



WILLOW RUN BUSINESS CENTER POTENTIAL AREA OF CONCERN (PAOC) INVESTIGATION WORK PLAN

YPSILANTI, MICHIGAN

Prepared for ENCORE

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ACRONYM LIST

BBL	Blasland Bouck and Lee
bgs	Below Ground Surface
CRA	Conestoga-Rovers & Associates
CVO	Company Vehicle Operations
DEC	Description of Existing Conditions
DNAPL	Dense Non-Aqueous Phase Liquid
ENCORE	Environmental Corporate Remediation
EOC	Extent of Contamination
FAV	Final Acute Value
FMG	Field Method Guidelines
GM	General Motors
GSI	Groundwater Surface water Interface
HSA	Hollow Stem Augers
LNAPL	Light Non-Aqueous Phase Liquid
MDEQ	Michigan Department of Environmental Quality
NAPL	Non-Aqueous Phase Liquid
PAOC	Potential Area of Concern
PCBs	Polychlorinated Biphenyls
PID	Photoionization Detector
RDA	Research and Development Area
RDWC	Residential Drinking Water Criteria
SVOCs	Semi-Volatile Organic Compounds
TAL	Target Analyte List
TCL	Target Compound List
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds
WRBC	Willow Run Business Center

1.0 INTRODUCTION

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Conestoga-Rovers & Associates, Inc. (CRA) was retained by Environmental Corporate Remediation (ENCORE), a wholly owned subsidiary of General Motors (GM), to prepare this Willow Run Business Center (WRBC) Potential Area of Concern (PAOC) Investigation Work Plan for the WRBC (Site) at the former Willow Run Assembly Plant located in Ypsilanti, Michigan. Figure 1.1 presents the Site location. The goal of this Work Plan is to address PAOCs identified in the Blasland, Bouck & Lee (BBL) Description of Existing Conditions (DEC) Report with outstanding issues based on the conclusions of the DEC and comments provided by the Michigan Department of Environmental Quality (MDEQ) in letters dated August 13, 1997 and March 10, 1998.

The Site is located on the former Willow Run Assembly Plant property, which currently houses the WRBC, as well as the GM Company Vehicle Operations (CVO) facility. Prior to 1940, the Ford Motor Company owned a large section of undeveloped land including the site of the former Willow Run facility. In 1941 the United States Defense Plant Corporation of America purchased the Willow Run facility and contracted Ford to construct and operate a bomber production plant. The Kaiser-Frazer Company (Kaiser-Frazer) leased the bomber plant and former assembly plant property from the War Asset Administration in November 1945 and purchased the facility in December 1948. Kaiser-Frazer owned the property until its sale to GM in December 1954.

GM used the original building at the Site as a parts storage warehouse until 1955. In 1956, light truck assembly began at the plant. Between 1958 and 1971, the Fisher body division and the Chevrolet motor division conducted building expansions at the Site.

From 1956 to July 1993, operations were typical of an automotive assembly plant. These operations included:

- The assembly of sheet metal stampings into a complete body by welding/soldering applications, metal finishing, and washing;
- Body painting, electro-deposition painting operations, top coating; and
- Assembly of body interior equipment using mechanical fasteners, sealers and adhesives for final assembly.

After 1993, the facility underwent deactivation activities and is presently used as a parts storage warehouse. GM sold the facility in 1997. GM is no longer the owner of the Site but does retain environmental liability for historical impacts that resulted from activities during their ownership of the property.

1.1 PURPOSE

This Work Plan addresses PAOCs that exhibit outstanding issues based on the conclusions of the DEC and the final "Response to Comments" letter (dated March 10, 1998) from the MDEQ that provided comments on the conclusions stated in the DEC report and the GM response to comments dated October 16, 1997. Following submittal of the DEC, GM received a letter dated August 13, 1997 from the MDEQ providing comments on the DEC. GM's consultant, BBL, provided responses to these comments on behalf of GM on October 16, 1997. The MDEQ followed by issuing one more letter dated March 10, 1998 commenting on the BBL responses. These three letters are presented in Appendix A. The outstanding issues outlined in the final March 10, 1998 MDEQ letter are:

- PAOC 1 - Cadmium, lead and nickel soil values exceed groundwater surface water interface (GSI) protection criteria;
- PAOC 2 - GSI criteria were being revised at that time and for some constituents, the criteria were site-specific and based on the hardness of the receiving water. In addition, the MDEQ stated that corrective action or control was required for lead and trichloroethylene in soil;
- PAOC 3 - Naphthalene exceeds GSI protection criteria and a control plan must be implemented to address groundwater impacts; and
- PAOC 5 - Groundwater modeling must be performed to document that impacts will not migrate into Tyler Pond. In absence of modeling, monitoring points along the bank of Tyler Pond must be monitored until it can be demonstrated that monitoring is no longer necessary. GSI criteria revisions, as stated above, also affected this PAOC.

In addition to these PAOCs, further monitoring will be completed at PAOC 8. A Corrective Action Plan was submitted for this area in 1996 that required sampling to monitor the effectiveness of natural attenuation. Monitoring will be completed at PAOC 8 to determine the current status of constituent removal by natural attenuation in this area.

In February 2006, an investigation of the WRBC property was conducted to locate historical monitoring wells associated with PAOCs that exceeded the current screening criteria. The majority of wells located were in operable condition. Although several wells were located, many were not found; in particular, the wells along the bank of Tyler

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Pond were not located. The located wells were purged or re-developed and sampled in March 2006. Appendix B presents a summary of the March 2006 groundwater sampling event results

Based on the results of the March 2006 groundwater sampling event at the WRBC (see Appendix B), additional sampling and delineation activities are required. The proposed activities will be conducted to:

- Assess current conditions at the PAOC 1 compliance point;
- Assess the physical and chemical extent of the impacts in the Former South Culvert Area (PAOC 2);
- Delineate the Light Non-Aqueous Phase Liquid (LNAPL) and dissolved phase plume in PAOC 3;
- Establish current levels of lead in groundwater downgradient from PAOC 5;
- Determine the extent of benzene and ethylbenzene impacts eastward and westward from PAOC 8;
- Conduct a limited investigation of selected storm sewers, inspect catch basins, manholes and determine fluid flow directions in the sewers both inside and outside of the WRBC building to aid delineation of impacts; and
- Re-establish the background Site monitoring well network to the west of the WRBC and monitor the detections of vinyl chloride at monitoring well BG-4 and polychlorinated biphenyl (PCBs) detections at monitoring well BG-3.

The WRBC complex houses separate business entities that operate independently in different areas of the facility. The business lease boundaries that exist inside the building have not been surveyed. The boundaries will be surveyed to help with administrative and communication issues that may arise during the course of this Work Plan. Figure 1.2 shows the approximate boundaries of the PAOCs included in this Work Plan.

1.2 INVESTIGATION METHODOLOGY

Detailed stratigraphy logs will be completed for each borehole and monitoring well that CRA installs. In the case where a borehole and monitoring well are paired, the borehole will be completed first and logged. The borehole will then be over-drilled and the monitoring well will be installed at the same location. Permanent monitoring wells will

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be installed using 4-1/4 inch inside diameter hollow stem augers (HSA). Soil borings will be completed using a GeoProbe™ direct push rig. Continuous soil samples will be collected at each location to record soil stratigraphy and to screen for organic vapors using a photoionization detector (PID).

Soil boring and monitoring well installation protocols are PAOC specific but all borings and monitoring wells will conform to the following criteria:

- All boreholes will be advanced, at minimum, to the native confining clay layer; and
- All monitoring wells will be installed to a minimum depth that reaches the native confining clay layer. Where the presence of Dense Non-Aqueous Phase Liquid (DNAPL) is suspected, each well will contain a sump that will extend a minimum of 1-ft. into clay. All monitoring wells will have a 0.010-inch slot and a 10-ft. screen.

Further details about drilling-related protocols such as target depths, screen lengths, sampling frequency and laboratory analysis for soil and groundwater are found in Tables 1.1 and 1.2. Unless otherwise stated, all new monitoring well locations will be sampled for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs), Site Target Analyte List (TAL) metals (hereby referred to as metals) and PCBs. Groundwater sampling will be completed using low-flow protocol. Ultra low-flow sampling protocol will be used for any PCB groundwater confirmation sampling.

Field related activities (borings, well development, groundwater sampling, etc.) will be conducted following ENCORE Field Method Guidelines (FMG). Applicable ENCORE FMGs (Soil Borings, Well Construction Materials, Well Development and Groundwater Sampling, Soil Gas Surveys) can be found in the Extent of Contamination (EOC) Work Plan (CRA, 2001) and Work Plan Addendum 1 (CRA, 2004). All soil borings and monitoring well locations presented in this Work Plan are approximate and will be field fit based on actual field conditions.

1.3 REPORT ORGANIZATION

The report is organized in the following sections:

Section 1	Provides the history, purpose and methodology of the activities included in this Work Plan.
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- Sections 2 to 7 Presents specific background information and the proposed investigative approach for each PAOC or area requiring investigation in this Work Plan.
- Section 8 Presents an overall schedule for the activities described in this Work Plan.
- Section 9 Provides references.

