:10
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 15:10
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 15:10
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 15:10

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-014
Collection Date: 4/7/2015 11:35 AM

Work Order: 1504433
Lab ID: 1504433-04
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 15:10
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 15:10
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 15:10
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 15:10
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 15:10
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 15:10
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 15:10
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 15:10
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 15:10
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 15:10
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 15:10
Surr: 1,2-Dichloroethane-d4	99.1			75-120	%REC	1	4/15/2015 15:10
Surr: 4-Bromofluorobenzene	95.6			80-110	%REC	1	4/15/2015 15:10
Surr: Dibromofluoromethane	93.2			85-115	%REC	1	4/15/2015 15:10
Surr: Toluene-d8	98.2			85-110	%REC	1	4/15/2015 15:10

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-015
Collection Date: 4/7/2015 12:35 PM

Work Order: 1504433
Lab ID: 1504433-05
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161332</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 15:35
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 15:35
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 15:35
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 15:35
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 15:35
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 15:35
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 15:35
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 15:35
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 15:35
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 15:35
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 15:35
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 15:35
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 15:35
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 15:35
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 15:35
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 15:35
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 15:35
Acetone	U		3.1	50	µg/L	1	4/15/2015 15:35
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 15:35
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 15:35
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 15:35
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 15:35
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 15:35
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 15:35
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 15:35
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 15:35
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 15:35
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 15:35
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 15:35
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 15:35
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 15:35
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 15:35
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 15:35
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 15:35
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 15:35
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 15:35
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 15:35

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-015
Collection Date: 4/7/2015 12:35 PM

Work Order: 1504433
Lab ID: 1504433-05
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 15:35
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 15:35
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 15:35
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 15:35
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 15:35
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 15:35
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 15:35
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 15:35
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 15:35
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 15:35
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 15:35
Surr: 1,2-Dichloroethane-d4	98.2			75-120	%REC	1	4/15/2015 15:35
Surr: 4-Bromofluorobenzene	94.2			80-110	%REC	1	4/15/2015 15:35
Surr: Dibromofluoromethane	93.1			85-115	%REC	1	4/15/2015 15:35
Surr: Toluene-d8	98.6			85-110	%REC	1	4/15/2015 15:35

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-016
Collection Date: 4/7/2015 10:30 AM

Work Order: 1504433
Lab ID: 1504433-06
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161332</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 16:26
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 16:26
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 16:26
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 16:26
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 16:26
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 16:26
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 16:26
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 16:26
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 16:26
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 16:26
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 16:26
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 16:26
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 16:26
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 16:26
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 16:26
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 16:26
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 16:26
Acetone	U		3.1	50	µg/L	1	4/15/2015 16:26
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 16:26
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 16:26
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 16:26
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 16:26
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 16:26
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 16:26
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 16:26
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 16:26
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 16:26
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 16:26
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 16:26
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 16:26
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 16:26
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 16:26
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 16:26
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 16:26
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 16:26
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 16:26
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 16:26

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-016
Collection Date: 4/7/2015 10:30 AM

Work Order: 1504433
Lab ID: 1504433-06
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 16:26
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 16:26
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 16:26
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 16:26
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 16:26
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 16:26
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 16:26
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 16:26
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 16:26
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 16:26
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 16:26
Surr: 1,2-Dichloroethane-d4	98.0			75-120	%REC	1	4/15/2015 16:26
Surr: 4-Bromofluorobenzene	91.5			80-110	%REC	1	4/15/2015 16:26
Surr: Dibromofluoromethane	93.8			85-115	%REC	1	4/15/2015 16:26
Surr: Toluene-d8	98.7			85-110	%REC	1	4/15/2015 16:26

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-017
Collection Date: 4/7/2015 12:40 PM

Work Order: 1504433
Lab ID: 1504433-07
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS							
			SW6020A			Prep: SW3005A / 4/9/15	Analyst: RH
<u>BatchID:</u> 69637							
Aluminum	1,100		2.7	10	µg/L	1	4/9/2015 21:11
Lead	6.6		0.30	3.0	µg/L	1	4/9/2015 21:11
Vanadium	1.7	J	0.46	4.0	µg/L	1	4/9/2015 21:11
VOLATILE ORGANIC COMPOUNDS							
			SW8260				Analyst: BG
<u>BatchID:</u> R161332							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 17:17
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 17:17
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 17:17
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 17:17
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 17:17
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 17:17
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 17:17
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 17:17
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 17:17
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 17:17
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 17:17
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 17:17
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 17:17
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 17:17
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 17:17
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 17:17
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 17:17
Acetone	U		3.1	50	µg/L	1	4/15/2015 17:17
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 17:17
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 17:17
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 17:17
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 17:17
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 17:17
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 17:17
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 17:17
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 17:17
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 17:17
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 17:17
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 17:17
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 17:17
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 17:17
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 17:17

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-017
Collection Date: 4/7/2015 12:40 PM

Work Order: 1504433
Lab ID: 1504433-07
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 17:17
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 17:17
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 17:17
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 17:17
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 17:17
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 17:17
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 17:17
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 17:17
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 17:17
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 17:17
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 17:17
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 17:17
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 17:17
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 17:17
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 17:17
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 17:17
Surr: 1,2-Dichloroethane-d4	99.8			75-120	%REC	1	4/15/2015 17:17
Surr: 4-Bromofluorobenzene	93.4			80-110	%REC	1	4/15/2015 17:17
Surr: Dibromofluoromethane	94.8			85-115	%REC	1	4/15/2015 17:17
Surr: Toluene-d8	98.4			85-110	%REC	1	4/15/2015 17:17

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-018
Collection Date: 4/7/2015 01:55 PM

Work Order: 1504433
Lab ID: 1504433-08
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161332</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 17:42
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 17:42
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 17:42
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 17:42
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 17:42
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 17:42
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 17:42
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 17:42
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 17:42
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 17:42
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 17:42
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 17:42
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 17:42
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 17:42
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 17:42
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 17:42
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 17:42
Acetone	U		3.1	50	µg/L	1	4/15/2015 17:42
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 17:42
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 17:42
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 17:42
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 17:42
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 17:42
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 17:42
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 17:42
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 17:42
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 17:42
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 17:42
cis-1,2-Dichloroethene	9.0		0.25	1.0	µg/L	1	4/15/2015 17:42
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 17:42
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 17:42
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 17:42
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 17:42
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 17:42
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 17:42
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 17:42
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 17:42

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-018
Collection Date: 4/7/2015 01:55 PM

Work Order: 1504433
Lab ID: 1504433-08
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 17:42
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 17:42
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 17:42
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 17:42
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 17:42
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 17:42
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 17:42
Trichloroethene	7.4		0.34	1.0	µg/L	1	4/15/2015 17:42
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 17:42
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 17:42
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 17:42
Surr: 1,2-Dichloroethane-d4	97.8			75-120	%REC	1	4/15/2015 17:42
Surr: 4-Bromofluorobenzene	93.4			80-110	%REC	1	4/15/2015 17:42
Surr: Dibromofluoromethane	96.2			85-115	%REC	1	4/15/2015 17:42
Surr: Toluene-d8	100			85-110	%REC	1	4/15/2015 17:42

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-019
Collection Date: 4/7/2015 03:05 PM

Work Order: 1504433
Lab ID: 1504433-09
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS							
			SW6020A			Prep: SW3005A / 4/9/15	Analyst: RH
BatchID: 69637							
Aluminum	6.3	J	2.7	10	µg/L	1	4/9/2015 21:17
Lead	0.47	J	0.30	3.0	µg/L	1	4/9/2015 21:17
Vanadium	1.3	J	0.46	4.0	µg/L	1	4/9/2015 21:17
VOLATILE ORGANIC COMPOUNDS							
			SW8260				Analyst: BG
BatchID: R161332							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 18:08
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 18:08
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 18:08
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 18:08
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 18:08
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 18:08
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 18:08
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 18:08
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 18:08
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 18:08
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 18:08
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 18:08
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 18:08
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 18:08
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 18:08
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 18:08
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 18:08
Acetone	U		3.1	50	µg/L	1	4/15/2015 18:08
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 18:08
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 18:08
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 18:08
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 18:08
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 18:08
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 18:08
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 18:08
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 18:08
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 18:08
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 18:08
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 18:08
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 18:08
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 18:08
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 18:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-019
Collection Date: 4/7/2015 03:05 PM

Work Order: 1504433
Lab ID: 1504433-09
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 18:08
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 18:08
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 18:08
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 18:08
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 18:08
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 18:08
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 18:08
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 18:08
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 18:08
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 18:08
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 18:08
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 18:08
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 18:08
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 18:08
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 18:08
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 18:08
Surr: 1,2-Dichloroethane-d4	98.3			75-120	%REC	1	4/15/2015 18:08
Surr: 4-Bromofluorobenzene	93.0			80-110	%REC	1	4/15/2015 18:08
Surr: Dibromofluoromethane	95.2			85-115	%REC	1	4/15/2015 18:08
Surr: Toluene-d8	97.4			85-110	%REC	1	4/15/2015 18:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-020
Collection Date: 4/7/2015 01:50 PM

Work Order: 1504433
Lab ID: 1504433-10
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS							
			SW6020A			Prep: SW3005A / 4/9/15	Analyst: ML
<u>BatchID: 69637</u>							
Aluminum	5,200		2.7	10	µg/L	1	4/10/2015 16:27
Vanadium	11		0.46	4.0	µg/L	1	4/9/2015 21:57
<u>BatchID: 69637</u>							
Lead	19		1.5	15	µg/L	5	4/13/2015 14:51
VOLATILE ORGANIC COMPOUNDS							
			SW8260				Analyst: BG
<u>BatchID: R161332</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 18:33
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 18:33
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 18:33
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 18:33
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 18:33
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 18:33
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 18:33
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 18:33
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 18:33
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 18:33
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 18:33
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 18:33
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 18:33
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 18:33
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 18:33
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 18:33
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 18:33
Acetone	U		3.1	50	µg/L	1	4/15/2015 18:33
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 18:33
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 18:33
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 18:33
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 18:33
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 18:33
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 18:33
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 18:33
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 18:33
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 18:33
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 18:33
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 18:33
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 18:33
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 18:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-020
Collection Date: 4/7/2015 01:50 PM

Work Order: 1504433
Lab ID: 1504433-10
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 18:33
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 18:33
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 18:33
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 18:33
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 18:33
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 18:33
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 18:33
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 18:33
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 18:33
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 18:33
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 18:33
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 18:33
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 18:33
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 18:33
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 18:33
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 18:33
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 18:33
Surr: 1,2-Dichloroethane-d4	95.6			75-120	%REC	1	4/15/2015 18:33
Surr: 4-Bromofluorobenzene	93.4			80-110	%REC	1	4/15/2015 18:33
Surr: Dibromofluoromethane	95.0			85-115	%REC	1	4/15/2015 18:33
Surr: Toluene-d8	97.2			85-110	%REC	1	4/15/2015 18:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-021
Collection Date: 4/7/2015 04:15 PM

Work Order: 1504433
Lab ID: 1504433-11
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS							
			SW6020A			Prep: SW3005A / 4/9/15	Analyst: ML
BatchID: 69637							
Aluminum	140		2.7	10	µg/L	1	4/10/2015 16:32
Vanadium	1.9	J	0.46	4.0	µg/L	1	4/9/2015 22:02
BatchID: 69637							
Lead		U	1.5	15	µg/L	5	4/13/2015 15:00
VOLATILE ORGANIC COMPOUNDS							
			SW8260				Analyst: BG
BatchID: R161332							
1,1,1-Trichloroethane		U	0.19	1.0	µg/L	1	4/15/2015 18:58
1,1,2,2-Tetrachloroethane		U	0.34	1.0	µg/L	1	4/15/2015 18:58
1,1,2-Trichloroethane		U	0.25	1.0	µg/L	1	4/15/2015 18:58
1,1,2-Trichlorotrifluoroethane		U	0.47	1.0	µg/L	1	4/15/2015 18:58
1,1-Dichloroethane		U	0.21	1.0	µg/L	1	4/15/2015 18:58
1,1-Dichloroethene		U	0.24	1.0	µg/L	1	4/15/2015 18:58
1,2,4-Trichlorobenzene		U	0.19	5.0	µg/L	1	4/15/2015 18:58
1,2-Dibromo-3-chloropropane		U	0.42	1.0	µg/L	1	4/15/2015 18:58
1,2-Dibromoethane		U	0.34	1.0	µg/L	1	4/15/2015 18:58
1,2-Dichlorobenzene		U	0.22	1.0	µg/L	1	4/15/2015 18:58
1,2-Dichloroethane		U	0.26	1.0	µg/L	1	4/15/2015 18:58
1,2-Dichloropropane		U	0.26	1.0	µg/L	1	4/15/2015 18:58
1,3-Dichlorobenzene		U	0.21	1.0	µg/L	1	4/15/2015 18:58
1,4-Dichlorobenzene		U	0.20	1.0	µg/L	1	4/15/2015 18:58
2-Butanone		U	0.87	25	µg/L	1	4/15/2015 18:58
2-Hexanone		U	0.15	50	µg/L	1	4/15/2015 18:58
4-Methyl-2-pentanone		U	0.15	50	µg/L	1	4/15/2015 18:58
Acetone		U	3.1	50	µg/L	1	4/15/2015 18:58
Benzene		U	0.25	1.0	µg/L	1	4/15/2015 18:58
Bromodichloromethane		U	0.16	1.0	µg/L	1	4/15/2015 18:58
Bromoform		U	0.099	1.0	µg/L	1	4/15/2015 18:58
Bromomethane		U	1.0	5.0	µg/L	1	4/15/2015 18:58
Carbon disulfide		U	0.26	5.0	µg/L	1	4/15/2015 18:58
Carbon tetrachloride		U	0.14	1.0	µg/L	1	4/15/2015 18:58
Chlorobenzene		U	0.19	1.0	µg/L	1	4/15/2015 18:58
Chloroethane		U	0.21	5.0	µg/L	1	4/15/2015 18:58
Chloroform		U	0.25	1.0	µg/L	1	4/15/2015 18:58
Chloromethane		U	0.25	5.0	µg/L	1	4/15/2015 18:58
cis-1,2-Dichloroethene		U	0.25	1.0	µg/L	1	4/15/2015 18:58
cis-1,3-Dichloropropene		U	0.24	1.0	µg/L	1	4/15/2015 18:58
Cyclohexane		U	0.31	1.0	µg/L	1	4/15/2015 18:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-021
Collection Date: 4/7/2015 04:15 PM

Work Order: 1504433
Lab ID: 1504433-11
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 18:58
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 18:58
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 18:58
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 18:58
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 18:58
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 18:58
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 18:58
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 18:58
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 18:58
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 18:58
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 18:58
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 18:58
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 18:58
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 18:58
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 18:58
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 18:58
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 18:58
Surr: 1,2-Dichloroethane-d4	105			75-120	%REC	1	4/15/2015 18:58
Surr: 4-Bromofluorobenzene	95.2			80-110	%REC	1	4/15/2015 18:58
Surr: Dibromofluoromethane	97.7			85-115	%REC	1	4/15/2015 18:58
Surr: Toluene-d8	97.6			85-110	%REC	1	4/15/2015 18:58

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-022
Collection Date: 4/7/2015 04:25 PM

Work Order: 1504433
Lab ID: 1504433-12
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS							
			SW6020A			Prep: SW3005A / 4/9/15	Analyst: ML
BatchID: 69637							
Aluminum	400		2.7	10	µg/L	1	4/10/2015 16:37
Vanadium	16		0.46	4.0	µg/L	1	4/9/2015 22:08
BatchID: 69637							
Lead	U		1.5	15	µg/L	5	4/13/2015 15:37
VOLATILE ORGANIC COMPOUNDS							
			SW8260				Analyst: BG
BatchID: R161332							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 19:23
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 19:23
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 19:23
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 19:23
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 19:23
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 19:23
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 19:23
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 19:23
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 19:23
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 19:23
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 19:23
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 19:23
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 19:23
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 19:23
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 19:23
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 19:23
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 19:23
Acetone	U		3.1	50	µg/L	1	4/15/2015 19:23
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 19:23
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 19:23
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 19:23
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 19:23
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 19:23
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 19:23
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 19:23
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 19:23
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 19:23
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 19:23
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 19:23
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 19:23
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 19:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-022
Collection Date: 4/7/2015 04:25 PM

Work Order: 1504433
Lab ID: 1504433-12
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 19:23
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 19:23
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 19:23
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 19:23
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 19:23
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 19:23
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 19:23
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 19:23
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 19:23
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 19:23
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 19:23
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 19:23
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 19:23
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 19:23
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 19:23
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 19:23
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 19:23
Surr: 1,2-Dichloroethane-d4	103			75-120	%REC	1	4/15/2015 19:23
Surr: 4-Bromofluorobenzene	95.7			80-110	%REC	1	4/15/2015 19:23
Surr: Dibromofluoromethane	92.3			85-115	%REC	1	4/15/2015 19:23
Surr: Toluene-d8	98.9			85-110	%REC	1	4/15/2015 19:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-023
Collection Date: 4/7/2015 04:50 PM

Work Order: 1504433
Lab ID: 1504433-13
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161332</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 19:49
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 19:49
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 19:49
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 19:49
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 19:49
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 19:49
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 19:49
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 19:49
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 19:49
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 19:49
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 19:49
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 19:49
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 19:49
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 19:49
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 19:49
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 19:49
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 19:49
Acetone	U		3.1	50	µg/L	1	4/15/2015 19:49
Benzene	0.93	J	0.25	1.0	µg/L	1	4/15/2015 19:49
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 19:49
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 19:49
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 19:49
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 19:49
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 19:49
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 19:49
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 19:49
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 19:49
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 19:49
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 19:49
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 19:49
Cyclohexane	2.2		0.31	1.0	µg/L	1	4/15/2015 19:49
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 19:49
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 19:49
Ethylbenzene	5.1		0.22	1.0	µg/L	1	4/15/2015 19:49
Isopropylbenzene	6.0		0.25	5.0	µg/L	1	4/15/2015 19:49
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 19:49
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 19:49

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-DN-023
Collection Date: 4/7/2015 04:50 PM

Work Order: 1504433
Lab ID: 1504433-13
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	2.9		0.32	1.0	µg/L	1	4/15/2015 19:49
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 19:49
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 19:49
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 19:49
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 19:49
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 19:49
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 19:49
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 19:49
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 19:49
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 19:49
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 19:49
Surr: 1,2-Dichloroethane-d4	103			75-120	%REC	1	4/15/2015 19:49
Surr: 4-Bromofluorobenzene	102			80-110	%REC	1	4/15/2015 19:49
Surr: Dibromofluoromethane	92.4			85-115	%REC	1	4/15/2015 19:49
Surr: Toluene-d8	97.9			85-110	%REC	1	4/15/2015 19:49

