



RESOURCE CONSERVATION AND RECOVERY ACT FACILITY INVESTIGATION WORK PLAN ADDENDUM No. 1

**FORMER WILLOW RUN POWERTRAIN PLANT
YPSILANTI, MICHIGAN**

**Prepared for:
Revitalizing Auto Communities Environmental Response Trust
(RACER)**

**Prepared by:
Conestoga-Rovers
& Associates**

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**MARCH 2013
REF. NO. 017358 (26)**

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Based on my knowledge of the conditions of the property described in the remedial action plan and my inquiry of the person or persons who manage the system referenced in the operator's certification, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Grant Trigger
Michigan Cleanup Manager
Revitalizing Auto Communities
Environmental Response Trust

3-18-13

Date

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LIST OF ACRONYMS

AOI	area of interest
bgs	below ground surface
CRA	Conestoga-Rovers & Associates, Inc.
PCBs	Polychlorinated Biphenyls
PID	photoionization detector
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RACER	Revitalizing Auto Communities Environmental Response Trust
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
Site	Willow Run Powertrain Plant Property
SVOCs	Semi-Volatile Organic Compounds
TAL	Target Analyte List
VOCs	Volatile Organic Compounds
Work Plan	RFI Work Plan
WWTP	Waste Water Treatment Plant
YTO	Ypsilanti Transmission Operations

1.0 INTRODUCTION

Conestoga-Rovers & Associates, Inc. (CRA) prepared a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan (Work Plan) for the Former Willow Run Powertrain Plant property (Site) in Ypsilanti, Michigan in February 2012. The field work associated with the Work Plan was completed in the spring of 2012 with the exception of the wells around the Waste Water Treatment Plant (WWTP) because RACER has not yet acquired the property from the airport authority. The results of the RFI investigation have been reviewed and will be presented in the RFI Report. The results indicate some additional investigation is warranted to further delineate impacts. CRA has prepared this Addendum No. 1 to the RFI Work Plan to address those delineation activities.

Specifically this RFI Work Plan Addendum No. 1 presents the additional investigative activities that will be conducted to:

- Delineate shallow soil exceedances for arsenic and manganese
- Evaluate shallow groundwater in the vicinity of shallow soil impacts near the southeast property boundary
- Reinstall and sample soil gas probes where soil gas samples were not able to be collected.
- Collect groundwater data (levels and sampling) from wells sampled in spring of 2012 and the new well included in this RFI Work Plan Addendum.

Additional background information including Site location, sampling methodology, and the Quality Assurance Project Plan are presented in the RFI Work Plan (CRA, 2012).

2.0 INVESTIGATION PROGRAM

This Addendum No. 1 addresses additional delineation activities to be completed in the spring of 2013.

2.1 SOIL INVESTIGATION

The proposed additional soil investigative locations, soil borings and monitoring wells, are presented on Figure 2.1. Table 2.1 presents the soil boring and monitoring well installation program and includes detailed information on soil sample depths and analysis, monitoring well screen intervals, and estimated depths of borings.

2.2 GROUNDWATER INVESTIGATION

Figure 2.2 presents locations of monitoring wells which will be sampled as part of this Addendum No. 1. Table 2.2 includes detailed information on groundwater sampling analysis planned at both the newly installed and existing wells. This includes a second round of groundwater samples to be collected from the wells sampled as part of the RFI Work Plan.

2.2.1 NON-RCRA INVESTIGATION

RACER is currently pursuing long-term waste water management solutions for the Site storm water. Currently, storm water is treated by the WWTP. Influent samples to the WWTP indicate that phosphorous levels are concentrations that may require treatment. Because of the known groundwater infiltration into the storm sewers, groundwater is a potential source of the phosphorous in the influent. Although this investigation is separate from the RCRA investigation, phosphorous has been added to the sampling parameters at select wells for efficiency.