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2.0 PAOC 2 - FORMER SOUTH CULVERT

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This section presents the proposed investigative program for the Former South Culvert (PAOC 2). Historical data from this PAOC was evaluated against 2006 MDEQ Part 201 screening criteria; this comparison is presented in Appendix C. This area is being investigated to determine if DNAPLs are present due to the discovery of DNAPL in a similar historic fill area on the adjacent CVO site.

2.1 BACKGROUND

The former south culvert may have been used as a metal plating sludge waste pit where waste sludge from electroplating activities was dumped. A 1942 Ford drawing, presented as Figure 2.1, shows the layout of a proposed sludge disposal pit. It is not clear if the disposal pit was completed as shown in the drawing. The figure indicates that the sludge pit was designed to hold approximately five million gallons of waste. Investigations by Atwell-Hicks, Inc. in May 1994 showed that this area was filled with wood, brick, copper wire and aluminum sheets, based on soil borings that were completed to a depth of 15 to 25 below ground surface (bgs) where clay was encountered, confirming that waste disposal occurred in this low-lying area. Historical aerial photographs show that the south culvert was partially filled by 1944 and completely filled and graded by 1955, with the majority of the filling taking place between 1949 and 1952. Half of this PAOC currently underlies the building expansion of the WRBC so preliminary investigations will focus on the area of PAOC 2 that is located outside of the building. The area includes an onsite roadway, parking spaces, an electrical substation and the immediate area surrounding the electrical substation.

In April of 1996, 26 additional soil borings were installed by BBL to delineate lead impacts in the area. The northern, southern and western boundaries were defined but the southeastern boundary could not be defined within the investigation's scope of work. These borings were not advanced to the confining clay layer.

In September 1996, another attempt was made to delineate the southeastern boundary of lead impacted soils. Two more soil borings were advanced into soils but the delineation attempt was unsuccessful.

In December 1996 four additional borings were installed to define the lead impacted soils in the former Kaiser-Frazer dump area, currently known as PAOC 29, located on the CVO property. This attempt proved successful, defining the lead impacted to soils to an area that now spans the WRBC and the CVO properties. The extent of lead

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impacted soils covers the eastern edge of the WRBC property and the former Kaiser-Frazer dump area on the CVO property. Due to the commingled nature of the wastes and their location spanning two different properties, the overlapping PAOC boundaries were defined by the property boundary.

There is currently no survey data available for historical soil borings. Available historical records consist of figures from previous reports. To prepare a deed restriction or other institutional controls at the PAOC, the extent of impacts need to be precisely assessed using documented survey points from current coordinate systems.

The boreholes used to assess subsurface conditions in the 1996 investigation conducted by BBL did not reach the confining clay layer so DNAPL would not have been detected if it was present in the subsurface like it has recently been discovered in another area of the property (CVO PAOC 18). Lead was detected above the direct contact value in six of eight soil samples. VOCs and SVOCs were not detected in concentrations that exceeded applicable criteria. PCBs were not detected in any soil samples during the 1996 investigation and no further PCB analysis was completed thereafter.

To monitor groundwater quality in this area, monitoring wells MW2-12A and MW2-13A were installed in April 1996. Samples collected in September 1996 were passed through a 10-micron filter then analyzed and compared to the MDEQ GSI Criteria. These results indicated that lead exceeded GSI in one sample and cadmium exceeded GSI in two samples. However, earlier samples collected in April 1996 and filtered through a 1-micron filter, did not show exceedances in MW2-13A for dissolved lead or dissolved cadmium. Monitoring well MW2-12A did not exhibit any detections¹. BBL concluded that groundwater was not a concern at this PAOC at that time. The MDEQ did not agree with this rationale because more stringent GSI Criteria were introduced (see Appendix A, March 10, 1998 letter).

In February 2006, monitoring wells MW-8 and MW2-13A were found to contain at least 2-ft. of sediment. Since the MDEQ no longer permits the filtering of groundwater samples these wells were resampled in March 2006 and samples were not filtered before analysis. Sampling results from March 2006 showed an exceedance of the Residential Drinking Water Criteria (RDWC) for manganese at MW-2-12A and MW-8. Monitoring well MW-8 also showed an exceedance of the RDWC for trichloroethene and GSI and RDWC for nickel. A review of the monitoring well installation logs revealed that the

¹ At the time these samples were completed, filtering was an acceptable practice to the MDEQ. The allowable filter size was changed from 1-micron to 10 microns during the 1996 assessment. This change explains the follow-up sampling events at most PAOCs with different filter sizes that are discussed in following sections. In PAOCs where this occurred, low-flow sampling procedures will be conducted without filters in accordance with current MDEQ guidance to demonstrate compliance with current Part 201 groundwater criteria.

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wells were not installed to a depth that reached the confining clay unit. These wells would not detect the presence of DNAPL, if present. The potential for DNAPL is suspected because of the similarities between PAOC 2, which is located on what is now known as the WRBC property, and PAOC 18, which is located on the CVO property. Test pitting and boring results indicated that similar material was deposited in both locations during similar time frames (1940s through the early 1950s), apparently deposited by the same parties (thought to be Ford and Kaiser-Frazer, based on historical record review).

2.2 INVESTIGATION APPROACH

For the area of PAOC 2 that is located outside of the building expansion, the investigation goals are as follows:

1. Delineate and characterize the areal extent of waste materials and lead impacted soils;
2. Abandon historical wells with sediment build-up;
3. Re-install monitoring wells to assess downgradient groundwater quality; and
4. Install borings to top of clay to check for the presence of DNAPL.

Information from the DEC report (BBL, 1997) gives approximate boundaries of the sludge bed and lead impacts. To delineate the waste sludge area, soil borings will be advanced 1-ft. into the confining clay layer. Figure 2.1 shows a historical representation of the sludge bed (1942 Ford drawing). CRA estimates the bottom of the pit to be at approximately 19-ft. bgs at an elevation of approximately 695-ft. (national geodetic vertical datum). This estimate is based on current ground surface elevations and the bottom of the sludge bed defined in Figure 2.1. Soil borings must extend into the native clay to ensure that the bottom of the pit is included in the soil core ensuring proper vertical delineation to evaluate the presence of DNAPL.

Monitoring wells installed in this PAOC will have a 1-ft. sump into the clay so if DNAPL is present it will collect in the well. The suspected boundaries of the waste sludge and lead impacted soils will be confirmed by installing boreholes in the approximate center of the PAOC to visually inspect the fill material. Additional borings will be completed outside of the suspected PAOC boundary to confirm the delineation borders. Locations of the borings are shown in Figure 2.2. Delineation of the fill area will be based on PID readings and visual evidence of staining or debris.

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Soil core samples will be visually inspected throughout the entire core length and submitted for laboratory analysis from the 0-2 ft. bgs interval and the 2-ft. interval above the water table. The laboratory analyses include VOCs, SVOCs, PCBs and metals. If field observations indicate the presence of impacts (odor, staining or high PID readings), a sample shall be collected from the impacted interval and submitted for laboratory analysis. Delineation of the lead impacted soils will be considered complete when lead concentrations are below relevant screening criteria.

PAOC 2 currently contains monitoring wells that require maintenance and abandonment. Monitoring wells MW-2-13A and MW-8 will be abandoned due to the large amount of sediment buildup and will be replaced with new monitoring wells installed at least 1-ft. into the confining clay layer. The proposed locations for the new wells (MW-2-20 to MW-2-22) are shown on Figure 2.2. Soil boring and monitoring well details are shown in Table 1.1. Table 1.2 summarizes the groundwater sampling program. If during the course of the investigation, NAPLs are encountered, a sample will be collected and analyzed for VOCs, SVOCs, PCBs, metals, corrosivity, flashpoint and fingerprinting. These analyses are summarized in Table 1.3. Groundwater will be sampled for VOCs, SVOCs, metals and PCBs.

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3.0 PAOC 3 - NORTHERN HYDRAULIC ELEVATOR

This section presents the proposed investigative program for the Northern Hydraulic Elevator (PAOC 3). Historical data from this PAOC was evaluated against 2006 MDEQ Part 201 screening criteria; this comparison is presented in Appendix C. This area is being investigated to delineate the extent of LNAPL and to evaluate dissolved groundwater impacts.

3.1 BACKGROUND

PAOC 3 is the result of an elevator that historically leaked hydraulic fluid into the surrounding soils and groundwater. The leak was identified during a pressure test (BBL, 1997). The initial response to the spill was to replace the unit and remove forty cubic yards of impacted soils. These soils were disposed off-Site as non-hazardous waste (BBL, 1997). In addition, a double walled unit was installed to replace the previous single walled unit. In June 1995, BBL conducted an investigation and LNAPL impacted soils were discovered in one soil boring, SB-3-1. Monitoring well MW-3-1 was installed adjacent to SB-3-1 in June 1995 and allowed to equalize. An LNAPL thickness of 0.2-ft. was measured in July 1995.