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-TB002
Collection Date: 4/7/2015

Work Order: 1504433
Lab ID: 1504433-14
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: BG
<u>BatchID: R161332</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	4/15/2015 13:29
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	4/15/2015 13:29
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	4/15/2015 13:29
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	4/15/2015 13:29
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	4/15/2015 13:29
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	4/15/2015 13:29
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	4/15/2015 13:29
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	4/15/2015 13:29
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	4/15/2015 13:29
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	4/15/2015 13:29
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	4/15/2015 13:29
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	4/15/2015 13:29
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	4/15/2015 13:29
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	4/15/2015 13:29
2-Butanone	U		0.87	25	µg/L	1	4/15/2015 13:29
2-Hexanone	U		0.15	50	µg/L	1	4/15/2015 13:29
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	4/15/2015 13:29
Acetone	U		3.1	50	µg/L	1	4/15/2015 13:29
Benzene	U		0.25	1.0	µg/L	1	4/15/2015 13:29
Bromodichloromethane	U		0.16	1.0	µg/L	1	4/15/2015 13:29
Bromoform	U		0.099	1.0	µg/L	1	4/15/2015 13:29
Bromomethane	U		1.0	5.0	µg/L	1	4/15/2015 13:29
Carbon disulfide	U		0.26	5.0	µg/L	1	4/15/2015 13:29
Carbon tetrachloride	U		0.14	1.0	µg/L	1	4/15/2015 13:29
Chlorobenzene	U		0.19	1.0	µg/L	1	4/15/2015 13:29
Chloroethane	U		0.21	5.0	µg/L	1	4/15/2015 13:29
Chloroform	U		0.25	1.0	µg/L	1	4/15/2015 13:29
Chloromethane	U		0.25	5.0	µg/L	1	4/15/2015 13:29
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	4/15/2015 13:29
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	4/15/2015 13:29
Cyclohexane	U		0.31	1.0	µg/L	1	4/15/2015 13:29
Dibromochloromethane	U		0.17	5.0	µg/L	1	4/15/2015 13:29
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	4/15/2015 13:29
Ethylbenzene	U		0.22	1.0	µg/L	1	4/15/2015 13:29
Isopropylbenzene	U		0.25	5.0	µg/L	1	4/15/2015 13:29
Methyl acetate	U		0.62	10	µg/L	1	4/15/2015 13:29
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	4/15/2015 13:29

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Apr-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-040715-TB002
Collection Date: 4/7/2015

Work Order: 1504433
Lab ID: 1504433-14
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	4/15/2015 13:29
Methylene chloride	U		0.64	5.0	µg/L	1	4/15/2015 13:29
Styrene	U		0.18	1.0	µg/L	1	4/15/2015 13:29
Tetrachloroethene	U		0.25	1.0	µg/L	1	4/15/2015 13:29
Toluene	U		0.20	1.0	µg/L	1	4/15/2015 13:29
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	4/15/2015 13:29
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	4/15/2015 13:29
Trichloroethene	U		0.34	1.0	µg/L	1	4/15/2015 13:29
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	4/15/2015 13:29
Vinyl chloride	U		0.19	1.0	µg/L	1	4/15/2015 13:29
Xylenes, Total	U		0.62	3.0	µg/L	1	4/15/2015 13:29
Surr: 1,2-Dichloroethane-d4	102			75-120	%REC	1	4/15/2015 13:29
Surr: 4-Bromofluorobenzene	94.6			80-110	%REC	1	4/15/2015 13:29
Surr: Dibromofluoromethane	94.8			85-115	%REC	1	4/15/2015 13:29
Surr: Toluene-d8	99.4			85-110	%REC	1	4/15/2015 13:29

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Conestoga-Rovers & Associates

Work Order: 1504433

Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: 69637

Instrument ID ICPMS2

Method: SW6020A

MBLK		Sample ID: MBLK-69637-69637				Units: mg/L		Analysis Date: 4/9/2015 09:01 PM		
Client ID:		Run ID: ICPMS2_150409A				SeqNo: 3219299		Prep Date: 4/9/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Aluminum U 0.010

Lead U 0.0050

Vanadium U 0.0050

LCS		Sample ID: LCS-69637-69637				Units: mg/L		Analysis Date: 4/9/2015 09:06 PM		
Client ID:		Run ID: ICPMS2_150409A				SeqNo: 3219300		Prep Date: 4/9/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Aluminum 0.0946 0.010 0.1 0 94.6 80-120 0

Lead 0.09519 0.0050 0.1 0 95.2 80-120 0

Vanadium 0.09607 0.0050 0.1 0 96.1 80-120 0

MS		Sample ID: 1504433-09BMS				Units: mg/L		Analysis Date: 4/9/2015 09:27 PM		
Client ID: GW-17322-040715-DN-019		Run ID: ICPMS2_150409A				SeqNo: 3219307		Prep Date: 4/9/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Aluminum 0.09822 0.010 0.1 0.006265 92 75-125 0

Lead 0.09575 0.0050 0.1 0.0004738 95.3 75-125 0

Vanadium 0.09643 0.0050 0.1 0.001306 95.1 75-125 0

MS		Sample ID: 1504457-24BMS				Units: mg/L		Analysis Date: 4/10/2015 12:05 AM		
Client ID:		Run ID: ICPMS2_150409A				SeqNo: 3219368		Prep Date: 4/9/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Lead 0.09466 0.0050 0.1 0.00002659 94.6 75-125 0

Vanadium 0.09613 0.0050 0.1 -0.0001381 96.3 75-125 0

MS		Sample ID: 1504457-24BMS				Units: mg/L		Analysis Date: 4/10/2015 06:08 PM		
Client ID:		Run ID: ICPMS2_150410A				SeqNo: 3222229		Prep Date: 4/9/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Aluminum 0.09989 0.010 0.1 0 99.9 75-125 0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504433
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **69637** Instrument ID **ICPMS2** Method: **SW6020A**

MSD		Sample ID: 1504433-09BMSD				Units: mg/L		Analysis Date: 4/9/2015 09:32 PM		
Client ID: GW-17322-040715-DN-019		Run ID: ICPMS2_150409A				SeqNo: 3219309		Prep Date: 4/9/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09774	0.010	0.1	0.006265	91.5	75-125	0.09822	0.49	20	
Lead	0.09521	0.0050	0.1	0.0004738	94.7	75-125	0.09575	0.566	20	
Vanadium	0.0962	0.0050	0.1	0.001306	94.9	75-125	0.09643	0.239	20	

MSD		Sample ID: 1504457-24BMSD				Units: mg/L		Analysis Date: 4/10/2015 12:10 AM		
Client ID:		Run ID: ICPMS2_150409A				SeqNo: 3219369		Prep Date: 4/9/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.09524	0.0050	0.1	0.00002659	95.2	75-125	0.09466	0.611	20	
Vanadium	0.09655	0.0050	0.1	-0.0001381	96.7	75-125	0.09613	0.436	20	

MSD		Sample ID: 1504457-24BMSD				Units: mg/L		Analysis Date: 4/10/2015 06:13 PM		
Client ID:		Run ID: ICPMS2_150410A				SeqNo: 3222230		Prep Date: 4/9/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09502	0.010	0.1	0	95	75-125	0.09989	5	20	

The following samples were analyzed in this batch:

1504433-07B	1504433-09B	1504433-10B
1504433-11B	1504433-12B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504433
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **R161332A** Instrument ID **VMS5** Method: **SW8260**

MBLK		Sample ID: VLKW2-150415-R161332A				Units: µg/L		Analysis Date: 4/15/2015 11:48 AM		
Client ID:		Run ID: VMS5_150415A				SeqNo: 3227182		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	U	1.0								
1,1,2,2-Tetrachloroethane	U	1.0								
1,1,2-Trichloroethane	U	1.0								
1,1,2-Trichlorotrifluoroethane	U	1.0								
1,1-Dichloroethane	U	1.0								
1,1-Dichloroethene	U	1.0								
1,2,4-Trichlorobenzene	U	1.0								
1,2-Dibromo-3-chloropropane	U	1.0								
1,2-Dibromoethane	U	1.0								
1,2-Dichlorobenzene	U	1.0								
1,2-Dichloroethane	U	1.0								
1,2-Dichloropropane	U	1.0								
1,3-Dichlorobenzene	U	1.0								
1,4-Dichlorobenzene	U	1.0								
2-Butanone	U	5.0								
2-Hexanone	U	5.0								
4-Methyl-2-pentanone	U	1.0								
Acetone	U	10								
Benzene	U	1.0								
Bromodichloromethane	U	1.0								
Bromoform	U	1.0								
Bromomethane	U	1.0								
Carbon disulfide	U	1.0								
Carbon tetrachloride	U	1.0								
Chlorobenzene	U	1.0								
Chloroethane	U	1.0								
Chloroform	U	1.0								
Chloromethane	U	1.0								
cis-1,2-Dichloroethene	U	1.0								
cis-1,3-Dichloropropene	U	1.0								
Cyclohexane	U	1.0								
Dibromochloromethane	U	1.0								
Dichlorodifluoromethane	U	1.0								
Ethylbenzene	U	1.0								
Isopropylbenzene	U	1.0								
Methyl acetate	U	2.0								
Methyl tert-butyl ether	U	1.0								
Methylcyclohexane	U	1.0								
Methylene chloride	U	5.0								
Styrene	U	1.0								
Tetrachloroethene	U	1.0								
Toluene	U	1.0								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504433
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: R161332A	Instrument ID VMS5	Method: SW8260						
trans-1,2-Dichloroethene	U	1.0						
trans-1,3-Dichloropropene	U	1.0						
Trichloroethene	U	1.0						
Trichlorofluoromethane	U	1.0						
Vinyl chloride	U	1.0						
Xylenes, Total	U	3.0						
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>19.76</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>98.8</i>	<i>75-120</i>	<i>0</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>19.64</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>98.2</i>	<i>80-110</i>	<i>0</i>	
<i>Surr: Dibromofluoromethane</i>	<i>18.92</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>94.6</i>	<i>85-115</i>	<i>0</i>	
<i>Surr: Toluene-d8</i>	<i>19.93</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>99.6</i>	<i>85-110</i>	<i>0</i>	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504433
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **R161332A** Instrument ID **VMS5** Method: **SW8260**

LCS		Sample ID: VLCSW1-150415-R161332A				Units: µg/L		Analysis Date: 4/15/2015 10:32 AM		
Client ID:		Run ID: VMS5_150415A				SeqNo: 3227181		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	20.05	1.0	20	0	100	75-130	0			
1,1,2,2-Tetrachloroethane	19.01	1.0	20	0	95	75-130	0			
1,1,2-Trichloroethane	18.97	1.0	20	0	94.8	75-125	0			
1,1-Dichloroethane	17.4	1.0	20	0	87	75-133	0			
1,1-Dichloroethene	17.87	1.0	20	0	89.4	70-145	0			
1,2,4-Trichlorobenzene	19.42	1.0	20	0	97.1	70-135	0			
1,2-Dibromo-3-chloropropane	16.7	1.0	20	0	83.5	60-130	0			
1,2-Dibromoethane	24.41	1.0	20	0	122	80-150	0			
1,2-Dichlorobenzene	18.89	1.0	20	0	94.4	70-130	0			
1,2-Dichloroethane	19.78	1.0	20	0	98.9	78-125	0			
1,2-Dichloropropane	19.26	1.0	20	0	96.3	75-125	0			
1,3-Dichlorobenzene	19.27	1.0	20	0	96.4	75-130	0			
1,4-Dichlorobenzene	19.68	1.0	20	0	98.4	75-130	0			
2-Butanone	14.46	5.0	20	0	72.3	55-150	0			
2-Hexanone	16.93	5.0	20	0	84.6	60-135	0			
4-Methyl-2-pentanone	22.31	1.0	20	0	112	77-178	0			
Acetone	13.93	10	20	0	69.6	60-160	0			
Benzene	19.91	1.0	20	0	99.6	85-125	0			
Bromodichloromethane	18.75	1.0	20	0	93.8	75-125	0			
Bromoform	19.05	1.0	20	0	95.2	60-125	0			
Bromomethane	16.47	1.0	20	0	82.4	30-185	0			
Carbon disulfide	17.01	1.0	20	0	85	60-165	0			
Carbon tetrachloride	19.79	1.0	20	0	99	65-140	0			
Chlorobenzene	19	1.0	20	0	95	80-120	0			
Chloroethane	14.99	1.0	20	0	75	50-140	0			
Chloroform	17.02	1.0	20	0	85.1	80-130	0			
Chloromethane	13.92	1.0	20	0	69.6	50-130	0			
cis-1,2-Dichloroethene	17.73	1.0	20	0	88.6	75-134	0			
cis-1,3-Dichloropropene	18.86	1.0	20	0	94.3	70-130	0			
Dibromochloromethane	17.54	1.0	20	0	87.7	60-115	0			
Dichlorodifluoromethane	11.29	1.0	20	0	56.4	20-120	0			
Ethylbenzene	19.69	1.0	20	0	98.4	85-125	0			
Isopropylbenzene	19.22	1.0	20	0	96.1	80-127	0			
Methyl tert-butyl ether	16.5	1.0	20	0	82.5	80-130	0			
Methylene chloride	17.12	5.0	20	0	85.6	75-140	0			
Styrene	18.65	1.0	20	0	93.2	85-125	0			
Tetrachloroethene	20.18	1.0	20	0	101	77-138	0			
Toluene	19.93	1.0	20	0	99.6	85-125	0			
trans-1,2-Dichloroethene	17.89	1.0	20	0	89.4	80-140	0			
trans-1,3-Dichloropropene	18.63	1.0	20	0	93.2	81-123	0			
Trichloroethene	18.65	1.0	20	0	93.2	84-130	0			
Trichlorofluoromethane	15.96	1.0	20	0	79.8	60-140	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504433
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: R161332A	Instrument ID VMS5		Method: SW8260				
Vinyl chloride	17	1.0	20	0	85	50-136	0
Xylenes, Total	58.2	3.0	60	0	97	80-126	0
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>19.68</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>98.4</i>	<i>75-120</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>20.44</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>102</i>	<i>80-110</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>18.78</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>93.9</i>	<i>85-115</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>20.07</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>100</i>	<i>85-110</i>	<i>0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504433
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **R161332A** Instrument ID **VMS5** Method: **SW8260**

MS				Sample ID: 1504433-09A MS			Units: µg/L		Analysis Date: 4/15/2015 08:14 PM	
Client ID: GW-17322-040715-DN-019				Run ID: VMS5_150415A			SeqNo: 3227327		Prep Date:	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	19.4	1.0	20	0	97	75-130	0			
1,1,2,2-Tetrachloroethane	20	1.0	20	0	100	75-130	0			
1,1,2-Trichloroethane	18.67	1.0	20	0	93.4	75-125	0			
1,1-Dichloroethane	17.12	1.0	20	0	85.6	75-133	0			
1,1-Dichloroethene	18.17	1.0	20	0	90.8	70-145	0			
1,2,4-Trichlorobenzene	17.77	1.0	20	0	88.8	70-135	0			
1,2-Dibromo-3-chloropropane	19.02	1.0	20	0	95.1	60-130	0			
1,2-Dibromoethane	24.57	1.0	20	0	123	80-150	0			
1,2-Dichlorobenzene	18.38	1.0	20	0	91.9	70-130	0			
1,2-Dichloroethane	19.27	1.0	20	0	96.4	78-125	0			
1,2-Dichloropropane	18.41	1.0	20	0	92	75-125	0			
1,3-Dichlorobenzene	18.9	1.0	20	0	94.5	75-130	0			
1,4-Dichlorobenzene	19.14	1.0	20	0	95.7	75-130	0			
2-Butanone	18.3	5.0	20	0	91.5	55-150	0			
2-Hexanone	19.12	5.0	20	0	95.6	60-135	0			
4-Methyl-2-pentanone	26.21	1.0	20	0	131	77-178	0			
Acetone	18.78	10	20	0	93.9	60-160	0			
Benzene	19.21	1.0	20	0	96	85-125	0			
Bromodichloromethane	18.12	1.0	20	0	90.6	75-125	0			
Bromoform	20.02	1.0	20	0	100	60-125	0			
Bromomethane	15	1.0	20	0	75	30-185	0			
Carbon disulfide	17.19	1.0	20	0	86	60-165	0			
Carbon tetrachloride	19.32	1.0	20	0	96.6	65-140	0			
Chlorobenzene	18.68	1.0	20	0	93.4	80-120	0			
Chloroethane	15.41	1.0	20	0	77	50-140	0			
Chloroform	16.48	1.0	20	0	82.4	80-130	0			
Chloromethane	13.55	1.0	20	0	67.8	50-130	0			
cis-1,2-Dichloroethene	17.2	1.0	20	0	86	75-134	0			
cis-1,3-Dichloropropene	17.86	1.0	20	0	89.3	70-130	0			
Dibromochloromethane	16.85	1.0	20	0	84.2	60-115	0			
Dichlorodifluoromethane	11.48	1.0	20	0	57.4	20-120	0			
Ethylbenzene	19.28	1.0	20	0	96.4	85-125	0			
Isopropylbenzene	19.42	1.0	20	0	97.1	80-127	0			
Methyl tert-butyl ether	15.85	1.0	20	0	79.2	80-130	0			S
Methylene chloride	16.71	5.0	20	0	83.6	75-140	0			
Styrene	18.73	1.0	20	0	93.6	85-125	0			
Tetrachloroethene	19.4	1.0	20	0	97	77-138	0			
Toluene	19.32	1.0	20	0	96.6	85-125	0			
trans-1,2-Dichloroethene	17.44	1.0	20	0	87.2	80-140	0			
trans-1,3-Dichloropropene	17.7	1.0	20	0	88.5	81-123	0			
Trichloroethene	17.87	1.0	20	0	89.4	84-130	0			
Trichlorofluoromethane	16.69	1.0	20	0	83.4	60-140	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504433
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: R161332A	Instrument ID VMS5	Method: SW8260					
Vinyl chloride	17.43	1.0	20	0	87.2	50-136	0
Xylenes, Total	57.42	3.0	60	0	95.7	80-126	0
<i>Surr: 1,2-Dichloroethane-d4</i>	19.17	0	20	0	95.8	75-120	0
<i>Surr: 4-Bromofluorobenzene</i>	20.4	0	20	0	102	80-110	0
<i>Surr: Dibromofluoromethane</i>	18.54	0	20	0	92.7	85-115	0
<i>Surr: Toluene-d8</i>	19.77	0	20	0	98.8	85-110	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504433
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **R161332A** Instrument ID **VMS5** Method: **SW8260**