2.2.2 DEEP GROUNDWATER SAMPLING

The deep well samples collected during the RFI Work Plan implementations were highly turbid and generally showed elevated metals. Deep well sampling to be conducted as part of this Addendum No. 1 shall be conducted in a slightly modified manner in an effort to reduce turbidity. The pump will be set in the well the day before the sample is to be collected. To avoid disturbing the well bottom, the well boring log will be consulted and the pump will be lowered to a predetermined elevation so as to not come in contact with the bottom of the well. Low flow sampling will then be conducted per the standard methodology (for details see the Field Method Guidelines included in the RFI Work Plan). The pump will remain in the well and a second sample will be

collected the following day without restabilizing the well. Once the second sample has been collected, the pump may be removed from the well

2.3 SOIL GAS INVESTIGATION

Figure 2.1 presents the locations of the two soil gas probes to be re-installed as part of this Addendum No. 1. Valid soil gas samples were not able to be obtained from two soil probes installed in the spring of 2012, therefore the soil gas probes will be reinstalled. Table 2.3 includes details on the gas probes to be re-installed and sampled.

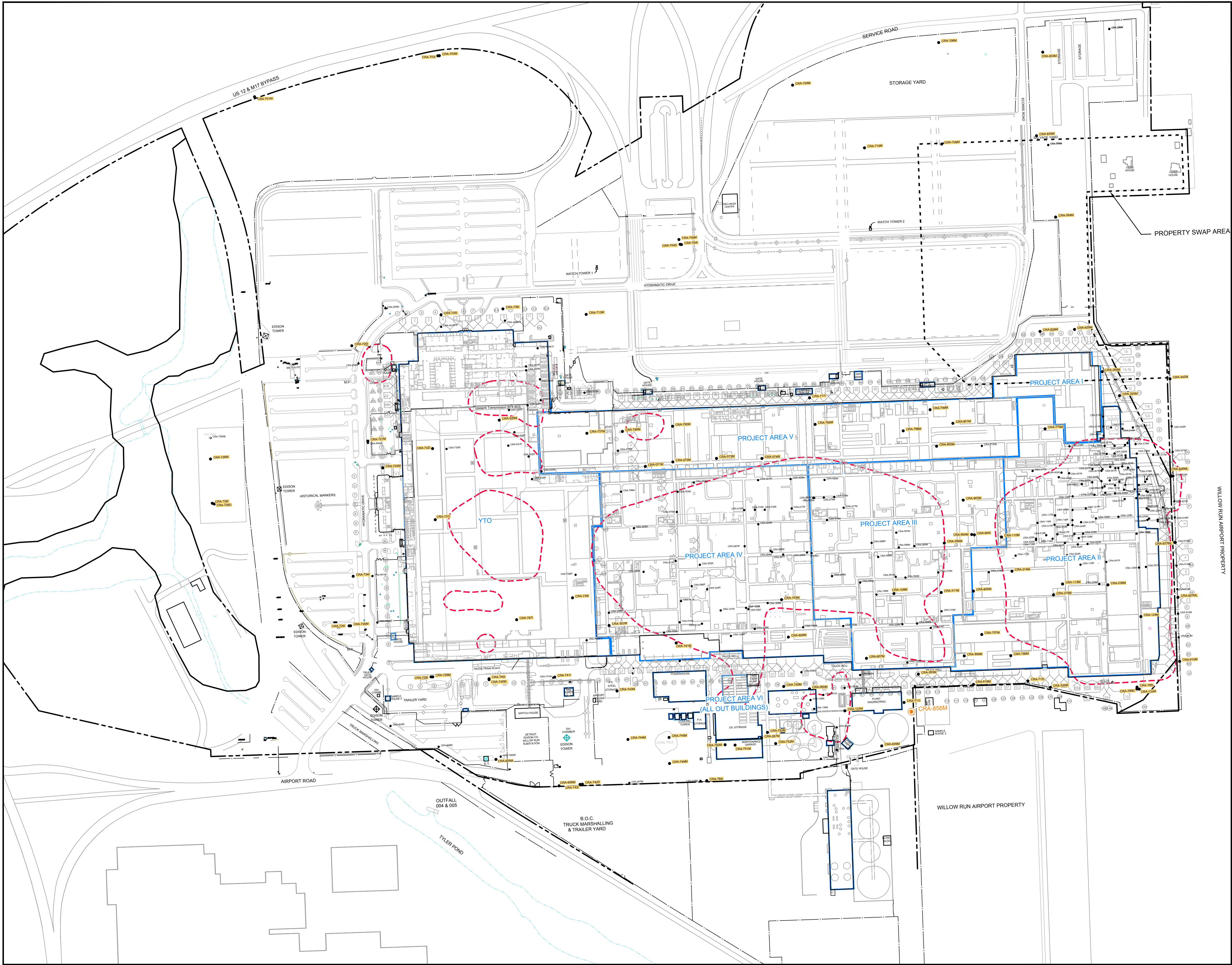
2.4 CHROMIUM ANALYSIS

During the 2012 RCRA field investigations, a speciation analysis was completed to determine the trivalent and hexavalent chromium concentrations at the Site. The chromium speciation results for soil indicate chromium is predominantly present in the trivalent form in soils at the Site (93%). Only very low level detections of chromium were observed in groundwater at concentrations below the Part 201 criteria. Therefore, samples collected during this Addendum No. 1, will be analyzed for total chromium only.

3.0 REFERENCES

CRA, 2012. Resource Conservation and Recovery Act Facility Investigation Work Plan.

FIGURES



No	Revision	Date	Initial

LEGEND

- PROPERTY BOUNDARY
- PROJECT AREA OUTLINE
- SURFACE WATER
- PROPERTY SWAP AREA
- EXISTING WELL SHALLOW
- EXISTING WELL INTERMEDIATE
- EXISTING WELL DEEP
- SHALLOW GW SAMPLE LOCATION
- EXISTING MONITORING WELLS TO BE RE-SAMPLED
- APPROXIMATE EXTENT OF LNAPL BASED ON LIF AND IN WELL

NOTE: AOI 38 - HISTORICAL TANK FARMS
INCLUDES AOI 18, AOI 17, AOI 27

SCALE VERIFICATION

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

Approved

DRAWING STATUS			

MONITORING WELL
GROUNDWATER SAMPLING LOCATIONS

RFI WORK PLAN ADDENDUM 1

FORMER WILLOW RUN PLANT
YPSILANTI, MICHIGAN

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:

Project Manager: B. LANDALE	Reviewed By: L. JERDON	Date: FEBRUARY 2013
Scale: 1:200	Project N°: 017358-T01	Report N°: 026
