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MEMORANDUM

TO:	Darlene Stringer, MDEQ Matt Gamble, MDEQ	REF. NO.:	017360-T05Y15
FROM:	Jeni Quigley/Earl Batenburg/jlc/77/Pwl.	DATE:	February 27, 2015
CC:	David Favero, RACER		
RE:	**AOI 25 – Former Degreaser Area Investigation** **Former Grand Rapids Metal Plant** **Wyoming, Michigan**		

Conestoga-Rovers & Associates (CRA), on behalf of Revitalizing Auto Communities Environmental Response (RACER) Trust, conducted topographic survey and soil investigation activities at the former Grand Rapids Metal Plant property located at 300 36th Street SW in Wyoming, Michigan (Site). The scope of work (SOW) consisted of soil boring advancement, soil sampling and a topographic survey in the area of Area of Interest (AOI) 25 – Former Degreaser Area. The samples were collected during the field investigation conducted on December 5, 2014. The protocols utilized during the implementation of the December 5, 2014 SOW were described in the Site-Wide Investigation Work Plan (Work Plan), submitted to the MDEQ on January 7, 2011.

Background

Field activities included the advancement of soil borings and the collection of soil samples for chemical analysis to evaluate potential impacts present in the former degreaser area. Several investigations have been conducted in AOI 25 between 1985 and 2014 to evaluate the nature and extent of volatile organic compound (VOC) contamination present as a result of a release of trichloroethene (TCE) from a former maintenance degreaser. In 1989, a combination groundwater extraction (GWE) and soil vapor extraction (SVE) system was installed in the former source area in the plant. The SVE system was operated until it was determined that the system was no longer effective at removing TCE mass from the source area. The system was shutdown in 2003, under approval of the Michigan Department of Environmental Quality (MDEQ). Additional investigations to further evaluate the extent of the residual impacts to soil in this area were conducted between 2003 and 2011.

Demolition activities conducted in 2011 and 2012 on behalf of the City of Wyoming's Brownfield Redevelopment Authority (WBRA) prompted the removal of the Main Manufacturing Building and associated concrete floor slab overlying AOI 25. After completion of demolition activities, the Site was re-graded by WBRA's contractor. The final grade across the Site is presented on a partial as-built survey provided by WBRA and is included in Attachment A.

Historical Sample Location Survey

A limited survey of historical sample locations was completed prior to commencement of soil investigation activities. Eight historical sample locations (SB1-04, SB2-04, SB4-04, SB5-04, SB7-05, SB8-05, SB12-05, and SB15-05) in the area of AOI 25 were located during the survey and the current ground surface elevations were recorded. The current ground elevations were compared to historical survey elevation data for several sample locations in AOI 25 to determine the change in elevation after demolition of the former Main Manufacturing Building, removal of the concrete floor slab, and final Site re-grading. Table 1 presents a comparison of surveyed ground surface elevations before and after slab removal and re-grading for the aforementioned sample locations in AOI 25.

Soil Investigation Activities

In order to evaluate the current concentrations of VOCs in the former source area subsequent to demolition and re-grading activities, three soil borings (SB326-14 through SB328-14) were advanced with a hand auger adjacent to historic sample locations to a depth of 4 feet below ground surface (bgs). Soil samples were collected in 2-foot intervals for laboratory analysis of Target Compound List (TCL) VOCs.

Figure 1 presents the sample locations. Stratigraphic soil boring logs are included in Attachment B.

Analytical Results

Analytical results for the soil samples were evaluated against the Generic Residential and Non-Residential Cleanup Criteria and Screening Levels established in Part 7 of Administrative Rules, effective December 30, 2013, pursuant to Part 201, Environmental Remediation, 1994 PA 451, as amended. Analytical results for soil samples compared to the aforementioned criteria are presented in Table 2. Figure 2 presents the analytical results compared to the aforementioned criteria.

As presented in the memorandum titled *Summary of Sampling and Remedial Action Activities – 2011 and 2012* submitted to the MDEQ on July 16, 2013, evaluation of sample results for additional evaluation and/or potential future remedial action was based on the comparison of the results to the following Part 201 Generic Cleanup Criteria:

- Groundwater Surface Water Interface Protection Criteria (GSIPC)
- Non-Residential Particulate Soil Inhalation (PSIC)
- Non-Residential Direct Contact Criteria (DCC)

The comparison for further evaluation relative to remedial action was limited to the above Part 201 Generic Cleanup Criteria based on the following:

- A deed covenant is currently in place for the Site that restricts the use of the Site to non-residential purposes; therefore, the Part 201 Generic Residential Cleanup Criteria were not utilized for comparison purposes for areas requiring further evaluation during this scope of work.

- A deed covenant is currently in place for the Site that restricts the use of groundwater beneath the Site for any purpose; therefore, the Part 201 Drinking Water Protection Criteria (DWPC) were not utilized for comparison purposes for areas requiring further evaluation during this scope of work.
- A deed covenant is currently in place for the Site that addresses the potential for vapor intrusion through the "construction and installation of vapor intrusion barriers for any building or other enclosure structure that will be occupied by any persons for any purposes" if determined to be required to reasonably prevent exposure; therefore, the Part 201 Soil Volatilization to Indoor Air Inhalation Criteria (SVIAC), Infinite Source Volatile Soil Inhalation Criteria (VSIC), and Finite (2-meter and 5-meter source thickness) Source VSIC were not utilized for comparison purposes for areas requiring further evaluation during this scope of work. Additionally, based on the sample intervals collected currently and historically, the thickness of the source was less than the 2-meter, 5-meter, and infinite source thickness required for applicable comparison to the VSIC.

The sampling activities that were conducted and evaluated based on comparison to Part 201 Generic Non-Residential DCC and PSIC, and GSIPC were evaluated consistent with this comparison. It should be noted that GSIPC was not utilized for comparison for completion of delineation activities, as that pathway is anticipated to be evaluated and addressed in the future relative to impacts in groundwater.

Figure 3 presents current and historical sample locations in which the concentration of TCE is compared to the Part 201 Non-Residential SVIAC.

A Quality Assurance/Quality Control (QA/QC) validation was conducted on the analytical data. Copies of analytical data and data validation memorandum summarizing the results of the data validation are presented in Attachment C and Attachment D, respectively. Based on the review of the data validation memorandum, the data produced by ALS Environmental of Holland, Michigan were found to exhibit acceptable levels of accuracy and precision and may be used with the qualifications noted in the tables in the data validation memoranda. Data was qualified for TCE for the samples collected from SB327-14 due to field duplicate sample variability.

Conclusions

Based on the results of the limited survey, the historical grade was lowered at the former sample locations following demolition and slab removal during property redevelopment re-grading activities. The change in elevation in this area ranges from approximately 1 to 5 feet, with the grade sloping down to the west towards SB12-05.

The current results for TCE in the former degreaser area are consistent with the historical results for soil samples collected in these locations in 2004 and 2005; however, the elevations at which these results were identified have changed. The analytical soil sample results indicate that concentrations of TCE that remain in the soil in this area currently exceed Part 201 Non-Residential SVIAC in one location. The horizontal and vertical extent of TCE contamination associated with the former source area has been delineated to Part 201 Non-Residential Direct Contact Criteria (DCC) and Particulate Soil Inhalation Criteria (PSIC), but not the other Part 201 Non-Residential Cleanup Criteria (i.e., DWPC, GSIPC, SVIAC, etc.) consistent with the above section, previous discussions with and submittals to the MDEQ, and the current and anticipated

future deed covenant for the Site. Further evaluation of this area is not warranted in order for RACER to obtain a certificate of completion or no further action determination.

Please contact David Favero at (217) 741-6235 or Jeni Quigley at (269) 685-5181 with any questions regarding this Memorandum.

List of Figures

List of Tables

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KEY MAP

Nº	Revision	Date	Initial

0 5 10ft

LEGEND

SB328-14	SOIL SAMPLE LOCATION
TW20-2	HISTORICAL SAMPLE LOCATION
MW6-03	HISTORICAL MONITORING WELL LOCATION
MW25-11	DESTROYED MONITORING WELL LOCATION
	APPROXIMATE SITE BOUNDARY
	AREA OF INTEREST

SCALE VERIFICATION

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

Approved

DRAWING STATUS

Status	Date	Initial

SOIL SAMPLE LOCATIONS

AOI 25 - FORMER DEGREASER AREA

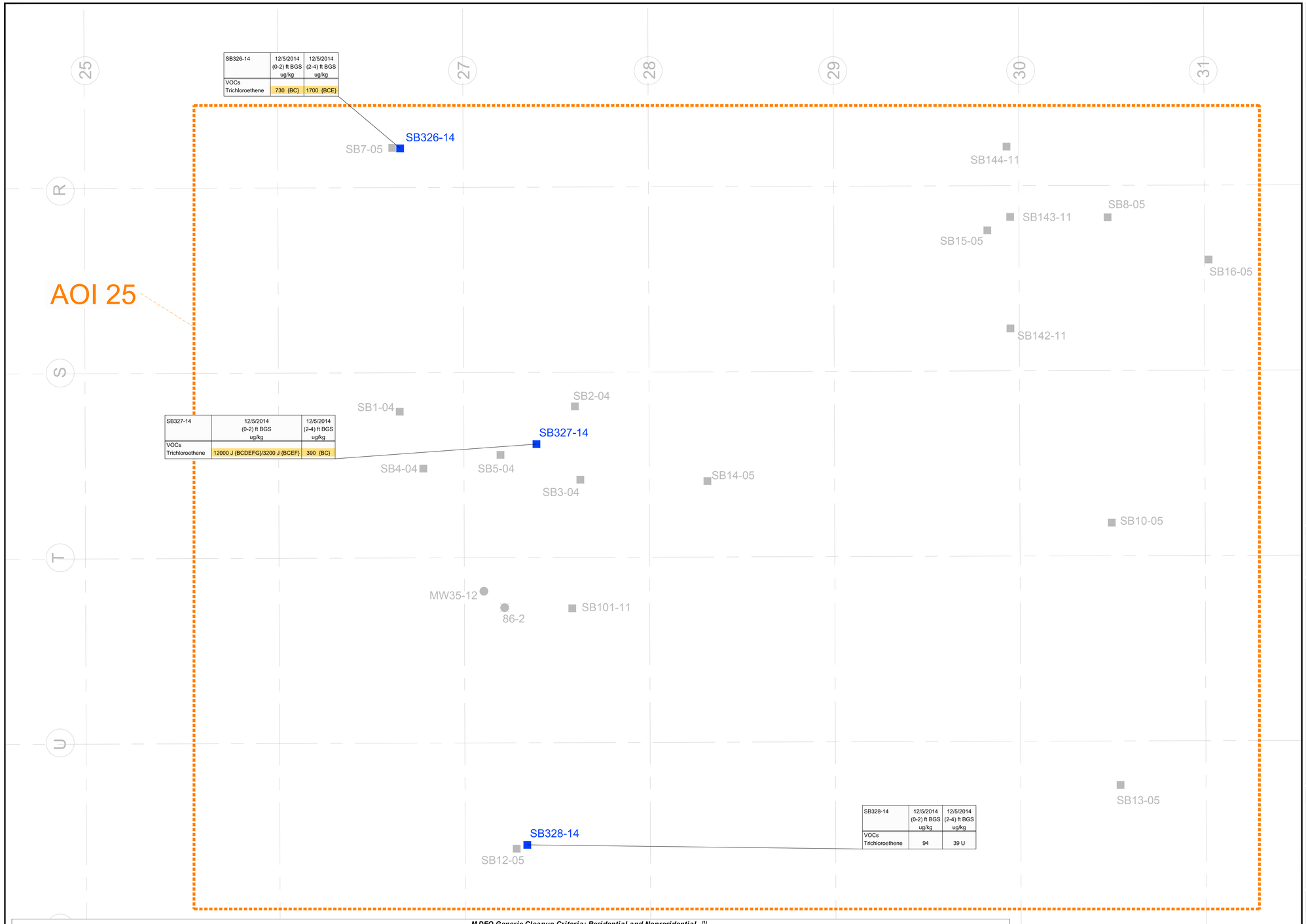
FORMER GRAND RAPIDS METAL PLANT
WYOMING, MICHIGAN

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:

Project Manager:	Reviewed By:	Date:	
J.Q.	E.B.	JANUARY 2015	
Scale: 1" = 10'	Project Nº: 017360-T05	Report Nº: MEMO077	Drawing Nº: Figure 1

017360-T05(MEMO077)GN-DE001 FEB 3/2015



M DEQ Generic Cleanup Criteria: Residential and Nonresidential [1]

	Statewide Default Background	Drinking Water Protection	Nonresidential Drinking Water Protection	Groundwater Surface Water Interface Protection	Soil Volatilization to Indoor Air Inhalation	Nonresidential Soil Volatilization to Indoor Air Inhalation	Infinite Source Volatile Soil Inhalation	Nonresidential Infinite Source Volatile Soil Inhalation	Finite VSIC for 5 Meter Source Thickness	Nonresidential Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Nonresidential Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation	Nonresidential Particulate Soil Inhalation	Direct Contact	Nonresidential Direct Contact	Soil Saturation Concentration Screening Levels
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
Volatile Organic Compounds (VOCs) (ug/kg)																	
Trichloroethene	NA	100	100	4000	1000	1900	11000	14000	25000	25000	57000	58000	130000000	59000000	110000	660000	500000

[1] Cleanup Criteria Requirements for Response Activity Administrative Rules R299.1 to R299.50 effective December 30, 2013 pursuant to 1994 PA 451 as amended.

Nº	Revision	Date	Initial

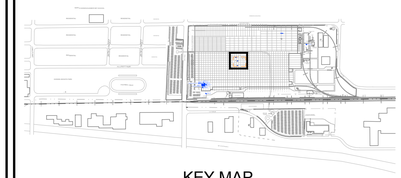
LEGEND

- SB328-14 SOIL SAMPLE LOCATION
- TW20-2 HISTORICAL SAMPLE LOCATION
- MW6-03 HISTORICAL MONITORING WELL LOCATION
- MW25-11 DESTROYED MONITORING WELL LOCATION
- APPROXIMATE SITE BOUNDARY
- AREA OF INTEREST

0 5 10ft

LOCATION, DATE, DEPTH UNIT, PARAMETERS EXCEEDANCE, CONCENTRATION

SB327-14	12/5/2014 (0-2) ft BGS ug/kg	12/5/2014 (2-4) ft BGS ug/kg
VOCs Trichloroethene	12000 J {BCDEFGRS}/3200 J {BCEFRS}	390 {BCRS}



KEY MAP

SCALE VERIFICATION

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

Approved

DRAWING STATUS

Status	Date	Initial

SOIL SAMPLE RESULTS COMPARED TO PART 201 CRITERIA

AOI 25 - FORMER DEGREASER AREA

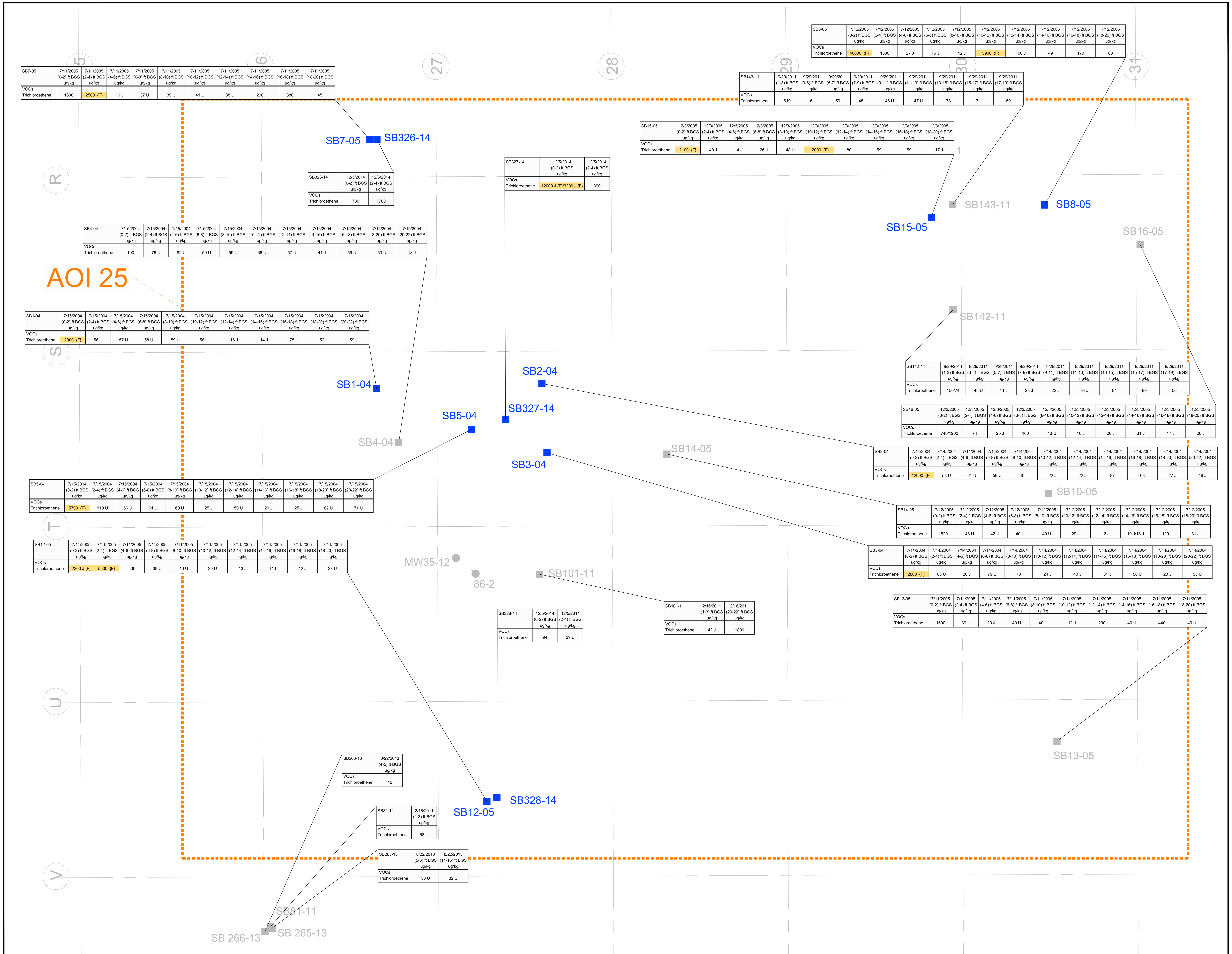
FORMER GRAND RAPIDS METAL PLANT
WYOMING, MICHIGAN

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:

Project Manager:	Reviewed By:	Date:	
J.Q.	E.B.	JANUARY 2015	
Scale: 1:10	Project Nº: 017360-T05	Report Nº: MEMO077	Drawing Nº: Figure 2