MSD				Sample ID: 1504433-09A MSD			Units: µg/L		Analysis Date: 4/15/2015 08:39 PM	
Client ID: GW-17322-040715-DN-019				Run ID: VMS5_150415A			SeqNo: 3227328		Prep Date:	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	20.9	1.0	20	0	104	75-130	19.4	7.44	30	
1,1,2,2-Tetrachloroethane	22.05	1.0	20	0	110	75-130	20	9.75	30	
1,1,2-Trichloroethane	20.09	1.0	20	0	100	75-125	18.67	7.33	30	
1,1-Dichloroethane	18.15	1.0	20	0	90.8	75-133	17.12	5.84	30	
1,1-Dichloroethene	18.92	1.0	20	0	94.6	70-145	18.17	4.04	30	
1,2,4-Trichlorobenzene	19.08	1.0	20	0	95.4	70-135	17.77	7.11	30	
1,2-Dibromo-3-chloropropane	21.47	1.0	20	0	107	60-130	19.02	12.1	30	
1,2-Dibromoethane	26.06	1.0	20	0	130	80-150	24.57	5.89	30	
1,2-Dichlorobenzene	19.73	1.0	20	0	98.6	70-130	18.38	7.08	30	
1,2-Dichloroethane	20.65	1.0	20	0	103	78-125	19.27	6.91	30	
1,2-Dichloropropane	19.93	1.0	20	0	99.6	75-125	18.41	7.93	30	
1,3-Dichlorobenzene	20.34	1.0	20	0	102	75-130	18.9	7.34	30	
1,4-Dichlorobenzene	20.22	1.0	20	0	101	75-130	19.14	5.49	30	
2-Butanone	19.16	5.0	20	0	95.8	55-150	18.3	4.59	30	
2-Hexanone	21.41	5.0	20	0	107	60-135	19.12	11.3	30	
4-Methyl-2-pentanone	28.37	1.0	20	0	142	77-178	26.21	7.91	30	
Acetone	21.58	10	20	0	108	60-160	18.78	13.9	30	
Benzene	20.49	1.0	20	0	102	85-125	19.21	6.45	30	
Bromodichloromethane	19.44	1.0	20	0	97.2	75-125	18.12	7.03	30	
Bromoform	20.73	1.0	20	0	104	60-125	20.02	3.48	30	
Bromomethane	16.37	1.0	20	0	81.8	30-185	15	8.73	30	
Carbon disulfide	17.87	1.0	20	0	89.4	60-165	17.19	3.88	30	
Carbon tetrachloride	20.86	1.0	20	0	104	65-140	19.32	7.67	30	
Chlorobenzene	19.66	1.0	20	0	98.3	80-120	18.68	5.11	30	
Chloroethane	16.01	1.0	20	0	80	50-140	15.41	3.82	30	
Chloroform	17.45	1.0	20	0	87.2	80-130	16.48	5.72	30	
Chloromethane	14.37	1.0	20	0	71.8	50-130	13.55	5.87	30	
cis-1,2-Dichloroethene	18.16	1.0	20	0	90.8	75-134	17.2	5.43	30	
cis-1,3-Dichloropropene	19.2	1.0	20	0	96	70-130	17.86	7.23	30	
Dibromochloromethane	18.18	1.0	20	0	90.9	60-115	16.85	7.59	30	
Dichlorodifluoromethane	12.02	1.0	20	0	60.1	20-120	11.48	4.6	30	
Ethylbenzene	20.67	1.0	20	0	103	85-125	19.28	6.96	30	
Isopropylbenzene	20.57	1.0	20	0	103	80-127	19.42	5.75	30	
Methyl tert-butyl ether	16.79	1.0	20	0	84	80-130	15.85	5.76	30	
Methylene chloride	17.05	5.0	20	0	85.2	75-140	16.71	2.01	30	
Styrene	19.86	1.0	20	0	99.3	85-125	18.73	5.86	30	
Tetrachloroethene	20.9	1.0	20	0	104	77-138	19.4	7.44	30	
Toluene	20.72	1.0	20	0	104	85-125	19.32	6.99	30	
trans-1,2-Dichloroethene	18.4	1.0	20	0	92	80-140	17.44	5.36	30	
trans-1,3-Dichloropropene	18.95	1.0	20	0	94.8	81-123	17.7	6.82	30	
Trichloroethene	19.27	1.0	20	0	96.4	84-130	17.87	7.54	30	
Trichlorofluoromethane	17.7	1.0	20	0	88.5	60-140	16.69	5.87	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1504433
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: R161332A	Instrument ID VMS5			Method: SW8260					
Vinyl chloride	18.24	1.0	20	0	91.2	50-136	17.43	4.54	30
Xylenes, Total	61.03	3.0	60	0	102	80-126	57.42	6.1	30
Surr: 1,2-Dichloroethane-d4	20.07	0	20	0	100	75-120	19.17	4.59	30
Surr: 4-Bromofluorobenzene	19.8	0	20	0	99	80-110	20.4	2.99	30
Surr: Dibromofluoromethane	18.54	0	20	0	92.7	85-115	18.54	0	30
Surr: Toluene-d8	20.09	0	20	0	100	85-110	19.77	1.61	30

The following samples were analyzed in this batch:	1504433-01A	1504433-02A	1504433-03A
	1504433-04A	1504433-05A	1504433-06A
	1504433-07A	1504433-08A	1504433-09A
	1504433-10A	1504433-11A	1504433-12A
	1504433-13A	1504433-14A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



**CONESTOGA-ROVERS
& ASSOCIATES**

CHAIN OF CUSTODY RECORD

14496 Sheldon Road, Suite #200, Plymouth, Michigan 48170

Phone: (734) 453-5123

Fax: (734) 453-5201

1504433
COC NO: PL-13524

PAGE 1 OF 1

(See Reverse Side for Instructions)

Project No/Phase/Task Code: 17322-TO3715				Laboratory Name: ALS				Lab Location: Holland, MI				SSOW ID: 17322-004																			
Project Name: ACC-Validation				Lab Contact: Tom Beamish				Lab Quote No: -				Cooler No: -																			
Project Location: Pontiac, MI				SAMPLE TYPE				CONTAINER QUANTITY & PRESERVATION				ANALYSIS REQUESTED (See Back of COC for Definitions)																			
Chemistry Contact: Rana Fleisher				Matrix Code (see back of COC) Grab (G) or Comp (C)				Unpreserved Hydrochloric Acid (HCl) Nitric Acid (HNO ₃) Sulfuric Acid (H ₂ SO ₄) Sodium Hydroxide (NaOH) Methanol/Water (Soil VOC) EnCores 3x5-g, 1x25-g Other:				Total Containers/Sample TCL Vials Aluminum Lead Vanadium																			
Sampler(s): Eric Mickelson, Don Newton																															
Carrier: Fed Ex				Airbill No: -				Date Shipped: 4-7-15				COMMENTS/ SPECIAL INSTRUCTIONS:																			
Item				SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)				DATE (mm/dd/yyyy)								TIME (hh:mm)															
1	GW-17322-040715-011			4/7/15	0845	WG	G		X					3	X																
2	-012				0915				X					3	X																
3	-013				1115				X					3	X																
4	-014				1135				X					3	X																
5	-015				1235				X					3	X																
6	-016				1030				X					3	X																
7	-017				1240				X	X				4	X	X	X	X													
8	-018				1355				X					3	X																
9	-019				1505				X	X				11	X	X	X	X					X								
10	-020				1350				X	X				4	X	X	X	X													
11	-021				1615				X	X				4	X	X	X	X													
12	-022				1625				X	X				4	X	X	X	X													
13	-023				1650				X					3	X																
14	TB-17322-040715-TB002						TB		X					1																	
TAT Required in business days (use separate COCs for different TATs)								Total Number of Containers: 52								Notes/ Special Requirements:															
☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☒ 2 Week ☐ Other:								All Samples in Cooler must be on COC								24 c															
RELINQUISHED BY				COMPANY				DATE				TIME				RECEIVED BY				COMPANY				DATE				TIME			
Don Newton				CRA				4-7-15				1830				D. J. [Signature]				ALS				4/8/15				0930			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT - ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE - Fully Executed Copy (CRA)

YELLOW - Receiving Laboratory Copy

PINK - Shipper

GOLDENROD - Sampling Crew

CRA Form: COC-10A (20110804)

FedEx NEW Package Express **US Airbill**

FedEx Tracking Number **8065 1269 0079**

1 From
Date **4-7-15**
Sender's Name **Dan Newton** Phone **419 609 1337**
Company **CBA**
Address **1805 E Perkins Ave**
City **Sandusky** State **OH** ZIP **44870**
2 Your Internal Billing Reference **1722-703-415**
3 To
Recipient's Name **ALC Lab** Phone **616 377-6070**
Company **ALC Lab**
Address **3352 12th Ave**
City **Holland** State **MI** ZIP **49421-7263**

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address Use this line for the HOLD location address or for confirmation of your shipping address.

☐ **HOLD Weekday**
FedEx location address
REQUIRED. NOT available for
FedEx First Overnight.

☐ **HOLD Saturday**
FedEx location address
REQUIRED. Available ONLY for
FedEx Priority Overnight and
FedEx 2Day to select locations.



8065 1269 0079

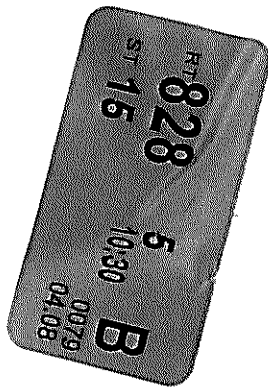
0200 **GR** **Recipient's Copy**

4 Express Package Service *In most locations. NOTE: Service order has changed. Please select carefully.
Next Business Day
☐ FedEx First Overnight
☒ FedEx Priority Overnight
☐ FedEx Standard Overnight
2 or 3 Business Days
☐ FedEx 2Day A.M.
☐ FedEx 2Day
☐ FedEx Express Saver
5 Packaging *Declared value limit \$500.
☐ FedEx Envelope* ☐ FedEx Pak* ☐ FedEx Box ☐ FedEx Tube ☒ Other
6 Special Handling and Delivery Signature Options
☐ **SATURDAY Delivery**
☐ No Signature Required
☐ Direct Signature
☐ Indirect Signature
Does this shipment contain dangerous goods?
☒ No ☐ Yes ☐ Yes ☐ Dry Ice ☐ Cargo Aircraft Only
7 Payment B/L to:
☒ Sender ☐ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check
Total Packages **1** **Total Weight** **31**
644

fedex.com 1800.GoFedEx

fedex.com 1800.GoFedEx 1800.463.3339

Courier or Driver:
Place Astra or Barcoded Label Here



1805 E PERKINS AVE
SANDUSKY, OH 448705127
UNITED STATES US

CAD: /OFFC1601
DIMS: 25x13x14 IN
BILL SENDER

#156297-435 R172 02/15

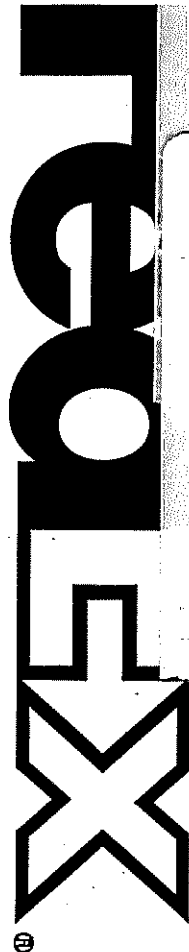
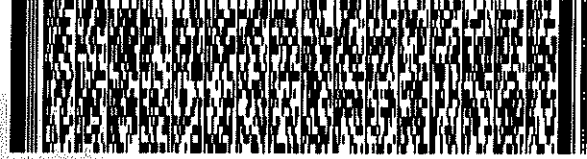
TO RECEIVING
ALS ENVIRONMENTAL
3352 128TH AVE

HOLLAND MI 49424

(810) 390-6070
JHU1
P01

REF:

DEPT:

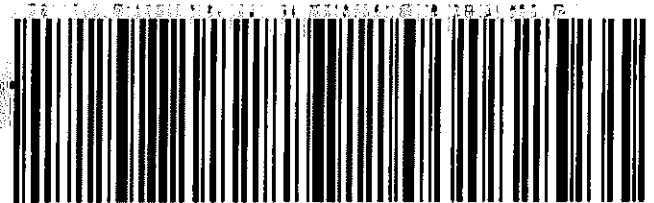


FedEx
TRK# 8065 1269 0079
0200

WED - 08 APR 10:30A
PRIORITY OVERNIGHT

68 HLMA

49424
MI-US GRN



01874010 04/07 537J2/WFCB/EE43

Align Open End of FedEx Pouch Here

Sample Receipt Checklist

Client Name: **CRA - PLYMOUTH**

Date/Time Received: **08-Apr-15 09:30**

Work Order: **1504433**

Received by: **DS**

Checklist completed by Diane Shaw
eSignature

08-Apr-15
Date

Reviewed by: Chad Whelton
eSignature

08-Apr-15
Date

Matrices: **Groundwater**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☒	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☒	No ☐	
Sample(s) received on ice?	Yes ☒	No ☐	
Temperature(s)/Thermometer(s):	<u>2.4 c</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>4/8/2015 11:17:14 AM</u>		
Water - VOA vials have zero headspace?	Yes ☒	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☒	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☒	N/A ☐
pH adjusted by:	<u>-</u>		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:



22-May-2015

Paul Wiseman
Conestoga-Rovers & Associates
14496 Sheldon Road
Suite 200
Plymouth, MI 48170

Re: **PCC-Validation (017322-T01Y13)**

Work Order: **1505785**

Dear Paul,

ALS Environmental received 8 samples on 14-May-2015 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 27.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Chad Whelton

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager



Certificate No: MN 532786

Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Work Order: 1505785

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1505785-01	GW-17322-051315-EM-001	Groundwater		5/13/2015 10:00	5/14/2015 09:30	☐
1505785-02	GW-17322-051315-EM-002	Groundwater		5/13/2015 10:10	5/14/2015 09:30	☐
1505785-03	GW-17322-051315-EM-003	Groundwater		5/13/2015 10:45	5/14/2015 09:30	☐
1505785-04	GW-17322-051315-EM-004	Groundwater		5/13/2015 16:10	5/14/2015 09:30	☐
1505785-05	GW-17322-051315-EM-005	Groundwater		5/13/2015 16:30	5/14/2015 09:30	☐
1505785-06	GW-17322-051315-EM-006	Groundwater		5/13/2015 13:55	5/14/2015 09:30	☐
1505785-07	GW-17322-051315-EM-007	Groundwater		5/13/2015 15:30	5/14/2015 09:30	☐
1505785-08	TB-17322-051315-EM	Water		5/13/2015	5/14/2015 09:30	☐

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Work Order: 1505785

Case Narrative

Batch R163790A, Method VOC_8260_W, Sample VLC SW2-150520: The LCS recovery was above the upper control limit for 1,2-Dibromoethane. All the sample results in the batch were non-detect. No qualification is required.

Batch R163790A, Method VOC_8260_W, Sample 1505785-07A MS: The MS recovery was above the upper control limit for 1,2-Dibromoethane. However, the MSD recovery and RPD between the MS and MSD were within control limits. No qualification is required.

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
WorkOrder: 1505785

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
µg/L	Micrograms per Liter

ALS Group USA, Corp

Date: 22-May-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-051315-EM-001
Collection Date: 5/13/2015 10:00 AM

Work Order: 1505785
Lab ID: 1505785-01
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			SW6020A			Prep: SW3005A / 5/18/15	Analyst: RH
<u>BatchID: 71195</u>							
Aluminum	38		1.1	10	µg/L	1	5/19/2015 11:58
Lead	0.30	J	0.10	3.0	µg/L	1	5/18/2015 17:30
Vanadium	U		0.40	4.0	µg/L	1	5/18/2015 17:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp**Date:** 22-May-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-051315-EM-002
Collection Date: 5/13/2015 10:10 AM

Work Order: 1505785
Lab ID: 1505785-02
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			SW6020A			Prep: SW3005A / 5/18/15	Analyst: RH
BatchID: 71195							
Aluminum	100		1.1	10	µg/L	1	5/19/2015 12:03
Lead	0.52	J	0.10	3.0	µg/L	1	5/18/2015 17:35
Vanadium	U		0.40	4.0	µg/L	1	5/18/2015 17:35

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 22-May-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-051315-EM-003
Collection Date: 5/13/2015 10:45 AM

Work Order: 1505785
Lab ID: 1505785-03
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			SW6020A			Prep: SW3005A / 5/18/15	Analyst: RH
BatchID: <u>71195</u>							
Aluminum	830		1.1	10	µg/L	1	5/19/2015 12:08
Lead	0.66	J	0.10	3.0	µg/L	1	5/18/2015 17:41
Vanadium	23		0.40	4.0	µg/L	1	5/18/2015 17:41

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 22-May-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-051315-EM-004
Collection Date: 5/13/2015 04:10 PM

Work Order: 1505785
Lab ID: 1505785-04
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			SW6020A		Prep: SW3005A / 5/18/15	Analyst: RH	
BatchID: <u>71195</u>							
Aluminum	5,300		1.1	10	µg/L	1	5/19/2015 12:13
Lead	17		0.10	3.0	µg/L	1	5/18/2015 17:46
Vanadium	15		0.40	4.0	µg/L	1	5/18/2015 17:46

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 22-May-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-051315-EM-005
Collection Date: 5/13/2015 04:30 PM

Work Order: 1505785
Lab ID: 1505785-05
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			SW6020A			Prep: SW3005A / 5/18/15	Analyst: RH
BatchID: 71195							
Aluminum	2,000		1.1	10	µg/L	1	5/19/2015 12:18
Lead	8.9		0.10	3.0	µg/L	1	5/18/2015 17:51
Vanadium	6.8		0.40	4.0	µg/L	1	5/18/2015 17:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 22-May-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-051315-EM-006
Collection Date: 5/13/2015 01:55 PM

Work Order: 1505785
Lab ID: 1505785-06
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			SW6020A		Prep: SW3005A / 5/18/15	Analyst: RH	
BatchID: <u>71195</u>							
Aluminum	28		1.1	10	µg/L	1	5/19/2015 12:23
Lead	0.24	J	0.10	3.0	µg/L	1	5/18/2015 17:56
Vanadium	1.0	J	0.40	4.0	µg/L	1	5/18/2015 17:56

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 22-May-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-051315-EM-007
Collection Date: 5/13/2015 03:30 PM