In April 1996, BBL conducted another investigation. Monitoring wells MW-3-5 to MW-3-8 were installed where soil borings appeared to be free of LNAPL to assess upgradient conditions. Naphthalene was the only constituent detected in groundwater at levels above the GSI Criterion in April 1996 at monitoring wells MW-3-6 and MW-3-8.

Initial Site reconnaissance in March 2006 located three wells in PAOC 3 labeled MW-3-6, MW-3-7 and MW-3-8. Historical BBL figures do not agree with the current well markings, identifications or locations. The wells were re-surveyed in April 2006 and will be referenced as MW-3-6, MW-3-7 and MW-3-8 as illustrated in Figure 3.1. All three wells contained LNAPL in March 2006. LNAPL thickness ranged from 0.19-ft. to 0.80-ft. Chemical analysis of the LNAPL showed the presence of VOCs, SVOCs and metals; no PCBs were detected. The current extent of the LNAPL plume at this time is unknown.

There are two storm sewer lines in the vicinity of the elevator as shown on Figure 3.1. One storm sewer line is present approximately 20-ft. south of the elevator. The storm sewer line runs in the west to east direction and is situated at approximately the same elevation as the groundwater table. The second sewer line is located approximately 5-ft. to 10-ft. north of the elevator. Current depth to LNAPL measurements, in combination

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with sewer invert elevations in that area, suggest that these sewers could be acting as preferential pathways for LNAPL or impacted groundwater.

3.2 INVESTIGATION APPROACH

The goals of the proposed activities for this PAOC include the following:

1. Delineate soil and groundwater impacts and the extent of LNAPL;
2. LNAPL recovery;
3. Determine if nearby storm sewers act as preferential pathways; and
4. Monitor groundwater levels and LNAPL thickness at monitoring wells.

3.2.1 DELINEATION ACTIVITIES

To delineate the existing LNAPL plume, four-inch monitoring wells will be installed at locations shown on Figure 3.1. Based on observations of the soil during installation (visual staining, PID readings, odor and OilScreenSoil® Sudan IV jar test), additional monitoring wells and soil borings may be advanced to further delineate the LNAPL and dissolved phase constituents. Newly installed wells will be monitored for LNAPL for a period of at least one month once per week to ensure that LNAPL is not present prior to sampling the groundwater.

Seven wells will be installed (MW-3-10 to MW-3-16), to establish LNAPL and dissolved phase plume boundaries. This configuration will determine if the sewers are acting as a preferential pathway. Cores from the soil borings will be inspected for the presence of LNAPL to determine the extent of impacts using OilScreenSoil® Sudan IV jar tests. The OilScreenSoil® Sudan IV jar test field screening instruction manual is presented in Appendix D. If no LNAPL is discovered, the wells will serve as groundwater monitoring points or as recovery wells if LNAPL is discovered. Soil boring and monitoring well details and sampling programs are summarized in Tables 1.1 and 1.2. Groundwater will be sampled for VOCs, SVOCs and metals in wells that do not show LNAPL. Additional sewer investigations are discussed in Section 7.

A soil sample will be collected from soil boring SB-3-100 near the elevator (the known source) to establish baseline constituent concentrations in the soil prior to LNAPL recovery. The sample will be collected at a depth close to the groundwater table, in the LNAPL "smear zone", where the highest constituent concentrations are expected.

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Following implementation of a remedy, it is expected that constituent concentrations will decrease when compared to the original samples collected from soil boring SB-3-100.

3.2.2 PRODUCT RECOVERY AND MONITORING

LNAPL recovery will be completed on a regular basis. The frequency of recovery events will be determined by the LNAPL recovery rate in the wells. Records will be kept to document the amount of LNAPL recovered at each well location along with water levels and LNAPL thickness measurements.

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4.0 **PAOC 8 - FORMER RESEARCH AND DEVELOPMENT AREA**

This section presents specific background information and the proposed investigative program for the impacts in the former Research and Development Area (RDA). This area is being investigated to delineate dissolved phase constituents and monitor the status of natural attenuation in the area.

4.1 **BACKGROUND**

The former RDA contained an underground storage tank (UST) farm and an associated dispenser island. A release of petroleum products was discovered in 1989. Seven tanks were present at the time of the release and three tanks had been previously removed. The seven tanks contained gasoline, paint thinner, transmission fluid, power steering fluid and antifreeze.

In December 1989, the dispenser island and the associated piping were removed and sheet-pile walls were installed to the south, west, and northwest of the tank farm prior to the removal of the remaining tanks (BBL, 1997). An interim treatment system was installed to evaluate impact remediation in the area using groundwater recovery and soil vapor extraction methods that also accelerated natural degradation processes occurring at the Site. The interim treatment system began operation November 15, 1992 and it was shutdown and removed in June 1996.

Monitoring well RD-MW-8 was installed inside the contaminant plume of the RDA. Wells RD-MW-1 through RD-MW-7 were installed to monitor impacted groundwater and were located at or near the plume boundary. The wells were used to monitor the area shown in Figure 4.1.

All eight wells in PAOC 8 were found in useable condition and were subsequently sampled in March 2006. The results from March 2006 indicate the presence of benzene in wells at concentrations that exceed the GSI Criterion at RD-MW-2 and RDWC at RD-MW-7. Although the drinking water pathway is not relevant on the Site (Groundwater Not In An Aquifer determination), the criteria are used to monitor the potential for off-Site migration. Benzene and ethylbenzene exceed the Final Acute Value (FAV) GSI Criterion at monitoring well RD-MW-8. The presence of storm sewers in this vicinity and their ability to act as preferential pathways to a GSI location will be investigated in a sewer study that is discussed in Section 7.

4.2 INVESTIGATION APPROACH

The main goal for this PAOC is to evaluate the current status of natural attenuation in the area and determine the extent of constituent impacts by installing two monitoring wells downgradient of RD-MW-2 and RD-MW-7 and one well upgradient of RD-MW-8. Monitoring well RD-MW-9 will be installed down gradient of RD-MW-2 and RD-MW-10 will be installed downgradient of RD-MW-7 to delineate benzene concentrations. Monitoring well RD-MW-11 will be installed to define the groundwater impacts in the northwest (upgradient) direction. Groundwater from these additional wells will be sampled and analyzed for VOCs, SVOCs, PCBs and metals to determine the current extent of impacts. Groundwater in this area generally flows west to east. Monitoring well details are shown in Table 1.1 and the groundwater sampling program is summarized on Table 1.2.

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5.0 GSI COMPLIANCE POINTS AND PAOCs 1 AND 5

This section presents the proposed investigative program for PAOCs 1 and 5. Historical data from these PAOCs (where available) was evaluated against 2006 MDEQ Part 201 screening criteria; this comparison is presented in Appendix C. These PAOCs are discussed together because they share the same groundwater discharge location (Tyler Pond). The groundwater in these areas was previously eliminated as a concern in the DEC based on the fact that respective compliance points (not located inside the PAOC but instead on the bank of Tyler Pond) did not exhibit consistent impacts (BBL, 1997). The compliance points were a series of wells located along the southern bank of Tyler Pond (MW-1-5, MW-6-5A, MW-7-3). In 1997 dismissal was proposed for the PAOCs on the basis of filtered samples. However, in the March 10, 1998 letter from the MDEQ (see Appendix A), this reasoning was deemed inadequate because samples collected within PAOC boundaries exhibited impacts during initial sampling events. The letter made two recommendations: additional monitoring was necessary and development of a groundwater based model demonstrating constituents would never reach Tyler Pond should be created.

The compliance wells were not located during the February 2006 investigation; therefore, current conditions could not be evaluated. To assess compliance with current Part 201 criteria the monitoring well network requires re-installation.

5.1 PAOC 1

The former wastewater treatment plant was expanded in 1959 by the addition of two lagoons by GM. Each lagoon was approximately 160-ft. by 270-ft. The system operated until 1984 when the lagoons were deactivated. Investigations revealed aluminum at a concentration of 9,580 mg/kg in soils in June 1995. At the time of this sampling, there was no applicable aluminum criterion for comparison. Cadmium, nickel and lead were detected above GSI at that time in groundwater samples collected from a hydraulic probe. This area was dismissed in the DEC as a PAOC based on subsequent investigations using filtered samples that are no longer accepted by the MDEQ². The MDEQ did not agree that this PAOC could be dismissed as various metals exceeded the GSI criteria, which were being revised to include site specific calculations based on the physical properties of the receiving water.

² At the time these samples were completed, filtering was an acceptable practice to the MDEQ. The allowable filter size was changed from 1-micron to 10 microns during the 1996 assessment. This change explains the follow-up sampling events at most PAOCs with different filter sizes that are discussed in following sections. In PAOCs where this occurred, low-flow sampling procedures will be conducted without filters in accordance with current MDEQ guidance to demonstrate compliance with current Part 201 groundwater criteria.