017360-T05(MEMO077)GN-DE002 FEB 11/2015



SB7-05	7/11/2005 (0-2) ft BGS ug/kg	7/11/2005 (2-4) ft BGS ug/kg	7/11/2005 (4-6) ft BGS ug/kg	7/11/2005 (6-8) ft BGS ug/kg	7/11/2005 (8-10) ft BGS ug/kg	7/11/2005 (10-12) ft BGS ug/kg	7/11/2005 (12-14) ft BGS ug/kg	7/11/2005 (14-16) ft BGS ug/kg	7/11/2005 (16-18) ft BGS ug/kg	7/11/2005 (18-20) ft BGS ug/kg
VOCs Trichloroethene	1600	2500 {F}	16 J	37 U	39 U	41 U	38 U	290	380	45

SB326-14	12/5/2014 (0-2) ft BGS ug/kg	12/5/2014 (2-4) ft BGS ug/kg
VOCs Trichloroethene	730	1700

SB4-04	7/15/2004 (0-2) ft BGS ug/kg	7/15/2004 (2-4) ft BGS ug/kg	7/15/2004 (4-6) ft BGS ug/kg	7/15/2004 (6-8) ft BGS ug/kg	7/15/2004 (8-10) ft BGS ug/kg	7/15/2004 (10-12) ft BGS ug/kg	7/15/2004 (12-14) ft BGS ug/kg	7/15/2004 (14-16) ft BGS ug/kg	7/15/2004 (16-18) ft BGS ug/kg	7/15/2004 (18-20) ft BGS ug/kg	7/15/2004 (20-22) ft BGS ug/kg
VOCs Trichloroethene	190	76 U	82 U	59 U	59 U	66 U	57 U	41 J	59 U	53 U	18 J

SB1-04	7/15/2004 (0-2) ft BGS ug/kg	7/15/2004 (2-4) ft BGS ug/kg	7/15/2004 (4-6) ft BGS ug/kg	7/15/2004 (6-8) ft BGS ug/kg	7/15/2004 (8-10) ft BGS ug/kg	7/15/2004 (10-12) ft BGS ug/kg	7/15/2004 (12-14) ft BGS ug/kg	7/15/2004 (14-16) ft BGS ug/kg	7/15/2004 (16-18) ft BGS ug/kg	7/15/2004 (18-20) ft BGS ug/kg	7/15/2004 (20-22) ft BGS ug/kg
VOCs Trichloroethene	2000 {F}	56 U	57 U	58 U	59 U	58 U	16 J	14 J	75 U	52 U	59 U

SB5-04	7/15/2004 (0-2) ft BGS ug/kg	7/15/2004 (2-4) ft BGS ug/kg	7/15/2004 (4-6) ft BGS ug/kg	7/15/2004 (6-8) ft BGS ug/kg	7/15/2004 (8-10) ft BGS ug/kg	7/15/2004 (10-12) ft BGS ug/kg	7/15/2004 (12-14) ft BGS ug/kg	7/15/2004 (14-16) ft BGS ug/kg	7/15/2004 (16-18) ft BGS ug/kg	7/15/2004 (18-20) ft BGS ug/kg	7/15/2004 (20-22) ft BGS ug/kg
VOCs Trichloroethene	5700 {F}	110 U	66 U	61 U	60 U	25 J	50 U	20 J	25 J	62 U	71 U

SB12-05	7/11/2005 (0-2) ft BGS ug/kg	7/11/2005 (2-4) ft BGS ug/kg	7/11/2005 (4-6) ft BGS ug/kg	7/11/2005 (6-8) ft BGS ug/kg	7/11/2005 (8-10) ft BGS ug/kg	7/11/2005 (10-12) ft BGS ug/kg	7/11/2005 (12-14) ft BGS ug/kg	7/11/2005 (14-16) ft BGS ug/kg	7/11/2005 (16-18) ft BGS ug/kg	7/11/2005 (18-20) ft BGS ug/kg
VOCs Trichloroethene	2200 J {F}	5500 {F}	530	39 U	40 U	39 U	13 J	140	12 J	38 U

SB327-14	12/5/2014 (0-2) ft BGS ug/kg	12/5/2014 (2-4) ft BGS ug/kg
VOCs Trichloroethene	12000 J {F}/3200 J {F}	390

SB8-05	7/12/2005 (0-2) ft BGS ug/kg	7/12/2005 (2-4) ft BGS ug/kg	7/12/2005 (4-6) ft BGS ug/kg	7/12/2005 (6-8) ft BGS ug/kg	7/12/2005 (8-10) ft BGS ug/kg	7/12/2005 (10-12) ft BGS ug/kg	7/12/2005 (12-14) ft BGS ug/kg	7/12/2005 (14-16) ft BGS ug/kg	7/12/2005 (16-18) ft BGS ug/kg	7/12/2005 (18-20) ft BGS ug/kg
VOCs Trichloroethene	46000 {F}	1500	27 J	16 J	12 J	5900 {F}	100 J	49	170	63

SB143-11	9/29/2011 (1-3) ft BGS ug/kg	9/29/2011 (3-5) ft BGS ug/kg	9/29/2011 (5-7) ft BGS ug/kg	9/29/2011 (7-9) ft BGS ug/kg	9/29/2011 (9-11) ft BGS ug/kg	9/29/2011 (11-13) ft BGS ug/kg	9/29/2011 (13-15) ft BGS ug/kg	9/29/2011 (15-17) ft BGS ug/kg	9/29/2011 (17-19) ft BGS ug/kg
VOCs Trichloroethene	610	61	59	45 U	48 U	47 U	78	71	59

SB15-05	12/3/2005 (0-2) ft BGS ug/kg	12/3/2005 (2-4) ft BGS ug/kg	12/3/2005 (4-6) ft BGS ug/kg	12/3/2005 (6-8) ft BGS ug/kg	12/3/2005 (8-10) ft BGS ug/kg	12/3/2005 (10-12) ft BGS ug/kg	12/3/2005 (12-14) ft BGS ug/kg	12/3/2005 (14-16) ft BGS ug/kg	12/3/2005 (16-18) ft BGS ug/kg	12/3/2005 (18-20) ft BGS ug/kg
VOCs Trichloroethene	2100 {F}	40 J	14 J	26 J	48 U	12000 {F}	80	59	59	17 J

SB142-11	9/29/2011 (1-3) ft BGS ug/kg	9/29/2011 (3-5) ft BGS ug/kg	9/29/2011 (5-7) ft BGS ug/kg	9/29/2011 (7-9) ft BGS ug/kg	9/29/2011 (9-11) ft BGS ug/kg	9/29/2011 (11-13) ft BGS ug/kg	9/29/2011 (13-15) ft BGS ug/kg	9/29/2011 (15-17) ft BGS ug/kg	9/29/2011 (17-19) ft BGS ug/kg
VOCs Trichloroethene	150/74	45 U	11 J	28 J	22 J	34 J	64	89	56

SB16-05	12/3/2005 (0-2) ft BGS ug/kg	12/3/2005 (2-4) ft BGS ug/kg	12/3/2005 (4-6) ft BGS ug/kg	12/3/2005 (6-8) ft BGS ug/kg	12/3/2005 (8-10) ft BGS ug/kg	12/3/2005 (10-12) ft BGS ug/kg	12/3/2005 (12-14) ft BGS ug/kg	12/3/2005 (14-16) ft BGS ug/kg	12/3/2005 (16-18) ft BGS ug/kg	12/3/2005 (18-20) ft BGS ug/kg
VOCs Trichloroethene	740/1200	74	25 J	160	43 U	16 J	20 J	31 J	17 J	20 J

SB2-04	7/14/2004 (0-2) ft BGS ug/kg	7/14/2004 (2-4) ft BGS ug/kg	7/14/2004 (4-6) ft BGS ug/kg	7/14/2004 (6-8) ft BGS ug/kg	7/14/2004 (8-10) ft BGS ug/kg	7/14/2004 (10-12) ft BGS ug/kg	7/14/2004 (12-14) ft BGS ug/kg	7/14/2004 (14-16) ft BGS ug/kg	7/14/2004 (16-18) ft BGS ug/kg	7/14/2004 (18-20) ft BGS ug/kg	7/14/2004 (20-22) ft BGS ug/kg
VOCs Trichloroethene	12000 {F}	58 U	61 U	59 U	40 J	22 J	22 J	87	63	27 J	46 J

SB14-05	7/12/2005 (0-2) ft BGS ug/kg	7/12/2005 (2-4) ft BGS ug/kg	7/12/2005 (4-6) ft BGS ug/kg	7/12/2005 (6-8) ft BGS ug/kg	7/12/2005 (8-10) ft BGS ug/kg	7/12/2005 (10-12) ft BGS ug/kg	7/12/2005 (12-14) ft BGS ug/kg	7/12/2005 (14-16) ft BGS ug/kg	7/12/2005 (16-18) ft BGS ug/kg	7/12/2005 (18-20) ft BGS ug/kg
VOCs Trichloroethene	820	48 U	42 U	40 U	40 U	29 J	16 J	19 J/18 J	120	31 J

SB3-04	7/14/2004 (0-2) ft BGS ug/kg	7/14/2004 (2-4) ft BGS ug/kg	7/14/2004 (4-6) ft BGS ug/kg	7/14/2004 (6-8) ft BGS ug/kg	7/14/2004 (8-10) ft BGS ug/kg	7/14/2004 (10-12) ft BGS ug/kg	7/14/2004 (12-14) ft BGS ug/kg	7/14/2004 (14-16) ft BGS ug/kg	7/14/2004 (16-18) ft BGS ug/kg	7/14/2004 (18-20) ft BGS ug/kg	7/14/2004 (20-22) ft BGS ug/kg
VOCs Trichloroethene	2800 {F}	63 U	20 J	79 U	78	24 J	40 J	31 J	58 U	20 J	53 U

SB13-05	7/11/2005 (0-2) ft BGS ug/kg	7/11/2005 (2-4) ft BGS ug/kg	7/11/2005 (4-6) ft BGS ug/kg	7/11/2005 (6-8) ft BGS ug/kg	7/11/2005 (8-10) ft BGS ug/kg	7/11/2005 (10-12) ft BGS ug/kg	7/11/2005 (12-14) ft BGS ug/kg	7/11/2005 (14-16) ft BGS ug/kg	7/11/2005 (16-18) ft BGS ug/kg	7/11/2005 (18-20) ft BGS ug/kg
VOCs Trichloroethene	1500	39 U	20 J	40 U	40 U	12 J	290	40 U	440	40 U

SB328-14	12/5/2014 (0-2) ft BGS ug/kg	12/5/2014 (2-4) ft BGS ug/kg
VOCs Trichloroethene	94	39 U

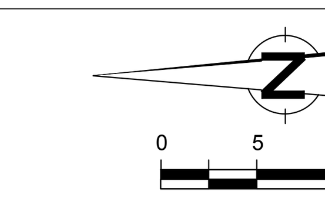
SB101-11	2/16/2011 (1-3) ft BGS ug/kg	2/16/2011 (20-22) ft BGS ug/kg
VOCs Trichloroethene	42 J	1800

SB266-13	8/22/2013 (4-5) ft BGS ug/kg
VOCs Trichloroethene	46

SB81-11	2/16/2011 (2-3) ft BGS ug/kg
VOCs Trichloroethene	58 U

SB265-13	8/22/2013 (5-6) ft BGS ug/kg	8/22/2013 (14-15) ft BGS ug/kg
VOCs Trichloroethene	33 U	32 U

Nº	Revision	Date	Initial



LEGEND

- SB15-053 SOIL SAMPLE RESULTS EXCEED NR SVIAC
- TW20-2 HISTORICAL SAMPLE LOCATION
- MW6-03 HISTORICAL MONITORING WELL LOCATION
- MW25-11 DESTROYED MONITORING WELL LOCATION
- AREA OF INTEREST

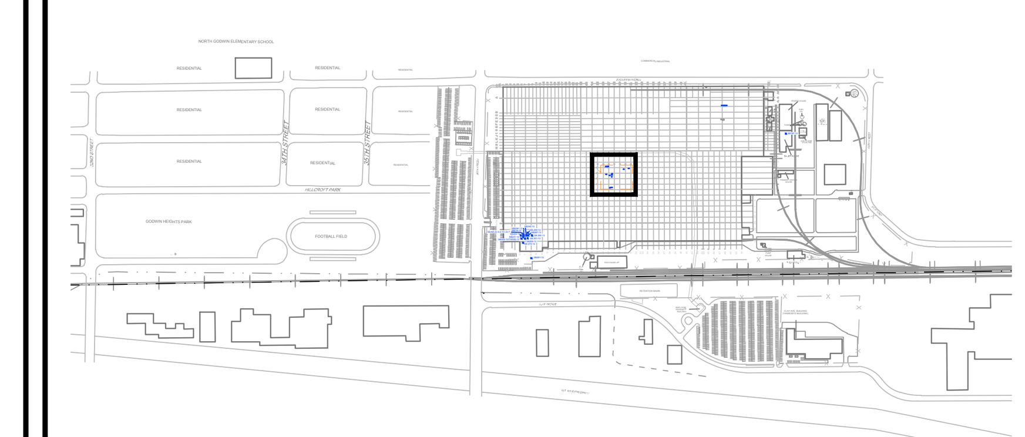
LOCATION — DATE — DEPTH — UNIT — PARAMETERS — EXCEEDANCE — CONCENTRATION

SB7-05	7/11/2005 (0-2) ft BGS ug/kg	7/11/2005 (2-4) ft BGS ug/kg	7/11/2005 (4-6) ft BGS ug/kg	7/11/2005 (6-8) ft BGS ug/kg	7/11/2005 (8-10) ft BGS ug/kg	7/11/2005 (10-12) ft BGS ug/kg	7/11/2005 (12-14) ft BGS ug/kg	7/11/2005 (14-16) ft BGS ug/kg	7/11/2005 (16-18) ft BGS ug/kg	7/11/2005 (18-20) ft BGS ug/kg
VOCs Trichloroethene	1600	2500 {F}	16 J	37 U	39 U	41 U	38 U	290	380	45

NOTES:

NRSVIAC - NON-RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR CRITERIA

SAMPLE DEPTH INTERVALS DO NOT REFLECT THE CHANGE IN ELEVATIONS IN THIS AREA AFTER DEMOLITION AND SITE RE-GRADING. REFER TO TABLE 1 FOR CORRESPONDING ELEVATION CHANGES AT HISTORICAL SAMPLE LOCATIONS.



KEY MAP

SCALE VERIFICATION

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

Approved

DRAWING STATUS

Status	Date	Initial

CURRENT AND HISTORICAL SOIL SAMPLE RESULTS COMPARED TO PART 201 NRSVIAC

AOI 25 - FORMER DEGREASER AREA

FORMER GRAND RAPIDS METAL PLANT
WYOMING, MICHIGAN

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:

Project Manager: J.Q.	Reviewed By: E.B.	Date: JANUARY 2015	
Scale: 1:10	Project Nº: 017360-T05	Report Nº: MEMO077	Drawing Nº: Figure 3

017360-T05(MEMO077)GN-DE003 FEB 11/2015

SUMMARY OF SURVEY ELEVATIONS - PRE/POST DEMOLITION
AOI 25 - FORMER DEGREASER AREA
GRAND RAPIDS METAL PLANT
WYOMING, MICHIGAN

	Ground Surface Elevations (ft. AMSL)		
Sample Location	***Pre-Demolition***	***Current***	***Elevation Change (ft.)***
SB1-04	681.01	678.35	2.66
SB2-04	680.99	678.26	2.73
SB4-04	681.01	678.14	2.87
SB5-04	681.02	678.19	2.83
SB7-05	681.30	679.68	1.62
SB8-05	681.30	680.28	1.02
SB12-05	681.20	676.29	4.91
SB15-05	681.20	678.68	2.52
SB326-14	--	679.69	--
SB327-14	--	678.21	--
SB328-14	--	676.28	--

Notes:
ft. AMSL - feet above mean sea level

SOIL SAMPLE ANALYTICAL RESULTS
AOI 25 - FORMER DEGREASER AREA
FORMER GRAND RAPIDS METAL PLANT
WYOMING, MICHIGAN

		MDEQ Generic Cleanup Criteria: Residential and Nonresidential [(1)]								
		Statewide Default Background	Drinking Water Protection	Nonresidential Drinking Water Protection	Groundwater Surface Water Interface Protection	Soil Volatilization to Indoor Air Inhalation	Nonresidential Soil Volatilization to Indoor Air Inhalation	Infinite Source Volatile Soil Inhalation	Nonresidential Infinite Source Volatile Soil Inhalation	Finite VSIC for 5 Meter Source Thickness
	Units	a	b	c	d	e	f	g	h	i
Volatile Organic Compounds (VOCs)										
1,1,1-Trichloroethane	µg/kg	NA	4000	4000	1800	250000	460000	3800000	4500000	12000000
1,1,2,2-Tetrachloroethane	µg/kg	NA	170	700	1600	4300	23000	10000	34000	10000
1,1,2-Trichloroethane	µg/kg	NA	100	100	6600	4600	24000	17000	57000	21000
1,1-Dichloroethane	µg/kg	NA	18000	50000	15000	230000	430000	2100000	2500000	5900000
1,1-Dichloroethene	µg/kg	NA	140	140	2600	62	330	1100	3700	5300
1,2,4-Trichlorobenzene	µg/kg	NA	4200	4200	5900	9600000	18000000	28000000	34000000	28000000
1,2-Dibromo-3-chloropropane (DBCP)	µg/kg	NA	10	10	ID	220	1200	260	900	260
1,2-Dibromoethane (Ethylene dibromide)	µg/kg	NA	20	20	110	670	3600	1700	5800	1700
1,2-Dichlorobenzene	µg/kg	NA	14000	14000	280	11000000	20000000	39000000	46000000	39000000
1,2-Dichloroethane	µg/kg	NA	100	100	7200	2100	11000	6200	21000	11000
1,2-Dichloropropane	µg/kg	NA	100	100	4600	4000	7400	25000	30000	50000
1,3-Dichlorobenzene	µg/kg	NA	170	480	680	26000	48000	79000	94000	79000
1,4-Dichlorobenzene	µg/kg	NA	1700	1700	360	19000	100000	77000	260000	77000
2-Butanone (Methyl ethyl ketone) (MEK)	µg/kg	NA	260000	760000	44000	54000000	99000000	29000000	35000000	29000000
2-Hexanone	µg/kg	NA	20000	58000	ID	990000	1800000	1100000	1300000	1100000
4-Methyl-2-pentanone (Methyl isobutyl ketone)	µg/kg	NA	36000	100000	ID	37000000	69000000	45000000	53000000	45000000
Acetone	µg/kg	NA	15000	42000	34000	290000000	540000000	130000000	160000000	130000000
Benzene	µg/kg	NA	100	100	4000	1600	8400	13000	45000	34000
Bromodichloromethane	µg/kg	NA	1600	1600	ID	1200	6400	9100	31000	9700
Bromoform	µg/kg	NA	1600	1600	ID	150000	770000	900000	3100000	900000
Bromomethane (Methyl bromide)	µg/kg	NA	200	580	700	860	1600	11000	13000	57000
Carbon disulfide	µg/kg	NA	16000	46000	ID	76000	140000	1300000	1600000	7900000
Carbon tetrachloride	µg/kg	NA	100	100	900	190	990	3500	12000	12000
Chlorobenzene	µg/kg	NA	2000	2000	500	120000	220000	770000	920000	990000
Chloroethane	µg/kg	NA	8600	34000	22000	2900000	5300000	30000000	36000000	120000000
Chloroform (Trichloromethane)	µg/kg	NA	1600	1600	7000	7200	38000	45000	150000	120000
Chloromethane (Methyl chloride)	µg/kg	NA	5200	22000	ID	2300	10000	40000	120000	410000
cis-1,2-Dichloroethene	µg/kg	NA	1400	1400	12000	22000	41000	180000	210000	420000
cis-1,3-Dichloropropene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	µg/kg	NA	1600	1600	ID	3900	21000	24000	80000	24000
Dichlorodifluoromethane (CFC-12)	µg/kg	NA	95000	270000	ID	900000	1700000	53000000	63000000	550000000
Ethylbenzene	µg/kg	NA	1500	1500	360	87000	460000	720000	2400000	1000000
Isopropyl benzene	µg/kg	NA	91000	260000	3200	400000	730000	1700000	2000000	1700000
Methyl acetate	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl cyclohexane	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	µg/kg	NA	800	800	140000	9900000	18000000	25000000	30000000	39000000
Methylene chloride	µg/kg	NA	100	100	30000	45000	240000	210000	700000	590000
Styrene	µg/kg	NA	2700	2700	2100	250000	1300000	970000	3300000	970000
Tetrachloroethene	µg/kg	NA	100	100	1200	11000	21000	170000	210000	480000
Toluene	µg/kg	NA	16000	16000	5400	330000	610000	2800000	3300000	5100000
trans-1,2-Dichloroethene	µg/kg	NA	2000	2000	30000	23000	43000	280000	330000	830000
trans-1,3-Dichloropropene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	µg/kg	NA	100	100	4000	1000	1900	11000	14000	25000
Trichlorofluoromethane (CFC-11)	µg/kg	NA	52000	150000	NA	2800000	5100000	92000000	110000000	630000000
Trifluorotrichloroethane (Freon 113)	µg/kg	NA	9000000	9000000	1700	5100000	9300000	180000000	210000000	880000000
Vinyl chloride	µg/kg	NA	40	40	260	270	2800	4200	29000	30000
Xylenes (total)	µg/kg	NA	5600	5600	820	6300000	12000000	46000000	54000000	61000000