		Drawing N°: 2.2

TABLES

TABLE 2.1
SOIL SAMPLING AND MONITORING WELL INSTALLATION PLAN
RFI WORK PLAN ADDENDUM 1
FORMER WILLOW RUN PLANT
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Boring/Well Number	Target Depth	Soil Sample Intervals (feet bgs) ³	Soil Analysis, ¹	Screen Installation Interval	Sampling Reason
CRA-839SB	Water table	• 0-2 • 2-4 • 4-6 • Up to one additional interval with high PID, staining, etc. ²	Manganese (Mn)	If high PIDs or other impacts observed, call office to determine if well will be set.	Delineation of manganese (Mn) around CRA-729I
CRA-840SB	Water table	• 0-2 • 2-4 • 4-6 • Up to one additional interval with high PID, staining, etc. ²	Manganese (Mn)	If high PIDs or other impacts observed, call office to determine if well will be set.	Delineation of manganese (Mn) around CRA-729I
CRA-841SB	Water table	• 0-2 • 2-4 • 4-6 • Up to one additional interval with high PID, staining, etc. ²	Manganese (Mn)	If high PIDs or other impacts observed, call office to determine if well will be set.	Delineation of manganese (Mn) around CRA-729I
CRA-842SB	Water table	• 0-2 • 2-4 • 4-6 • Up to one additional interval with high PID, staining, etc. ²	Manganese (Mn)	If high PIDs or other impacts observed, call office to determine if well will be set.	Delineation of manganese (Mn) in soil around CRA-729I
CRA-843SB	~ 25 ft	--	--	--	Evaluation of stratigraphy near CRA-604M to determine if location would allow for monitoring of intermediate groundwater quality
CRA-847SB	Water table	• 0-2 • 2-4 • 4-6 • Up to one additional interval with high PID, staining, etc. ²	Arsenic (As)	If high PIDs or other impacts observed, call office to determine if well will be set.	Delineation of Arsenic (As) in soil south of CRA-752M and CRA-750M
CRA-854SB	Water table	• 0-2 • 2 feet above the water table • Up to one additional interval with high PID, staining, etc. ²	TCL VOCs	If high PIDs or other impacts observed, call office to determine if well will be set.	Delineation of VOC's in soil around CRA-711I
CRA-855SB	Water table	• 0-2 • 2 feet above the water table • Up to one additional interval with high PID, staining, etc. ²	TCL VOCs	If high PIDs or other impacts observed, call office to determine if well will be set.	Delineation of VOC's in soil around CRA-711I
CRA-856M	Water table	• 0-2 • 2 feet above the water table • Up to one additional interval with high PID, staining, etc. ²	TCL VOCs	--	Delineation of VOC's in soil and shallow groundwater around CRA-711I
CRA-857SB	Water table	• 0-2 • 2 feet above the water table • Up to one additional interval with high PID, staining, etc. ²	TCL VOCs	If high PIDs or other impacts observed, call office to determine if well will be set.	Delineation of VOC's in soil around CRA-711I