5.2 PAOC 5

This area contained the former ELPO tank building, which housed storage tanks for acidic and caustic materials. The area stored paint that contained high lead levels and other chemicals that were used in the vehicle undercoating process at the assembly plant. Soil results from samples collected in June 1995 showed that lead did not exceed direct contact values or soil inhalation criteria so soil was not considered a PAOC. However, groundwater samples collected from a soil boring showed an exceedance of the GSI Criterion for lead within the PAOC but because the compliance points (located near the bank of Tyler Pond) did not show any exceedances, groundwater in PAOC 5 was not deemed a concern in the DEC Report. This reasoning was rejected by the MDEQ as grounds for dismissal of groundwater as a PAOC (see Appendix A, March 10, 1998 letter). The 1998 MDEQ letter discusses the need for hydraulic modeling to show that constituents will not migrate to Tyler Pond. This Work Plan proposes to evaluate current conditions at the compliance point to close this PAOC using low-flow sampling protocols and groundwater elevation data to create a model showing the fate of constituents from PAOC 5.

5.3 INVESTIGATION APPROACH

Historical groundwater investigations using filtered samples at these PAOCs have shown exceedances of the GSI Criteria for various constituents. The MDEQ no longer accepts filtered samples for groundwater analysis and specifically stated that it did not agree with the DEC report's conclusions for these PAOCs. The installation of new monitoring points and confirmatory sampling using low-flow sampling protocol is recommended to ensure compliance with current applicable criteria. Sampling at the GSI compliance points has not occurred since 1996.

This network will be reinstalled with six new wells (GS-9 to GS-15) evenly spaced along the southern bank of Tyler Pond (Figure 5.1). All wells will be sampled for VOCs, SVOCs, PCBs and metals to establish baseline conditions. Once the GSI network is installed, compliance with current criteria for each PAOC will be determined by the analytical results of the appropriate downgradient well. Monitoring well details are shown in Table 1.1 and the groundwater-sampling program is summarized on Table 1.2.

6.0 BACKGROUND WELLS

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This section presents information and the proposed investigative program for verifying previous results and obtaining additional background groundwater data.

6.1 HISTORY

Background wells, BG-1 through BG-5, were installed by BBL to establish the quality of groundwater migrating onto the Site. Historical monitoring wells BG-1 through BG-5 are not associated with any PAOCs.

Only two of the five original background wells have been located. A structure located in the suspected location of BG-1 was found to resemble a monitoring well but the structure was partially filled with concrete and is not salvageable. Well BG-2 was not located as its suspected location was covered by large amounts of inventory that cannot be easily relocated. Well BG-3 was located near column Q-53 and found in operable condition. It was sampled on July 12, 2006. Monitoring well BG-4 was located in the southwestern section of the WRBC property in a parking lot. Historical information does not indicate any significant activities in this area. Historical Site figures place BG-5 underneath the eastern warehouse expansion and following a brief search, it was concluded that the well is under the concrete floor of the new structure.

Detections of vinyl chloride at monitoring well BG-4 and PCBs at monitoring well BG-3 during the March 2006 sampling event in areas with no historically known sources require confirmation and further monitoring.

6.2 INVESTIGATION APPROACH

To verify the detections at BG-3 and BG-4, both wells will be re-sampled. Monitoring well BG-3 will be sampled (using ultra low-flow techniques and equipment) for PCBs and monitoring well BG-4 for VOCs (vinyl chloride). Both wells will also be sampled for metals to aid in background metals concentration determination. The results of sampling will determine if further actions are necessary.

Two additional monitoring wells (BG-6 and BG-7) will be installed to the west of the Site to determine the quality of groundwater migrating onto the property. These wells will also be used to improve the representation of groundwater flow patterns on the western area of the Site. The newly installed wells will be initially monitored for VOCs, SVOCs,

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PCBs and metals to determine background groundwater quality. The proposed well locations are shown in Figure 6.1. Monitoring well details are shown in Table 1.1 and the groundwater sampling program is summarized on Table 1.2.

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7.0 STORM SEWER SURVEY INVESTIGATION

7.1 BACKGROUND

The discovery of constituents exceeding GSI Criteria near sewers requires accurate sewer plans so migration pathways can be identified and resolved. Currently, CRA has limited information about the network of indoor and outdoor storm sewers; specifically, invert elevations, the chemical nature of sediments and the final drainage points of outfalls. This information is necessary in areas where impacts to groundwater are apparent because the sewer lines may be acting as preferential pathways to GSI compliance locations. Furthermore, catch basins and manholes in the sewer network may be acting as traps for grease and oils.

Historical sewer maps were used to generate an overall depiction of the sewer networks (Figure 7.1). Five distinct networks have been identified beneath the WRBC from a historical figure and given letter designations (A, B, C, D and E). The flow direction in the sewers is not clear in all areas from historical drawings. In response to these issues a limited sewer investigation will be conducted. The primary focus of the investigation will be to identify and catalogue the indoor and outdoor storm sewer system in two particular areas. All of the known outfalls at the Site will be investigated for potential impacts, starting at the outfalls to Tyler Pond, and proceeding upgradient towards the building. The outfalls are presented in Figure 7.1. In addition, two areas within the building footprint will be evaluated.

7.2 INVESTIGATION APPROACH

The limited investigation will focus on the sewers in the vicinity of impacted areas and/or sewers upgradient from all known outfalls that discharge to Tyler Pond. These areas are also shown on Figure 7.1. The investigation goals are as follows:

- Inspect each catch basin/manhole (approximately 70) in relevant areas using the sample inspection form in Appendix E;
- Confirm sewer connections and flow patterns using tracer dyes or other appropriate means, if necessary;
- Assess the internal cavity of the sewers to act as preferential pathways;
- Sample sediment in relevant locations (as determined by the inspection) for oil and grease; and

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- Survey each catch basin/manhole to construct an accurate sewer map to aid in further investigations.

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8.0 SCHEDULING

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The fieldwork described in this Work Plan will be completed according to the schedule presented in Figure 8.1.

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9.0 REFERENCES

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BBL, October 16, 1997, Response to "Response to Comments on DEC Report". Letter from Frederick Blickle (BBL) and Barbara Sullivan (BBL) to Ms. Vicki Katko (MDEQ).

BBL. 1997. Description of Existing Conditions Report, Former Willow Run Assembly Plant Property, Ypsilanti, Michigan.

CRA. April 2001. Supplemental Phase III Extent of Contamination (EOC) Work Plan, Former Willow Run Assembly Plant Property, Ypsilanti, Michigan.

CRA. April 2004. Supplemental Phase III Extent of Contamination (EOC) Work Plan Addendum 1, Former Willow Run Assembly Plant Property, Ypsilanti, Michigan.

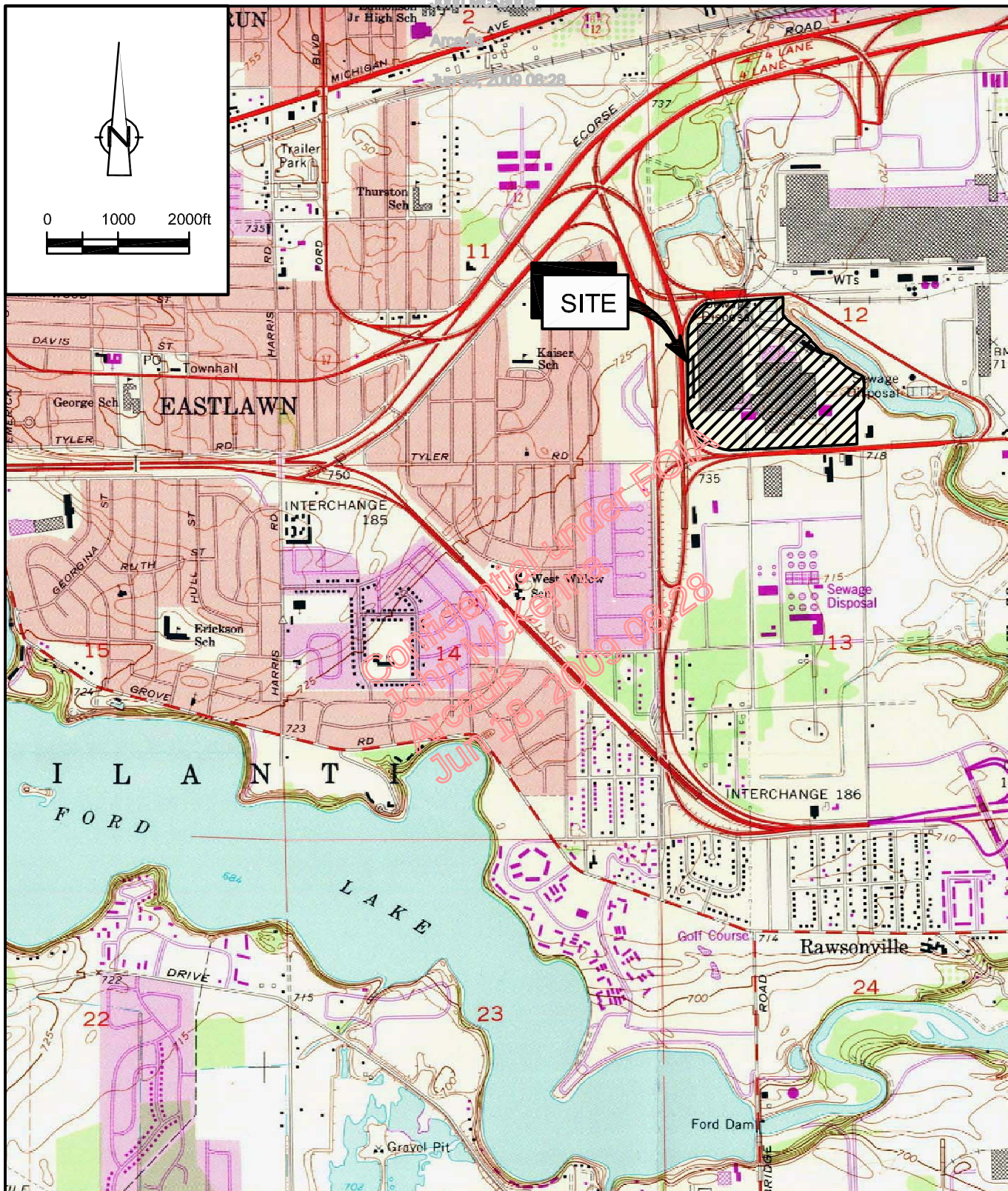
MDEQ, August 13, 1997, Comments on DEC Report. Letter from Ms. Vicki Katko (MDEQ) to Mr. Mark Napolitan (GM).