TABLE 2

SOIL SAMPLE ANALYTICAL RESULTS
AOI 25 - FORMER DEGREASER AREA
FORMER GRAND RAPIDS METAL PLANT
WYOMING, MICHIGAN

	MDEQ Generic Cleanup Criteria: Residential and Nonresidential [(1)]								
	Statewide Default Background	Drinking Water Protection	Nonresidential Drinking Water Protection	Groundwater Surface Water Interface Protection	Soil Volatilization to Indoor Air Inhalation	Nonresidential Soil Volatilization to Indoor Air Inhalation	Infinite Source Volatile Soil Inhalation	Nonresidential Infinite Source Volatile Soil Inhalation	Finite VSIC for 5 Meter Source Thickness
Units	a	b	c	d	e	f	g	h	i

Notes:
[(1)] Cleanup Criteria Requirements for Response Activity, Administrative Rules R299.1 to R299.50 effective December 30, 2013 pursuant to 1994 PA 451 as amended.
ID - Insufficient data to develop criterion.
NA - A criterion or value is not available or, in the case of background numbers, not applicable.
NLL - Hazardous substance is not likely to leach under most soil conditions.
NLV - Hazardous substance is not likely to volatilize under most conditions.
U - Not detected at the associated reporting limit.
-- Parameter was not analyzed.
☐ - Exceeds Generic Cleanup Criteria.
Superscript letter notes the criterion exceeded.

SOIL SAMPLE ANALYTICAL RESULTS
AOI 25 - FORMER DEGREASER AREA
FORMER GRAND RAPIDS METAL PLANT
WYOMING, MICHIGAN

		MDEQ Generic Cleanup Criteria: Residential and Nonresidential [1]							
		Nonresidential Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Nonresidential Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation	Nonresidential Particulate Soil Inhalation	Direct Contact	Nonresidential Direct Contact	Soil Saturation Concentration Screening Levels
	Units	j	k	l	m	n	o	p	q
Volatile Organic Compounds (VOCs)									
1,1,1-Trichloroethane	µg/kg	15000000	28000000	31000000	67000000000	29000000000	500000000	1000000000	460000
1,1,2,2-Tetrachloroethane	µg/kg	34000	14000	34000	54000000	68000000	53000	240000	870000
1,1,2-Trichloroethane	µg/kg	57000	44000	120000	190000000	250000000	180000	840000	920000
1,1-Dichloroethane	µg/kg	6000000	14000000	14000000	33000000000	15000000000	27000000	87000000	890000
1,1-Dichloroethene	µg/kg	15000	13000	37000	62000000	78000000	200000	660000	570000
1,2,4-Trichlorobenzene	µg/kg	34000000	28000000	34000000	25000000000	11000000000	990000	5800000	1100000
1,2-Dibromo-3-chloropropane (DBCP)	µg/kg	900	260	900	560000	700000	4400000	20000	1200
1,2-Dibromoethane (Ethylene dibromide)	µg/kg	5800	3300	9800	14000000	18000000	92	430	890000
1,2-Dichlorobenzene	µg/kg	46000000	52000000	55000000	100000000000	44000000000	19000000	63000000	210000
1,2-Dichloroethane	µg/kg	33000	26000	74000	120000000	150000000	91000	420000	1200000
1,2-Dichloropropane	µg/kg	51000	110000	120000	270000000	120000000	140000	660000	550000
1,3-Dichlorobenzene	µg/kg	94000	110000	110000	200000000	88000000	200000	660000	170000
1,4-Dichlorobenzene	µg/kg	260000	110000	340000	450000000	570000000	400000	1900000	NA
2-Butanone (Methyl ethyl ketone) (MEK)	µg/kg	35000000	35000000	36000000	67000000000	29000000000	120000000	700000000	27000000
2-Hexanone	µg/kg	1300000	1400000	1500000	2700000000	1200000000	32000000	100000000	2500000
4-Methyl-2-pentanone (Methyl isobutyl ketone)	µg/kg	53000000	67000000	70000000	140000000000	60000000000	56000000	180000000	2700000
Acetone	µg/kg	160000000	190000000	200000000	390000000000	170000000000	23000000	73000000	110000000
Benzene	µg/kg	99000	79000	230000	380000000	470000000	180000	840000	400000
Bromodichloromethane	µg/kg	31000	19000	57000	84000000	110000000	110000	490000	1500000
Bromoform	µg/kg	3100000	900000	3100000	2800000000	3600000000	820000	3800000	870000
Bromomethane (Methyl bromide)	µg/kg	57000	140000	140000	330000000	150000000	320000	1000000	2200000
Carbon disulfide	µg/kg	8000000	19000000	19000000	47000000000	21000000000	7200000	43000000	280000
Carbon tetrachloride	µg/kg	34000	28000	79000	130000000	170000000	96000	440000	390000
Chlorobenzene	µg/kg	1100000	2100000	2100000	4700000000	2100000000	4300000	14000000	260000
Chloroethane	µg/kg	120000000	280000000	280000000	670000000000	290000000000	2600000	12000000	950000
Chloroform (Trichloromethane)	µg/kg	340000	270000	790000	1300000000	1600000000	1200000	5500000	1500000
Chloromethane (Methyl chloride)	µg/kg	1000000	1000000	2500000	4900000000	2600000000	1600000	7400000	1100000
cis-1,2-Dichloroethene	µg/kg	430000	990000	1000000	2300000000	1000000000	2500000	8000000	640000
cis-1,3-Dichloropropene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	µg/kg	80000	33000	98000	130000000	160000000	110000	500000	610000
Dichlorodifluoromethane (CFC-12)	µg/kg	550000000	1400000000	1400000000	3300000000000	1500000000000	52000000	170000000	1000000
Ethylbenzene	µg/kg	3100000	2200000	6500000	10000000000	13000000000	22000000	71000000	140000
Isopropyl benzene	µg/kg	2000000	2800000	3000000	5800000000	2600000000	25000000	80000000	390000
Methyl acetate	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Methyl cyclohexane	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	µg/kg	41000000	87000000	89000000	200000000000	88000000000	1500000	7100000	5900000
Methylene chloride	µg/kg	1700000	1400000	4000000	6600000000	8300000000	1300000	5800000	2300000
Styrene	µg/kg	3300000	1400000	4200000	5500000000	6900000000	400000	1900000	520000
Tetrachloroethene	µg/kg	490000	1100000	1100000	2700000000	1200000000	200000	930000	88000
Toluene	µg/kg	36000000	12000000	36000000	27000000000	12000000000	50000000	160000000	250000
trans-1,2-Dichloroethene	µg/kg	840000	2000000	2000000	4700000000	2100000000	3800000	12000000	1400000
trans-1,3-Dichloropropene	µg/kg	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	µg/kg	25000	57000	58000	130000000	59000000	110000	660000	500000
Trichlorofluoromethane (CFC-11)	µg/kg	140000000000	1500000000	140000000000	3800000000000	1700000000000	79000000	260000000	560000
Trifluorotrichloroethane (Freon 113)	µg/kg	890000000	2100000000	2100000000	5100000000000	2300000000000	1000000000	1000000000	550000
Vinyl chloride	µg/kg	170000	73000	420000	350000000	890000000	3800	34000	490000
Xylenes (total)	µg/kg	65000000	130000000	130000000	290000000000	130000000000	410000000	1000000000	150000

TABLE 2

SOIL SAMPLE ANALYTICAL RESULTS
AOI 25 - FORMER DEGREASER AREA
FORMER GRAND RAPIDS METAL PLANT
WYOMING, MICHIGAN

	MDEQ Generic Cleanup Criteria: Residential and Nonresidential [1]							
	Nonresidential Finite VSIC for 5 Meter Source Thickness	Finite VSIC for 2 Meter Source Thickness	Nonresidential Finite VSIC for 2 Meter Source Thickness	Particulate Soil Inhalation	Nonresidential Particulate Soil Inhalation	Direct Contact	Nonresidential Direct Contact	Soil Saturation Concentration Screening Levels
Units	j	k	l	m	n	o	p	q

Notes:
[1] Cleanup Criteria Requirements for Response Activity, Administrative Rules R299.1 to R299.50 effective December 30, 2013 pursuant to 1994 PA 451 as amended.
ID - Insufficient data to develop criterion.
NA - A criterion or value is not available or, in the case of background numbers, not applicable.
NLL - Hazardous substance is not likely to leach under most soil conditions.
NLV - Hazardous substance is not likely to volatilize under most conditions.
U - Not detected at the associated reporting limit.
-- Parameter was not analyzed.
☐ - Exceeds Generic Cleanup Criteria.
Superscript letter notes the criterion exceeded.

SOIL SAMPLE ANALYTICAL RESULTS
AOI 25 - FORMER DEGREASER AREA
FORMER GRAND RAPIDS METAL PLANT
WYOMING, MICHIGAN

Sample Location:		*SB326-14*	*SB326-14*	*SB327-14*	*SB327-14*	*SB327-14*
Sample Identification:		*SO-17360-120514-EB-004*	*SO-17360-120514-EB-005*	*SO-17360-120514-EB-001*	*SO-17360-120514-EB-002*	*SO-17360-120514-EB-003*
Sample Date:		*12/5/2014*	*12/5/2014*	*12/5/2014*	*12/5/2014*	*12/5/2014*
Sample Depth		*(0-2) ft BGS*	*(2-4) ft BGS*	*(0-2) ft BGS*	*(0-2) ft BGS*	*(2-4) ft BGS*
Sample Type:					*Duplicate*	
	Units					
Volatile Organic Compounds (VOCs)						
1,1,1-Trichloroethane	µg/kg	38 U	36 U	36 U	39 U	37 U
1,1,2,2-Tetrachloroethane	µg/kg	38 U	36 U	36 U	39 U	37 U
1,1,2-Trichloroethane	µg/kg	38 U	36 U	36 U	39 U	37 U
1,1-Dichloroethane	µg/kg	38 U	36 U	36 U	39 U	37 U
1,1-Dichloroethene	µg/kg	38 U	36 U	36 U	39 U	37 U
1,2,4-Trichlorobenzene	µg/kg	38 U	36 U	36 U	39 U	37 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/kg	38 U	36 U	36 U	39 U	37 U
1,2-Dibromoethane (Ethylene dibromide)	µg/kg	38 U	36 U	36 U	39 U	37 U
1,2-Dichlorobenzene	µg/kg	38 U	36 U	36 U	39 U	37 U
1,2-Dichloroethane	µg/kg	38 U	36 U	36 U	39 U	37 U
1,2-Dichloropropane	µg/kg	38 U	36 U	36 U	39 U	37 U
1,3-Dichlorobenzene	µg/kg	38 U	36 U	36 U	39 U	37 U
1,4-Dichlorobenzene	µg/kg	38 U	36 U	36 U	39 U	37 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/kg	250 U	240 U	240 U	260 U	250 U
2-Hexanone	µg/kg	38 U	36 U	36 U	39 U	37 U
4-Methyl-2-pentanone (Methyl isobutyl ketone)	µg/kg	38 U	36 U	36 U	39 U	37 U
Acetone	µg/kg	130 U	120 U	120 U	130 U	120 U
Benzene	µg/kg	38 U	36 U	48	39 U	37 U
Bromodichloromethane	µg/kg	38 U	36 U	36 U	39 U	37 U
Bromoform	µg/kg	38 U	36 U	36 U	39 U	37 U
Bromomethane (Methyl bromide)	µg/kg	94 U	91 U	89 U	97 U	93 U
Carbon disulfide	µg/kg	38 U	36 U	36 U	39 U	37 U
Carbon tetrachloride	µg/kg	38 U	36 U	36 U	39 U	37 U
Chlorobenzene	µg/kg	38 U	36 U	36 U	39 U	37 U
Chloroethane	µg/kg	130 U	120 U	120 U	130 U	120 U
Chloroform (Trichloromethane)	µg/kg	38 U	36 U	36 U	39 U	37 U
Chloromethane (Methyl chloride)	µg/kg	130 U	120 U	120 U	130 U	120 U
cis-1,2-Dichloroethene	µg/kg	38 U	36 U	36 U	39 U	37 U
cis-1,3-Dichloropropene	µg/kg	38 U	36 U	36 U	39 U	37 U
Cyclohexane	µg/kg	38 U	36 U	120	89	37 U
Dibromochloromethane	µg/kg	38 U	36 U	36 U	39 U	37 U
Dichlorodifluoromethane (CFC-12)	µg/kg	38 U	36 U	36 U	39 U	37 U
Ethylbenzene	µg/kg	38 U	36 U	23 J	16 J	37 U
Isopropyl benzene	µg/kg	38 U	36 U	68	63	37 U
Methyl acetate	µg/kg	250 U	240 U	240 U	260 U	250 U
Methyl cyclohexane	µg/kg	38 U	36 U	390	220	37 U
Methyl tert butyl ether (MTBE)	µg/kg	38 U	36 U	36 U	39 U	37 U
Methylene chloride	µg/kg	38 U	36 U	36 U	39 U	37 U
Styrene	µg/kg	38 U	36 U	36 U	39 U	37 U
Tetrachloroethene	µg/kg	38 U	36 U	36 U	39 U	37 U
Toluene	µg/kg	33 J	36 U	120	45	17 J
trans-1,2-Dichloroethene	µg/kg	38 U	36 U	36 U	39 U	37 U
trans-1,3-Dichloropropene	µg/kg	38 U	36 U	36 U	39 U	37 U
Trichloroethene	µg/kg	**730**[bc]	**1700**[bce]	**12000 J**[bcdefg]	**3200 J**[bcef]	**390**[bc]
Trichlorofluoromethane (CFC-11)	µg/kg	38 U	36 U	36 U	39 U	37 U
Trifluorotrichloroethane (Freon 113)	µg/kg	38 U	36 U	36 U	39 U	37 U
Vinyl chloride	µg/kg	38 U	36 U	36 U	39 U	37 U
Xylenes (total)	µg/kg	90 J	110 U	190	140	110 U

SOIL SAMPLE ANALYTICAL RESULTS
AOI 25 - FORMER DEGREASER AREA
FORMER GRAND RAPIDS METAL PLANT
WYOMING, MICHIGAN

Sample Location:		***SB328-14***	***SB328-14***
Sample Identification:		***SO-17360-120514-EB-006***	***SO-17360-120514-EB-007***
Sample Date:		***12/5/2014***	***12/5/2014***
Sample Depth		***(0-2) ft BGS***	***(2-4) ft BGS***
Sample Type:			
	Units		
Volatile Organic Compounds (VOCs)			
1,1,1-Trichloroethane	µg/kg	38 U	39 U
1,1,2,2-Tetrachloroethane	µg/kg	38 U	39 U
1,1,2-Trichloroethane	µg/kg	38 U	39 U
1,1-Dichloroethane	µg/kg	38 U	39 U
1,1-Dichloroethene	µg/kg	38 U	39 U
1,2,4-Trichlorobenzene	µg/kg	38 U	39 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/kg	38 U	39 U
1,2-Dibromoethane (Ethylene dibromide)	µg/kg	38 U	39 U
1,2-Dichlorobenzene	µg/kg	38 U	39 U
1,2-Dichloroethane	µg/kg	38 U	39 U
1,2-Dichloropropane	µg/kg	38 U	39 U
1,3-Dichlorobenzene	µg/kg	38 U	39 U
1,4-Dichlorobenzene	µg/kg	38 U	39 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/kg	250 U	260 U
2-Hexanone	µg/kg	38 U	39 U
4-Methyl-2-pentanone (Methyl isobutyl ketone)	µg/kg	38 U	39 U
Acetone	µg/kg	130 U	130 U
Benzene	µg/kg	38 U	22 J
Bromodichloromethane	µg/kg	38 U	39 U
Bromoform	µg/kg	38 U	39 U
Bromomethane (Methyl bromide)	µg/kg	95 U	98 U
Carbon disulfide	µg/kg	38 U	39 U
Carbon tetrachloride	µg/kg	38 U	39 U
Chlorobenzene	µg/kg	38 U	39 U
Chloroethane	µg/kg	130 U	130 U
Chloroform (Trichloromethane)	µg/kg	38 U	39 U
Chloromethane (Methyl chloride)	µg/kg	130 U	130 U
cis-1,2-Dichloroethene	µg/kg	38 U	39 U
cis-1,3-Dichloropropene	µg/kg	38 U	39 U
Cyclohexane	µg/kg	38 U	77
Dibromochloromethane	µg/kg	38 U	39 U
Dichlorodifluoromethane (CFC-12)	µg/kg	38 U	39 U
Ethylbenzene	µg/kg	38 U	39 U
Isopropyl benzene	µg/kg	38 U	39 U
Methyl acetate	µg/kg	250 U	260 U
Methyl cyclohexane	µg/kg	38 U	180
Methyl tert butyl ether (MTBE)	µg/kg	38 U	39 U
Methylene chloride	µg/kg	38 U	39 U
Styrene	µg/kg	38 U	39 U
Tetrachloroethene	µg/kg	38 U	39 U
Toluene	µg/kg	38 U	44
trans-1,2-Dichloroethene	µg/kg	38 U	39 U
trans-1,3-Dichloropropene	µg/kg	38 U	39 U
Trichloroethene	µg/kg	94	39 U
Trichlorofluoromethane (CFC-11)	µg/kg	38 U	39 U
Trifluorotrichloroethane (Freon 113)	µg/kg	38 U	39 U
Vinyl chloride	µg/kg	38 U	39 U
Xylenes (total)	µg/kg	110 U	120 U