Work Order: 1505785
Lab ID: 1505785-07
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: AK
<u>BatchID: R163790</u>							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	5/20/2015 17:46
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	5/20/2015 17:46
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	5/20/2015 17:46
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	5/20/2015 17:46
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	5/20/2015 17:46
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	5/20/2015 17:46
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	5/20/2015 17:46
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	5/20/2015 17:46
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	5/20/2015 17:46
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	5/20/2015 17:46
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	5/20/2015 17:46
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	5/20/2015 17:46
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	5/20/2015 17:46
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	5/20/2015 17:46
2-Butanone	U		0.87	25	µg/L	1	5/20/2015 17:46
2-Hexanone	U		0.15	50	µg/L	1	5/20/2015 17:46
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	5/20/2015 17:46
Acetone	U		3.1	50	µg/L	1	5/20/2015 17:46
Benzene	U		0.25	1.0	µg/L	1	5/20/2015 17:46
Bromodichloromethane	U		0.16	1.0	µg/L	1	5/20/2015 17:46
Bromoform	U		0.099	1.0	µg/L	1	5/20/2015 17:46
Bromomethane	U		1.0	5.0	µg/L	1	5/20/2015 17:46
Carbon disulfide	1.0	J	0.26	5.0	µg/L	1	5/20/2015 17:46
Carbon tetrachloride	U		0.14	1.0	µg/L	1	5/20/2015 17:46
Chlorobenzene	U		0.19	1.0	µg/L	1	5/20/2015 17:46
Chloroethane	U		0.21	5.0	µg/L	1	5/20/2015 17:46
Chloroform	U		0.25	1.0	µg/L	1	5/20/2015 17:46
Chloromethane	U		0.25	5.0	µg/L	1	5/20/2015 17:46
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	5/20/2015 17:46
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	5/20/2015 17:46
Cyclohexane	U		0.31	1.0	µg/L	1	5/20/2015 17:46
Dibromochloromethane	U		0.17	5.0	µg/L	1	5/20/2015 17:46
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	5/20/2015 17:46
Ethylbenzene	U		0.22	1.0	µg/L	1	5/20/2015 17:46
Isopropylbenzene	U		0.25	5.0	µg/L	1	5/20/2015 17:46
Methyl acetate	U		0.62	10	µg/L	1	5/20/2015 17:46
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	5/20/2015 17:46

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 22-May-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: GW-17322-051315-EM-007
Collection Date: 5/13/2015 03:30 PM

Work Order: 1505785
Lab ID: 1505785-07
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	5/20/2015 17:46
Methylene chloride	U		0.64	5.0	µg/L	1	5/20/2015 17:46
Styrene	U		0.18	1.0	µg/L	1	5/20/2015 17:46
Tetrachloroethene	U		0.25	1.0	µg/L	1	5/20/2015 17:46
Toluene	U		0.20	1.0	µg/L	1	5/20/2015 17:46
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	5/20/2015 17:46
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	5/20/2015 17:46
Trichloroethene	U		0.34	1.0	µg/L	1	5/20/2015 17:46
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	5/20/2015 17:46
Vinyl chloride	U		0.19	1.0	µg/L	1	5/20/2015 17:46
Xylenes, Total	U		0.62	3.0	µg/L	1	5/20/2015 17:46
Surr: 1,2-Dichloroethane-d4	91.6			75-120	%REC	1	5/20/2015 17:46
Surr: 4-Bromofluorobenzene	98.8			80-110	%REC	1	5/20/2015 17:46
Surr: Dibromofluoromethane	95.6			85-115	%REC	1	5/20/2015 17:46
Surr: Toluene-d8	96.5			85-110	%REC	1	5/20/2015 17:46

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 22-May-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: TB-17322-051315-EM
Collection Date: 5/13/2015

Work Order: 1505785
Lab ID: 1505785-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			SW8260				Analyst: AK
BatchID: R163790							
1,1,1-Trichloroethane	U		0.19	1.0	µg/L	1	5/20/2015 17:21
1,1,2,2-Tetrachloroethane	U		0.34	1.0	µg/L	1	5/20/2015 17:21
1,1,2-Trichloroethane	U		0.25	1.0	µg/L	1	5/20/2015 17:21
1,1,2-Trichlorotrifluoroethane	U		0.47	1.0	µg/L	1	5/20/2015 17:21
1,1-Dichloroethane	U		0.21	1.0	µg/L	1	5/20/2015 17:21
1,1-Dichloroethene	U		0.24	1.0	µg/L	1	5/20/2015 17:21
1,2,4-Trichlorobenzene	U		0.19	5.0	µg/L	1	5/20/2015 17:21
1,2-Dibromo-3-chloropropane	U		0.42	1.0	µg/L	1	5/20/2015 17:21
1,2-Dibromoethane	U		0.34	1.0	µg/L	1	5/20/2015 17:21
1,2-Dichlorobenzene	U		0.22	1.0	µg/L	1	5/20/2015 17:21
1,2-Dichloroethane	U		0.26	1.0	µg/L	1	5/20/2015 17:21
1,2-Dichloropropane	U		0.26	1.0	µg/L	1	5/20/2015 17:21
1,3-Dichlorobenzene	U		0.21	1.0	µg/L	1	5/20/2015 17:21
1,4-Dichlorobenzene	U		0.20	1.0	µg/L	1	5/20/2015 17:21
2-Butanone	U		0.87	25	µg/L	1	5/20/2015 17:21
2-Hexanone	U		0.15	50	µg/L	1	5/20/2015 17:21
4-Methyl-2-pentanone	U		0.15	50	µg/L	1	5/20/2015 17:21
Acetone	U		3.1	50	µg/L	1	5/20/2015 17:21
Benzene	U		0.25	1.0	µg/L	1	5/20/2015 17:21
Bromodichloromethane	U		0.16	1.0	µg/L	1	5/20/2015 17:21
Bromoform	U		0.099	1.0	µg/L	1	5/20/2015 17:21
Bromomethane	U		1.0	5.0	µg/L	1	5/20/2015 17:21
Carbon disulfide	U		0.26	5.0	µg/L	1	5/20/2015 17:21
Carbon tetrachloride	U		0.14	1.0	µg/L	1	5/20/2015 17:21
Chlorobenzene	U		0.19	1.0	µg/L	1	5/20/2015 17:21
Chloroethane	U		0.21	5.0	µg/L	1	5/20/2015 17:21
Chloroform	U		0.25	1.0	µg/L	1	5/20/2015 17:21
Chloromethane	U		0.25	5.0	µg/L	1	5/20/2015 17:21
cis-1,2-Dichloroethene	U		0.25	1.0	µg/L	1	5/20/2015 17:21
cis-1,3-Dichloropropene	U		0.24	1.0	µg/L	1	5/20/2015 17:21
Cyclohexane	U		0.31	1.0	µg/L	1	5/20/2015 17:21
Dibromochloromethane	U		0.17	5.0	µg/L	1	5/20/2015 17:21
Dichlorodifluoromethane	U		0.41	5.0	µg/L	1	5/20/2015 17:21
Ethylbenzene	U		0.22	1.0	µg/L	1	5/20/2015 17:21
Isopropylbenzene	U		0.25	5.0	µg/L	1	5/20/2015 17:21
Methyl acetate	U		0.62	10	µg/L	1	5/20/2015 17:21
Methyl tert-butyl ether	U		0.12	5.0	µg/L	1	5/20/2015 17:21

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 22-May-15

Client: Conestoga-Rovers & Associates
Project: PCC-Validation (017322-T01Y13)
Sample ID: TB-17322-051315-EM
Collection Date: 5/13/2015

Work Order: 1505785
Lab ID: 1505785-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		0.32	1.0	µg/L	1	5/20/2015 17:21
Methylene chloride	1.1	J	0.64	5.0	µg/L	1	5/20/2015 17:21
Styrene	U		0.18	1.0	µg/L	1	5/20/2015 17:21
Tetrachloroethene	U		0.25	1.0	µg/L	1	5/20/2015 17:21
Toluene	U		0.20	1.0	µg/L	1	5/20/2015 17:21
trans-1,2-Dichloroethene	U		0.29	1.0	µg/L	1	5/20/2015 17:21
trans-1,3-Dichloropropene	U		0.19	1.0	µg/L	1	5/20/2015 17:21
Trichloroethene	U		0.34	1.0	µg/L	1	5/20/2015 17:21
Trichlorofluoromethane	U		0.39	1.0	µg/L	1	5/20/2015 17:21
Vinyl chloride	U		0.19	1.0	µg/L	1	5/20/2015 17:21
Xylenes, Total	U		0.62	3.0	µg/L	1	5/20/2015 17:21
Surr: 1,2-Dichloroethane-d4	91.0			75-120	%REC	1	5/20/2015 17:21
Surr: 4-Bromofluorobenzene	96.0			80-110	%REC	1	5/20/2015 17:21
Surr: Dibromofluoromethane	94.5			85-115	%REC	1	5/20/2015 17:21
Surr: Toluene-d8	96.2			85-110	%REC	1	5/20/2015 17:21

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Conestoga-Rovers & Associates

QC BATCH REPORT

Work Order: 1505785

Project: PCC-Validation (017322-T01Y13)

Batch ID: 71195

Instrument ID ICPMS2

Method: SW6020A

MBLK		Sample ID: MBLK-71195-71195				Units: mg/L		Analysis Date: 5/18/2015 02:24 PM		
Client ID:		Run ID: ICPMS2_150518A				SeqNo: 3279533		Prep Date: 5/18/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.001464	0.010								J
Lead	U	0.0050								
Vanadium	U	0.0050								

LCS		Sample ID: LCS-71195-71195				Units: mg/L		Analysis Date: 5/18/2015 02:30 PM		
Client ID:		Run ID: ICPMS2_150518A				SeqNo: 3279534		Prep Date: 5/18/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09839	0.010	0.1	0	98.4	80-120	0			
Lead	0.09817	0.0050	0.1	0	98.2	80-120	0			
Vanadium	0.09195	0.0050	0.1	0	92	80-120	0			

MS		Sample ID: 1505209-18AMS				Units: mg/L		Analysis Date: 5/18/2015 02:40 PM		
Client ID:		Run ID: ICPMS2_150518A				SeqNo: 3279536		Prep Date: 5/18/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.9929	0.10	1	0.05513	93.8	75-125	0			
Lead	3.612	0.050	1	2.063	155	75-125	0			S
Vanadium	0.936	0.050	1	0.00247	93.4	75-125	0			

MSD		Sample ID: 1505209-18AMSD				Units: mg/L		Analysis Date: 5/18/2015 03:01 PM		
Client ID:		Run ID: ICPMS2_150518A				SeqNo: 3279540		Prep Date: 5/18/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	4.715	0.050	2	2.063	133	75-125	4.715	0	20	S

MSD		Sample ID: 1505209-18AMSD				Units: mg/L		Analysis Date: 5/19/2015 11:53 AM		
Client ID:		Run ID: ICPMS2_150519A				SeqNo: 3282076		Prep Date: 5/18/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	1.969	0.10	2	0.05513	95.7	75-125	1.969	0	20	

MSD		Sample ID: 1505209-18AMSD				Units: mg/L		Analysis Date: 5/19/2015 04:53 PM		
Client ID:		Run ID: ICPMS2_150519A				SeqNo: 3282231		Prep Date: 5/18/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Vanadium	2.062	0.050	2	0	103	75-125	2.062	0	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1505785
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **71195** Instrument ID **ICPMS2** Method: **SW6020A**

The following samples were analyzed in this batch:

1505785-01A	1505785-02A	1505785-03A
1505785-04A	1505785-05A	1505785-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1505785
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **R163790A** Instrument ID **VMS8** Method: **SW8260**

MBLK		Sample ID: VLKW1-150520-R163790A				Units: µg/L		Analysis Date: 5/20/2015 02:53 PM		
Client ID:		Run ID: VMS8_150520A				SeqNo: 3284956		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	U	1.0								
1,1,2,2-Tetrachloroethane	U	1.0								
1,1,2-Trichloroethane	U	1.0								
1,1,2-Trichlorotrifluoroethane	U	1.0								
1,1-Dichloroethane	U	1.0								
1,1-Dichloroethene	U	1.0								
1,2,4-Trichlorobenzene	U	1.0								
1,2-Dibromo-3-chloropropane	U	1.0								
1,2-Dibromoethane	U	1.0								
1,2-Dichlorobenzene	U	1.0								
1,2-Dichloroethane	U	1.0								
1,2-Dichloropropane	U	1.0								
1,3-Dichlorobenzene	U	1.0								
1,4-Dichlorobenzene	U	1.0								
2-Butanone	U	5.0								
2-Hexanone	U	5.0								
4-Methyl-2-pentanone	U	1.0								
Acetone	U	10								
Benzene	U	1.0								
Bromodichloromethane	U	1.0								
Bromoform	U	1.0								
Bromomethane	U	1.0								
Carbon disulfide	U	1.0								
Carbon tetrachloride	U	1.0								
Chlorobenzene	U	1.0								
Chloroethane	U	1.0								
Chloroform	U	1.0								
Chloromethane	U	1.0								
cis-1,2-Dichloroethene	U	1.0								
cis-1,3-Dichloropropene	U	1.0								
Cyclohexane	U	1.0								
Dibromochloromethane	U	1.0								
Dichlorodifluoromethane	U	1.0								
Ethylbenzene	U	1.0								
Isopropylbenzene	U	1.0								
Methyl acetate	U	2.0								
Methyl tert-butyl ether	U	1.0								
Methylcyclohexane	U	1.0								
Methylene chloride	U	5.0								
Styrene	U	1.0								
Tetrachloroethene	U	1.0								
Toluene	U	1.0								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1505785
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: R163790A	Instrument ID VMS8	Method: SW8260						
trans-1,2-Dichloroethene	U	1.0						
trans-1,3-Dichloropropene	U	1.0						
Trichloroethene	U	1.0						
Trichlorofluoromethane	U	1.0						
Vinyl chloride	U	1.0						
Xylenes, Total	U	3.0						
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>18.24</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>91.2</i>	<i>75-120</i>	<i>0</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>20.13</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>101</i>	<i>80-110</i>	<i>0</i>	
<i>Surr: Dibromofluoromethane</i>	<i>19.19</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>96</i>	<i>85-115</i>	<i>0</i>	
<i>Surr: Toluene-d8</i>	<i>20.12</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>101</i>	<i>85-110</i>	<i>0</i>	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1505785
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **R163790A** Instrument ID **VMS8** Method: **SW8260**

LCS		Sample ID: VLCSW2-150520-R163790A				Units: µg/L		Analysis Date: 5/20/2015 01:40 PM		
Client ID:		Run ID: VMS8_150520A				SeqNo: 3284951		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	22.2	1.0	20	0	111	75-130	0			
1,1,2,2-Tetrachloroethane	20.93	1.0	20	0	105	75-130	0			
1,1,2-Trichloroethane	20.97	1.0	20	0	105	75-125	0			
1,1-Dichloroethane	21.68	1.0	20	0	108	75-133	0			
1,1-Dichloroethene	23.47	1.0	20	0	117	70-145	0			
1,2,4-Trichlorobenzene	21.75	1.0	20	0	109	70-135	0			
1,2-Dibromo-3-chloropropane	24.29	1.0	20	0	121	60-130	0			
1,2-Dibromoethane	31.7	1.0	20	0	158	80-150	0			S
1,2-Dichlorobenzene	20.82	1.0	20	0	104	70-130	0			
1,2-Dichloroethane	20.74	1.0	20	0	104	78-125	0			
1,2-Dichloropropane	21.01	1.0	20	0	105	75-125	0			
1,3-Dichlorobenzene	21.96	1.0	20	0	110	75-130	0			
1,4-Dichlorobenzene	21.81	1.0	20	0	109	75-130	0			
2-Butanone	22.83	5.0	20	0	114	55-150	0			
2-Hexanone	21.82	5.0	20	0	109	60-135	0			
4-Methyl-2-pentanone	27.09	1.0	20	0	135	77-178	0			
Acetone	21.15	10	20	0	106	60-160	0			
Benzene	21.25	1.0	20	0	106	85-125	0			
Bromodichloromethane	23.1	1.0	20	0	116	75-125	0			
Bromoform	21.53	1.0	20	0	108	60-125	0			
Bromomethane	18.39	1.0	20	0	92	30-185	0			
Carbon disulfide	24.05	1.0	20	0	120	60-165	0			
Carbon tetrachloride	21.22	1.0	20	0	106	65-140	0			
Chlorobenzene	20.73	1.0	20	0	104	80-120	0			
Chloroethane	20.65	1.0	20	0	103	50-140	0			
Chloroform	21.86	1.0	20	0	109	80-130	0			
Chloromethane	17.08	1.0	20	0	85.4	50-130	0			
cis-1,2-Dichloroethene	23.13	1.0	20	0	116	75-134	0			
cis-1,3-Dichloropropene	22.69	1.0	20	0	113	70-130	0			
Dibromochloromethane	19.09	1.0	20	0	95.4	60-115	0			
Dichlorodifluoromethane	16.19	1.0	20	0	81	20-120	0			
Ethylbenzene	22.23	1.0	20	0	111	85-125	0			
Isopropylbenzene	21.92	1.0	20	0	110	80-127	0			
Methyl tert-butyl ether	22.89	1.0	20	0	114	80-130	0			
Methylene chloride	22.48	5.0	20	0	112	75-140	0			
Styrene	22.02	1.0	20	0	110	85-125	0			
Tetrachloroethene	22.75	1.0	20	0	114	77-138	0			
Toluene	21.75	1.0	20	0	109	85-125	0			
trans-1,2-Dichloroethene	22.34	1.0	20	0	112	80-140	0			
trans-1,3-Dichloropropene	22.78	1.0	20	0	114	81-123	0			
Trichloroethene	22.27	1.0	20	0	111	84-130	0			
Trichlorofluoromethane	19.21	1.0	20	0	96	60-140	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1505785
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: R163790A	Instrument ID VMS8		Method: SW8260				
Vinyl chloride	19.48	1.0	20	0	97.4	50-136	0
Xylenes, Total	64.25	3.0	60	0	107	80-126	0
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>17.7</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>88.5</i>	<i>75-120</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>19.83</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>99.2</i>	<i>80-110</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>19.35</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>96.8</i>	<i>85-115</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>19.74</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>98.7</i>	<i>85-110</i>	<i>0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1505785
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **R163790A** Instrument ID **VMS8** Method: **SW8260**