MDEQ, March 10, 1998, Response to "BBL Response". Letter from Ms. Vicki Katko (MDEQ) to Mr. Mark Napolitan (GM).

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SOURCE: USGS QUADRANGLE MAP;
YPSILANTI EAST, MICHIGAN

figure 1.1

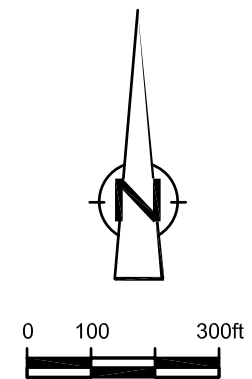
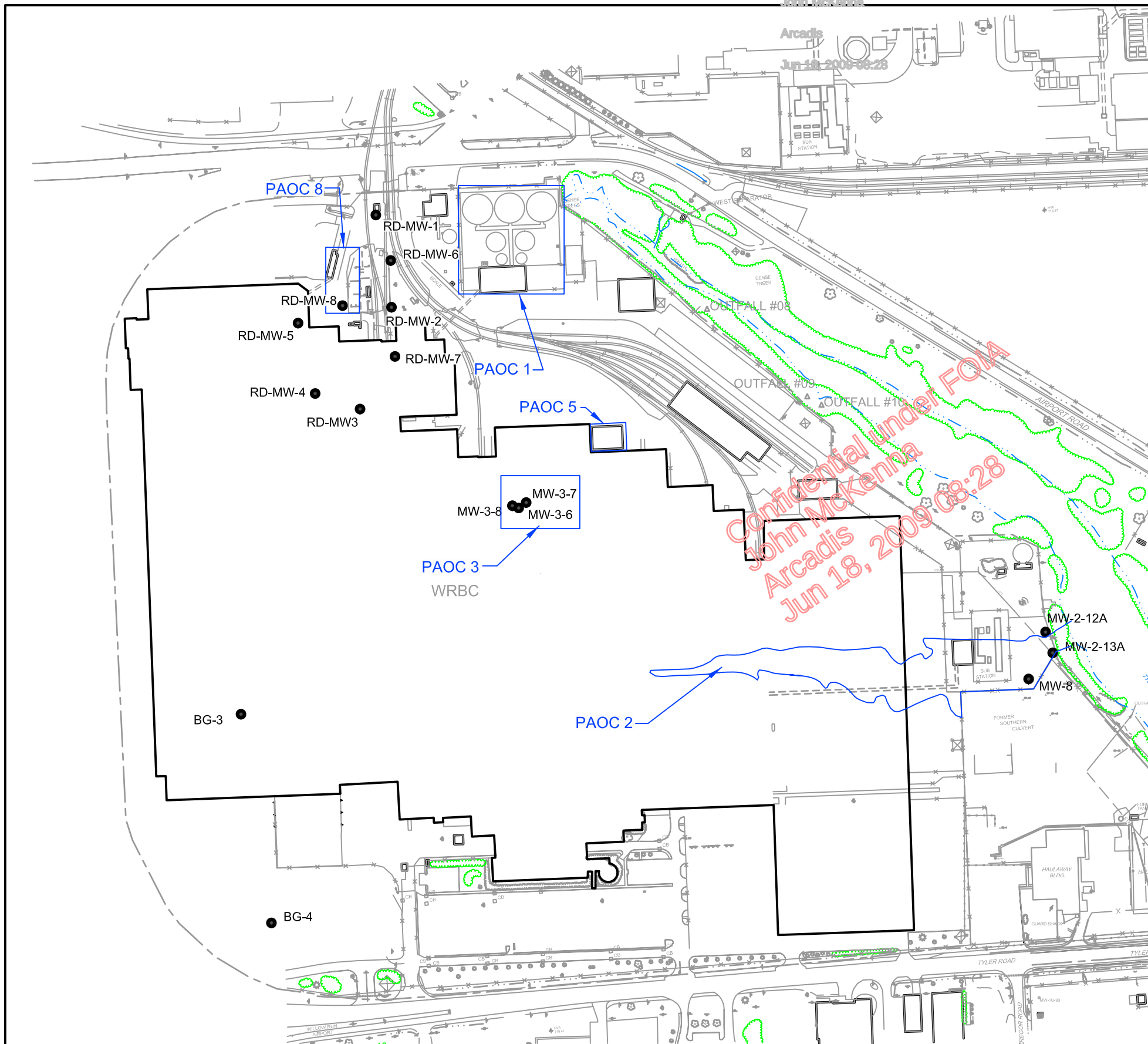
SITE LOCATION
WILLOW RUN BUSINESS CENTER PAOC WORK PLAN
WILLOW RUN BUSINESS CENTER
Ypsilanti Township, Washtenaw County, Michigan

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LEGEND

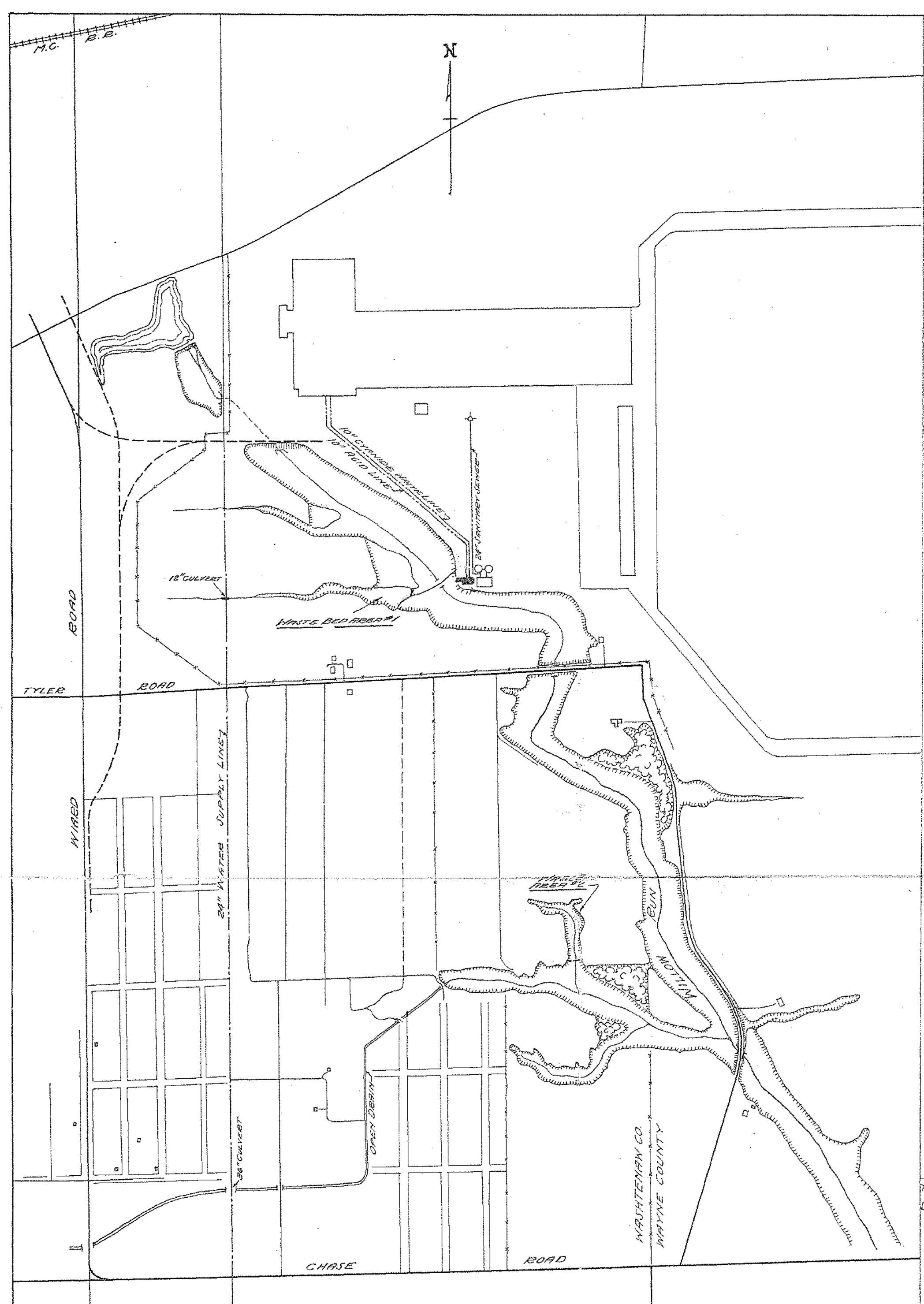
- BG-3 MONITORING WELL (SURVEYED)
- ~ DITCH, STREAM OR RIVER
- x - FENCE LINE
- ~ TREE LINE
- BUILDING
- - - PROPERTY LINE
- PAOC BOUNDARY