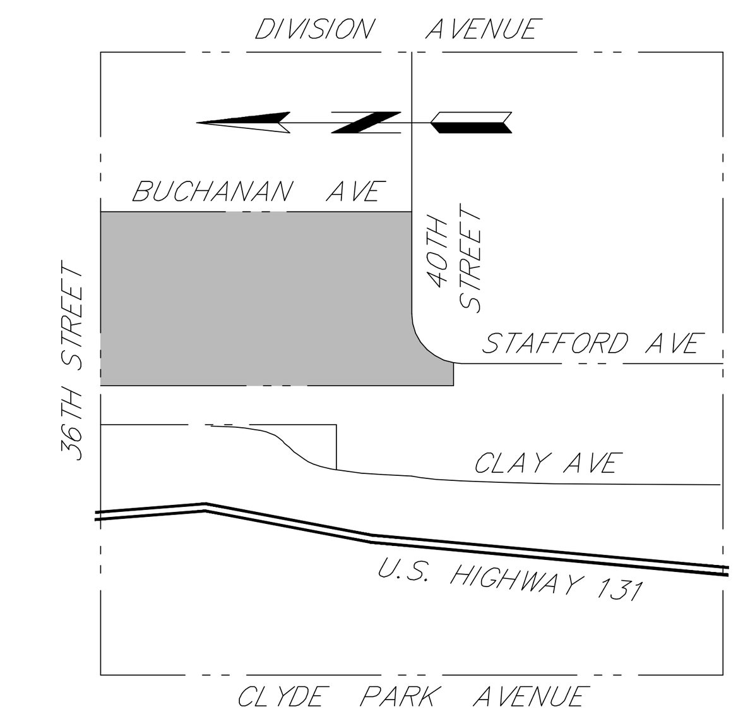
Attachment A

Post Demolition As-Built Survey

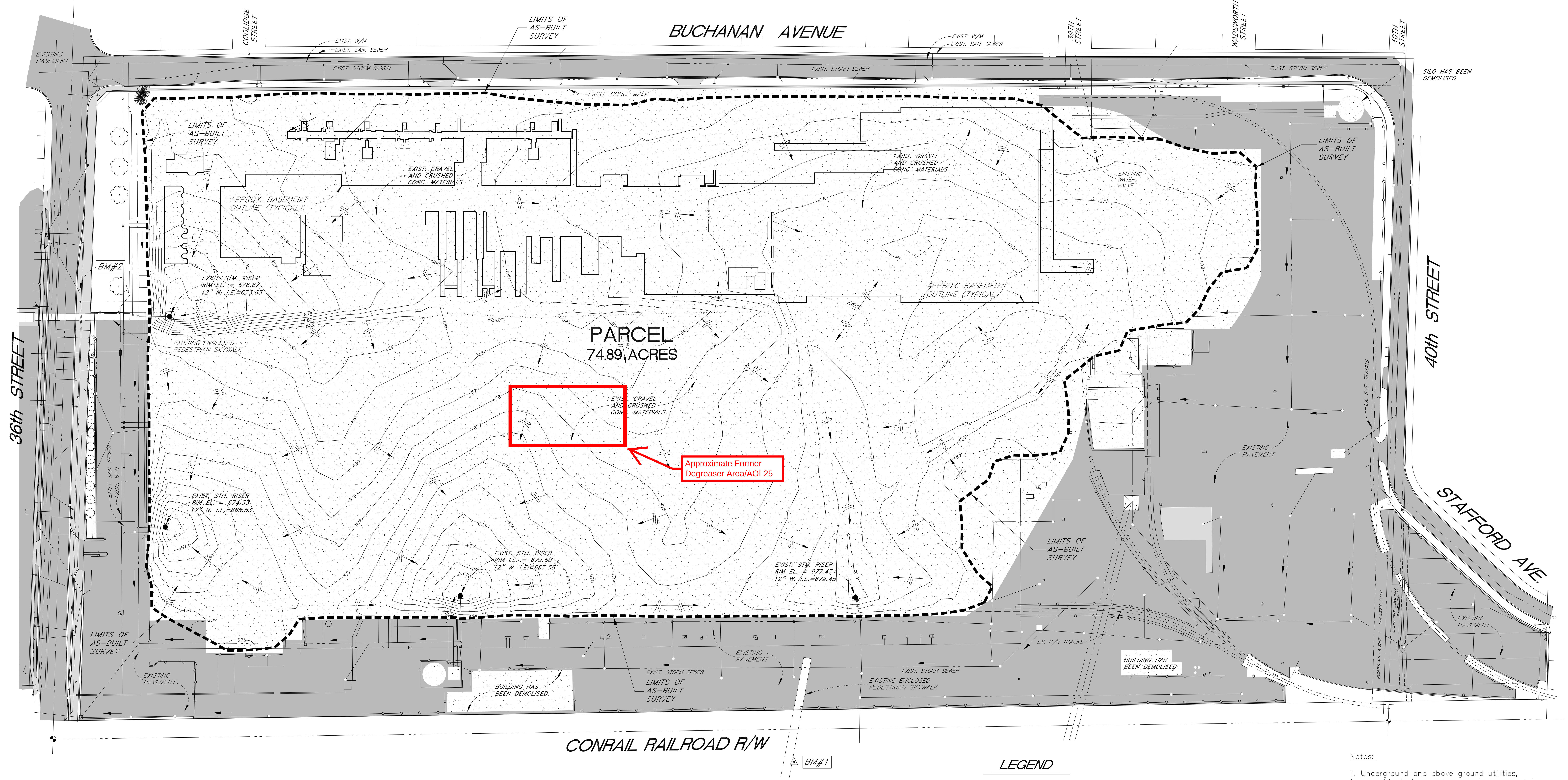
811 - CALL BEFORE YOU DIG

BENCHMARK #1 ELEV. = 676.97
TOP OF U.S.G.S. MON #41622
LOCATED 1,470' SOUTH OF AND 45'
WEST OF THE NORTH 1/4 CORNER
OF SEC. 24, T6N, R12W

BENCHMARK #1 ELEV. = 676.39
TOP OF BOAT SPIKE IN N. SIDE OF
P. POLE LOCATED 887' EAST OF
AND 52' SOUTH OF THE NORTH 1/4
CORNER OF SEC. 24, T6N, R12W



LOCATION MAP
NOT TO SCALE



LEGEND

—675—	ASBUILT CONTOUR LINE
(dashed box)	LIMIT OF ASBUILT SURVEY
(grey fill)	EXISTING PAVEMENT
←/—	DIRECTION OF SURFACE DRAINAGE

GRAPHIC SCALE
100' 0 50' 100'
(IN FEET)
1 inch = 100 ft.

Notes:

1. Underground and above ground utilities, topographic features, etc... as shown were taken from the previous Alta/Acsm survey performed by Roosien & Associates for Thunder Ventures LLC, dated March 8, 2011. Limits of asbuilt survey as noted on the Plan.

2. Areas outside the Limits of asbuilt survey may not reflect the current conditions as an exhaustive inspection of the property was not performed as part of this project.

3. A boundary survey was not performed as part of this project.

REVISIONS:

DRAWN BY: JEP
APPROVED BY: KR
DATE: Oct. 5, 2012
REVISIONS: Oct. 8, 2012

SERVING THE NEEDS OF OUR CLIENTS SINCE 1987

Roosien & Associates
SURVEYING AND ENGINEERING
5055 PLAINFIELD AVE. NE
GRAND RAPIDS, MI 49525
TELE. (616) 361-7220
FAX (616) 361-1822

PARTIAL ASBUILT SURVEY
FOR 300 - 36TH STREET SW
PART OF SEC. 24, T6N, R12W
CITY OF WYOMING, KENT CO., MI

CLIENT:
STUART FARBER
THUNDER VENTURES LLC
6755 DALY ROAD
WEST BLOOMFIELD MI 48322

PROJECT NO.
120864

SHEET
1 OF 1

Attachment B

Stratigraphic Soil Boring Logs

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: FORMER GRAND RAPIDS METAL PLANT
PROJECT NUMBER: 017360
CLIENT: RACER TRUST
LOCATION: WYOMING, MI

HOLE DESIGNATION: SB326-14
DATE COMPLETED: December 5, 2014
DRILLING METHOD: HAND AUGER
FIELD PERSONNEL: E. BATENBURG

NORTHING: 511548.95
EASTING: 12773479.73

GROUND SURFACE 679.69

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
0	SP/GP-SAND AND GRAVEL (FILL), trace silt, trace slag, trace brick debris, dense, fine sand, fine and coarse gravel, crushed concrete, poorly graded, brown, moist	678.69	BACKFILLED WITH SOIL CUTTINGS	1HA-0-2'-004		100	
2	SP-SAND (FILL), trace fine gravel, trace slag, loose, fine grained, poorly graded, dark brown, moist	675.69		2HA-2-4'-005		100	
4	- brown at 1.25ft BGS - no slag, light brown at 1.9ft BGS - brown at 2.3ft BGS - no gravel, light brown at 3.6ft BGS END OF BOREHOLE @ 4.0ft BGS						
6							
8							
10							
12							
14							
16							
18							
20							
22							
24							
26							
28							
30							
32							
34							

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

CHEMICAL ANALYSIS (1HA-0-2'-004, 2HA-2-4'-005)

OVERBURDEN LOG 017360-T05-WI.GPJ CRA_CORP.GDT 1/21/15

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: FORMER GRAND RAPIDS METAL PLANT
PROJECT NUMBER: 017360
CLIENT: RACER TRUST
LOCATION: WYOMING, MI

HOLE DESIGNATION: SB327-14
DATE COMPLETED: December 5, 2014
DRILLING METHOD: HAND AUGER
FIELD PERSONNEL: E. BATENBURG

NORTHING: 511521.47
EASTING: 12773420.09

GROUND SURFACE 678.21

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
0	SP/GP-SAND AND GRAVEL (FILL), trace silt, trace slag, trace plastic/rubber debris, trace brick debris, dense, fine and coarse gravel, fine sand, crushed concrete, poorly graded, brown, moist	677.71	BACKFILLED WITH SOIL CUTTINGS	1HA 0-2' -001/ 002		100	
4	SP-SAND (FILL), trace fine gravel, trace slag, loose, fine grained, poorly graded, dark brown, moist - with slag, dark brown at 0.75ft BGS - trace slag, brown at 1.3ft BGS - no gravel, orange brown at 2.1ft BGS - light brown at 2.3ft BGS	674.21		2HA 2-4' -003		100	
8	END OF BOREHOLE @ 4.0ft BGS						

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

CHEMICAL ANALYSIS (oval)

OVERBURDEN LOG 017360-T05-WI.GPJ CRA_CORP.GDT 1/21/15

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: FORMER GRAND RAPIDS METAL PLANT
PROJECT NUMBER: 017360
CLIENT: RACER TRUST
LOCATION: WYOMING, MI

HOLE DESIGNATION: SB328-14
DATE COMPLETED: December 5, 2014
DRILLING METHOD: HAND AUGER
FIELD PERSONNEL: E. BATENBURG

NORTHING: 511523.31
EASTING: 12773339.27

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	GROUND SURFACE	676.28					
0	SP/GP-SAND AND GRAVEL (FILL), trace silt, trace slag, trace plastic/rubber debris, trace brick debris, dense, fine and coarse gravel, fine sand, crushed concrete, poorly graded, brown, moist	675.28	BACKFILLED WITH SOIL CUTTINGS	1HA-0-2'-006		100	
2	SP-SAND (FILL), trace fine gravel, trace slag, loose, fine grained, poorly graded, dark brown, moist - with slag, orange brown at 1.5ft BGS - trace silt, no slag, light brown at 2.5ft BGS	672.28		2HA-2-4'-007		100	
4	END OF BOREHOLE @ 4.0ft BGS						
6							
8							
10							
12							
14							
16							
18							
20							
22							
24							
26							
28							
30							
32							
34							

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

CHEMICAL ANALYSIS ( )

OVERBURDEN LOG 017360-T05-WI.GPJ CRA_CORP.GDT 1/21/15

Attachment C

Analytical Laboratory Report

16-Dec-2014

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

Re: **Former GRMP (17360)** Work Order: **1412310**

Dear Rawa, Revision: **1**

ALS Environmental received 7 samples on 05-Dec-2014 02:46 PM for the analyses presented in the following report.

This is a REVISED REPORT. The Case Narrative provides information discussing the reason for issuing a revised report. The total number of pages in this revision is 29.

If you have any questions regarding these test results, please feel free to contact me.

Sincerely,

Chad Whelton

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 532786

ALS Group USA, Corp

Date: 16-Dec-14

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360)
Work Order: **1412310**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1412310-01	SO-17360-120514-EB-001	Soil		12/5/2014 10:05	12/5/2014 14:46	☐
1412310-02	SO-17360-120514-EB-002	Soil		12/5/2014 10:10	12/5/2014 14:46	☐
1412310-03	SO-17360-120514-EB-003	Soil		12/5/2014 10:18	12/5/2014 14:46	☐
1412310-04	SO-17360-120514-EB-004	Soil		12/5/2014 10:47	12/5/2014 14:46	☐
1412310-05	SO-17360-120514-EB-005	Soil		12/5/2014 11:28	12/5/2014 14:46	☐
1412310-06	SO-17360-120514-EB-006	Soil		12/5/2014 11:45	12/5/2014 14:46	☐
1412310-07	SO-17360-120514-EB-007	Soil		12/5/2014 11:58	12/5/2014 14:46	☐

Revision: 1

ALS Group USA, Corp

Date: 16-Dec-14

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360)
Work Order: 1412310

Case Narrative

Batch 65722, Method VOC_8260_S, Sample LCS-65722: The LCS recovery for 1,2-Dibromoethane was above the upper control limit. All sample results in the batch were non-detect. No qualification is required.

Revised report sent 12/16/14 due to incorrect names on the original report. All names have been changed to contain 17360 instead of 17300. No data has been changed.

ALS Group USA, Corp

Date: 16-Dec-14

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360)
WorkOrder: **1412310**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	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

Acronym	Description
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

Units Reported	Description
% of sample	Percent of Sample
µg/Kg-dry	Micrograms per Kilogram Dry Weight

ALS Group USA, Corp

Date: *16-Dec-14*

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360)
Sample ID: SO-17360-120514-EB-001
Collection Date: 12/5/2014 10:05 AM

Work Order: 1412310
Lab ID: 1412310-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/8/14		Analyst: **JDW**
BatchID: 65722							
1,1,1-Trichloroethane	U		14	36	µg/Kg-dry	1	12/13/2014 01:06
1,1,2,2-Tetrachloroethane	U		16	36	µg/Kg-dry	1	12/13/2014 01:06
1,1,2-Trichloroethane	U		13	36	µg/Kg-dry	1	12/13/2014 01:06
1,1,2-Trichlorotrifluoroethane	U		13	36	µg/Kg-dry	1	12/13/2014 01:06
1,1-Dichloroethane	U		13	36	µg/Kg-dry	1	12/13/2014 01:06
1,1-Dichloroethene	U		15	36	µg/Kg-dry	1	12/13/2014 01:06
1,2,4-Trichlorobenzene	U		18	36	µg/Kg-dry	1	12/13/2014 01:06
1,2-Dibromo-3-chloropropane	U		17	36	µg/Kg-dry	1	12/13/2014 01:06
1,2-Dibromoethane	U		14	36	µg/Kg-dry	1	12/13/2014 01:06
1,2-Dichlorobenzene	U		14	36	µg/Kg-dry	1	12/13/2014 01:06
1,2-Dichloroethane	U		17	36	µg/Kg-dry	1	12/13/2014 01:06
1,2-Dichloropropane	U		12	36	µg/Kg-dry	1	12/13/2014 01:06
1,3-Dichlorobenzene	U		14	36	µg/Kg-dry	1	12/13/2014 01:06
1,4-Dichlorobenzene	U		14	36	µg/Kg-dry	1	12/13/2014 01:06
2-Butanone	U		88	240	µg/Kg-dry	1	12/13/2014 01:06
2-Hexanone	U		8.7	36	µg/Kg-dry	1	12/13/2014 01:06
4-Methyl-2-pentanone	U		12	36	µg/Kg-dry	1	12/13/2014 01:06
Acetone	U		75	120	µg/Kg-dry	1	12/13/2014 01:06
Benzene	**48**		**14**	**36**	**µg/Kg-dry**	1	12/13/2014 01:06
Bromodichloromethane	U		8.0	36	µg/Kg-dry	1	12/13/2014 01:06
Bromoform	U		7.0	36	µg/Kg-dry	1	12/13/2014 01:06
Bromomethane	U		14	89	µg/Kg-dry	1	12/13/2014 01:06
Carbon disulfide	U		18	36	µg/Kg-dry	1	12/13/2014 01:06
Carbon tetrachloride	U		10	36	µg/Kg-dry	1	12/13/2014 01:06
Chlorobenzene	U		15	36	µg/Kg-dry	1	12/13/2014 01:06
Chloroethane	U		76	120	µg/Kg-dry	1	12/13/2014 01:06
Chloroform	U		15	36	µg/Kg-dry	1	12/13/2014 01:06
Chloromethane	U		20	120	µg/Kg-dry	1	12/13/2014 01:06
cis-1,2-Dichloroethene	U		14	36	µg/Kg-dry	1	12/13/2014 01:06
cis-1,3-Dichloropropene	U		12	36	µg/Kg-dry	1	12/13/2014 01:06
Cyclohexane	**120**		**16**	**36**	**µg/Kg-dry**	1	12/13/2014 01:06
Dibromochloromethane	U		6.6	36	µg/Kg-dry	1	12/13/2014 01:06
Dichlorodifluoromethane	U		16	36	µg/Kg-dry	1	12/13/2014 01:06
Ethylbenzene	**23**	J	**13**	**36**	**µg/Kg-dry**	1	12/13/2014 01:06
Isopropylbenzene	**68**		**15**	**36**	**µg/Kg-dry**	1	12/13/2014 01:06
Methyl acetate	U		48	240	µg/Kg-dry	1	12/13/2014 01:06
Methyl tert-butyl ether	U		15	36	µg/Kg-dry	1	12/13/2014 01:06