MS				Sample ID: 1505785-07A MS			Units: µg/L		Analysis Date: 5/20/2015 10:39 PM	
Client ID: GW-17322-051315-EM-007				Run ID: VMS8_150520A			SeqNo: 3285009		Prep Date:	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	21.07	1.0	20	0	105	75-130	0			
1,1,2,2-Tetrachloroethane	20.39	1.0	20	0	102	75-130	0			
1,1,2-Trichloroethane	20.38	1.0	20	0	102	75-125	0			
1,1-Dichloroethane	21.76	1.0	20	0	109	75-133	0			
1,1-Dichloroethene	18.69	1.0	20	0	93.4	70-145	0			
1,2,4-Trichlorobenzene	18.69	1.0	20	0	93.4	70-135	0			
1,2-Dibromo-3-chloropropane	22.41	1.0	20	0	112	60-130	0			
1,2-Dibromoethane	30.54	1.0	20	0	153	80-150	0			S
1,2-Dichlorobenzene	20.06	1.0	20	0	100	70-130	0			
1,2-Dichloroethane	19.74	1.0	20	0	98.7	78-125	0			
1,2-Dichloropropane	20.62	1.0	20	0	103	75-125	0			
1,3-Dichlorobenzene	21.82	1.0	20	0	109	75-130	0			
1,4-Dichlorobenzene	21.06	1.0	20	0	105	75-130	0			
2-Butanone	19.23	5.0	20	0	96.2	55-150	0			
2-Hexanone	23.35	5.0	20	0	117	60-135	0			
4-Methyl-2-pentanone	28.5	1.0	20	0	142	77-178	0			
Acetone	16.86	10	20	0	84.3	60-160	0			
Benzene	21.19	1.0	20	0	106	85-125	0			
Bromodichloromethane	20.65	1.0	20	0	103	75-125	0			
Bromoform	19.43	1.0	20	0	97.2	60-125	0			
Bromomethane	12.62	1.0	20	0	63.1	30-185	0			
Carbon disulfide	22.27	1.0	20	1.05	106	60-165	0			
Carbon tetrachloride	20.51	1.0	20	0	103	65-140	0			
Chlorobenzene	20.2	1.0	20	0	101	80-120	0			
Chloroethane	18.29	1.0	20	0	91.4	50-140	0			
Chloroform	20.79	1.0	20	0	104	80-130	0			
Chloromethane	13.87	1.0	20	0	69.4	50-130	0			
cis-1,2-Dichloroethene	21.85	1.0	20	0	109	75-134	0			
cis-1,3-Dichloropropene	20.99	1.0	20	0	105	70-130	0			
Dibromochloromethane	17.84	1.0	20	0	89.2	60-115	0			
Dichlorodifluoromethane	14.78	1.0	20	0	73.9	20-120	0			
Ethylbenzene	22.13	1.0	20	0	111	85-125	0			
Isopropylbenzene	21.6	1.0	20	0	108	80-127	0			
Methyl tert-butyl ether	20.51	1.0	20	0	103	80-130	0			
Methylene chloride	21.11	5.0	20	0	106	75-140	0			
Styrene	21.64	1.0	20	0	108	85-125	0			
Tetrachloroethene	20.99	1.0	20	0	105	77-138	0			
Toluene	22.63	1.0	20	0	113	85-125	0			
trans-1,2-Dichloroethene	22.01	1.0	20	0	110	80-140	0			
trans-1,3-Dichloropropene	21.79	1.0	20	0	109	81-123	0			
Trichloroethene	22.22	1.0	20	0	111	84-130	0			
Trichlorofluoromethane	18.53	1.0	20	0	92.6	60-140	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1505785
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: R163790A	Instrument ID VMS8		Method: SW8260				
Vinyl chloride	17.74	1.0	20	0	88.7	50-136	0
Xylenes, Total	65.21	3.0	60	0	109	80-126	0
<i>Surr: 1,2-Dichloroethane-d4</i>	18.17	0	20	0	90.8	75-120	0
<i>Surr: 4-Bromofluorobenzene</i>	20.12	0	20	0	101	80-110	0
<i>Surr: Dibromofluoromethane</i>	19.34	0	20	0	96.7	85-115	0
<i>Surr: Toluene-d8</i>	20.12	0	20	0	101	85-110	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1505785
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: **R163790A** Instrument ID **VMS8** Method: **SW8260**

MSD				Sample ID: 1505785-07A MSD			Units: µg/L		Analysis Date: 5/20/2015 11:03 PM	
Client ID: GW-17322-051315-EM-007				Run ID: VMS8_150520A			SeqNo: 3285011		Prep Date:	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	19.7	1.0	20	0	98.5	75-130	21.07	6.72	30	
1,1,2,2-Tetrachloroethane	19.01	1.0	20	0	95	75-130	20.39	7.01	30	
1,1,2-Trichloroethane	19.17	1.0	20	0	95.8	75-125	20.38	6.12	30	
1,1-Dichloroethane	20.2	1.0	20	0	101	75-133	21.76	7.44	30	
1,1-Dichloroethene	20.92	1.0	20	0	105	70-145	18.69	11.3	30	
1,2,4-Trichlorobenzene	18.29	1.0	20	0	91.4	70-135	18.69	2.16	30	
1,2-Dibromo-3-chloropropane	20.78	1.0	20	0	104	60-130	22.41	7.55	30	
1,2-Dibromoethane	27.76	1.0	20	0	139	80-150	30.54	9.54	30	
1,2-Dichlorobenzene	18.05	1.0	20	0	90.2	70-130	20.06	10.5	30	
1,2-Dichloroethane	18.39	1.0	20	0	92	78-125	19.74	7.08	30	
1,2-Dichloropropane	18.88	1.0	20	0	94.4	75-125	20.62	8.81	30	
1,3-Dichlorobenzene	18.9	1.0	20	0	94.5	75-130	21.82	14.3	30	
1,4-Dichlorobenzene	18.7	1.0	20	0	93.5	75-130	21.06	11.9	30	
2-Butanone	17.69	5.0	20	0	88.4	55-150	19.23	8.34	30	
2-Hexanone	20.8	5.0	20	0	104	60-135	23.35	11.6	30	
4-Methyl-2-pentanone	26.28	1.0	20	0	131	77-178	28.5	8.11	30	
Acetone	17.97	10	20	0	89.8	60-160	16.86	6.37	30	
Benzene	19.06	1.0	20	0	95.3	85-125	21.19	10.6	30	
Bromodichloromethane	19.05	1.0	20	0	95.2	75-125	20.65	8.06	30	
Bromoform	17.53	1.0	20	0	87.6	60-125	19.43	10.3	30	
Bromomethane	12.81	1.0	20	0	64	30-185	12.62	1.49	30	
Carbon disulfide	20.68	1.0	20	1.05	98.2	60-165	22.27	7.4	30	
Carbon tetrachloride	18.86	1.0	20	0	94.3	65-140	20.51	8.38	30	
Chlorobenzene	18.76	1.0	20	0	93.8	80-120	20.2	7.39	30	
Chloroethane	17.78	1.0	20	0	88.9	50-140	18.29	2.83	30	
Chloroform	18.93	1.0	20	0	94.6	80-130	20.79	9.37	30	
Chloromethane	14.32	1.0	20	0	71.6	50-130	13.87	3.19	30	
cis-1,2-Dichloroethene	20.12	1.0	20	0	101	75-134	21.85	8.24	30	
cis-1,3-Dichloropropene	19.14	1.0	20	0	95.7	70-130	20.99	9.22	30	
Dibromochloromethane	16.12	1.0	20	0	80.6	60-115	17.84	10.1	30	
Dichlorodifluoromethane	14.19	1.0	20	0	71	20-120	14.78	4.07	30	
Ethylbenzene	20.08	1.0	20	0	100	85-125	22.13	9.71	30	
Isopropylbenzene	19.52	1.0	20	0	97.6	80-127	21.6	10.1	30	
Methyl tert-butyl ether	20.79	1.0	20	0	104	80-130	20.51	1.36	30	
Methylene chloride	19.6	5.0	20	0	98	75-140	21.11	7.42	30	
Styrene	20.45	1.0	20	0	102	85-125	21.64	5.65	30	
Tetrachloroethene	19.05	1.0	20	0	95.2	77-138	20.99	9.69	30	
Toluene	20.42	1.0	20	0	102	85-125	22.63	10.3	30	
trans-1,2-Dichloroethene	20.02	1.0	20	0	100	80-140	22.01	9.47	30	
trans-1,3-Dichloropropene	19.87	1.0	20	0	99.4	81-123	21.79	9.22	30	
Trichloroethene	19.72	1.0	20	0	98.6	84-130	22.22	11.9	30	
Trichlorofluoromethane	17.26	1.0	20	0	86.3	60-140	18.53	7.1	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1505785
Project: PCC-Validation (017322-T01Y13)

QC BATCH REPORT

Batch ID: R163790A		Instrument ID VMS8		Method: SW8260					
Vinyl chloride	16.85	1.0	20	0	84.2	50-136	17.74	5.15	30
Xylenes, Total	59.92	3.0	60	0	99.9	80-126	65.21	8.46	30
Surr: 1,2-Dichloroethane-d4	18.06	0	20	0	90.3	75-120	18.17	0.607	30
Surr: 4-Bromofluorobenzene	20.15	0	20	0	101	80-110	20.12	0.149	30
Surr: Dibromofluoromethane	18.96	0	20	0	94.8	85-115	19.34	1.98	30
Surr: Toluene-d8	20.08	0	20	0	100	85-110	20.12	0.199	30

The following samples were analyzed in this batch: | 1505785-07A | 1505785-08A |

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



**CONESTOGA-ROVERS
& ASSOCIATES**

CHAIN OF CUSTODY RECORD

14496 Sheldon Road, Suite #200, Plymouth, Michigan 48170

Phone: (734) 453-5123

Fax: (734) 453-5201

1500 / 80
COC NO.: **PL-13274**

PAGE **1** OF **1**

(See Reverse Side for Instructions)

Project No/Phase/Task Code: 17322-TO3Y15				Laboratory Name: ALS				Lab Location: Holland, MI				SSOW ID: 17322-004																																																																			
Project Name: PCC-Validation				Lab Contact: Tam Beamish				Lab Quote No: -				Cooler No: -																																																																			
Project Location: Pontiac, MI				SAMPLE TYPE				CONTAINER QUANTITY & PRESERVATION				ANALYSIS REQUESTED (See Back of COC for Definitions)																																																																			
Chemistry Contact: Rana Fleisher				Matrix Code (see back of COC) Grab (G) or Comp (C)				Unpreserved Hydrochloric Acid (HCl) Nitric Acid (HNO ₃) Sulfuric Acid (H ₂ SO ₄) Sodium Hydroxide (NaOH) Methanol/Water (Sol VOC) EnCore 345-g, 125-g Other: Total Containers/Sample				Carrier: Fed Ex Airbill No: - Date Shipped: 5-13-15																																																																			
Sampler(s): Eric Mickelson																																																																															
<table border="1"> <thead> <tr> <th>Item</th> <th>SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)</th> <th>DATE (mm/dd/yy)</th> <th>TIME (hh:mm)</th> </tr> </thead> <tbody> <tr><td>1</td><td>GW-17322-051315-EM-001</td><td>5/13/15</td><td>1000</td></tr> <tr><td>2</td><td>-002</td><td></td><td>1010</td></tr> <tr><td>3</td><td>-003</td><td></td><td>1045</td></tr> <tr><td>4</td><td>-004</td><td></td><td>1610</td></tr> <tr><td>5</td><td>-005</td><td></td><td>1630</td></tr> <tr><td>6</td><td>-006</td><td></td><td>1355</td></tr> <tr><td>7</td><td>-007</td><td></td><td>1530</td></tr> <tr><td>8</td><td>TB-17322-051315-EM</td><td></td><td></td></tr> <tr><td>9</td><td></td><td></td><td></td></tr> <tr><td>10</td><td></td><td></td><td></td></tr> <tr><td>11</td><td></td><td></td><td></td></tr> <tr><td>12</td><td></td><td></td><td></td></tr> <tr><td>13</td><td></td><td></td><td></td></tr> <tr><td>14</td><td></td><td></td><td></td></tr> <tr><td>15</td><td></td><td></td><td></td></tr> </tbody> </table>				Item	SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)	DATE (mm/dd/yy)	TIME (hh:mm)	1	GW-17322-051315-EM-001	5/13/15	1000	2	-002		1010	3	-003		1045	4	-004		1610	5	-005		1630	6	-006		1355	7	-007		1530	8	TB-17322-051315-EM			9				10				11				12				13				14				15															
Item	SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)	DATE (mm/dd/yy)	TIME (hh:mm)																																																																												
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TAT Required In business days (Use separate COCs for different TATs) ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☐ 2 Week ☒ Other: 5 Days				Total Number of Containers: 16				Notes/Special Requirements: (a)																																																																							
All Samples in Cooler must be on COC																																																																															
RELINQUISHED BY		COMPANY		DATE		TIME		RECEIVED BY		COMPANY		DATE		TIME																																																																	
1. Eric Mickelson		CRA		5-13-15		1730		1. T.B. Beamish		ALS		05/14/15		0930																																																																	
2.								2.																																																																							
3.								3.																																																																							

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT - ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: **WHITE** - Fully Executed Copy (CRA)

YELLOW - Receiving Laboratory Copy

PINK - Shipper

GOLDENROD - Sampling Crew

382
CRA Form: COC-10A (20110804)

BILL SENDER

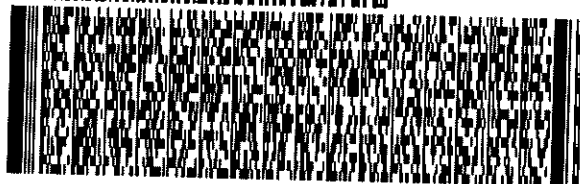
**TO SAMPLES RECIEVABLE
ALS ENVIRONMENTAL
3352 128TH AVE**

HOLLAND MI 49424

(616) 399-6070

MEF:

DEPT 1

**FedEx**
Express

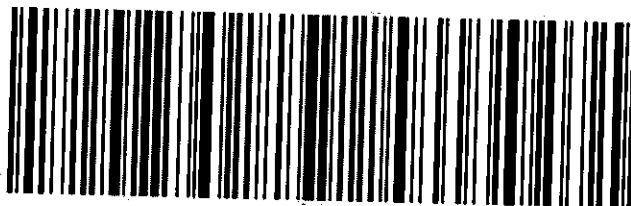
TRK# 8066 7367 8852
0200

THU - 14 MAY 10:30A
PRIORITY OVERNIGHT

68 HLMA

49424

MI-U8 GRR



Part # 156287-435 RIT2 03/15

1512160291611 44

Sample Receipt Checklist

Client Name: CRA - PLYMOUTH

Date/Time Received: 14-May-15 09:30

Work Order: 1505785

Received by: KRW

Checklist completed by Keith Wurenga
eSignature

14-May-15
Date

Reviewed by: Chad Whelton
eSignature

14-May-15
Date

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☒	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☒	No ☐	
Sample(s) received on ice?	Yes ☒	No ☐	
Temperature(s)/Thermometer(s):	<u>3.8 C</u> <u>SR2</u>		
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>5/14/2015 1:15:41 PM</u>		
Water - VOA vials have zero headspace?	Yes ☒	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☒	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☒	N/A ☐
pH adjusted by:	<u>-</u>		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:

Appendix C

Data Validation Report



**CONESTOGA-ROVERS
& ASSOCIATES**

14496 Sheldon Road, Suite #200
Plymouth, Michigan 48170
Telephone: (734) 453-5123 Fax: (734) 453-5201
www.CRAworld.com

MEMORANDUM

To: Tom Kinney REF. No.: 017322

FROM: Nancy Bergstrom/tl/34/Det DATE: May 27, 2015

RE: Analytical Results and Reduced Validation
Additional Groundwater Monitoring
PCC-Validation
Pontiac, Michigan
May 2015

1.0 Introduction

The following document details a reduced validation of analytical results for groundwater samples collected in support of the Additional Groundwater Monitoring at the PCC-Validation Site during May 2015. Samples were submitted to ALS Environmental, located in Holland, Michigan (ALS-MI). A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard Conestoga-Rovers & Associates (CRA) report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody form, finished report forms, method blank data, recovery data from surrogate spikes, laboratory control samples (LCS), matrix spikes (MS), and field QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the documents entitled:

- i) "Sampling and Analysis Plan and Fundamental Quality Assurance Project Plan (QAPP)", April, 2012
- ii) "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", United States Environmental Protection Agency (USEPA) 540/R-99-008, October 1999
- iii) "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", USEPA 540/R-94-013, February 1994

Items ii) and iii) will subsequently be referred to as the "Guidelines" in this Memorandum.

2.0 Sample Holding Time and Preservation

The sample holding time criteria and sample preservation requirements for the analyses are summarized in Table 3. The sample chain of custody document and analytical report were used to determine sample holding times. All samples were analyzed within the required holding times.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature ($4 \pm 2^{\circ}\text{C}$).

3.0 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

All method blank results were non-detect or the investigative sample results were greater than five times the method blank results, indicating that laboratory contamination was not a factor.

4.0 Surrogate Spike Recoveries – Organic Analyses

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for volatile organic compounds (VOC) determinations were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries met the above criteria.

5.0 Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

Organic Analyses

The LCS contained all compounds of interest. All LCS were within the laboratory control limits or outlying percent recoveries did not result in qualification, demonstrating acceptable analytical accuracy.

Inorganic Analyses

The LCS contained all analytes of interest. LCS recoveries were assessed per the "Guidelines". All LCS recoveries were within the control limits, demonstrating acceptable analytical accuracy.

6.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the extraction or digestion process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1.

Organic Analyses

The MS/MSD samples were spiked with all compounds of interest. All percent recoveries and RPD values were within the laboratory control limits or outlying percent recoveries did not result in qualification, demonstrating acceptable analytical accuracy and precision.

Inorganic Analyses

A MS/MSD sample was not performed on an investigative sample for the metals analyses.

7.0 Field QA/QC Samples

The field QA/QC consisted of one trip blank sample and one field duplicate sample set.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, one trip blank was submitted to the laboratory for TCL VOC analysis. Methylene chloride was detected in the trip blank sample but not in the investigative sample. Qualification is not required in this instance. All remaining results were non-detect for the compounds of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, one field duplicate sample was collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is one times the RL value for water samples.

Table 4 presents the data qualified due to variability in the field duplicate results. All remaining field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

8.0 Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. Positive analyte detections less than the RL but greater than the MDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this memorandum. Non-detect results were presented as non-detect at the RL in Table 2.

9.0 Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualifications noted herein.