Notes

M - monitoring well installed to screen shallow zone
I - monitoring well installed to screen intermediate zone
SB - soil boring

¹ "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" SW846, 3rd Edition, updated November 1986
VOCs U.S. EPA Method SW846-8260
SVOCs U.S. EPA Method SW846-8270
PCBs U.S. EPA Method SW846-8082
Inorganics U.S. EPA Method SW846-6000/7000 series
Fine/ Coarse Pb If totals analysis indicates that lead is present at concentrations greater than 75 ppm, the laboratory will analyze for fine and coarse grain.

² In the event that an additional sample is collected due to high PID, staining or other, the sample will be analyzed for TCL VOCs, TCL SVOCs, Site-Specific TAL Metals, PCBs, Fine/ Coarse Pb if > 75ppm

³ 0-2 feet bgs interval will be based on field conditions and will represent a 2 foot interval beneath the concrete and subslab fill

TABLE 2.2
GROUNDWATER SAMPLING PROGRAM
RFI WORK PLAN ADDENDUM 1
FORMER WILLOW RUN PLANT
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Well Number	Groundwater Analysis ¹	Sampling Reason	Sampling Frequency
New Location			
CRA-856M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Delineation of impacts in shallow zone	One - time
Existing Locations			
CRA-60M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-71M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-72M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-73M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-74M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-94M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-103M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-109M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-110M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-113M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-124M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-133M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-137M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-209M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-238M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-263M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Well at Site Boundary, second round of sampling	One - time
CRA-264M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Well at Site Boundary, second round of sampling	One - time
CRA-267M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Historical well, second round of sampling	One - time
CRA-307M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-311M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-314M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-315M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-320M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-325M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Well at Site Boundary, second round of sampling	One - time
CRA-342M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Well at Site Boundary, second round of sampling	One - time

TABLE 2.2
GROUNDWATER SAMPLING PROGRAM
RFI WORK PLAN ADDENDUM 1
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Well Number	Groundwater Analysis ¹	Sampling Reason	Sampling Frequency
CRA-529M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-605M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Well at Site Boundary, second round of sampling	One - time
CRA-606M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Well at Site Boundary, second round of sampling	One - time
CRA-609M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Well at Site Boundary, second round of sampling	One - time
CRA-610M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Well at Site Boundary, second round of sampling	One - time
CRA-618M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Well at Site Boundary, second round of sampling	One - time
CRA-701M	TCL VOCs, TCL SVOCs, TAL Metals, PCBs	Northern upgradient property boundary Site-specific background metals, third round of sampling	One - time
CRA-703M	TCL VOCs, TCL SVOCs, TAL Metals, PCBs, Phosphorous	Northern upgradient property boundary Site-specific background metals, third round of sampling	One - time
CRA-703I	TCL VOCs, TCL SVOCs, TAL Metals, PCBs, Phosphorous	Intermediate zone quality Northern upgradient property boundary Site-specific background metals, third round of sampling	One - time
CRA-704M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Northern upgradient property boundary Site-specific background metals, second round of sampling	One - time
CRA-704I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Intermediate zone quality, second round of sampling	One - time
CRA-704D	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Deep aquifer quality, second round of sampling	One - time
CRA-705M	TCL VOCs, TCL SVOCs, TAL Metals, PCBs	Northern property boundary Site-specific background metals, third round of sampling	One - time
CRA-706M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Northern property boundary Site-specific background metals, third round of sampling	One - time
CRA-709M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Storage Yard investigation, second round of sampling	One - time
CRA-710M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Storage Yard investigation, second round of sampling	One - time
CRA-711I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Intermediate zone quality - downgradient property boundary , second round of sampling	One - time
CRA-712I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Intermediate zone quality - downgradient property boundary , second round of sampling	One - time
CRA-713M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Groundwater quality north of Plant building, second round of sampling	One - time
CRA-717I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Delineation north of Plant building, second round of sampling	One - time
CRA-720I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Intermediate zone quality, second round of sampling	One - time
CRA-721M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality west of Plant building, second round of sampling	One - time
CRA-722M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Former Admin Building UST investigation, second round of sampling	One - time