LIST OF PAOCs

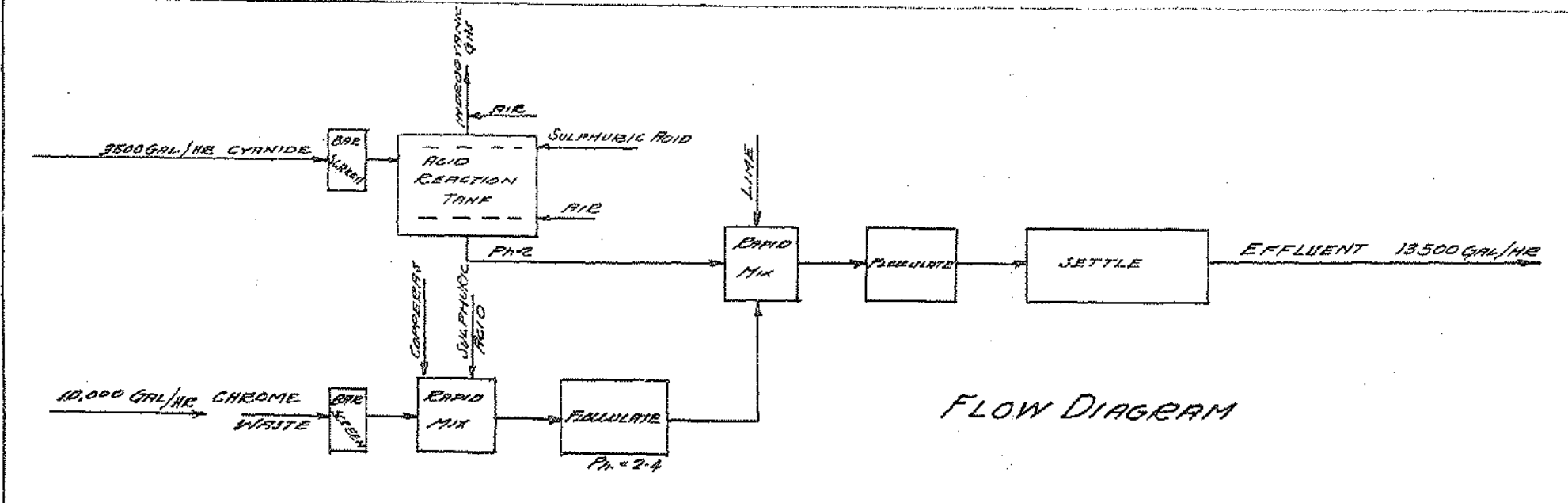
- PAOC 1 - FORMER WWTP AND LAGOONS
- PAOC 2 - FORMER SOUTH CULVERT
- PAOC 3 - NORTHERN HYDRAULIC ELEVATOR
- PAOC 5 - ELPO TANK BUILDING
- PAOC 8 - FORMER RESEARCH AND DEVELOPMENT AREA

figure 1.2
PAOC LOCATIONS
WILLOW RUN BUSINESS CENTER WORK PLAN
WILLOW RUN BUSINESS CENTER
Ypsilanti, Michigan