TABLE 1

SAMPLE COLLECTION AND ANALYSIS SUMMARY
ADDITIONAL GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
MAY 2015

Analysis/Parameters							
Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	TCL VOC		Comments
					Aluminum, Vanadium, Lead		
ALS - Holland SDG No.: 1505785							
GW-17322-051315-EM-001	MW38-07	water	05/13/2015	10:00	-	X	Field duplicate of MW38-07
GW-17322-051315-EM-002	MW38-07	water	05/13/2015	10:10	-	X	
GW-17322-051315-EM-003	MW82-12	water	05/13/2015	10:45	-	X	
GW-17322-051315-EM-004	MW33-07	water	05/13/2015	16:10	-	X	
GW-17322-051315-EM-005	MW21-07	water	05/13/2015	16:30	-	X	MS/MSD Trip Blank
GW-17322-051315-EM-006	MW83-12	water	05/13/2015	13:55	-	X	
GW-17322-051315-EM-007	MW74D-15	water	05/13/2015	15:30	X	-	
TB-17322-051315-EM	--	water	05/13/2015	--	X	-	

Notes:

TCL VOC - Target Compound List Volatile Organic Compounds
 ALS - Holland - ALS Environmental - Holland, Michigan
 SDG - Sample Delivery Group
 MS/MSD - Matrix spike/matrix spike duplicate

TABLE 2

VALIDATED ANALYTICAL RESULTS SUMMARY
ADDITIONAL GROUNDWATER MONITORING

PCC-VALIDATION
PONTIAC, MICHIGAN
MAY 2015

Sample Location: MW211-07 MW33-07 MW38-07
Sample ID: GW-17322-051315-EM-005 GW-17322-051315-EM-004 GW-17322-051315-EM-002
Sample Date: 05/13/2015 05/13/2015 05/13/2015
Sample Type: Duplicate
Parameters

Units

VOCs

1,1,1-Trichloroethane	ug/L	--	--	--
1,1,2,2-Tetrachloroethane	ug/L	--	--	--
1,1,2-Trichloroethane	ug/L	--	--	--
1,1-Dichloroethane	ug/L	--	--	--
1,1-Dichloroethene	ug/L	--	--	--
1,2,4-Trichlorobenzene	ug/L	--	--	--
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	--	--	--
1,2-Dibromoethane (Ethylene dibromide)	ug/L	--	--	--
1,2-Dichlorobenzene	ug/L	--	--	--
1,2-Dichloroethane	ug/L	--	--	--
1,2-Dichloropropane	ug/L	--	--	--
1,3-Dichlorobenzene	ug/L	--	--	--
1,4-Dichlorobenzene	ug/L	--	--	--
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	--	--	--
2-Hexanone	ug/L	--	--	--
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	--	--	--
Acetone	ug/L	--	--	--
Benzene	ug/L	--	--	--
Bromodichloromethane	ug/L	--	--	--
Bromoform	ug/L	--	--	--
Bromomethane (Methyl bromide)	ug/L	--	--	--
Carbon disulfide	ug/L	--	--	--
Carbon tetrachloride	ug/L	--	--	--
Chlorobenzene	ug/L	--	--	--
Chloroethane	ug/L	--	--	--
Chloroform (Trichloromethane)	ug/L	--	--	--

TABLE 2

VALIDATED ANALYTICAL RESULTS SUMMARY
ADDITIONAL GROUNDWATER MONITORING

PCC-VALIDATION
PONTIAC, MICHIGAN
MAY 2015

Sample Location: MW21-07 MW33-07 MW38-07
Sample ID: GW-17322-051315-EM-005 GW-17322-051315-EM-004 GW-17322-051315-EM-002
Sample Date: 05/13/2015 05/13/2015 05/13/2015
Sample Type: Duplicate
Parameters

Units

VOCs

Chloromethane (Methyl chloride)	ug/L	--	--	--
cis-1,2-Dichloroethene	ug/L	--	--	--
cis-1,3-Dichloropropene	ug/L	--	--	--
Cyclohexane	ug/L	--	--	--
Dibromochloromethane	ug/L	--	--	--
Dichlorodifluoromethane (CFC-12)	ug/L	--	--	--
Ethylbenzene	ug/L	--	--	--
Isopropyl benzene	ug/L	--	--	--
Methyl acetate	ug/L	--	--	--
Methyl cyclohexane	ug/L	--	--	--
Methyl tert butyl ether (MTBE)	ug/L	--	--	--
Methylene chloride	ug/L	--	--	--
Styrene	ug/L	--	--	--
Tetrachloroethene	ug/L	--	--	--
Toluene	ug/L	--	--	--
trans-1,2-Dichloroethene	ug/L	--	--	--
trans-1,3-Dichloropropene	ug/L	--	--	--
Trichloroethene	ug/L	--	--	--
Trichlorofluoromethane (CFC-11)	ug/L	--	--	--
Trifluorotrichloroethane (Freon 113)	ug/L	--	--	--
Vinyl chloride	ug/L	--	--	--
Xylenes (total)	ug/L	--	--	--

TABLE 2

VALIDATED ANALYTICAL RESULTS SUMMARY
ADDITIONAL GROUNDWATER MONITORING

PCC-VALIDATION
PONTIAC, MICHIGAN
MAY 2015

Sample Location:
Sample ID: MW21-07 GW-17322-051315-EM-005
Sample Date: 05/13/2015
Sample Type: Duplicate
Parameters

MW33-07 GW-17322-051315-EM-004
05/13/2015

MW38-07 GW-17322-051315-EM-002
05/13/2015

Units

Metals

Aluminum
Lead
Vanadium

ug/L 2000
ug/L 8.9
ug/L 6.8

5300
17
15

100 J
0.52 J
4.0 U

TABLE 2

VALIDATED ANALYTICAL RESULTS SUMMARY
ADDITIONAL GROUNDWATER MONITORING

PCC-VALIDATION
PONTIAC, MICHIGAN
MAY 2015

Sample Location: MW38-07 MW74D-15 MW82-12
Sample ID: GW-17322-051315-EM-001 GW-17322-051315-EM-007 GW-17322-051315-EM-003
Sample Date: 05/13/2015 05/13/2015 05/13/2015
Sample Type: Parameters

Units

VOCs

1,1,1-Trichloroethane	--	1.0 U	--
1,1,2,2-Tetrachloroethane	--	1.0 U	--
1,1,2-Trichloroethane	--	1.0 U	--
1,1-Dichloroethane	--	1.0 U	--
1,1-Dichloroethene	--	1.0 U	--
1,2,4-Trichlorobenzene	--	5.0 U	--
1,2-Dibromo-3-chloropropane (DBCP)	--	1.0 U	--
1,2-Dibromoethane (Ethylene dibromide)	--	1.0 U	--
1,2-Dichlorobenzene	--	1.0 U	--
1,2-Dichloroethane	--	1.0 U	--
1,2-Dichloropropane	--	1.0 U	--
1,3-Dichlorobenzene	--	1.0 U	--
1,4-Dichlorobenzene	--	1.0 U	--
2-Butanone (Methyl ethyl ketone) (MEK)	--	25 U	--
2-Hexanone	--	50 U	--
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	--	50 U	--
Acetone	--	50 U	--
Benzene	--	1.0 U	--
Bromodichloromethane	--	1.0 U	--
Bromoform	--	1.0 U	--
Bromomethane (Methyl bromide)	--	5.0 U	--
Carbon disulfide	--	1.0 J	--
Carbon tetrachloride	--	1.0 U	--
Chlorobenzene	--	1.0 U	--
Chloroethane	--	5.0 U	--
Chloroform (Trichloromethane)	--	1.0 U	--

TABLE 2

VALIDATED ANALYTICAL RESULTS SUMMARY
ADDITIONAL GROUNDWATER MONITORING

PCC-VALIDATION
PONTIAC, MICHIGAN
MAY 2015

Sample Location:	MW38-07	MW74D-15	MW82-12
Sample ID:	GW-17322-051315-EM-001	GW-17322-051315-EM-007	GW-17322-051315-EM-003
Sample Date:	05/13/2015	05/13/2015	05/13/2015
Sample Type:			
Parameters			
VOCs			
Chloromethane (Methyl chloride)	ug/L	5.0 U	-
cis-1,2-Dichloroethene	ug/L	1.0 U	-
cis-1,3-Dichloropropene	ug/L	1.0 U	-
Cyclohexane	ug/L	1.0 U	-
Dibromochloromethane	ug/L	5.0 U	-
Dichlorodifluoromethane (CFC-12)	ug/L	5.0 U	-
Ethylbenzene	ug/L	1.0 U	-
Isopropyl benzene	ug/L	5.0 U	-
Methyl acetate	ug/L	10 U	-
Methyl cyclohexane	ug/L	1.0 U	-
Methyl tert butyl ether (MTBE)	ug/L	5.0 U	-
Methylene chloride	ug/L	5.0 U	-
Styrene	ug/L	1.0 U	-
Tetrachloroethene	ug/L	1.0 U	-
Toluene	ug/L	1.0 U	-
trans-1,2-Dichloroethene	ug/L	1.0 U	-
trans-1,3-Dichloropropene	ug/L	1.0 U	-
Trichloroethene	ug/L	1.0 U	-
Trichlorofluoromethane (CFC-11)	ug/L	1.0 U	-
Trifluorotrichloroethane (Freon 113)	ug/L	1.0 U	-
Vinyl chloride	ug/L	1.0 U	-
Xylenes (total)	ug/L	3.0 U	-

TABLE 2

VALIDATED ANALYTICAL RESULTS SUMMARY ADDITIONAL GROUNDWATER MONITORING

PCC-VALIDATION

PONTIAC, MICHIGAN

MAY 2015

Sample Location:

Sample ID:

Sample Date:

Sample Type:

Parameters

Well ID	Well Name	Well Type	Well Status	Well Depth (m)	Well Completion Date	Well Completion Status
MW38-07	GW-17322-051315-EM-001	GW-17322-051315-EM-007	GW-17322-051315-EM-003	05/13/2015	05/13/2015	05/13/2015
MW74D-15	GW-17322-051315-EM-001	GW-17322-051315-EM-007	GW-17322-051315-EM-003	05/13/2015	05/13/2015	05/13/2015
MW82-12	GW-17322-051315-EM-001	GW-17322-051315-EM-007	GW-17322-051315-EM-003	05/13/2015	05/13/2015	05/13/2015

Units

Metals

Aluminum

Lead

Vanadium

38J

0.30 J

4.0 U

1

1

1

830

0.66 J

23

TABLE 2

VALIDATED ANALYTICAL RESULTS SUMMARY
ADDITIONAL GROUNDWATER MONITORING

PCC-VALIDATION
PONTIAC, MICHIGAN
MAY 2015

MW83-12 Trip Blank
GW-17322-051315-EM-006 TB-17322-051315-EM
05/13/2015 05/13/2015

Sample Location:
Sample ID:
Sample Date:
Sample Type:
Parameters

Units

Metals

Aluminum	28	--
Lead	0.24 J	--
Vanadium	1.0 J	--

Notes

- U - Not detected at the associated reporting limit.
- J - Estimated concentration.
- UJ - Not detected; associated reporting limit is estimated.

TABLE 3

ANALYTICAL METHODS AND HOLDING TIME CRITERIA
ADDITIONAL GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
MAY 2015

<i>Parameter</i>	<i>Method</i>	<i>Matrix</i>	<i>Preservation</i>	<i>Holding Time</i>	
				<i>Collection to Extraction (Days)</i>	<i>Collection or Extraction to Analysis (Days)</i>
TCL VOC	SW-846 8260B	Water	pH < 2 and Iced, 4 ± 2° C	-	14
Aluminum, Lead, Vanadium	SW-846 6020	Water	pH < 2 and Iced, 4 ± 2° C	-	180

Notes

SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions.
TCL VOC - Target Compound List Volatile Organic Compounds

TABLE 4

QUALIFIED SAMPLE DATA DUE TO VARIABILITY IN FIELD DUPLICATE RESULTS
ADDITIONAL GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
MAY 2015

<i>Parameter</i>	<i>Analyte</i>	<i>RPD/Diff</i>	<i>Sample ID</i>	<i>Qualified Result</i>	<i>Field Duplicate Sample ID</i>	<i>Qualified Result</i>	<i>Units</i>
Metals	Aluminum	Diff = 62	GW-17322-051315-EM-001	38 J	GW-17322-051315-EM-002	100 J	µg/L

Notes:

Diff - Difference (i.e. >1X RL for waters or >2XRL for soils.)

RPD - Relative percent difference.



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MEMORANDUM

TO: Tom Kinney

FROM: Nancy Bergstrom/tl/32/Det

REF. NO.: 017322

DATE: April 30, 2015

RE: **Analytical Results and Full Validation
Groundwater Monitoring
PCC-Validation
Pontiac, Michigan
April 2015**

1.0 Introduction

The following document details a validation of analytical results for groundwater samples collected in support of the Groundwater Monitoring at the PCC-Validation Site during April 2015. Samples were submitted to ALS Environmental, located in Holland, Michigan. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Full Contract Laboratory Program (CLP) equivalent raw data deliverables were provided by the laboratory. Evaluation of 10 percent of the data (the four samples identified on Table 1) was performed on the full CLP data and was based on information obtained from the finished data sheets, raw data, chain of custody forms, calibration data, blank data, recovery data from surrogate spikes, laboratory control samples (LCS), matrix spike (MS) samples, and field quality assurance/quality control (QA/QC) samples. The assessment of the analytical and in-house data included checks for: data consistency (by observing comparability of duplicate analyses), adherence to accuracy and precision criteria, and transmittal errors. The remaining data was evaluated based on information obtained from the chain of custody forms, finished report forms, method blank data, recovery data from surrogate spikes, LCS, MS, and field QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the documents entitled:

- i) "Sampling and Analysis Plan and Fundamental Quality Assurance Project Plan (QAPP)", April 2012
- ii) "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", United States Environmental Protection Agency (USEPA) 540/R-99-008, October 1999
- iii) USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", USEPA 540-R-01-008, July 2002

Items ii) and iii) will subsequently be referred to as the "Guidelines" in this Memorandum.

2.0 Sample Holding Time and Preservation

The sample holding time criteria and sample preservation requirements for the analyses are summarized in Table 3. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (4 +/- 2°C).

3.0 Gas Chromatography/Mass Spectrometer (GC/MS) – Tuning and Mass Calibration IPC (Instrument Performance Check) and Inductively Coupled/Mass Spectrometer (ICP/MS) – Full Validation

Organic Analyses

Prior to volatile organic compound (VOC) analysis, GC/MS instrumentation is tuned to ensure optimization over the mass range of interest. To evaluate instrument tuning, the method requires the analysis of the specific tuning compound bromofluorobenzene (BFB). The resulting spectra must meet the criteria cited in the methods before analysis is initiated. Analysis of the tuning compound must then be repeated every 12 hours throughout sample analysis to ensure the continued optimization of the instrument.

The tuning compound was analyzed at the required frequency throughout VOC analysis periods. All tuning criteria were met, indicating that proper optimization of the instrumentation was achieved.

Inorganic Analyses

To ensure adequate mass resolution, identification, and to some degree, sensitivity, the performance of each ICP/MS instrument used for metals analyses is checked prior to calibration and initiating an analysis sequence through the analysis of a tuning solution.

Instrument performance check data were reviewed. The tuning solution was analyzed at the required frequency throughout the analyses. The results of all instrument performance checks were within the method acceptance criteria, indicating that proper optimization of the instrumentation was achieved.

4.0 Initial Calibration - Organic Analyses – Full Validation

GC/MS

To quantify VOC compounds of interest in samples, calibration of the GC/MS over a specific concentration range must be performed. Initially, a five-point calibration curve containing all compounds of interest is

analyzed to characterize instrument response for each analyte over a specific concentration range. Linearity of the calibration curve and instrument sensitivity are evaluated against the following criteria:

- i) All relative response factors (RRFs) must be greater than or equal to 0.05
- ii) The percent relative standard deviation (RSD) values must not exceed 30.0 percent or a minimum correlation coefficient (R) of 0.995 and minimum coefficient of determination (R^2) of 0.99 if linear and quadratic equation calibration curves, respectively, are used

The initial calibration data for VOCs were reviewed. All compounds met the above criteria for sensitivity and linearity.

5.0 Initial Calibration – Inorganic Analyses – Full Validation

Initial calibration of the instruments ensures that they are capable of producing satisfactory quantitative data at the beginning of a series of analyses. For ICP/MS analysis, a calibration blank and at least one standard must be analyzed at each wavelength to establish the analytical curve. For analytical curves established from a calibration blank and more than one standard, the resulting correlation coefficients (R) must be 0.995 or greater.

After the analyses of the calibration curves, an initial calibration verification (ICV) standard must be analyzed to verify the analytical accuracy of the calibration curves. All analyte recoveries from the analyses of the ICVs must be within the following control limits:

<i>Analytical Method</i>	<i>Parameter</i>	<i>Control Limits</i>
ICP/MS	Metals	90 - 110%

Table 4 presents the sample results qualified due to outlying initial calibration results. The remaining calibration curves and ICVs were analyzed at the proper frequencies and the above-specified criteria were met.

6.0 Continuing Calibration - Organic Analyses – Full Validation

GC/MS

To ensure that instrument calibration for VOC analyses is acceptable throughout the sample analysis period, continuing calibration standards must be analyzed and compared to the initial calibration curve every 12 hours.

The following criteria were employed to evaluate continuing calibration data:

- i) All RRF values must be greater than or equal to 0.05

- ii) Percent difference (%D) values must not exceed 25 percent

Table 5 presents the data qualified due to outlying continuing calibration results. All remaining calibration standards were analyzed at the required frequency, and the results met the above criteria for instrument sensitivity and stability.

7.0 Continuing Calibration – Inorganic Analyses – Full Validation

To ensure that instrument calibration is acceptable throughout the sample analysis period, continuing calibration verification (CCV) standards are analyzed on a regular basis. Each CCV is deemed acceptable if all analyte recoveries are within the control limits specified above for the ICVs. If some of the CCV analyte recoveries are outside the control limits, samples analyzed before and after the CCV, up until the previous and proceeding CCV analyses, are affected.

For this study, CCVs were analyzed at the proper frequency. All analyte recoveries reported for the CCVs were within the specified limits.

8.0 Contract Required Detection Limit (CRDL) Standard Analyses – Full Validation

To verify the linearity of the ICP/MS calibration near the detection limit, a standard is analyzed which contains the ICP/MS analytes at specified concentrations. This standard must be analyzed at the beginning and end of each sample analysis run or a minimum of twice per 8-hour period.

CRDL recoveries were evaluated using the criteria specified in the "Guidelines". Table 6 presents the sample data qualified due to outlying CRDL standards. The remaining CRDL recoveries were acceptable.

9.0 Laboratory Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. Additionally, initial and continuing calibration blanks (ICBs/CCBs) are routinely analyzed after each ICV/CCV for the inorganic parameters.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

Organic Analyses

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

Inorganic Analyses

All ICBs, CCBs, and method blanks were non-detect, indicating that laboratory contamination was not a factor for this investigation.

10.0 Surrogate Spike Recoveries

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample extraction and/or analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for VOC determinations were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries met the above criteria.