TABLE 2.2
GROUNDWATER SAMPLING PROGRAM
RFI WORK PLAN ADDENDUM 1
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Well Number	Groundwater Analysis ¹	Sampling Reason	Sampling Frequency
CRA-724I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Intermediate zone quality Eastern chlorinated plume, second round of sampling	One - time
CRA-725I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Intermediate zone quality Eastern chlorinated plume, second round of sampling	One - time
CRA-725M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Eastern chlorinated plume, second round of sampling	One - time
CRA-726M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Western property boundary shallow zone groundwater quality, second round of sampling	One - time
CRA-726I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Western property boundary intermediate zone groundwater quality, second round of sampling	One - time
CRA-726D	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Deep aquifer quality, second round of sampling	One - time
CRA-729M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Eastern chlorinated plume, second round of sampling	One - time
CRA-729I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Intermediate zone quality Eastern chlorinated plume, second round of sampling	One - time
CRA-731I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Intermediate zone quality Eastern chlorinated plume, second round of sampling	One - time
CRA-732I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Intermediate zone quality Eastern chlorinated plume, second round of sampling	One - time
CRA-735I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Intermediate zone quality Eastern chlorinated plume, second round of sampling	One - time
CRA-736I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Intermediate zone quality Eastern chlorinated plume, second round of sampling	One - time
CRA-737M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Eastern chlorinated plume, second round of sampling	One - time
CRA-739I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Intermediate zone quality Eastern chlorinated plume, second round of sampling	One - time
CRA-740M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Eastern chlorinated plume, second round of sampling	One - time
CRA-740I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Intermediate zone quality Eastern chlorinated plume, second round of sampling	One - time
CRA-741I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Intermediate zone quality Eastern chlorinated plume, second round of sampling	One - time
CRA-742I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Amenable Cyanide, Phosphorous	Intermediate zone quality Eastern chlorinated plume Historical Acid and Cyanide Waste Lines (AOI 40), second round of sampling	One - time
CRA-742D	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Amenable Cyanide, Phosphorous	Deep aquifer quality, second round of sampling	One - time
CRA-743M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time

TABLE 2.2
GROUNDWATER SAMPLING PROGRAM
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Well Number	Groundwater Analysis ¹	Sampling Reason	Sampling Frequency
CRA-744M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Amenable Cyanide	Groundwater quality outside of LNAPL plume Historical Acid and Cyanide Waste Lines (AOI 40), second round of sampling	One - time
CRA-745M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Amenable Cyanide, Phosphorous	Groundwater quality outside of LNAPL plume Historical Acid and Cyanide Waste Lines (AOI 40), second round of sampling	One - time
CRA-749M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Amenable Cyanide	Groundwater quality outside of LNAPL plume Historical Acid and Cyanide Waste Lines (AOI 40), second round of sampling	One - time
CRA-750M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Amenable Cyanide	Historical Acid and Cyanide Waste Lines (AOI 40) Dry Cleaning Operations (AOI 43), second round of sampling	One - time
CRA-751M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Amenable Cyanide	Historical Acid and Cyanide Waste Lines (AOI 40) Dry Cleaning Operations (AOI 43), second round of sampling	One - time
CRA-752M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Barrel Yard (AOI 23), second round of sampling	One - time
CRA-753M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Amenable Cyanide	Historical Acid and Cyanide Waste Lines (AOI 40) Barrel Yard (AOI 23), second round of sampling	One - time
CRA-755M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-756M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-757M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-775M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Area not previously investigated, second round of sampling	One - time
CRA-784I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Southern property boundary intermediate zone quality, second round of sampling	One - time
CRA-785I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Eastern property boundary intermediate zone groundwater quality, second round of sampling	One - time
CRA-785D	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Deep aquifer quality, second round of sampling	One - time
CRA-787I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Intermediate zone quality Eastern chlorinated plume, second round of sampling	One - time
CRA-790M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-791M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-792M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time