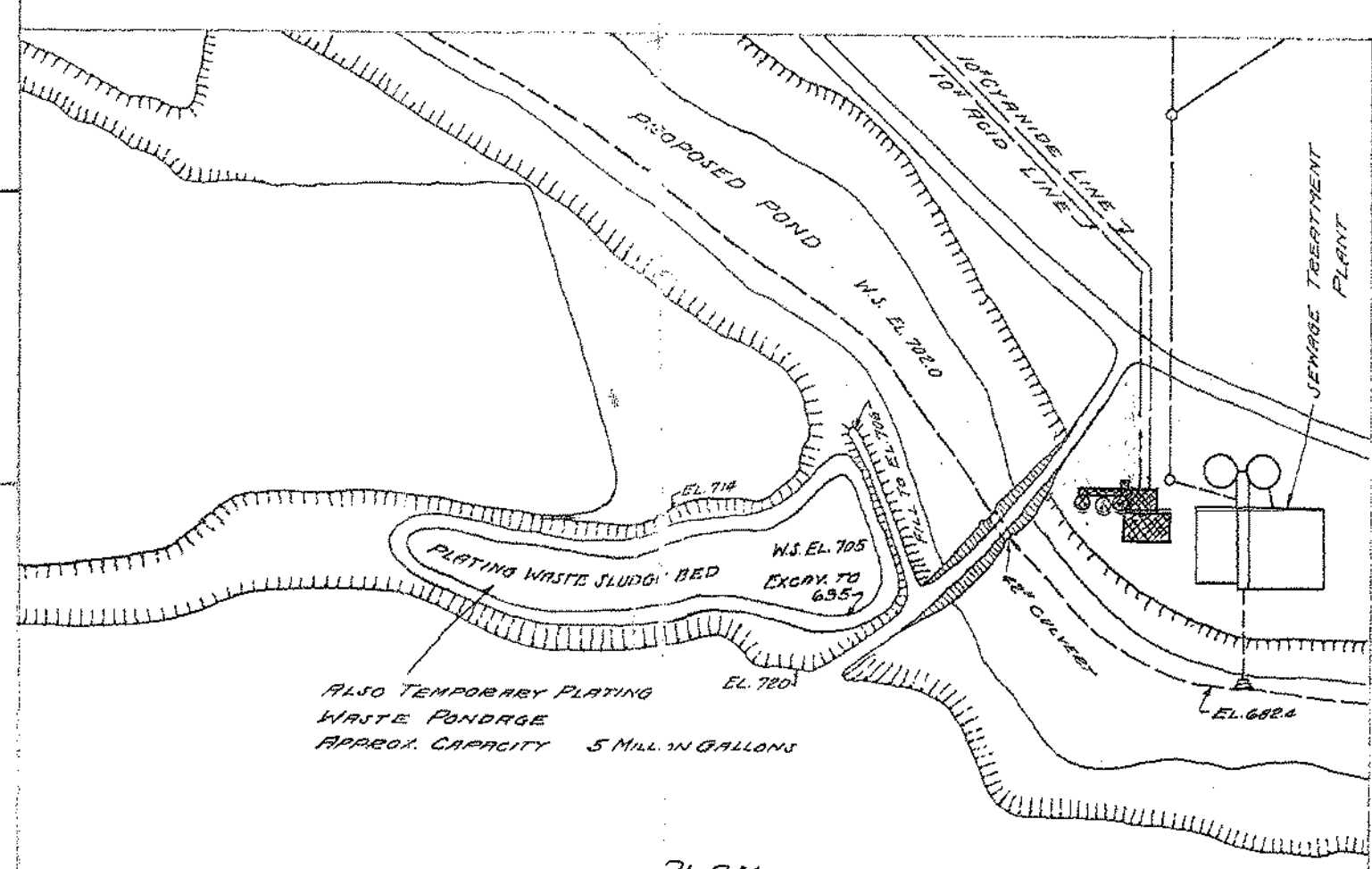




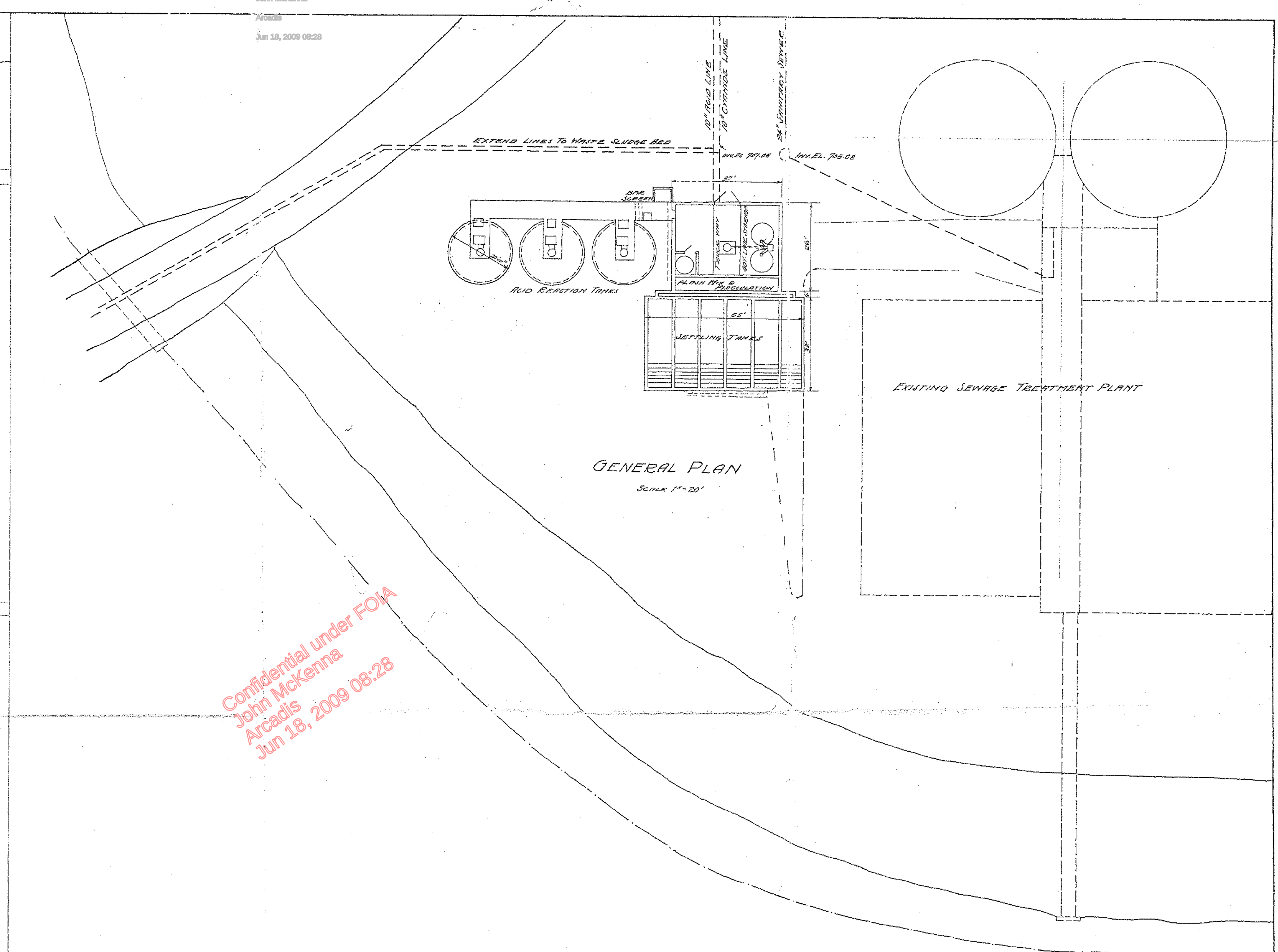
GENERAL LOCATION MAP
SCALE 1"=600'



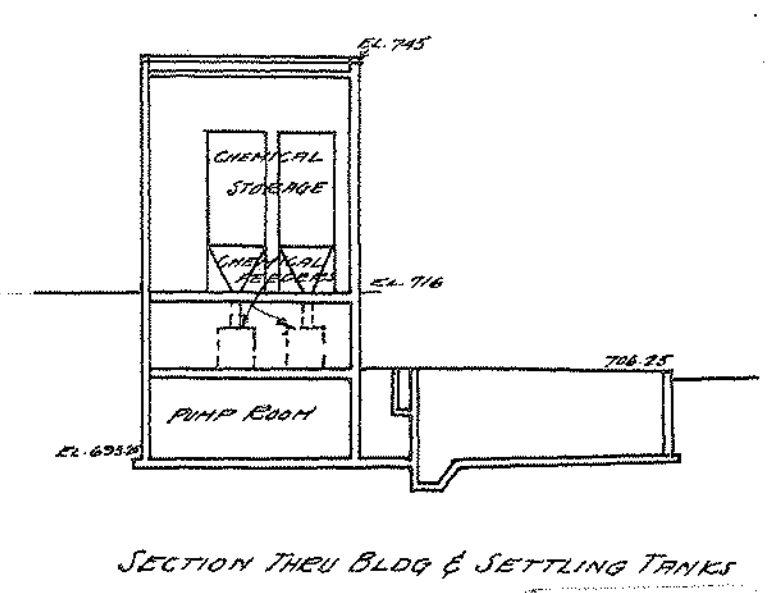
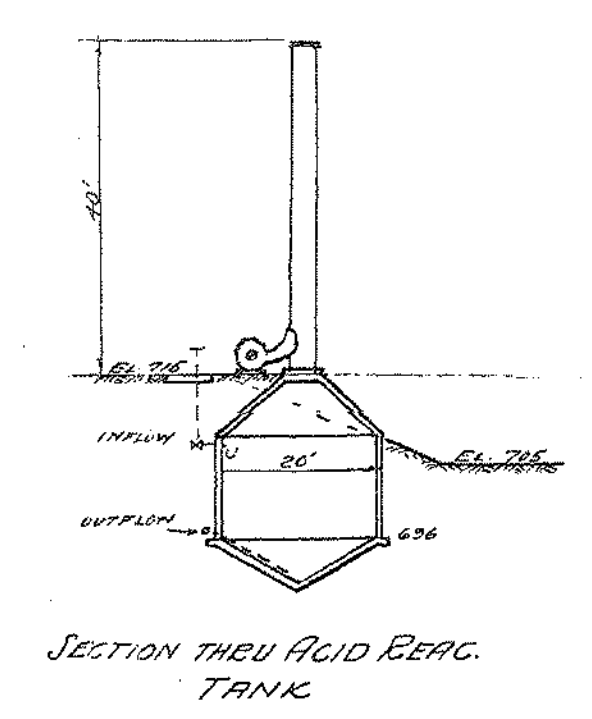
FLOW DIAGRAM



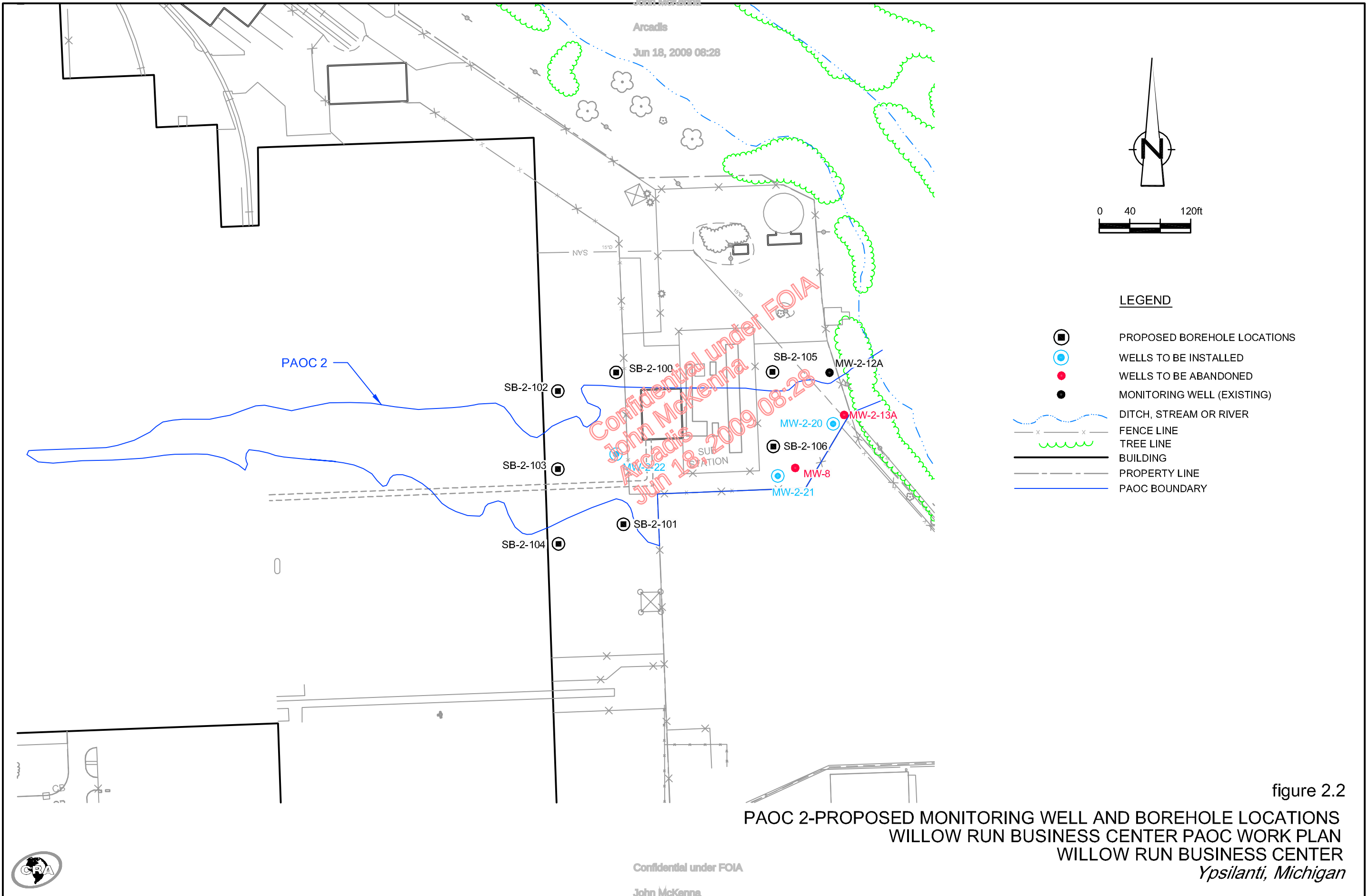
PLAN
WASTE BED AREA NO. 1
SCALE 1"=200'