11.0 Internal Standards (IS) Analyses – Full Validation

IS data were evaluated for all VOC and ICP/MS sample analyses.

Organics Analyses

To ensure that changes in the GC/MS sensitivity and response do not affect sample analysis results, IS compounds are added to each sample prior to analysis. All results are then calculated as a ratio of the IS responses.

The sample IS results were evaluated against the following criteria:

- i) The retention time of the IS must not vary more than ± 30 seconds from the associated calibration standard
- ii) IS area counts must not vary by more than a factor of two (-50 percent to +100 percent) from the associated calibration standard

All organic IS recoveries and retention times met the above criteria.

Inorganic Analyses

IS elements were added to all samples prior to metals analysis by ICP/MS. Overall instrument stability and performance for metals analyses were monitored using the IS intensity data. IS recoveries were assessed using control limits of 60-125 percent.

All inorganic IS recoveries were acceptable, demonstrating adequate analytical performance.

12.0 Laboratory Control Sample (LCS) Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

Organic Analyses

The LCS contained all compounds of interest. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

Inorganic Analyses

The LCS contained all analytes of interest. LCS recoveries were assessed per the "Guidelines". All LCS recoveries were within the control limits, demonstrating acceptable analytical accuracy.

13.0 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the extraction or digestion process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1.

Organic Analyses

The MS/MSD samples were spiked with all compounds of interest. All percent recoveries and RPD values were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

Inorganic Analyses

The MS/MSD samples were spiked with the analytes of interest, and the results were evaluated using the "Guidelines". All percent recoveries and RPD values were within the control limits, demonstrating acceptable analytical accuracy and precision.

14.0 Field QA/QC Samples

The field QA/QC consisted of two trip blank samples and two field duplicate sample sets.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, two trip blanks were submitted to the laboratory for VOC analysis. All results were non-detect for the compounds of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, two field duplicate samples were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is one times the RL value for water samples.

There were no detections reported for the field duplicate sample sets.

15.0 Analyte Reporting

The laboratory reported detected results down to the laboratory's MDL for each analyte. Positive analyte detections less than the RL but greater than the MDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this memorandum. Non-detect results were presented as non-detect at the RL in Table 2.

16.0 Target Compound Identification – Full Validation

To minimize erroneous compound identification during organic analyses, qualitative criteria including compound retention time and mass spectra (if applicable) were evaluated according to the identification criteria established by the methods. The organic compounds reported adhered to the specified identification criteria.

17.0 Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualifications noted herein.

TABLE 1
SAMPLE COLLECTION AND ANALYSIS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters		Comments
					TCL VOC	Aluminum, Vanadium, Lead	
ALS - Holland SDG No.: 1504351							
GW-17322-040615-DN-005	MW74D-15	water	04/06/2015	12:00	X	-	Full validation performed
ALS - Holland SDG No.: 1504352							
GW-17322-040615-DN-001	MW48-07	water	04/06/2015	12:00	X	-	Full validation performed
GW-17322-040615-DN-002	MW92i-13	water	04/06/2015	15:10	X	-	
GW-17322-040615-DN-003	MW92s-13	water	04/06/2015	15:45	X	-	
GW-17322-040615-DN-004	MW93i-13	water	04/06/2015	16:50	X	-	
GW-17322-040615-DN-006	MW74-08	water	04/06/2015	13:15	X	-	MS/MSD
GW-17322-040615-DN-007	MW91-12	water	04/06/2015	15:20	X	-	
GW-17322-040615-DN-008	MW85-12	water	04/06/2015	16:40	X	-	
GW-17322-040615-DN-009	MW68-08	water	04/06/2015	17:50	X	-	
GW-17322-040615-DN-010	MW80-12	water	04/06/2015	17:55	X	-	
TB-001	--	water	04/06/2015	--	X	-	Trip Blank
ALS - Holland SDG No.: 1504433							
GW-17322-040715-DN-011	MW87-12	water	04/07/2015	08:45	X	-	
GW-17322-040715-DN-012	MW87-12	water	04/07/2015	9:15	X	-	Field duplicate of MW87-12
GW-17322-040715-DN-013	MW81-12	water	04/07/2015	11:15	X	-	
GW-17322-040715-DN-014	MW81-12	water	04/07/2015	11:35	X	-	Field duplicate of MW81-12
GW-17322-040715-DN-015	MW79-12	water	04/07/2015	12:35	X	-	Full validation performed
GW-17322-040715-DN-016	MW90-12	water	04/07/2015	10:30	X	-	
GW-17322-040715-DN-017	MW38-07	water	04/07/2015	12:40	X	X	
GW-17322-040715-DN-018	MW2-07	water	04/07/2015	13:55	X	-	
GW-17322-040715-DN-019	MW10-07	water	04/07/2015	15:05	X	X	MS/MSD
GW-17322-040715-DN-020	MW33-07	water	04/07/2015	13:50	X	X	

TABLE 1

SAMPLE COLLECTION AND ANALYSIS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>				Comments
					TCL VOC	Aluminum, Vanadium, Lead			
ALS - Holland SDG No.: 1504433									
GW-17322-040715-DN-021	MW83-12	water	04/07/2015	16:15	X	X			Full validation performed
GW-17322-040715-DN-022	MW82-12	water	04/07/2015	16:25	X	X			
GW-17322-040715-DN-023	MW88-12	water	04/07/2015	16:50	X				
GW-17322-040715-TB002	--	water	04/07/2015	--	X				Trip Blank

Notes:

TCL VOC - Target Compound List Volatile Organic Compounds
 ALS - Holland - ALS Environmental - Holland, Michigan
 SDG - Sample Delivery Group
 MS/MSD - Matrix spike/matrix spike duplicate

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location: MW2-07 MW10-07 MW33-07
Sample ID: GW-17322-040715-DN-018 GW-17322-040715-DN-019 GW-17322-040715-DN-020
Sample Date: 04/07/2015 04/07/2015 04/07/2015
Sample Type:

Parameters**Units****VOCs**

1,1,1-Trichloroethane	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane (DBCP)	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane (Ethylene dibromide)	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	25 U	25 U	25 U
2-Hexanone	50 U	50 U	50 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	50 U	50 U	50 U
Acetone	50 U	50 U	50 U
Benzene	1.0 U	1.0 U	1.0 U
Bromodichloromethane	1.0 U	1.0 U	1.0 U
Bromoform	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	5.0 U	5.0 U	5.0 U
Carbon disulfide	5.0 U	5.0 U	5.0 U
Carbon tetrachloride	1.0 U	1.0 U	1.0 U
Chlorobenzene	1.0 U	1.0 U	1.0 U
Chloroethane	5.0 U	5.0 U	5.0 U
Chloroform (Trichloromethane)	1.0 U	1.0 U	1.0 U

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:			
Sample ID:			
Sample Date:			
Sample Type:			
Parameters	Units		
VOCs			
Chloromethane (Methyl chloride)	ug/L	5.0 U	5.0 U
cis-1,2-Dichloroethene	ug/L	9.0	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U
Cyclohexane	ug/L	1.0 U	1.0 U
Dibromochloromethane	ug/L	5.0 U	5.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	5.0 U	5.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U
Isopropyl benzene	ug/L	5.0 U	5.0 U
Methyl acetate	ug/L	10 U	10 U
Methyl cyclohexane	ug/L	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	ug/L	5.0 U	5.0 U
Methylene chloride	ug/L	5.0 U	5.0 U
Styrene	ug/L	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	ug/L	7.4	1.0 U
Trifluorotrichloroethane (Freon 113)	ug/L	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U
Xylenes (total)	ug/L	3.0 U	3.0 U

Sample Location: MW2-07
Sample ID: GW-17322-040715-DN-018
Sample Date: 04/07/2015

Sample Location: MW10-07
Sample ID: GW-17322-040715-DN-019
Sample Date: 04/07/2015

Sample Location: MW33-07
Sample ID: GW-17322-040715-DN-020
Sample Date: 04/07/2015

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:
Sample ID:
Sample Date:
Sample Type:

MW2-07 MW10-07 MW33-07
GW-17322-040715-DN-018 GW-17322-040715-DN-019 GW-17322-040715-DN-020
04/07/2015 04/07/2015 04/07/2015

Parameters

Units

Metals

Aluminum
Lead
Vanadium

ug/L -- 6.3 J 5200
ug/L -- 0.47 J 19
ug/L -- 1.3 J 11

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location: **MW38-07** **MW48-07** **MW68-08**
Sample ID: **GW-17322-040715-DN-017** **GW-17322-040615-DN-001** **GW-17322-040615-DN-009**
Sample Date: **04/07/2015** **04/06/2015** **04/06/2015**
Sample Type:

Parameters**Units****VOCs**

1,1,1-Trichloroethane	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane (DBCP)	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane (Ethylene dibromide)	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	25 U	25 U	25 U
2-Hexanone	50 U	50 U	50 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	50 U	50 U	50 U
Acetone	50 U	50 U	50 U
Benzene	1.0 U	1.0 U	1.0 U
Bromodichloromethane	1.0 U	1.0 U	1.0 U
Bromoform	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	5.0 U	5.0 U	5.0 U
Carbon disulfide	5.0 U	5.0 U	5.0 U
Carbon tetrachloride	1.0 U	1.0 U	1.0 U
Chlorobenzene	1.0 U	1.0 U	1.0 U
Chloroethane	5.0 U	5.0 U	5.0 U
Chloroform (Trichloromethane)	1.0 U	1.0 U	1.0 U

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:	MW38-07	MW48-07	MW68-08
Sample ID:	GW-17322-040715-DN-017	GW-17322-040615-DN-001	GW-17322-040615-DN-009
Sample Date:	04/07/2015	04/06/2015	04/06/2015
Sample Type:			
Parameters			
VOCs			
Chloromethane (Methyl chloride)	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U
Cyclohexane	1.0 U	1.0 U	1.0 U
Dibromochloromethane	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane (CFC-12)	5.0 U	5.0 U	5.0 U
Ethylbenzene	1.0 U	1.0 U	1.0 U
Isopropyl benzene	5.0 U	5.0 U	5.0 U
Methyl acetate	10 U	10 U	10 U
Methyl cyclohexane	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	5.0 U	5.0 U	5.0 U
Methylene chloride	5.0 U	5.0 U	5.0 U
Styrene	1.0 U	1.0 U	1.0 U
Tetrachloroethene	1.0 U	1.0 U	1.0 U
Toluene	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U
Trichloroethene	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (Freon 113)	1.0 U	1.0 U	1.0 U
Vinyl chloride	1.0 U	1.0 U	1.0 U
Xylenes (total)	3.0 U	3.0 U	3.0 U
Units			
ug/L	5.0 U	5.0 U	5.0 U
ug/L	1.0 U	1.0 U	1.0 U
ug/L	1.0 U	1.0 U	1.0 U
ug/L	1.0 U	1.0 U	1.0 U
ug/L	5.0 U	5.0 U	5.0 U
ug/L	5.0 U	5.0 U	5.0 U
ug/L	1.0 U	1.0 U	1.0 U
ug/L	5.0 U	5.0 U	5.0 U
ug/L	10 U	10 U	10 U
ug/L	1.0 U	1.0 U	1.0 U
ug/L	5.0 U	5.0 U	5.0 U
ug/L	5.0 U	5.0 U	5.0 U
ug/L	1.0 U	1.0 U	1.0 U
ug/L	1.0 U	1.0 U	1.0 U
ug/L	1.0 U	1.0 U	1.0 U
ug/L	1.0 U	1.0 U	1.0 U
ug/L	1.0 U	1.0 U	1.0 U
ug/L	1.0 U	1.0 U	1.0 U
ug/L	3.0 U	3.0 U	3.0 U

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:
Sample ID:
Sample Date:
Sample Type:

MW38-07 MW48-07 MW68-08
GW-17322-040715-DN-017 GW-17322-040615-DN-001 GW-17322-040615-DN-009
04/07/2015 04/06/2015 04/06/2015

Parameters

Units

Metals

Aluminum
Lead
Vanadium

ug/L 1100
ug/L 6.6
ug/L 1.7 J

-- -- --

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location: MW74-08 MW74D-15 MW79-12
Sample ID: GW-17322-040615-DN-006 GW-17322-040615-DN-005 GW-17322-040715-DN-015
Sample Date: 04/06/2015 04/06/2015 04/07/2015
Sample Type:

<i>Parameters</i>	<i>Units</i>			
VOCs				
1,1,1-Trichloroethane	ug/L	320	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	5.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	5.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	26	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	14	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	25 U	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	5.0 U	1.0 U	1.0 U
1,2-Dibromoethane (Ethylene dibromide)	ug/L	5.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	5.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	5.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	5.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	5.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	5.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	120 U	25 UJ	25 UJ
2-Hexanone	ug/L	250 U	50 UJ	50 UJ
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	250 U	50 U	50 U
Acetone	ug/L	250 U	50 UJ	50 UJ
Benzene	ug/L	3.4 J	1.0 U	1.0 U
Bromodichloromethane	ug/L	5.0 U	1.0 U	1.0 U
Bromoform	ug/L	5.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	25 U	5.0 U	5.0 U
Carbon disulfide	ug/L	25 U	5.0 U	5.0 U
Carbon tetrachloride	ug/L	5.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	5.0 U	1.0 U	1.0 U
Chloroethane	ug/L	25 U	5.0 U	5.0 UJ
Chloroform (Trichloromethane)	ug/L	4.4 J	1.0 U	1.0 UJ

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:		MW74-08	MW74D-15	MW79-12
Sample ID:		GW-17322-040615-DN-006	GW-17322-040615-DN-005	GW-17322-040715-DN-015
Sample Date:		04/06/2015	04/06/2015	04/07/2015
Sample Type:				
Parameters		Units		
VOCs				
Chloromethane (Methyl chloride)		25 U	5.0 U	5.0 U
cis-1,2-Dichloroethene		12	1.0 U	1.0 U
cis-1,3-Dichloropropene		5.0 U	1.0 U	1.0 U
Cyclohexane		5.0 U	1.0 U	1.0 U
Dibromochloromethane		25 U	5.0 U	5.0 U
Dichlorodifluoromethane (CFC-12)		25 U	5.0 U	5.0 U
Ethylbenzene		5.0 U	1.0 U	1.0 U
Isopropyl benzene		25 U	5.0 U	5.0 U
Methyl acetate		50 U	10 U	10 U
Methyl cyclohexane		5.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)		25 U	5.0 U	5.0 U
Methylene chloride		25 U	5.0 U	5.0 U
Styrene		5.0 U	1.0 U	1.0 U
Tetrachloroethene		5.0 U	1.0 U	1.0 U
Toluene		5.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene		5.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene		5.0 U	1.0 U	1.0 U
Trichloroethene		1100	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)		5.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (Freon 113)		5.0 U	1.0 U	1.0 U
Vinyl chloride		5.0 U	1.0 U	1.0 U
Xylenes (total)		15 U	3.0 U	3.0 U

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:
Sample ID:
Sample Date:
Sample Type:

MW74-08 **MW74D-15** **MW79-12**
GW-17322-040615-DN-006 **GW-17322-040615-DN-005** **GW-17322-040715-DN-015**
04/06/2015 **04/06/2015** **04/07/2015**

Parameters

Units

Metals

Aluminum
 Lead
 Vanadium

ug/L
 ug/L
 ug/L

--
 --
 --

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING

PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location: MW80-12 MW81-12 MW81-12
Sample ID: GW-17322-040615-DN-010 GW-17322-040715-DN-013 GW-17322-040715-DN-014
Sample Date: 04/06/2015 04/07/2015 04/07/2015
Sample Type: Duplicate

Parameters**Units****VOCs**

1,1,1-Trichloroethane	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane (DBCP)	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane (Ethylene dibromide)	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	25 U	25 U	25 U
2-Hexanone	50 U	50 U	50 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	50 U	50 U	50 U
Acetone	1.0 U	1.0 U	1.0 U
Benzene	1.0 U	1.0 U	1.0 U
Bromodichloromethane	1.0 U	1.0 U	1.0 U
Bromoform	5.0 U	5.0 U	5.0 U
Bromomethane (Methyl bromide)	5.0 U	5.0 U	5.0 U
Carbon disulfide	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	1.0 U	1.0 U	1.0 U
Chlorobenzene	1.0 U	1.0 U	1.0 U
Chloroethane	5.0 U	5.0 U	5.0 U
Chloroform (Trichloromethane)	1.0 U	1.0 U	1.0 U

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:		MW80-12	MW81-12	MW81-12
Sample ID:		GW-17322-040615-DN-010	GW-17322-040715-DN-013	GW-17322-040715-DN-014
Sample Date:		04/06/2015	04/07/2015	04/07/2015
Sample Type:				Duplicate
Parameters				
VOCs				
Chloromethane (Methyl chloride)	ug/L	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U
Cyclohexane	ug/L	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	5.0 U	5.0 U	5.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U
Isopropyl benzene	ug/L	5.0 U	5.0 U	5.0 U
Methyl acetate	ug/L	10 U	10 U	10 U
Methyl cyclohexane	ug/L	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	ug/L	5.0 U	5.0 U	5.0 U
Methylene chloride	ug/L	5.0 U	5.0 U	5.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	ug/L	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (Freon 113)	ug/L	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	3.0 U	3.0 U	3.0 U

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:
Sample ID:
Sample Date:
Sample Type:

MW80-12 MW81-12 MW81-12
GW-17322-040615-DN-010 GW-17322-040715-DN-013 GW-17322-040715-DN-014
04/06/2015 04/07/2015 04/07/2015
Duplicate

Parameters

Units

Metals

Aluminum
Lead
Vanadium

ug/L
ug/L
ug/L

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Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:				
Sample ID:				
Sample Date:				
Sample Type:				
Parameters	Units	GW-17322-040715-DN-022 04/07/2015	GW-17322-040715-DN-021 04/07/2015	GW-17322-040615-DN-008 04/06/2015
		MW82-12	MW83-12	MW85-12
VOCs				
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 UJ	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 UJ	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	1.0 U	1.0 UJ	1.0 U
1,2-Dibromoethane (Ethylene dibromide)	ug/L	1.0 U	1.0 UJ	1.0 U
1,2-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 UJ	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	1.0 U	1.0 UJ	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	25 U	25 UJ	25 U
2-Hexanone	ug/L	50 U	50 UJ	50 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	50 U	50 U	50 U
Acetone	ug/L	50 U	50 UJ	50 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	5.0 U	5.0 U	5.0 U
Carbon disulfide	ug/L	5.0 U	5.0 U	5.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	9.3
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	5.0 U	5.0 UJ	5.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 UJ	23