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

Revision: 1

ALS Group USA, Corp

Date: *16-Dec-14*

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360)
Sample ID: SO-17360-120514-EB-001
Collection Date: 12/5/2014 10:05 AM

Work Order: 1412310
Lab ID: 1412310-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	**390**		**17**	**36**	**µg/Kg-dry**	1	12/13/2014 01:06
Methylene chloride	U		14	36	µg/Kg-dry	1	12/13/2014 01:06
Styrene	U		13	36	µg/Kg-dry	1	12/13/2014 01:06
Tetrachloroethene	U		16	36	µg/Kg-dry	1	12/13/2014 01:06
Toluene	**120**		**13**	**36**	**µg/Kg-dry**	1	12/13/2014 01:06
trans-1,2-Dichloroethene	U		11	36	µg/Kg-dry	1	12/13/2014 01:06
trans-1,3-Dichloropropene	U		12	36	µg/Kg-dry	1	12/13/2014 01:06
Trichlorofluoromethane	U		9.8	36	µg/Kg-dry	1	12/13/2014 01:06
Vinyl chloride	U		16	36	µg/Kg-dry	1	12/13/2014 01:06
Xylenes, Total	**190**		**42**	**110**	**µg/Kg-dry**	1	12/13/2014 01:06
Surr: 1,2-Dichloroethane-d4	*97.5*			*70-130*	*%REC*	1	12/13/2014 01:06
Surr: 4-Bromofluorobenzene	*103*			*70-130*	*%REC*	1	12/13/2014 01:06
Surr: Dibromofluoromethane	*91.0*			*70-130*	*%REC*	1	12/13/2014 01:06
Surr: Toluene-d8	*98.4*			*70-130*	*%REC*	1	12/13/2014 01:06
BatchID: 65722							
Trichloroethene	**12,000**		**83**	**180**	**µg/Kg-dry**	5	12/14/2014 22:03
Surr: 1,2-Dichloroethane-d4	*91.8*			*70-130*	*%REC*	5	12/14/2014 22:03
Surr: 4-Bromofluorobenzene	*96.7*			*70-130*	*%REC*	5	12/14/2014 22:03
Surr: Dibromofluoromethane	*97.2*			*70-130*	*%REC*	5	12/14/2014 22:03
Surr: Toluene-d8	*96.7*			*70-130*	*%REC*	5	12/14/2014 22:03
MOISTURE			**A2540 G**				Analyst: **EVB**
BatchID: R154074							
Moisture	**6.4**		**0.025**	**0.050**	**% of sample**	1	12/10/2014 11:00

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

Revision: 1

ALS Group USA, Corp

Date: *16-Dec-14*

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360)
Sample ID: SO-17360-120514-EB-002
Collection Date: 12/5/2014 10:10 AM

Work Order: 1412310
Lab ID: 1412310-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/8/14		Analyst: **JDW**
BatchID: 65722							
1,1,1-Trichloroethane	U		15	39	µg/Kg-dry	1	12/13/2014 01:33
1,1,2,2-Tetrachloroethane	U		17	39	µg/Kg-dry	1	12/13/2014 01:33
1,1,2-Trichloroethane	U		14	39	µg/Kg-dry	1	12/13/2014 01:33
1,1,2-Trichlorotrifluoroethane	U		14	39	µg/Kg-dry	1	12/13/2014 01:33
1,1-Dichloroethane	U		14	39	µg/Kg-dry	1	12/13/2014 01:33
1,1-Dichloroethene	U		16	39	µg/Kg-dry	1	12/13/2014 01:33
1,2,4-Trichlorobenzene	U		20	39	µg/Kg-dry	1	12/13/2014 01:33
1,2-Dibromo-3-chloropropane	U		19	39	µg/Kg-dry	1	12/13/2014 01:33
1,2-Dibromoethane	U		15	39	µg/Kg-dry	1	12/13/2014 01:33
1,2-Dichlorobenzene	U		16	39	µg/Kg-dry	1	12/13/2014 01:33
1,2-Dichloroethane	U		18	39	µg/Kg-dry	1	12/13/2014 01:33
1,2-Dichloropropane	U		13	39	µg/Kg-dry	1	12/13/2014 01:33
1,3-Dichlorobenzene	U		16	39	µg/Kg-dry	1	12/13/2014 01:33
1,4-Dichlorobenzene	U		15	39	µg/Kg-dry	1	12/13/2014 01:33
2-Butanone	U		96	260	µg/Kg-dry	1	12/13/2014 01:33
2-Hexanone	U		9.5	39	µg/Kg-dry	1	12/13/2014 01:33
4-Methyl-2-pentanone	U		13	39	µg/Kg-dry	1	12/13/2014 01:33
Acetone	U		82	130	µg/Kg-dry	1	12/13/2014 01:33
Benzene	U		16	39	µg/Kg-dry	1	12/13/2014 01:33
Bromodichloromethane	U		8.7	39	µg/Kg-dry	1	12/13/2014 01:33
Bromoform	U		7.6	39	µg/Kg-dry	1	12/13/2014 01:33
Bromomethane	U		15	97	µg/Kg-dry	1	12/13/2014 01:33
Carbon disulfide	U		19	39	µg/Kg-dry	1	12/13/2014 01:33
Carbon tetrachloride	U		11	39	µg/Kg-dry	1	12/13/2014 01:33
Chlorobenzene	U		16	39	µg/Kg-dry	1	12/13/2014 01:33
Chloroethane	U		82	130	µg/Kg-dry	1	12/13/2014 01:33
Chloroform	U		16	39	µg/Kg-dry	1	12/13/2014 01:33
Chloromethane	U		22	130	µg/Kg-dry	1	12/13/2014 01:33
cis-1,2-Dichloroethene	U		16	39	µg/Kg-dry	1	12/13/2014 01:33
cis-1,3-Dichloropropene	U		13	39	µg/Kg-dry	1	12/13/2014 01:33
Cyclohexane	**89**		**17**	**39**	**µg/Kg-dry**	1	12/13/2014 01:33
Dibromochloromethane	U		7.2	39	µg/Kg-dry	1	12/13/2014 01:33
Dichlorodifluoromethane	U		18	39	µg/Kg-dry	1	12/13/2014 01:33
Ethylbenzene	**16**	J	**14**	**39**	**µg/Kg-dry**	1	12/13/2014 01:33
Isopropylbenzene	**63**		**17**	**39**	**µg/Kg-dry**	1	12/13/2014 01:33
Methyl acetate	U		52	260	µg/Kg-dry	1	12/13/2014 01:33
Methyl tert-butyl ether	U		16	39	µg/Kg-dry	1	12/13/2014 01:33

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

Revision: 1

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360)
Sample ID: SO-17360-120514-EB-002
Collection Date: 12/5/2014 10:10 AM

Work Order: 1412310
Lab ID: 1412310-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	**220**		**18**	**39**	**µg/Kg-dry**	1	12/13/2014 01:33
Methylene chloride	U		15	39	µg/Kg-dry	1	12/13/2014 01:33
Styrene	U		14	39	µg/Kg-dry	1	12/13/2014 01:33
Tetrachloroethene	U		17	39	µg/Kg-dry	1	12/13/2014 01:33
Toluene	**45**		**15**	**39**	**µg/Kg-dry**	1	12/13/2014 01:33
trans-1,2-Dichloroethene	U		12	39	µg/Kg-dry	1	12/13/2014 01:33
trans-1,3-Dichloropropene	U		13	39	µg/Kg-dry	1	12/13/2014 01:33
Trichloroethene	**3,200**		**18**	**39**	**µg/Kg-dry**	1	12/13/2014 01:33
Trichlorofluoromethane	U		11	39	µg/Kg-dry	1	12/13/2014 01:33
Vinyl chloride	U		17	39	µg/Kg-dry	1	12/13/2014 01:33
Xylenes, Total	**140**		**46**	**120**	**µg/Kg-dry**	1	12/13/2014 01:33
Surr: 1,2-Dichloroethane-d4	*97.2*			*70-130*	*%REC*	1	12/13/2014 01:33
Surr: 4-Bromofluorobenzene	*101*			*70-130*	*%REC*	1	12/13/2014 01:33
Surr: Dibromofluoromethane	*90.3*			*70-130*	*%REC*	1	12/13/2014 01:33
Surr: Toluene-d8	*97.5*			*70-130*	*%REC*	1	12/13/2014 01:33
MOISTURE			**A2540 G**				Analyst: **EVB**
BatchID: R154074							
Moisture	**6.5**		**0.025**	**0.050**	**% of sample**	1	12/10/2014 11:00

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

Revision: 1

ALS Group USA, Corp

Date: *16-Dec-14*

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360)
Sample ID: SO-17360-120514-EB-003
Collection Date: 12/5/2014 10:18 AM

Work Order: 1412310
Lab ID: 1412310-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/8/14		Analyst: **JDW**
BatchID: 65722							
1,1,1-Trichloroethane	U		14	37	µg/Kg-dry	1	12/13/2014 01:59
1,1,2,2-Tetrachloroethane	U		16	37	µg/Kg-dry	1	12/13/2014 01:59
1,1,2-Trichloroethane	U		13	37	µg/Kg-dry	1	12/13/2014 01:59
1,1,2-Trichlorotrifluoroethane	U		14	37	µg/Kg-dry	1	12/13/2014 01:59
1,1-Dichloroethane	U		14	37	µg/Kg-dry	1	12/13/2014 01:59
1,1-Dichloroethene	U		16	37	µg/Kg-dry	1	12/13/2014 01:59
1,2,4-Trichlorobenzene	U		19	37	µg/Kg-dry	1	12/13/2014 01:59
1,2-Dibromo-3-chloropropane	U		18	37	µg/Kg-dry	1	12/13/2014 01:59
1,2-Dibromoethane	U		15	37	µg/Kg-dry	1	12/13/2014 01:59
1,2-Dichlorobenzene	U		15	37	µg/Kg-dry	1	12/13/2014 01:59
1,2-Dichloroethane	U		18	37	µg/Kg-dry	1	12/13/2014 01:59
1,2-Dichloropropane	U		12	37	µg/Kg-dry	1	12/13/2014 01:59
1,3-Dichlorobenzene	U		15	37	µg/Kg-dry	1	12/13/2014 01:59
1,4-Dichlorobenzene	U		14	37	µg/Kg-dry	1	12/13/2014 01:59
2-Butanone	U		92	250	µg/Kg-dry	1	12/13/2014 01:59
2-Hexanone	U		9.2	37	µg/Kg-dry	1	12/13/2014 01:59
4-Methyl-2-pentanone	U		13	37	µg/Kg-dry	1	12/13/2014 01:59
Acetone	U		79	120	µg/Kg-dry	1	12/13/2014 01:59
Benzene	U		15	37	µg/Kg-dry	1	12/13/2014 01:59
Bromodichloromethane	U		8.4	37	µg/Kg-dry	1	12/13/2014 01:59
Bromoform	U		7.4	37	µg/Kg-dry	1	12/13/2014 01:59
Bromomethane	U		14	93	µg/Kg-dry	1	12/13/2014 01:59
Carbon disulfide	U		18	37	µg/Kg-dry	1	12/13/2014 01:59
Carbon tetrachloride	U		11	37	µg/Kg-dry	1	12/13/2014 01:59
Chlorobenzene	U		15	37	µg/Kg-dry	1	12/13/2014 01:59
Chloroethane	U		79	120	µg/Kg-dry	1	12/13/2014 01:59
Chloroform	U		15	37	µg/Kg-dry	1	12/13/2014 01:59
Chloromethane	U		21	120	µg/Kg-dry	1	12/13/2014 01:59
cis-1,2-Dichloroethene	U		15	37	µg/Kg-dry	1	12/13/2014 01:59
cis-1,3-Dichloropropene	U		13	37	µg/Kg-dry	1	12/13/2014 01:59
Cyclohexane	U		17	37	µg/Kg-dry	1	12/13/2014 01:59
Dibromochloromethane	U		6.9	37	µg/Kg-dry	1	12/13/2014 01:59
Dichlorodifluoromethane	U		17	37	µg/Kg-dry	1	12/13/2014 01:59
Ethylbenzene	U		14	37	µg/Kg-dry	1	12/13/2014 01:59
Isopropylbenzene	U		16	37	µg/Kg-dry	1	12/13/2014 01:59
Methyl acetate	U		50	250	µg/Kg-dry	1	12/13/2014 01:59
Methyl tert-butyl ether	U		16	37	µg/Kg-dry	1	12/13/2014 01:59

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

Revision: 1

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360)
Sample ID: SO-17360-120514-EB-003
Collection Date: 12/5/2014 10:18 AM

Work Order: 1412310
Lab ID: 1412310-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		17	37	µg/Kg-dry	1	12/13/2014 01:59
Methylene chloride	U		15	37	µg/Kg-dry	1	12/13/2014 01:59
Styrene	U		14	37	µg/Kg-dry	1	12/13/2014 01:59
Tetrachloroethene	U		17	37	µg/Kg-dry	1	12/13/2014 01:59
Toluene	**17**	J	**14**	**37**	**µg/Kg-dry**	1	12/13/2014 01:59
trans-1,2-Dichloroethene	U		11	37	µg/Kg-dry	1	12/13/2014 01:59
trans-1,3-Dichloropropene	U		12	37	µg/Kg-dry	1	12/13/2014 01:59
Trichloroethene	**390**		**17**	**37**	**µg/Kg-dry**	1	12/13/2014 01:59
Trichlorofluoromethane	U		10	37	µg/Kg-dry	1	12/13/2014 01:59
Vinyl chloride	U		17	37	µg/Kg-dry	1	12/13/2014 01:59
Xylenes, Total	U		44	110	µg/Kg-dry	1	12/13/2014 01:59
Surr: 1,2-Dichloroethane-d4	*101*			*70-130*	*%REC*	1	12/13/2014 01:59
Surr: 4-Bromofluorobenzene	*98.6*			*70-130*	*%REC*	1	12/13/2014 01:59
Surr: Dibromofluoromethane	*98.6*			*70-130*	*%REC*	1	12/13/2014 01:59
Surr: Toluene-d8	*99.4*			*70-130*	*%REC*	1	12/13/2014 01:59
MOISTURE			**A2540 G**				Analyst: **EVB**
BatchID: R154074							
Moisture	**6.2**		**0.025**	**0.050**	**% of sample**	1	12/10/2014 11:00

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

Revision: 1

ALS Group USA, Corp

Date: *16-Dec-14*

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360)
Sample ID: SO-17360-120514-EB-004
Collection Date: 12/5/2014 10:47 AM

Work Order: 1412310
Lab ID: 1412310-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/8/14		Analyst: **JDW**
BatchID: 65722							
1,1,1-Trichloroethane	U		14	38	µg/Kg-dry	1	12/13/2014 02:25
1,1,2,2-Tetrachloroethane	U		17	38	µg/Kg-dry	1	12/13/2014 02:25
1,1,2-Trichloroethane	U		13	38	µg/Kg-dry	1	12/13/2014 02:25
1,1,2-Trichlorotrifluoroethane	U		14	38	µg/Kg-dry	1	12/13/2014 02:25
1,1-Dichloroethane	U		14	38	µg/Kg-dry	1	12/13/2014 02:25
1,1-Dichloroethene	U		16	38	µg/Kg-dry	1	12/13/2014 02:25
1,2,4-Trichlorobenzene	U		19	38	µg/Kg-dry	1	12/13/2014 02:25
1,2-Dibromo-3-chloropropane	U		18	38	µg/Kg-dry	1	12/13/2014 02:25
1,2-Dibromoethane	U		15	38	µg/Kg-dry	1	12/13/2014 02:25
1,2-Dichlorobenzene	U		15	38	µg/Kg-dry	1	12/13/2014 02:25
1,2-Dichloroethane	U		18	38	µg/Kg-dry	1	12/13/2014 02:25
1,2-Dichloropropane	U		12	38	µg/Kg-dry	1	12/13/2014 02:25
1,3-Dichlorobenzene	U		15	38	µg/Kg-dry	1	12/13/2014 02:25
1,4-Dichlorobenzene	U		14	38	µg/Kg-dry	1	12/13/2014 02:25
2-Butanone	U		93	250	µg/Kg-dry	1	12/13/2014 02:25
2-Hexanone	U		9.2	38	µg/Kg-dry	1	12/13/2014 02:25
4-Methyl-2-pentanone	U		13	38	µg/Kg-dry	1	12/13/2014 02:25
Acetone	U		80	130	µg/Kg-dry	1	12/13/2014 02:25
Benzene	U		15	38	µg/Kg-dry	1	12/13/2014 02:25
Bromodichloromethane	U		8.4	38	µg/Kg-dry	1	12/13/2014 02:25
Bromoform	U		7.4	38	µg/Kg-dry	1	12/13/2014 02:25
Bromomethane	U		14	94	µg/Kg-dry	1	12/13/2014 02:25
Carbon disulfide	U		19	38	µg/Kg-dry	1	12/13/2014 02:25
Carbon tetrachloride	U		11	38	µg/Kg-dry	1	12/13/2014 02:25
Chlorobenzene	U		15	38	µg/Kg-dry	1	12/13/2014 02:25
Chloroethane	U		80	130	µg/Kg-dry	1	12/13/2014 02:25
Chloroform	U		16	38	µg/Kg-dry	1	12/13/2014 02:25
Chloromethane	U		21	130	µg/Kg-dry	1	12/13/2014 02:25
cis-1,2-Dichloroethene	U		15	38	µg/Kg-dry	1	12/13/2014 02:25
cis-1,3-Dichloropropene	U		13	38	µg/Kg-dry	1	12/13/2014 02:25
Cyclohexane	U		17	38	µg/Kg-dry	1	12/13/2014 02:25
Dibromochloromethane	U		7.0	38	µg/Kg-dry	1	12/13/2014 02:25
Dichlorodifluoromethane	U		17	38	µg/Kg-dry	1	12/13/2014 02:25
Ethylbenzene	U		14	38	µg/Kg-dry	1	12/13/2014 02:25
Isopropylbenzene	U		16	38	µg/Kg-dry	1	12/13/2014 02:25
Methyl acetate	U		51	250	µg/Kg-dry	1	12/13/2014 02:25
Methyl tert-butyl ether	U		16	38	µg/Kg-dry	1	12/13/2014 02:25