TABLE 2.2
GROUNDWATER SAMPLING PROGRAM
RFI WORK PLAN ADDENDUM 1
FORMER WILLOW RUN PLANT
YPSILANTI, MICHIGAN

Well Number	Groundwater Analysis ¹	Sampling Reason	Sampling Frequency
CRA-795M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-798M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Maintenance Degreasing (AOI 33), second round of sampling	One - time
CRA-799M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Maintenance Degreasing (AOI 33), second round of sampling	One - time
CRA-800M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Maintenance Degreasing (AOI 33), second round of sampling	One - time
CRA-801M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Maintenance Degreasing (AOI 33), second round of sampling	One - time
CRA-803M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-804M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-804I	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Intermediate zone quality outside of LNAPL plume, second round of sampling	One - time
CRA-805M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-806M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-807M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-808M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Groundwater quality outside of LNAPL plume, second round of sampling	One - time
CRA-826ML	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Lower portion of shallow zone quality, second round of sampling	One - time
CRA-827ML	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Lower portion of shallow zone quality, second round of sampling	One - time
CRA-828M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Possible historical drum storage area, second round of sampling	One - time
CRA-829M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Possible historical drum storage area, second round of sampling	One - time
CRA-311M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, previously not sampled for full list, confirmation of previous results	One - time
CRA-314M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, previously not sampled for full list, confirmation of previous results	One - time
CRA-315M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, previously not sampled for full list, confirmation of previous results	One - time

TABLE 2.2
GROUNDWATER SAMPLING PROGRAM
RFI WORK PLAN ADDENDUM 1
FORMER WILLOW RUN PLANT
YPSILANTI, MICHIGAN

Well Number	Groundwater Analysis ¹	Sampling Reason	Sampling Frequency
CRA-325M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Well at Site Boundary, previously not sampled for full list, confirmation of previous results	One - time
CRA-529M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Groundwater quality outside of LNAPL plume, previously not sampled for full list, confirmation of previous results	One - time
CRA-609M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Well at Site Boundary, previously not sampled for full list, confirmation of previous results	One - time
CRA-618M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Well at Site Boundary, previously not sampled for full list, confirmation of previous results	One - time
CRA-833M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Historic Salvage Yard, second round of sampling	One - time
CRA-834M	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs	Historic Salvage Yard, second round of sampling	One - time
CRA-837ML	TCL VOCs, TCL SVOCs, Site TAL Metals, PCBs, Phosphorous	Lower portion of shallow zone quality, second round of sampling	One - time

Notes

Due to non-standard screen length, tubing will be set at the mid-point of the screen length for sampling.

M - monitoring well installed to screen shallow zone

ML - monitoring well installed to screen lower portion of shallow zone

I - monitoring well installed to screen intermediate zone

D - monitoring well installed to screen deep zone

SB - soil boring

¹ "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods"

SW846, 3rd Edition, updated November 1986

VOCs U.S. EPA Method SW846-8260

SVOCs U.S. EPA Method SW846-8270

Site TAL Metals U.S. EPA Method SW846-6000/7000 series

PCBs U.S. EPA Method SW846-8082

Amenable Cyanide U.S. EPA Method SW846-9012

TABLE 2.3
SOIL GAS SAMPLING PROGRAM
RFI WORK PLAN ADDENDUM 1
FORMER WILLOW RUN PLANT
YPSILANTI, MICHIGAN

Boring/Well Number	Target Depth	Environmental Parameters	
		Sample Intervals (feet bgs)	Chemical Analysis
CRA-812GP	3-inches below concrete	Sub-slab	VOCs - TO-15
CRA-817GP	3-inches below concrete	Sub-slab	VOCs - TO-15

Notes

- bgs - below ground surface
- QA/QC Samples will include the collection and analysis of one duplicate sample. Additionally, isopropyl alcohol (IPA) will be analyzed with all samples