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:	MW82-12	MW83-12	MW85-12
Sample ID:	GW-17322-040715-DN-022	GW-17322-040715-DN-021	GW-17322-040615-DN-008
Sample Date:	04/07/2015	04/07/2015	04/06/2015
Sample Type:			
Parameters	Units		
VOCs			
Chloromethane (Methyl chloride)	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U
Cyclohexane	1.0 U	1.0 U	1.0 U
Dibromochloromethane	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane (CFC-12)	5.0 U	5.0 U	5.0 U
Ethylbenzene	1.0 U	1.0 U	1.0 U
Isopropyl benzene	5.0 U	5.0 U	5.0 U
Methyl acetate	10 U	10 U	10 U
Methyl cyclohexane	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	5.0 U	5.0 U	5.0 U
Methylene chloride	5.0 U	5.0 U	5.0 U
Styrene	1.0 U	1.0 U	1.0 U
Tetrachloroethene	1.0 U	1.0 U	1.0 U
Toluene	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U
Trichloroethene	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (Freon 113)	1.0 U	1.0 U	1.0 U
Vinyl chloride	1.0 U	1.0 U	1.0 U
Xylenes (total)	3.0 U	3.0 U	3.0 U

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:
Sample ID:
Sample Date:
Sample Type:

MW82-12 MW83-12 MW85-12
GW-17322-040715-DN-022 GW-17322-040715-DN-021 GW-17322-040615-DN-008
04/07/2015 04/07/2015 04/06/2015

Parameters

Units

Metals

Aluminum
Lead
Vanadium

ug/L 400
ug/L 15 U
ug/L 16

140 J
15 U
1.9 J

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Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:	MW87-12	MW87-12	MW88-12
Sample ID:	GW-17322-040715-DN-011	GW-17322-040715-DN-012	GW-17322-040715-DN-023
Sample Date:	04/07/2015	04/07/2015	04/07/2015
Sample Type:		Duplicate	
Parameters	Units		
VOCs			
1,1,1-Trichloroethane	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane (DBCP)	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane (Ethylene dibromide)	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	25 U	25 U	25 U
2-Hexanone	50 U	50 U	50 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	50 U	50 U	50 U
Acetone	50 U	50 U	50 U
Benzene	1.0 U	1.0 U	0.93 J
Bromodichloromethane	1.0 U	1.0 U	1.0 U
Bromoform	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	5.0 U	5.0 U	5.0 U
Carbon disulfide	5.0 U	5.0 U	5.0 U
Carbon tetrachloride	1.0 U	1.0 U	1.0 U
Chlorobenzene	1.0 U	1.0 U	1.0 U
Chloroethane	5.0 U	5.0 U	5.0 U
Chloroform (Trichloromethane)	1.0 U	1.0 U	1.0 U

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:		MW87-12	MW87-12	MW88-12
Sample ID:		GW-17322-040715-DN-011	GW-17322-040715-DN-012	GW-17322-040715-DN-023
Sample Date:		04/07/2015	04/07/2015	04/07/2015
Sample Type:			Duplicate	
Parameters	Units			
VOCs				
Chloromethane (Methyl chloride)	ug/L	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U
Cyclohexane	ug/L	1.0 U	1.0 U	2.2
Dibromochloromethane	ug/L	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	5.0 U	5.0 U	5.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	5.1
Isopropyl benzene	ug/L	5.0 U	5.0 U	6.0
Methyl acetate	ug/L	10 U	10 U	10 U
Methyl cyclohexane	ug/L	1.0 U	1.0 U	2.9
Methyl tert butyl ether (MTBE)	ug/L	5.0 U	5.0 U	5.0 U
Methylene chloride	ug/L	5.0 U	5.0 U	5.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	ug/L	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (Freon 113)	ug/L	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	3.0 U	3.0 U	3.0 U

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:
Sample ID:
Sample Date:
Sample Type:

MW87-12 MW87-12 MW88-12
GW-17322-040715-DN-011 GW-17322-040715-DN-012 GW-17322-040715-DN-023
04/07/2015 04/07/2015 04/07/2015
Duplicate

Parameters

Units

Metals

Aluminum
Lead
Vanadium

ug/L -- -- --
ug/L -- -- --
ug/L -- -- --

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

<i>Sample Location:</i>	<i>MW90-12</i>	<i>MW91-12</i>	<i>MW92i-13</i>
<i>Sample ID:</i>	<i>GW-17322-040715-DN-016</i>	<i>GW-17322-040615-DN-007</i>	<i>GW-17322-040615-DN-002</i>
<i>Sample Date:</i>	<i>04/07/2015</i>	<i>04/06/2015</i>	<i>04/06/2015</i>
<i>Sample Type:</i>			
<i>Parameters</i>			
<i>VOCs</i>			
1,1,1-Trichloroethane	1.0 U	5.6	1.0 U
1,1,2,2-Tetrachloroethane	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane (DBCP)	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane (Ethylene dibromide)	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	25 U	25 U	25 U
2-Hexanone	50 U	50 U	50 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	50 U	50 U	50 U
Acetone	50 U	50 U	50 U
Benzene	1.0 U	1.0 U	1.0 U
Bromodichloromethane	1.0 U	1.0 U	1.0 U
Bromoform	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	5.0 U	5.0 U	5.0 U
Carbon disulfide	5.0 U	5.0 U	5.0 U
Carbon tetrachloride	1.0 U	1.0 U	1.0 U
Chlorobenzene	1.0 U	1.0 U	1.0 U
Chloroethane	5.0 U	5.0 U	5.0 U
Chloroform (Trichloromethane)	1.0 U	1.0 U	1.0 U

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:	MW90-12	MW91-12	MW92i-13
Sample ID:	GW-17322-040715-DN-016	GW-17322-040615-DN-007	GW-17322-040615-DN-002
Sample Date:	04/07/2015	04/06/2015	04/06/2015
Sample Type:			
Parameters			
VOCs			
Chloromethane (Methyl chloride)	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U
Cyclohexane	1.0 U	1.0 U	1.0 U
Dibromochloromethane	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane (CFC-12)	5.0 U	5.0 U	5.0 U
Ethylbenzene	1.0 U	1.0 U	1.0 U
Isopropyl benzene	5.0 U	5.0 U	5.0 U
Methyl acetate	10 U	10 U	10 U
Methyl cyclohexane	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	5.0 U	5.0 U	5.0 U
Methylene chloride	5.0 U	5.0 U	5.0 U
Styrene	1.0 U	1.0 U	1.0 U
Tetrachloroethene	1.0 U	1.0 U	1.0 U
Toluene	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U
Trichloroethene	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	1.0 U	37	1.0 U
Trifluorotrichloroethane (Freon 113)	1.0 U	1.0 U	1.0 U
Vinyl chloride	1.0 U	1.0 U	1.2
Xylenes (total)	3.0 U	3.0 U	3.0 U

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:
Sample ID:
Sample Date:
Sample Type:

GW-17322-040715-DN-016 MW90-12 GW-17322-040615-DN-007 MW91-12 GW-17322-040615-DN-002 MW92i-13
04/07/2015 04/06/2015 04/06/2015

Parameters

Units

Metals

Aluminum
Lead
Vanadium

ug/L
ug/L
ug/L

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Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location: **MW92s-13** **MW93i-13** **Trip Blank**
Sample ID: **GW-17322-040615-DN-003** **GW-17322-040615-DN-004** **TB-001**
Sample Date: **04/06/2015** **04/06/2015** **04/06/2015**
Sample Type:

Parameters	Units		
VOCs			
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	1.0 U	1.0 U
1,2-Dibromoethane (Ethylene dibromide)	ug/L	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	25 U	25 U
2-Hexanone	ug/L	50 U	50 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	50 U	50 U
Acetone	ug/L	50 U	50 U
Benzene	ug/L	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	5.0 U	5.0 U
Carbon disulfide	ug/L	5.0 U	5.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U
Chloroethane	ug/L	5.0 U	5.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:	MW92s-13	MW93i-13	Trip Blank
Sample ID:	GW-17322-040615-DN-003	GW-17322-040615-DN-004	TB-001
Sample Date:	04/06/2015	04/06/2015	04/06/2015
Sample Type:			
Parameters	Units		
VOCs			
Chloromethane (Methyl chloride)	5.0 U	5.0 U	5.0 U
cis-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U
Cyclohexane	1.0 U	1.0 U	1.0 U
Dibromochloromethane	5.0 U	5.0 U	5.0 U
Dichlorodifluoromethane (CFC-12)	5.0 U	5.0 U	5.0 U
Ethylbenzene	1.0 U	1.0 U	1.0 U
Isopropyl benzene	5.0 U	5.0 U	5.0 U
Methyl acetate	10 U	10 U	10 U
Methyl cyclohexane	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	5.0 U	5.0 U	5.0 U
Methylene chloride	5.0 U	5.0 U	5.0 U
Styrene	1.0 U	1.0 U	1.0 U
Tetrachloroethene	1.0 U	1.0 U	1.0 U
Toluene	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U
Trichloroethene	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (Freon 113)	1.0 U	1.0 U	1.0 U
Vinyl chloride	1.0 U	1.0 U	1.0 U
Xylenes (total)	3.0 U	3.0 U	3.0 U

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location: MW92s-13 MW93i-13 Trip Blank
Sample ID: GW-17322-040615-DN-003 GW-17322-040615-DN-004 TB-001
Sample Date: 04/06/2015 04/06/2015 04/06/2015
Sample Type:

Parameters	Units
Metals	
Aluminum	ug/L
Lead	ug/L
Vanadium	ug/L

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING

PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location: Trip Blank
Sample ID: GW-17322-040715-TB002
Sample Date: 04/07/2015
Sample Type:

Parameters Units

VOCs

1,1,1-Trichloroethane	ug/L	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U
1,1-Dichloroethane	ug/L	1.0 U
1,1-Dichloroethene	ug/L	1.0 U
1,2,4-Trichlorobenzene	ug/L	5.0 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	1.0 U
1,2-Dibromoethane (Ethylene dibromide)	ug/L	1.0 U
1,2-Dichlorobenzene	ug/L	1.0 U
1,2-Dichloroethane	ug/L	1.0 U
1,2-Dichloropropane	ug/L	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U
1,4-Dichlorobenzene	ug/L	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	25 U
2-Hexanone	ug/L	50 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	50 U
Acetone	ug/L	50 U
Benzene	ug/L	1.0 U
Bromodichloromethane	ug/L	1.0 U
Bromoform	ug/L	1.0 U
Bromomethane (Methyl bromide)	ug/L	5.0 U
Carbon disulfide	ug/L	5.0 U
Carbon tetrachloride	ug/L	1.0 U
Chlorobenzene	ug/L	1.0 U
Chloroethane	ug/L	5.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING

PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Sample Location:
Sample ID:
Sample Date:
Sample Type:

Trip Blank

GW-17322-040715-TB002

04/07/2015

<i>Parameters</i>	<i>Units</i>
VOCs	
Chloromethane (Methyl chloride)	ug/L
cis-1,2-Dichloroethene	ug/L
cis-1,3-Dichloropropene	ug/L
Cyclohexane	ug/L
Dibromochloromethane	ug/L
Dichlorodifluoromethane (CFC-12)	ug/L
Ethylbenzene	ug/L
Isopropyl benzene	ug/L
Methyl acetate	ug/L
Methyl cyclohexane	ug/L
Methyl tert butyl ether (MTBE)	ug/L
Methylene chloride	ug/L
Styrene	ug/L
Tetrachloroethene	ug/L
Toluene	ug/L
trans-1,2-Dichloroethene	ug/L
trans-1,3-Dichloropropene	ug/L
Trichloroethene	ug/L
Trichlorofluoromethane (CFC-11)	ug/L
Trifluorotrichloroethane (Freon 113)	ug/L
Vinyl chloride	ug/L
Xylenes (total)	ug/L

Table 2

VALIDATED ANALYTICAL RESULTS SUMMARY
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

Trip Blank
GW-17322-040715-TB002
04/07/2015

Sample Location:
Sample ID:
Sample Date:
Sample Type:

<i>Parameters</i>	<i>Units</i>
<i>Metals</i>	
Aluminum	ug/L
Lead	ug/L
Vanadium	ug/L

Notes:
 U - Not detected at the associated reporting limit.
 J - Estimated concentration.
 UJ - Not detected; associated reporting limit is estimated.

TABLE 3

ANALYTICAL METHODS AND HOLDING TIME CRITERIA
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

<i>Parameter</i>	<i>Method</i>	<i>Matrix</i>	<i>Preservation</i>	<i>Holding Time</i>	
				<i>Collection to Extraction (Days)</i>	<i>Collection or Extraction to Analysis (Days)</i>
TCL VOC	SW-846 8260B	Water	pH < 2 and Iced, 4 ± 2° C	-	14
Aluminum, Lead, Vanadium	SW-846 6020	Water	pH < 2 and Iced, 4 ± 2° C	-	180

Notes

SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions.
TCL VOC - Target Compound List Volatile Organic Compounds

TABLE 4

QUALIFIED SAMPLE RESULTS DUE TO OUTLYING INITIAL CALIBRATION RESULTS
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

<i>Parameter</i>	<i>Analyte</i>	<i>Calibration Date</i>	<i>Correlation Coefficient</i>	<i>RRF</i>	<i>Associated Sample ID</i>	<i>Qualified Result</i>	<i>Units</i>
Metals	Vanadium	04/09/15	0.9131	-	GW-17322-040715-DN-021	1.9 J	µg/L

Notes:

- J - Estimated concentration.
- - Not applicable.
- RRF - Relative response factor.

TABLE 5

QUALIFIED SAMPLE RESULTS DUE TO OUTLYING CONTINUING CALIBRATION RESULTS
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

<i>Parameter</i>	<i>Analyte</i>	<i>Calibration Date</i>	<i>RRF</i>	<i>%D</i>	<i>Associated Sample ID</i>	<i>Qualified Result</i>	<i>Units</i>
VOC	Acetone	4/8/2015	-	55.9	GW-17322-040615-DN-005	50 UJ	µg/L
VOC	Methylene chloride	4/8/2015	-	30.5	GW-17322-040615-DN-005	5.0 UJ	µg/L
VOC	2-Butanone	4/8/2015	-	48.1	GW-17322-040615-DN-005	25 UJ	µg/L
VOC	2-Hexanone	4/8/2015	-	26.4	GW-17322-040615-DN-005	50 UJ	µg/L
VOC	Acetone	4/14/2015	-	66.9	GW-17322-040615-DN-001	50 UJ	µg/L
VOC	2-Butanone	4/14/2015	-	33.8	GW-17322-040615-DN-001	25 UJ	µg/L
VOC	1,2-Dibromoethane	4/14/2015	-	43.1	GW-17322-040615-DN-001	1.0 UJ	µg/L
VOC	1,2,4-Trichlorobenzene	4/14/2015	-	25.9	GW-17322-040615-DN-001	5.0 UJ	µg/L
VOC	Chloroethane	4/15/2015	-	31.0	GW-17322-040715-DN-015 GW-17322-040715-DN-021	5.0 UJ 5.0 UJ	µg/L µg/L
VOC	Acetone	4/15/2015	-	71.7	GW-17322-040715-DN-015 GW-17322-040715-DN-021	50 UJ 50 UJ	µg/L µg/L
VOC	Methyl acetate	4/15/2015	-	41.0	GW-17322-040715-DN-015 GW-17322-040715-DN-021	10 UJ 10 UJ	µg/L µg/L
VOC	Methylene chloride	4/15/2015	-	38.1	GW-17322-040715-DN-015 GW-17322-040715-DN-021	5.0 UJ 5.0 UJ	µg/L µg/L
VOC	1,1-Dichloroethane	4/15/2015	-	27.0	GW-17322-040715-DN-015 GW-17322-040715-DN-021	1.0 UJ 1.0 UJ	µg/L µg/L
VOC	cis-1,2-Dichloroethene	4/15/2015	-	30.0	GW-17322-040715-DN-015 GW-17322-040715-DN-021	1.0 UJ 1.0 UJ	µg/L µg/L

TABLE 5

QUALIFIED SAMPLE RESULTS DUE TO OUTLYING CONTINUING CALIBRATION RESULTS
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

<i>Parameter</i>	<i>Analyte</i>	<i>Calibration Date</i>	<i>RRF</i>	<i>%D</i>	<i>Associated Sample ID</i>	<i>Qualified Result</i>	<i>Units</i>
VOC	2-Butanone	4/15/2015	-	46.5	GW-17322-040715-DN-015 GW-17322-040715-DN-021	25 UJ 25 UJ	µg/L µg/L
VOC	Chloroform	4/15/2015	-	28.2	GW-17322-040715-DN-015 GW-17322-040715-DN-021	1.0 UJ 1.0 UJ	µg/L µg/L
VOC	1,2-Dichloroethane	4/15/2015	-	25.0	GW-17322-040715-DN-015 GW-17322-040715-DN-021	1.0 UJ 1.0 UJ	µg/L µg/L
VOC	2-Hexanone	4/15/2015	-	29.9	GW-17322-040715-DN-015 GW-17322-040715-DN-021	50 UJ 50 UJ	µg/L µg/L
VOC	1,2-Dibromoethane	4/15/2015	-	46.9	GW-17322-040715-DN-015 GW-17322-040715-DN-021	1.0 UJ 1.0 UJ	µg/L µg/L
VOC	1,1,2,2-Tetrachloroethane	4/15/2015	-	29.5	GW-17322-040715-DN-015 GW-17322-040715-DN-021	1.0 UJ 1.0 UJ	µg/L µg/L
VOC	1,4-Dichlorobenzene	4/15/2015	-	25.1	GW-17322-040715-DN-015 GW-17322-040715-DN-021	1.0 UJ 1.0 UJ	µg/L µg/L
VOC	1,2-Dibromo-3-chloropropane	4/15/2015	-	26.5	GW-17322-040715-DN-015 GW-17322-040715-DN-021	1.0 UJ 1.0 UJ	µg/L µg/L

Notes:

UJ - Not detected; associated reporting limit is estimated.

- - Not applicable

%D - Percent difference

RRF - Relative Response Factor

VOC - Volatile Organic Compounds

TABLE 6

QUALIFIED SAMPLE DATA DUE TO OUTLYING CRDL STANDARDS
GROUNDWATER MONITORING
PCC-VALIDATION
PONTIAC, MICHIGAN
APRIL 2015

<i>Parameter</i>	<i>Analyte</i>	<i>CRDL Recovery (percent)</i>	<i>CRDL Control Limits (percent)</i>	<i>Associated Sample ID</i>	<i>Qualified Result</i>	<i>Units</i>
Metals	Aluminum	67	70-130	GW-17322-040715-DN-021	140 J	µg/L

Notes:

- J Estimated concentration.
- CRDL Contract required detection limits.