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

Revision: 1

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360)
Sample ID: SO-17360-120514-EB-004
Collection Date: 12/5/2014 10:47 AM

Work Order: 1412310
Lab ID: 1412310-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		17	38	µg/Kg-dry	1	12/13/2014 02:25
Methylene chloride	U		15	38	µg/Kg-dry	1	12/13/2014 02:25
Styrene	U		14	38	µg/Kg-dry	1	12/13/2014 02:25
Tetrachloroethene	U		17	38	µg/Kg-dry	1	12/13/2014 02:25
Toluene	**33**	J	**14**	**38**	**µg/Kg-dry**	1	12/13/2014 02:25
trans-1,2-Dichloroethene	U		12	38	µg/Kg-dry	1	12/13/2014 02:25
trans-1,3-Dichloropropene	U		13	38	µg/Kg-dry	1	12/13/2014 02:25
Trichloroethene	**730**		**18**	**38**	**µg/Kg-dry**	1	12/13/2014 02:25
Trichlorofluoromethane	U		10	38	µg/Kg-dry	1	12/13/2014 02:25
Vinyl chloride	U		17	38	µg/Kg-dry	1	12/13/2014 02:25
Xylenes, Total	**90**	J	**44**	**110**	**µg/Kg-dry**	1	12/13/2014 02:25
Surr: 1,2-Dichloroethane-d4	*100*			*70-130*	*%REC*	1	12/13/2014 02:25
Surr: 4-Bromofluorobenzene	*97.0*			*70-130*	*%REC*	1	12/13/2014 02:25
Surr: Dibromofluoromethane	*94.0*			*70-130*	*%REC*	1	12/13/2014 02:25
Surr: Toluene-d8	*95.4*			*70-130*	*%REC*	1	12/13/2014 02:25
MOISTURE			**A2540 G**				Analyst: **EVB**
BatchID: R154074							
Moisture	**6.7**		**0.025**	**0.050**	**% of sample**	1	12/10/2014 11:00

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

Revision: 1

ALS Group USA, Corp

Date: *16-Dec-14*

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360)
Sample ID: SO-17360-120514-EB-005
Collection Date: 12/5/2014 11:28 AM

Work Order: 1412310
Lab ID: 1412310-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/8/14		Analyst: **JDW**
BatchID: 65722							
1,1,1-Trichloroethane	U		14	36	µg/Kg-dry	1	12/13/2014 02:51
1,1,2,2-Tetrachloroethane	U		16	36	µg/Kg-dry	1	12/13/2014 02:51
1,1,2-Trichloroethane	U		13	36	µg/Kg-dry	1	12/13/2014 02:51
1,1,2-Trichlorotrifluoroethane	U		14	36	µg/Kg-dry	1	12/13/2014 02:51
1,1-Dichloroethane	U		13	36	µg/Kg-dry	1	12/13/2014 02:51
1,1-Dichloroethene	U		15	36	µg/Kg-dry	1	12/13/2014 02:51
1,2,4-Trichlorobenzene	U		19	36	µg/Kg-dry	1	12/13/2014 02:51
1,2-Dibromo-3-chloropropane	U		18	36	µg/Kg-dry	1	12/13/2014 02:51
1,2-Dibromoethane	U		14	36	µg/Kg-dry	1	12/13/2014 02:51
1,2-Dichlorobenzene	U		15	36	µg/Kg-dry	1	12/13/2014 02:51
1,2-Dichloroethane	U		17	36	µg/Kg-dry	1	12/13/2014 02:51
1,2-Dichloropropane	U		12	36	µg/Kg-dry	1	12/13/2014 02:51
1,3-Dichlorobenzene	U		15	36	µg/Kg-dry	1	12/13/2014 02:51
1,4-Dichlorobenzene	U		14	36	µg/Kg-dry	1	12/13/2014 02:51
2-Butanone	U		90	240	µg/Kg-dry	1	12/13/2014 02:51
2-Hexanone	U		9.0	36	µg/Kg-dry	1	12/13/2014 02:51
4-Methyl-2-pentanone	U		12	36	µg/Kg-dry	1	12/13/2014 02:51
Acetone	U		77	120	µg/Kg-dry	1	12/13/2014 02:51
Benzene	U		15	36	µg/Kg-dry	1	12/13/2014 02:51
Bromodichloromethane	U		8.2	36	µg/Kg-dry	1	12/13/2014 02:51
Bromoform	U		7.2	36	µg/Kg-dry	1	12/13/2014 02:51
Bromomethane	U		14	91	µg/Kg-dry	1	12/13/2014 02:51
Carbon disulfide	U		18	36	µg/Kg-dry	1	12/13/2014 02:51
Carbon tetrachloride	U		10	36	µg/Kg-dry	1	12/13/2014 02:51
Chlorobenzene	U		15	36	µg/Kg-dry	1	12/13/2014 02:51
Chloroethane	U		77	120	µg/Kg-dry	1	12/13/2014 02:51
Chloroform	U		15	36	µg/Kg-dry	1	12/13/2014 02:51
Chloromethane	U		20	120	µg/Kg-dry	1	12/13/2014 02:51
cis-1,2-Dichloroethene	U		15	36	µg/Kg-dry	1	12/13/2014 02:51
cis-1,3-Dichloropropene	U		12	36	µg/Kg-dry	1	12/13/2014 02:51
Cyclohexane	U		16	36	µg/Kg-dry	1	12/13/2014 02:51
Dibromochloromethane	U		6.8	36	µg/Kg-dry	1	12/13/2014 02:51
Dichlorodifluoromethane	U		16	36	µg/Kg-dry	1	12/13/2014 02:51
Ethylbenzene	U		14	36	µg/Kg-dry	1	12/13/2014 02:51
Isopropylbenzene	U		16	36	µg/Kg-dry	1	12/13/2014 02:51
Methyl acetate	U		49	240	µg/Kg-dry	1	12/13/2014 02:51
Methyl tert-butyl ether	U		15	36	µg/Kg-dry	1	12/13/2014 02:51

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

Revision: 1

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360)
Sample ID: SO-17360-120514-EB-005
Collection Date: 12/5/2014 11:28 AM

Work Order: 1412310
Lab ID: 1412310-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		17	36	µg/Kg-dry	1	12/13/2014 02:51
Methylene chloride	U		14	36	µg/Kg-dry	1	12/13/2014 02:51
Styrene	U		14	36	µg/Kg-dry	1	12/13/2014 02:51
Tetrachloroethene	U		16	36	µg/Kg-dry	1	12/13/2014 02:51
Toluene	U		14	36	µg/Kg-dry	1	12/13/2014 02:51
trans-1,2-Dichloroethene	U		11	36	µg/Kg-dry	1	12/13/2014 02:51
trans-1,3-Dichloropropene	U		12	36	µg/Kg-dry	1	12/13/2014 02:51
Trichloroethene	**1,700**		**17**	**36**	**µg/Kg-dry**	1	12/13/2014 02:51
Trichlorofluoromethane	U		10	36	µg/Kg-dry	1	12/13/2014 02:51
Vinyl chloride	U		16	36	µg/Kg-dry	1	12/13/2014 02:51
Xylenes, Total	U		43	110	µg/Kg-dry	1	12/13/2014 02:51
Surr: 1,2-Dichloroethane-d4	*102*			*70-130*	*%REC*	1	12/13/2014 02:51
Surr: 4-Bromofluorobenzene	*96.8*			*70-130*	*%REC*	1	12/13/2014 02:51
Surr: Dibromofluoromethane	*96.9*			*70-130*	*%REC*	1	12/13/2014 02:51
Surr: Toluene-d8	*97.4*			*70-130*	*%REC*	1	12/13/2014 02:51
MOISTURE			**A2540 G**				Analyst: **EVB**
BatchID: R154074							
Moisture	**7.5**		**0.025**	**0.050**	**% of sample**	1	12/10/2014 11:00

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

Revision: 1

ALS Group USA, Corp

Date: *16-Dec-14*

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360)
Sample ID: SO-17360-120514-EB-006
Collection Date: 12/5/2014 11:45 AM

Work Order: 1412310
Lab ID: 1412310-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/8/14		Analyst: **JDW**
BatchID: 65722							
1,1,1-Trichloroethane	U		15	38	µg/Kg-dry	1	12/13/2014 03:16
1,1,2,2-Tetrachloroethane	U		17	38	µg/Kg-dry	1	12/13/2014 03:16
1,1,2-Trichloroethane	U		14	38	µg/Kg-dry	1	12/13/2014 03:16
1,1,2-Trichlorotrifluoroethane	U		14	38	µg/Kg-dry	1	12/13/2014 03:16
1,1-Dichloroethane	U		14	38	µg/Kg-dry	1	12/13/2014 03:16
1,1-Dichloroethene	U		16	38	µg/Kg-dry	1	12/13/2014 03:16
1,2,4-Trichlorobenzene	U		20	38	µg/Kg-dry	1	12/13/2014 03:16
1,2-Dibromo-3-chloropropane	U		19	38	µg/Kg-dry	1	12/13/2014 03:16
1,2-Dibromoethane	U		15	38	µg/Kg-dry	1	12/13/2014 03:16
1,2-Dichlorobenzene	U		15	38	µg/Kg-dry	1	12/13/2014 03:16
1,2-Dichloroethane	U		18	38	µg/Kg-dry	1	12/13/2014 03:16
1,2-Dichloropropane	U		13	38	µg/Kg-dry	1	12/13/2014 03:16
1,3-Dichlorobenzene	U		15	38	µg/Kg-dry	1	12/13/2014 03:16
1,4-Dichlorobenzene	U		15	38	µg/Kg-dry	1	12/13/2014 03:16
2-Butanone	U		94	250	µg/Kg-dry	1	12/13/2014 03:16
2-Hexanone	U		9.4	38	µg/Kg-dry	1	12/13/2014 03:16
4-Methyl-2-pentanone	U		13	38	µg/Kg-dry	1	12/13/2014 03:16
Acetone	U		81	130	µg/Kg-dry	1	12/13/2014 03:16
Benzene	U		15	38	µg/Kg-dry	1	12/13/2014 03:16
Bromodichloromethane	U		8.6	38	µg/Kg-dry	1	12/13/2014 03:16
Bromoform	U		7.5	38	µg/Kg-dry	1	12/13/2014 03:16
Bromomethane	U		15	95	µg/Kg-dry	1	12/13/2014 03:16
Carbon disulfide	U		19	38	µg/Kg-dry	1	12/13/2014 03:16
Carbon tetrachloride	U		11	38	µg/Kg-dry	1	12/13/2014 03:16
Chlorobenzene	U		16	38	µg/Kg-dry	1	12/13/2014 03:16
Chloroethane	U		81	130	µg/Kg-dry	1	12/13/2014 03:16
Chloroform	U		16	38	µg/Kg-dry	1	12/13/2014 03:16
Chloromethane	U		21	130	µg/Kg-dry	1	12/13/2014 03:16
cis-1,2-Dichloroethene	U		15	38	µg/Kg-dry	1	12/13/2014 03:16
cis-1,3-Dichloropropene	U		13	38	µg/Kg-dry	1	12/13/2014 03:16
Cyclohexane	U		17	38	µg/Kg-dry	1	12/13/2014 03:16
Dibromochloromethane	U		7.1	38	µg/Kg-dry	1	12/13/2014 03:16
Dichlorodifluoromethane	U		17	38	µg/Kg-dry	1	12/13/2014 03:16
Ethylbenzene	U		14	38	µg/Kg-dry	1	12/13/2014 03:16
Isopropylbenzene	U		16	38	µg/Kg-dry	1	12/13/2014 03:16
Methyl acetate	U		51	250	µg/Kg-dry	1	12/13/2014 03:16
Methyl tert-butyl ether	U		16	38	µg/Kg-dry	1	12/13/2014 03:16

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

Revision: 1

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360) **Work Order:** 1412310
Sample ID: SO-17360-120514-EB-006 **Lab ID:** 1412310-06
Collection Date: 12/5/2014 11:45 AM **Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		18	38	µg/Kg-dry	1	12/13/2014 03:16
Methylene chloride	U		15	38	µg/Kg-dry	1	12/13/2014 03:16
Styrene	U		14	38	µg/Kg-dry	1	12/13/2014 03:16
Tetrachloroethene	U		17	38	µg/Kg-dry	1	12/13/2014 03:16
Toluene	U		14	38	µg/Kg-dry	1	12/13/2014 03:16
trans-1,2-Dichloroethene	U		12	38	µg/Kg-dry	1	12/13/2014 03:16
trans-1,3-Dichloropropene	U		13	38	µg/Kg-dry	1	12/13/2014 03:16
Trichloroethene	**94**		**18**	**38**	**µg/Kg-dry**	1	12/13/2014 03:16
Trichlorofluoromethane	U		11	38	µg/Kg-dry	1	12/13/2014 03:16
Vinyl chloride	U		17	38	µg/Kg-dry	1	12/13/2014 03:16
Xylenes, Total	U		45	110	µg/Kg-dry	1	12/13/2014 03:16
Surr: 1,2-Dichloroethane-d4	*102*			*70-130*	*%REC*	1	12/13/2014 03:16
Surr: 4-Bromofluorobenzene	*95.8*			*70-130*	*%REC*	1	12/13/2014 03:16
Surr: Dibromofluoromethane	*98.2*			*70-130*	*%REC*	1	12/13/2014 03:16
Surr: Toluene-d8	*98.4*			*70-130*	*%REC*	1	12/13/2014 03:16
MOISTURE			**A2540 G**				Analyst: **EVB**
BatchID: R154074							
Moisture	**5.9**		**0.025**	**0.050**	**% of sample**	1	12/10/2014 11:00

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

Revision: 1

ALS Group USA, Corp

Date: *16-Dec-14*

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360)
Sample ID: SO-17360-120514-EB-007
Collection Date: 12/5/2014 11:58 AM

Work Order: 1412310
Lab ID: 1412310-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/8/14		Analyst: **JDW**
BatchID: 65722							
1,1,1-Trichloroethane	U		15	39	µg/Kg-dry	1	12/13/2014 03:42
1,1,2,2-Tetrachloroethane	U		17	39	µg/Kg-dry	1	12/13/2014 03:42
1,1,2-Trichloroethane	U		14	39	µg/Kg-dry	1	12/13/2014 03:42
1,1,2-Trichlorotrifluoroethane	U		15	39	µg/Kg-dry	1	12/13/2014 03:42
1,1-Dichloroethane	U		14	39	µg/Kg-dry	1	12/13/2014 03:42
1,1-Dichloroethene	U		16	39	µg/Kg-dry	1	12/13/2014 03:42
1,2,4-Trichlorobenzene	U		20	39	µg/Kg-dry	1	12/13/2014 03:42
1,2-Dibromo-3-chloropropane	U		19	39	µg/Kg-dry	1	12/13/2014 03:42
1,2-Dibromoethane	U		15	39	µg/Kg-dry	1	12/13/2014 03:42
1,2-Dichlorobenzene	U		16	39	µg/Kg-dry	1	12/13/2014 03:42
1,2-Dichloroethane	U		19	39	µg/Kg-dry	1	12/13/2014 03:42
1,2-Dichloropropane	U		13	39	µg/Kg-dry	1	12/13/2014 03:42
1,3-Dichlorobenzene	U		16	39	µg/Kg-dry	1	12/13/2014 03:42
1,4-Dichlorobenzene	U		15	39	µg/Kg-dry	1	12/13/2014 03:42
2-Butanone	U		97	260	µg/Kg-dry	1	12/13/2014 03:42
2-Hexanone	U		9.6	39	µg/Kg-dry	1	12/13/2014 03:42
4-Methyl-2-pentanone	U		13	39	µg/Kg-dry	1	12/13/2014 03:42
Acetone	U		83	130	µg/Kg-dry	1	12/13/2014 03:42
Benzene	**22**	J	**16**	**39**	**µg/Kg-dry**	1	12/13/2014 03:42
Bromodichloromethane	U		8.8	39	µg/Kg-dry	1	12/13/2014 03:42
Bromoform	U		7.7	39	µg/Kg-dry	1	12/13/2014 03:42
Bromomethane	U		15	98	µg/Kg-dry	1	12/13/2014 03:42
Carbon disulfide	U		19	39	µg/Kg-dry	1	12/13/2014 03:42
Carbon tetrachloride	U		11	39	µg/Kg-dry	1	12/13/2014 03:42
Chlorobenzene	U		16	39	µg/Kg-dry	1	12/13/2014 03:42
Chloroethane	U		83	130	µg/Kg-dry	1	12/13/2014 03:42
Chloroform	U		16	39	µg/Kg-dry	1	12/13/2014 03:42
Chloromethane	U		22	130	µg/Kg-dry	1	12/13/2014 03:42
cis-1,2-Dichloroethene	U		16	39	µg/Kg-dry	1	12/13/2014 03:42
cis-1,3-Dichloropropene	U		13	39	µg/Kg-dry	1	12/13/2014 03:42
Cyclohexane	**77**		**18**	**39**	**µg/Kg-dry**	1	12/13/2014 03:42
Dibromochloromethane	U		7.3	39	µg/Kg-dry	1	12/13/2014 03:42
Dichlorodifluoromethane	U		18	39	µg/Kg-dry	1	12/13/2014 03:42
Ethylbenzene	U		15	39	µg/Kg-dry	1	12/13/2014 03:42
Isopropylbenzene	U		17	39	µg/Kg-dry	1	12/13/2014 03:42
Methyl acetate	U		53	260	µg/Kg-dry	1	12/13/2014 03:42
Methyl tert-butyl ether	U		17	39	µg/Kg-dry	1	12/13/2014 03:42

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

Revision: 1

Client: Conestoga-Rovers & Associates
Project: Former GRMP (17360)
Sample ID: SO-17360-120514-EB-007
Collection Date: 12/5/2014 11:58 AM

Work Order: 1412310
Lab ID: 1412310-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	**180**		**18**	**39**	**µg/Kg-dry**	1	12/13/2014 03:42
Methylene chloride	U		15	39	µg/Kg-dry	1	12/13/2014 03:42
Styrene	U		15	39	µg/Kg-dry	1	12/13/2014 03:42
Tetrachloroethene	U		17	39	µg/Kg-dry	1	12/13/2014 03:42
Toluene	**44**		**15**	**39**	**µg/Kg-dry**	1	12/13/2014 03:42
trans-1,2-Dichloroethene	U		12	39	µg/Kg-dry	1	12/13/2014 03:42
trans-1,3-Dichloropropene	U		13	39	µg/Kg-dry	1	12/13/2014 03:42
Trichloroethene	U		18	39	µg/Kg-dry	1	12/13/2014 03:42
Trichlorofluoromethane	U		11	39	µg/Kg-dry	1	12/13/2014 03:42
Vinyl chloride	U		18	39	µg/Kg-dry	1	12/13/2014 03:42
Xylenes, Total	U		46	120	µg/Kg-dry	1	12/13/2014 03:42
Surr: 1,2-Dichloroethane-d4	*103*			*70-130*	*%REC*	1	12/13/2014 03:42
Surr: 4-Bromofluorobenzene	*96.7*			*70-130*	*%REC*	1	12/13/2014 03:42
Surr: Dibromofluoromethane	*97.8*			*70-130*	*%REC*	1	12/13/2014 03:42
Surr: Toluene-d8	*98.9*			*70-130*	*%REC*	1	12/13/2014 03:42
MOISTURE			**A2540 G**				Analyst: **EVB**
BatchID: R154074							
Moisture	**5.6**		**0.025**	**0.050**	**% of sample**	1	12/10/2014 11:00

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

Revision: 1

Batch ID: **65722** Instrument ID **VMS8** Method: **SW8260B**

MBLK Sample ID: **MBLK-65722-65722** Units: **µg/Kg** Analysis Date: **12/8/2014 01:10 PM**

Client ID: Run ID: **VMS8_141208A** SeqNo: **3066344** Prep Date: **12/8/2014** 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	30								
1,1,2,2-Tetrachloroethane	U	30								
1,1,2-Trichloroethane	U	30								
1,1,2-Trichlorotrifluoroethane	U	30								
1,1-Dichloroethane	U	30								
1,1-Dichloroethene	U	30								
1,2,4-Trichlorobenzene	U	30								
1,2-Dibromo-3-chloropropane	U	30								
1,2-Dibromoethane	U	30								
1,2-Dichlorobenzene	U	30								
1,2-Dichloroethane	U	30								
1,2-Dichloropropane	U	30								
1,3-Dichlorobenzene	U	30								
1,4-Dichlorobenzene	U	30								
2-Butanone	U	200								
2-Hexanone	U	30								
4-Methyl-2-pentanone	U	30								
Acetone	U	100								
Benzene	U	30								
Bromodichloromethane	U	30								
Bromoform	U	30								
Bromomethane	U	75								
Carbon disulfide	U	30								
Carbon tetrachloride	U	30								
Chlorobenzene	U	30								
Chloroethane	U	100								
Chloroform	U	30								
Chloromethane	U	100								
cis-1,2-Dichloroethene	U	30								
cis-1,3-Dichloropropene	U	30								
Cyclohexane	U	30								
Dibromochloromethane	U	30								
Dichlorodifluoromethane	U	30								
Ethylbenzene	U	30								
Isopropylbenzene	U	30								
Methyl acetate	U	200								
Methyl tert-butyl ether	U	30								
Methylcyclohexane	U	30								
Methylene chloride	U	30								
Styrene	U	30								
Tetrachloroethene	U	30								

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

Revision: 1

Batch ID: **65722** Instrument ID **VMS8** Method: **SW8260B**

Toluene	U	30					
trans-1,2-Dichloroethene	U	30					
trans-1,3-Dichloropropene	U	30					
Trichloroethene	U	30					
Trichlorofluoromethane	U	30					
Vinyl chloride	U	30					
Xylenes, Total	U	90					
Surr: 1,2-Dichloroethane-d4	*983.5*	0	*1000*	0	*98.4*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1006*	0	*1000*	0	*101*	*70-130*	0
Surr: Dibromofluoromethane	*918*	0	*1000*	0	*91.8*	*70-130*	0
Surr: Toluene-d8	*955.5*	0	*1000*	0	*95.6*	*70-130*	0

Client: Conestoga-Rovers & Associates
Work Order: 1412310
Project: Former GRMP (17360)

QC BATCH REPORT

Batch ID: **65722** Instrument ID **VMS8** Method: **SW8260B**

LCS Sample ID: **LCS-65722-65722** Units: **µg/Kg** Analysis Date: **12/8/2014 10:44 AM**
Client ID: Run ID: **VMS8_141208A** SeqNo: **3066338** Prep Date: **12/8/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1144	30	1000	0	114	70-135	0			
1,1,2,2-Tetrachloroethane	843	30	1000	0	84.3	55-130	0			
1,1,2-Trichloroethane	1011	30	1000	0	101	60-125	0			
1,1-Dichloroethane	1100	30	1000	0	110	75-125	0			
1,1-Dichloroethene	1122	30	1000	0	112	65-135	0			
1,2,4-Trichlorobenzene	972.5	30	1000	0	97.2	65-130	0			
1,2-Dibromo-3-chloropropane	845	30	1000	0	84.5	40-135	0			
1,2-Dibromoethane	1342	30	1000	0	134	75-125	0			S
1,2-Dichlorobenzene	1038	30	1000	0	104	75-120	0			
1,2-Dichloroethane	1134	30	1000	0	113	70-135	0			
1,2-Dichloropropane	1124	30	1000	0	112	70-120	0			
1,3-Dichlorobenzene	1036	30	1000	0	104	70-125	0			
1,4-Dichlorobenzene	1012	30	1000	0	101	70-125	0			
2-Butanone	911	200	1000	0	91.1	30-160	0			
2-Hexanone	817	30	1000	0	81.7	45-145	0			
4-Methyl-2-pentanone	1042	30	1000	0	104	96-168	0			
Acetone	965	100	1000	0	96.5	20-160	0			
Benzene	1092	30	1000	0	109	75-125	0			
Bromodichloromethane	1068	30	1000	0	107	70-130	0			
Bromoform	799	30	1000	0	79.9	55-135	0			
Bromomethane	1053	75	1000	0	105	30-160	0			
Carbon disulfide	961	30	1000	0	96.1	45-160	0			
Carbon tetrachloride	1072	30	1000	0	107	65-135	0			
Chlorobenzene	1054	30	1000	0	105	75-125	0			
Chloroethane	1046	100	1000	0	105	40-155	0			
Chloroform	1050	30	1000	0	105	70-125	0			
Chloromethane	937	100	1000	0	93.7	50-130	0			
cis-1,2-Dichloroethene	1151	30	1000	0	115	65-125	0			
cis-1,3-Dichloropropene	1223	30	1000	0	122	70-125	0			
Dibromochloromethane	877.5	30	1000	0	87.8	65-135	0			
Dichlorodifluoromethane	815	30	1000	0	81.5	35-135	0			
Ethylbenzene	1076	30	1000	0	108	75-125	0			
Isopropylbenzene	862	30	1000	0	86.2	75-130	0			
Methyl tert-butyl ether	1016	30	1000	0	102	75-125	0			
Methylene chloride	1030	30	1000	0	103	55-145	0			
Styrene	969	30	1000	0	96.9	75-125	0			
Tetrachloroethene	1200	30	1000	0	120	64-140	0			
Toluene	983	30	1000	0	98.3	70-125	0			
trans-1,2-Dichloroethene	1118	30	1000	0	112	65-135	0			
trans-1,3-Dichloropropene	993	30	1000	0	99.3	65-125	0			
Trichloroethene	1032	30	1000	0	103	75-125	0			
Trichlorofluoromethane	1020	30	1000	0	102	25-185	0			

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

Revision: 1

Batch ID: **65722** Instrument ID **VMS8** Method: **SW8260B**

Vinyl chloride	1159	30	1000	0	116	60-125	0
Xylenes, Total	3014	90	3000	0	100	75-125	0
Surr: 1,2-Dichloroethane-d4	*1018*	0	*1000*	0	*102*	*70-130*	0
Surr: 4-Bromofluorobenzene	*908.5*	0	*1000*	0	*90.8*	*70-130*	0
Surr: Dibromofluoromethane	*1002*	0	*1000*	0	*100*	*70-130*	0
Surr: Toluene-d8	*914*	0	*1000*	0	*91.4*	*70-130*	0

Client: Conestoga-Rovers & Associates
Work Order: 1412310
Project: Former GRMP (17360)

QC BATCH REPORT

Batch ID: **65722** Instrument ID **VMS8** Method: **SW8260B**

MS Sample ID: **1412310-07A MS** Units: **µg/Kg** Analysis Date: **12/13/2014 08:48 A**

Client ID: **SO-17360-120514-EB-007** Run ID: **VMS5_141212B** SeqNo: **3074853** Prep Date: **12/8/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1188	30	1000	0	119	70-135	0			
1,1,2,2-Tetrachloroethane	1004	30	1000	0	100	55-130	0			
1,1,2-Trichloroethane	1082	30	1000	0	108	60-125	0			
1,1-Dichloroethane	1154	30	1000	0	115	75-125	0			
1,1-Dichloroethene	1310	30	1000	0	131	65-135	0			
1,2,4-Trichlorobenzene	1054	30	1000	0	105	65-130	0			
1,2-Dibromo-3-chloropropane	716	30	1000	0	71.6	40-135	0			
1,2-Dibromoethane	1224	30	1000	0	122	75-125	0			
1,2-Dichlorobenzene	1041	30	1000	0	104	75-120	0			
1,2-Dichloroethane	1088	30	1000	0	109	70-135	0			
1,2-Dichloropropane	1078	30	1000	0	108	70-120	0			
1,3-Dichlorobenzene	1064	30	1000	0	106	70-125	0			
1,4-Dichlorobenzene	1043	30	1000	0	104	70-125	0			
2-Butanone	827	200	1000	0	82.7	30-160	0			
2-Hexanone	827.5	30	1000	0	82.8	45-145	0			
4-Methyl-2-pentanone	1142	30	1000	0	114	89-161	0			
Acetone	902	100	1000	0	90.2	20-160	0			
Benzene	1168	30	1000	20.37	115	75-125	0			
Bromodichloromethane	1058	30	1000	0	106	70-130	0			
Bromoform	752	30	1000	0	75.2	55-135	0			
Bromomethane	881	75	1000	0	88.1	30-160	0			
Carbon disulfide	1038	30	1000	0	104	45-160	0			
Carbon tetrachloride	1006	30	1000	0	101	65-135	0			
Chlorobenzene	1078	30	1000	0	108	75-125	0			
Chloroethane	1082	100	1000	0	108	40-155	0			
Chloroform	1110	30	1000	0	111	70-125	0			
Chloromethane	954.5	100	1000	0	95.4	50-130	0			
cis-1,2-Dichloroethene	1087	30	1000	0	109	65-125	0			
cis-1,3-Dichloropropene	918.5	30	1000	0	91.8	70-125	0			
Dibromochloromethane	816	30	1000	0	81.6	65-135	0			
Dichlorodifluoromethane	785.5	30	1000	0	78.6	35-135	0			
Ethylbenzene	1168	30	1000	0	117	75-125	0			
Isopropylbenzene	1052	30	1000	0	105	75-130	0			
Methyl tert-butyl ether	1015	30	1000	0	102	75-125	0			
Methylene chloride	1070	30	1000	0	107	55-145	0			
Styrene	1015	30	1000	0	102	75-125	0			
Tetrachloroethene	1156	30	1000	0	116	64-140	0			
Toluene	1154	30	1000	41.36	111	70-125	0			
trans-1,2-Dichloroethene	1207	30	1000	0	121	65-135	0			
trans-1,3-Dichloropropene	910.5	30	1000	0	91	65-125	0			
Trichloroethene	1094	30	1000	0	109	75-125	0			
Trichlorofluoromethane	1075	30	1000	0	108	25-185	0			

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

Revision: 1

QC BATCH REPORT

Batch ID: **65722** Instrument ID **VMS8** Method: **SW8260B**

Vinyl chloride	1154	30	1000	0	115	60-125	0
Xylenes, Total	3536	90	3000	0	118	75-125	0
Surr: 1,2-Dichloroethane-d4	*972.5*	0	*1000*	0	*97.2*	*70-130*	0
Surr: 4-Bromofluorobenzene	*1026*	0	*1000*	0	*103*	*70-130*	0
Surr: Dibromofluoromethane	*976*	0	*1000*	0	*97.6*	*70-130*	0
Surr: Toluene-d8	*992.5*	0	*1000*	0	*99.2*	*70-130*	0

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

Revision: 1

Client: Conestoga-Rovers & Associates
Work Order: 1412310
Project: Former GRMP (17360)

QC BATCH REPORT

Batch ID: **65722** Instrument ID **VMS8** Method: **SW8260B**

MSD Sample ID: **1412310-07A MSD** Units: **µg/Kg** Analysis Date: **12/13/2014 09:14 A**

Client ID: **SO-17360-120514-EB-007** Run ID: **VMS5_141212B** SeqNo: **3074854** Prep Date: **12/8/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1160	30	1000	0	116	70-135	1188	2.43	30	
1,1,2,2-Tetrachloroethane	1005	30	1000	0	100	55-130	1004	0.0996	30	
1,1,2-Trichloroethane	1034	30	1000	0	103	60-125	1082	4.49	30	
1,1-Dichloroethane	1116	30	1000	0	112	75-125	1154	3.3	30	
1,1-Dichloroethene	1256	30	1000	0	126	65-135	1310	4.17	30	
1,2,4-Trichlorobenzene	1110	30	1000	0	111	65-130	1054	5.13	30	
1,2-Dibromo-3-chloropropane	814	30	1000	0	81.4	40-135	716	12.8	30	
1,2-Dibromoethane	1205	30	1000	0	120	75-125	1224	1.52	30	
1,2-Dichlorobenzene	1095	30	1000	0	110	75-120	1041	5.06	30	
1,2-Dichloroethane	1077	30	1000	0	108	70-135	1088	0.97	30	
1,2-Dichloropropane	1066	30	1000	0	107	70-120	1078	1.17	30	
1,3-Dichlorobenzene	1102	30	1000	0	110	70-125	1064	3.56	30	
1,4-Dichlorobenzene	1088	30	1000	0	109	70-125	1043	4.27	30	
2-Butanone	964	200	1000	0	96.4	30-160	827	15.3	30	
2-Hexanone	859	30	1000	0	85.9	45-145	827.5	3.74	30	
4-Methyl-2-pentanone	1198	30	1000	0	120	89-161	1142	4.78	30	
Acetone	1108	100	1000	0	111	20-160	902	20.5	30	
Benzene	1136	30	1000	20.37	112	75-125	1168	2.78	30	
Bromodichloromethane	1048	30	1000	0	105	70-130	1058	0.95	30	
Bromoform	741	30	1000	0	74.1	55-135	752	1.47	30	
Bromomethane	918.5	75	1000	0	91.8	30-160	881	4.17	30	
Carbon disulfide	977.5	30	1000	0	97.8	45-160	1038	6	30	
Carbon tetrachloride	1014	30	1000	0	101	65-135	1006	0.693	30	
Chlorobenzene	1062	30	1000	0	106	75-125	1078	1.5	30	
Chloroethane	1051	100	1000	0	105	40-155	1082	2.95	30	
Chloroform	1069	30	1000	0	107	70-125	1110	3.81	30	
Chloromethane	905	100	1000	0	90.5	50-130	954.5	5.32	30	
cis-1,2-Dichloroethene	1036	30	1000	0	104	65-125	1087	4.85	30	
cis-1,3-Dichloropropene	904	30	1000	0	90.4	70-125	918.5	1.59	30	
Dibromochloromethane	790.5	30	1000	0	79	65-135	816	3.17	30	
Dichlorodifluoromethane	745.5	30	1000	0	74.6	35-135	785.5	5.23	30	
Ethylbenzene	1170	30	1000	0	117	75-125	1168	0.171	30	
Isopropylbenzene	1088	30	1000	0	109	75-130	1052	3.36	30	
Methyl tert-butyl ether	983	30	1000	0	98.3	75-125	1015	3.2	30	
Methylene chloride	1020	30	1000	0	102	55-145	1070	4.83	30	
Styrene	1002	30	1000	0	100	75-125	1015	1.34	30	
Tetrachloroethene	1192	30	1000	0	119	64-140	1156	2.98	30	
Toluene	1120	30	1000	41.36	108	70-125	1154	2.9	30	
trans-1,2-Dichloroethene	1151	30	1000	0	115	65-135	1207	4.75	30	
trans-1,3-Dichloropropene	872	30	1000	0	87.2	65-125	910.5	4.32	30	
Trichloroethene	1066	30	1000	0	107	75-125	1094	2.64	30	
Trichlorofluoromethane	1024	30	1000	0	102	25-185	1075	4.86	30	

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

Revision: 1

QC BATCH REPORT

Batch ID: **65722** Instrument ID **VMS8** Method: **SW8260B**

Vinyl chloride	1096	30	1000	0	110	60-125	1154	5.11	30
Xylenes, Total	3540	90	3000	0	118	75-125	3536	0.0848	30
Surr: 1,2-Dichloroethane-d4	*997*	0	*1000*	0	*99.7*	*70-130*	972.5	*2.49*	*30*
Surr: 4-Bromofluorobenzene	*1009*	0	*1000*	0	*101*	*70-130*	1026	*1.62*	*30*
Surr: Dibromofluoromethane	*952*	0	*1000*	0	*95.2*	*70-130*	976	*2.49*	*30*
Surr: Toluene-d8	*975.5*	0	*1000*	0	*97.6*	*70-130*	992.5	*1.73*	*30*

The following samples were analyzed in this batch:

1412310-01A	1412310-02A	1412310-03A
1412310-04A	1412310-05A	1412310-06A
1412310-07A		

Client: Conestoga-Rovers & Associates
Work Order: 1412310
Project: Former GRMP (17360)

QC BATCH REPORT

Batch ID: **R154074** Instrument ID **MOIST** Method: **A2540 G**

MBLK Sample ID: **WBLKS-R154074** Units: **% of sample** Analysis Date: **12/10/2014 11:00 A**
Client ID: Run ID: **MOIST_141210B** SeqNo: **3071665** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.050								

LCS Sample ID: **LCS-R154074** Units: **% of sample** Analysis Date: **12/10/2014 11:00 A**
Client ID: Run ID: **MOIST_141210B** SeqNo: **3071664** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1412310-01B DUP** Units: **% of sample** Analysis Date: **12/10/2014 11:00 A**
Client ID: **SO-17360-120514-EB-001** Run ID: **MOIST_141210B** SeqNo: **3071646** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	6.08	0.050	0	0	0	0-0	6.4	5.13	20	

DUP Sample ID: **1412376-04A DUP** Units: **% of sample** Analysis Date: **12/10/2014 11:00 A**
Client ID: Run ID: **MOIST_141210B** SeqNo: **3071658** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	10.15	0.050	0	0	0	0-0	9.8	3.51	20	

The following samples were analyzed in this batch:

1412310-01B	1412310-02B	1412310-03B
1412310-04B	1412310-05B	1412310-06B
1412310-07B		

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

Revision: 1

1412310

CHAIN OF CUSTODY RECORD

COC NO.: PL- 12317
PAGE 1 OF 1

CONESTOGA-ROVERS & ASSOCIATES
14496 Sheldon Road, Suite #200, Plymouth, Michigan 48170
Phone: (734) 453-5123 Fax: (734) 453-5201

(See Reverse Side for Instructions)

Project No/ Phase/Task Code: 017360-TOSY14-01414	Laboratory Name: ALS	Lab Location: Holland MI	SSOW ID: 017360
Project Name: Former GRMP - RACER	Lab Contact: Chad Whitten	Lab Quote No.:	Cooler No.:
Project Location: Wyoming, MI			Carrier:
Chemistry Contact: R. Fletcher			Airbill No.:
Sampler(s): E. Batenburg			Date Shipped: Dep. Lab

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp. (C)	Container Quantity & Preservation: Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO_3)	Sulfuric Acid (H_2SO_4)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g; 1x25-g	Other:	Total Containers/Sample	TCL VOCs	MS/MSD Request	Comments/ Special Instructions:
1	SO-17360-120514-EB-001	12-5-14	1005	SO	G	1					2			3	X		
2	-002		1010														
3	-003		1018														
4	-004		1047														
5	-005		1128														
6	-006		1145														
7	-007		1158								4			5		X	MS/MSD
8																	
9																	
10																	
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:
All Samples in Cooler must be on COC

Notes/ Special Requirements:

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1.	CRA	12-5-14	1446	1.		12/5/14	1446
2.				2.			
3.				3.			

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

4.8°c

Distribution: WHITE — Fully Executed Copy (CRA) YELLOW — Receiving Laboratory Copy PINK — Shipper GOLDENROD — Sampling Crew

CRA Form: COC10A (20110804)

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **CRA - PLYMOUTH** Date/Time Received: **05-Dec-14 14:46**

Work Order: **1412310** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 05-Dec-14 (Date) Reviewed by: Chad Whelton (eSignature) 05-Dec-14 (Date)

Matrices: Soil

Carrier name: Client

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):	4.8 C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/5/2014 3:00:08 PM		
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:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

Revision: 1

Attachment D

Data Validation Memorandum

CONESTOGA-ROVERS & ASSOCIATES

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

MEMORANDUM

TO:	Jennifer Quigley	REF. NO.:	017360-T05Y14
FROM:	Ruth Mickle/tl/74/Det	DATE:	January 9, 2015
RE:	**Analytical Results and Reduced Validation Soil Sampling Event Racer Grand Rapids Stamping Site Wyoming, Michigan December 2014**		

1.0 Introduction

The following document details a reduced validation of analytical results for soil samples collected in support of the soil sampling event at the Racer Grand Rapids Stamping Site during December 2014. 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) "Former Grand Rapids Metal Plant Quality Assurance Project Plan (QAPP)", Revision 1, January 6, 2011

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 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 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.

The method blank results were non-detect, 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 extraction and/or analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for target compound list volatile organic compound (TCL VOC) determinations were spiked with the appropriate number of surrogate compounds prior to sample extraction and/or analysis.

Surrogate recoveries were assessed against laboratory control limits. The 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. The 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-VOC 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. If the original sample concentration is significantly greater than the spike concentration, the recovery is not assessed.

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

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.

7.0 Duplicate Sample Analyses – Moisture Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory as specified in Table 1. The duplicate results were evaluated per the "Guidelines".

The duplicate analyses performed were acceptable, demonstrating acceptable analytical precision.

8.0 Field QA/QC Samples

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

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, four 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 100 percent for soil 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 two times the RL value for soil samples.

Most field duplicate results showed adequate reproducibility, indicating satisfactory sampling and laboratory precision. The trichloroethene results for sample SO-17360-120514-EB-001 and its field duplicate did show some variability. The original and duplicate sample results were qualified as estimated, as noted in Table 4.

9.0 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.

10.0 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
SOIL SAMPLING EVENT
RACER GRAND RAPIDS STAMPING SITE
WYOMING, MICHIGAN
DECEMBER 2014

Sample Identification	*Location*	*Matrix*	*Initial Sample Depth* (ft. bgs)	*Final Sample Depth* (ft. bgs)	*Collection Date (mm/dd/yyyy)*	*Collection Time (hr:min)*	*Analysis/Parameters*		*Comments*
							TCL VOC	*Moisture*	
ALS-MI SDG No.: 1412310									
SO-17360-120514-EB-001	SB327-14	soil	0	2	12/05/2014	10:05	X	X	
SO-17360-120514-EB-002	SB327-14	soil	0	2	12/05/2014	10:10	X	X	Field duplicate of -EB-001
SO-17360-120514-EB-003	SB327-14	soil	2	4	12/05/2014	10:18	X	X	
SO-17360-120514-EB-004	SB326-14	soil	0	2	12/05/2014	10:47	X	X	
SO-17360-120514-EB-005	SB326-14	soil	2	4	12/05/2014	11:28	X	X	
SO-17360-120514-EB-006	SB328-14	soil	0	2	12/05/2014	11:45	X	X	
SO-17360-120514-EB-007	SB328-14	soil	2	4	12/05/2014	11:58	X	X	MS/MSD

Notes:

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

TABLE 2

SOIL SAMPLING EVENT
RACER GRAND RAPIDS STAMPING SITE
WYOMING, MICHIGAN
DECEMBER 2014

Sample Location:		*SB326-14*	*SB326-14*	*SB327-14*
Sample Identification:		*SO-17360-120514-EB-004*	*SO-17360-120514-EB-005*	*SO-17360-120514-EB-001*
Sample Date:		*12/5/2014*	*12/5/2014*	*12/5/2014*
Sample Depth		*(0-2) ft BGS*	*(2-4) ft BGS*	*(0-2) ft BGS*
Sample Type:				
	Units			
Volatile Organic Compounds				
1,1,1-Trichloroethane	ug/kg	38 U	36 U	36 U
1,1,2,2-Tetrachloroethane	ug/kg	38 U	36 U	36 U
1,1,2-Trichloroethane	ug/kg	38 U	36 U	36 U
1,1-Dichloroethane	ug/kg	38 U	36 U	36 U
1,1-Dichloroethene	ug/kg	38 U	36 U	36 U
1,2,4-Trichlorobenzene	ug/kg	38 U	36 U	36 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	38 U	36 U	36 U
1,2-Dibromoethane (Ethylene dibromide)	ug/kg	38 U	36 U	36 U
1,2-Dichlorobenzene	ug/kg	38 U	36 U	36 U
1,2-Dichloroethane	ug/kg	38 U	36 U	36 U
1,2-Dichloropropane	ug/kg	38 U	36 U	36 U
1,3-Dichlorobenzene	ug/kg	38 U	36 U	36 U
1,4-Dichlorobenzene	ug/kg	38 U	36 U	36 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/kg	250 U	240 U	240 U
2-Hexanone	ug/kg	38 U	36 U	36 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/kg	38 U	36 U	36 U
Acetone	ug/kg	130 U	120 U	120 U
Benzene	ug/kg	38 U	36 U	48
Bromodichloromethane	ug/kg	38 U	36 U	36 U
Bromoform	ug/kg	38 U	36 U	36 U
Bromomethane (Methyl bromide)	ug/kg	94 U	91 U	89 U
Carbon disulfide	ug/kg	38 U	36 U	36 U
Carbon tetrachloride	ug/kg	38 U	36 U	36 U
Chlorobenzene	ug/kg	38 U	36 U	36 U
Chloroethane	ug/kg	130 U	120 U	120 U
Chloroform (Trichloromethane)	ug/kg	38 U	36 U	36 U
Chloromethane (Methyl chloride)	ug/kg	130 U	120 U	120 U
cis-1,2-Dichloroethene	ug/kg	38 U	36 U	36 U
cis-1,3-Dichloropropene	ug/kg	38 U	36 U	36 U

TABLE 2

SOIL SAMPLING EVENT
RACER GRAND RAPIDS STAMPING SITE
WYOMING, MICHIGAN
DECEMBER 2014

Sample Location:		*SB326-14*	*SB326-14*	*SB327-14*
Sample Identification:		*SO-17360-120514-EB-004*	*SO-17360-120514-EB-005*	*SO-17360-120514-EB-001*
Sample Date:		*12/5/2014*	*12/5/2014*	*12/5/2014*
Sample Depth		*(0-2) ft BGS*	*(2-4) ft BGS*	*(0-2) ft BGS*
Sample Type:				
	Units			
Volatile Organic Compounds				
Cyclohexane	ug/kg	38 U	36 U	120
Dibromochloromethane	ug/kg	38 U	36 U	36 U
Dichlorodifluoromethane (CFC-12)	ug/kg	38 U	36 U	36 U
Ethylbenzene	ug/kg	38 U	36 U	23 J
Isopropyl benzene	ug/kg	38 U	36 U	68
Methyl acetate	ug/kg	250 U	240 U	240 U
Methyl cyclohexane	ug/kg	38 U	36 U	390
Methyl tert butyl ether (MTBE)	ug/kg	38 U	36 U	36 U
Methylene chloride	ug/kg	38 U	36 U	36 U
Styrene	ug/kg	38 U	36 U	36 U
Tetrachloroethene	ug/kg	38 U	36 U	36 U
Toluene	ug/kg	33 J	36 U	120
trans-1,2-Dichloroethene	ug/kg	38 U	36 U	36 U
trans-1,3-Dichloropropene	ug/kg	38 U	36 U	36 U
Trichloroethene	ug/kg	730	1700	12000 J
Trichlorofluoromethane (CFC-11)	ug/kg	38 U	36 U	36 U
Trifluorotrichloroethane (Freon 113)	ug/kg	38 U	36 U	36 U
Vinyl chloride	ug/kg	38 U	36 U	36 U
Xylenes (total)	ug/kg	90 J	110 U	190
General Chemistry				
Moisture content (dry weight)	%	6.7	7.5	6.4

TABLE 2

SOIL SAMPLING EVENT
RACER GRAND RAPIDS STAMPING SITE
WYOMING, MICHIGAN
DECEMBER 2014

Sample Location:		*SB327-14*	*SB327-14*	*SB328-14*
Sample Identification:		*SO-17360-120514-EB-002*	*SO-17360-120514-EB-003*	*SO-17360-120514-EB-006*
Sample Date:		*12/5/2014*	*12/5/2014*	*12/5/2014*
Sample Depth		*(0-2) ft BGS*	*(2-4) ft BGS*	*(0-2) ft BGS*
Sample Type:		*Duplicate*		
	Units			
Volatile Organic Compounds				
1,1,1-Trichloroethane	ug/kg	39 U	37 U	38 U
1,1,2,2-Tetrachloroethane	ug/kg	39 U	37 U	38 U
1,1,2-Trichloroethane	ug/kg	39 U	37 U	38 U
1,1-Dichloroethane	ug/kg	39 U	37 U	38 U
1,1-Dichloroethene	ug/kg	39 U	37 U	38 U
1,2,4-Trichlorobenzene	ug/kg	39 U	37 U	38 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	39 U	37 U	38 U
1,2-Dibromoethane (Ethylene dibromide)	ug/kg	39 U	37 U	38 U
1,2-Dichlorobenzene	ug/kg	39 U	37 U	38 U
1,2-Dichloroethane	ug/kg	39 U	37 U	38 U
1,2-Dichloropropane	ug/kg	39 U	37 U	38 U
1,3-Dichlorobenzene	ug/kg	39 U	37 U	38 U
1,4-Dichlorobenzene	ug/kg	39 U	37 U	38 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/kg	260 U	250 U	250 U
2-Hexanone	ug/kg	39 U	37 U	38 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/kg	39 U	37 U	38 U
Acetone	ug/kg	130 U	120 U	130 U
Benzene	ug/kg	39 U	37 U	38 U
Bromodichloromethane	ug/kg	39 U	37 U	38 U
Bromoform	ug/kg	39 U	37 U	38 U
Bromomethane (Methyl bromide)	ug/kg	97 U	93 U	95 U
Carbon disulfide	ug/kg	39 U	37 U	38 U
Carbon tetrachloride	ug/kg	39 U	37 U	38 U
Chlorobenzene	ug/kg	39 U	37 U	38 U
Chloroethane	ug/kg	130 U	120 U	130 U
Chloroform (Trichloromethane)	ug/kg	39 U	37 U	38 U
Chloromethane (Methyl chloride)	ug/kg	130 U	120 U	130 U
cis-1,2-Dichloroethene	ug/kg	39 U	37 U	38 U
cis-1,3-Dichloropropene	ug/kg	39 U	37 U	38 U

TABLE 2

SOIL SAMPLING EVENT
RACER GRAND RAPIDS STAMPING SITE
WYOMING, MICHIGAN
DECEMBER 2014

Sample Location:		*SB327-14*	*SB327-14*	*SB328-14*
Sample Identification:		*SO-17360-120514-EB-002*	*SO-17360-120514-EB-003*	*SO-17360-120514-EB-006*
Sample Date:		*12/5/2014*	*12/5/2014*	*12/5/2014*
Sample Depth		*(0-2) ft BGS*	*(2-4) ft BGS*	*(0-2) ft BGS*
Sample Type:		*Duplicate*		
	Units			
Volatile Organic Compounds				
Cyclohexane	ug/kg	89	37 U	38 U
Dibromochloromethane	ug/kg	39 U	37 U	38 U
Dichlorodifluoromethane (CFC-12)	ug/kg	39 U	37 U	38 U
Ethylbenzene	ug/kg	16 J	37 U	38 U
Isopropyl benzene	ug/kg	63	37 U	38 U
Methyl acetate	ug/kg	260 U	250 U	250 U
Methyl cyclohexane	ug/kg	220	37 U	38 U
Methyl tert butyl ether (MTBE)	ug/kg	39 U	37 U	38 U
Methylene chloride	ug/kg	39 U	37 U	38 U
Styrene	ug/kg	39 U	37 U	38 U
Tetrachloroethene	ug/kg	39 U	37 U	38 U
Toluene	ug/kg	45	17 J	38 U
trans-1,2-Dichloroethene	ug/kg	39 U	37 U	38 U
trans-1,3-Dichloropropene	ug/kg	39 U	37 U	38 U
Trichloroethene	ug/kg	3200 J	390	94
Trichlorofluoromethane (CFC-11)	ug/kg	39 U	37 U	38 U
Trifluorotrichloroethane (Freon 113)	ug/kg	39 U	37 U	38 U
Vinyl chloride	ug/kg	39 U	37 U	38 U
Xylenes (total)	ug/kg	140	110 U	110 U
General Chemistry				
Moisture content (dry weight)	%	6.5	6.2	5.9

TABLE 2

SOIL SAMPLING EVENT
RACER GRAND RAPIDS STAMPING SITE
WYOMING, MICHIGAN
DECEMBER 2014

Sample Location:		***SB328-14***
Sample Identification:		***SO-17360-120514-EB-007***
Sample Date:		***12/5/2014***
Sample Depth		***(2-4) ft BGS***
Sample Type:		
	Units	
Volatile Organic Compounds		
1,1,1-Trichloroethane	ug/kg	39 U
1,1,2,2-Tetrachloroethane	ug/kg	39 U
1,1,2-Trichloroethane	ug/kg	39 U
1,1-Dichloroethane	ug/kg	39 U
1,1-Dichloroethene	ug/kg	39 U
1,2,4-Trichlorobenzene	ug/kg	39 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	39 U
1,2-Dibromoethane (Ethylene dibromide)	ug/kg	39 U
1,2-Dichlorobenzene	ug/kg	39 U
1,2-Dichloroethane	ug/kg	39 U
1,2-Dichloropropane	ug/kg	39 U
1,3-Dichlorobenzene	ug/kg	39 U
1,4-Dichlorobenzene	ug/kg	39 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/kg	260 U
2-Hexanone	ug/kg	39 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/kg	39 U
Acetone	ug/kg	130 U
Benzene	ug/kg	22 J
Bromodichloromethane	ug/kg	39 U
Bromoform	ug/kg	39 U
Bromomethane (Methyl bromide)	ug/kg	98 U
Carbon disulfide	ug/kg	39 U
Carbon tetrachloride	ug/kg	39 U
Chlorobenzene	ug/kg	39 U
Chloroethane	ug/kg	130 U
Chloroform (Trichloromethane)	ug/kg	39 U
Chloromethane (Methyl chloride)	ug/kg	130 U
cis-1,2-Dichloroethene	ug/kg	39 U
cis-1,3-Dichloropropene	ug/kg	39 U

TABLE 2

SOIL SAMPLING EVENT
RACER GRAND RAPIDS STAMPING SITE
WYOMING, MICHIGAN
DECEMBER 2014

Sample Location:		***SB328-14***
Sample Identification:		***SO-17360-120514-EB-007***
Sample Date:		***12/5/2014***
Sample Depth		***(2-4) ft BGS***
Sample Type:		
	Units	
Volatile Organic Compounds		
Cyclohexane	ug/kg	77
Dibromochloromethane	ug/kg	39 U
Dichlorodifluoromethane (CFC-12)	ug/kg	39 U
Ethylbenzene	ug/kg	39 U
Isopropyl benzene	ug/kg	39 U
Methyl acetate	ug/kg	260 U
Methyl cyclohexane	ug/kg	180
Methyl tert butyl ether (MTBE)	ug/kg	39 U
Methylene chloride	ug/kg	39 U
Styrene	ug/kg	39 U
Tetrachloroethene	ug/kg	39 U
Toluene	ug/kg	44
trans-1,2-Dichloroethene	ug/kg	39 U
trans-1,3-Dichloropropene	ug/kg	39 U
Trichloroethene	ug/kg	39 U
Trichlorofluoromethane (CFC-11)	ug/kg	39 U
Trifluorotrichloroethane (Freon 113)	ug/kg	39 U
Vinyl chloride	ug/kg	39 U
Xylenes (total)	ug/kg	120 U
General Chemistry		
Moisture content (dry weight)	%	5.6

Notes:

U - Not detected at the associated reporting limit.
J - Estimated concentration.

TABLE 3

ANALYTICAL METHODS AND HOLDING TIME CRITERIA
SOIL SAMPLING EVENT
RACER GRAND RAPIDS STAMPING SITE
WYOMING, MICHIGAN
DECEMBER 2014

Parameter	*Method*	*Matrix*	*Preservation*	*Holding Time*	
				Collection to Extraction (Days)	*Collection or Extraction to Analysis (Days)*
TCL VOC	SW-846 8260B	Soil	Iced, 4 ± 2° C	-	14
Moisture	SM 2540G	Soil	None	-	NE

Notes

SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions.
NE - Not established
SM - "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, with subsequent revisions.
VOC - Volatile Organic Compounds
TCL - Target Compound List

TABLE 4

QUALIFIED SAMPLE DATA DUE TO VARIABILITY IN FIELD DUPLICATE RESULTS
SOIL SAMPLING EVENT
RACER GRAND RAPIDS STAMPING SITE
WYOMING, MICHIGAN
DECEMBER 2014

Parameter	*Analyte*	*RPD/Diff*		*Sample ID*	*Qualified Result*	*Field Duplicate Sample ID*	*Qualified Result*	*Units*
TCL VOC	Trichloroethene	116	RPD	SO-17360-120514-EB-001	12000 J	SO-17360-120514-EB-002	3200 J	µg/kg

Notes:

RPD - Relative percent difference.
J - Estimated concentration.