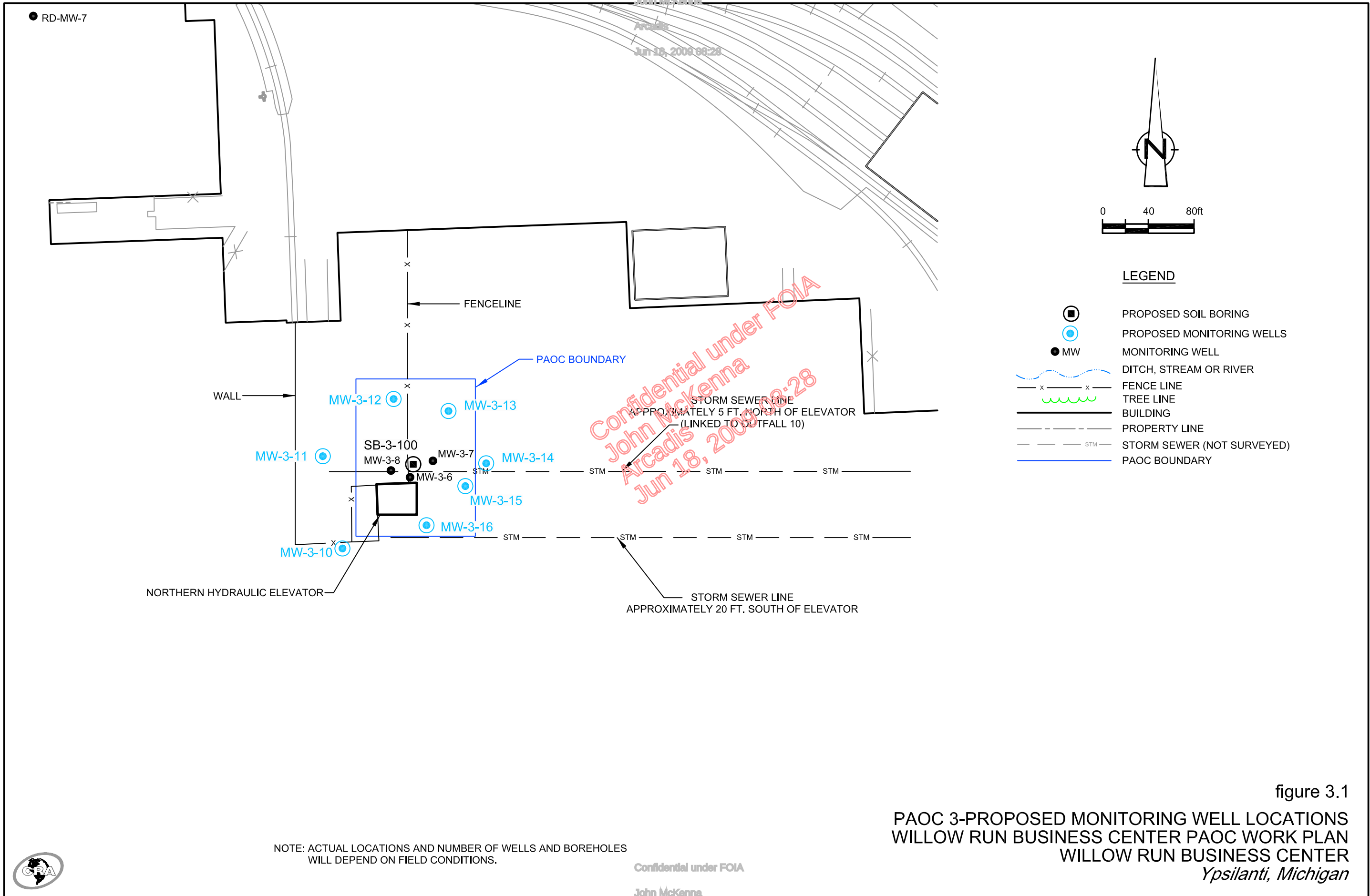


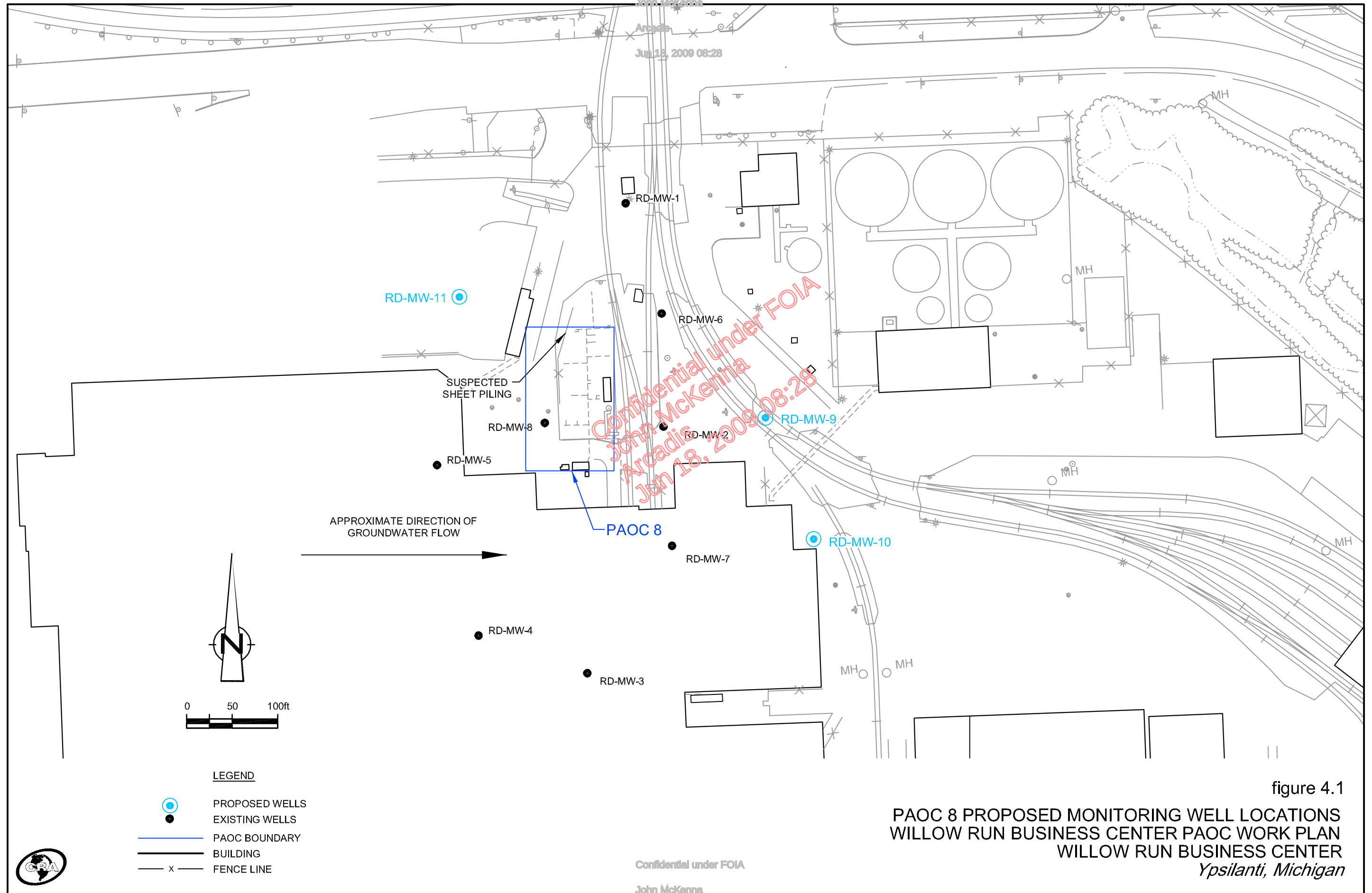
GENERAL PLAN
SCALE 1"=200'



GMP 008157
PRELIMINARY STUDY
FORD MOTOR COMPANY
AIRPLANE PARTS MANUFACTURING PLANT
YALANT, MICHIGAN
CYANIDE AND PLATING WASTE
TREATMENT PLANT
HUBBELL BOTT & CLARK INC. CONSULTING ENGINEERS
DETROIT MICHIGAN
JOB NO 330-F JANUARY 1942







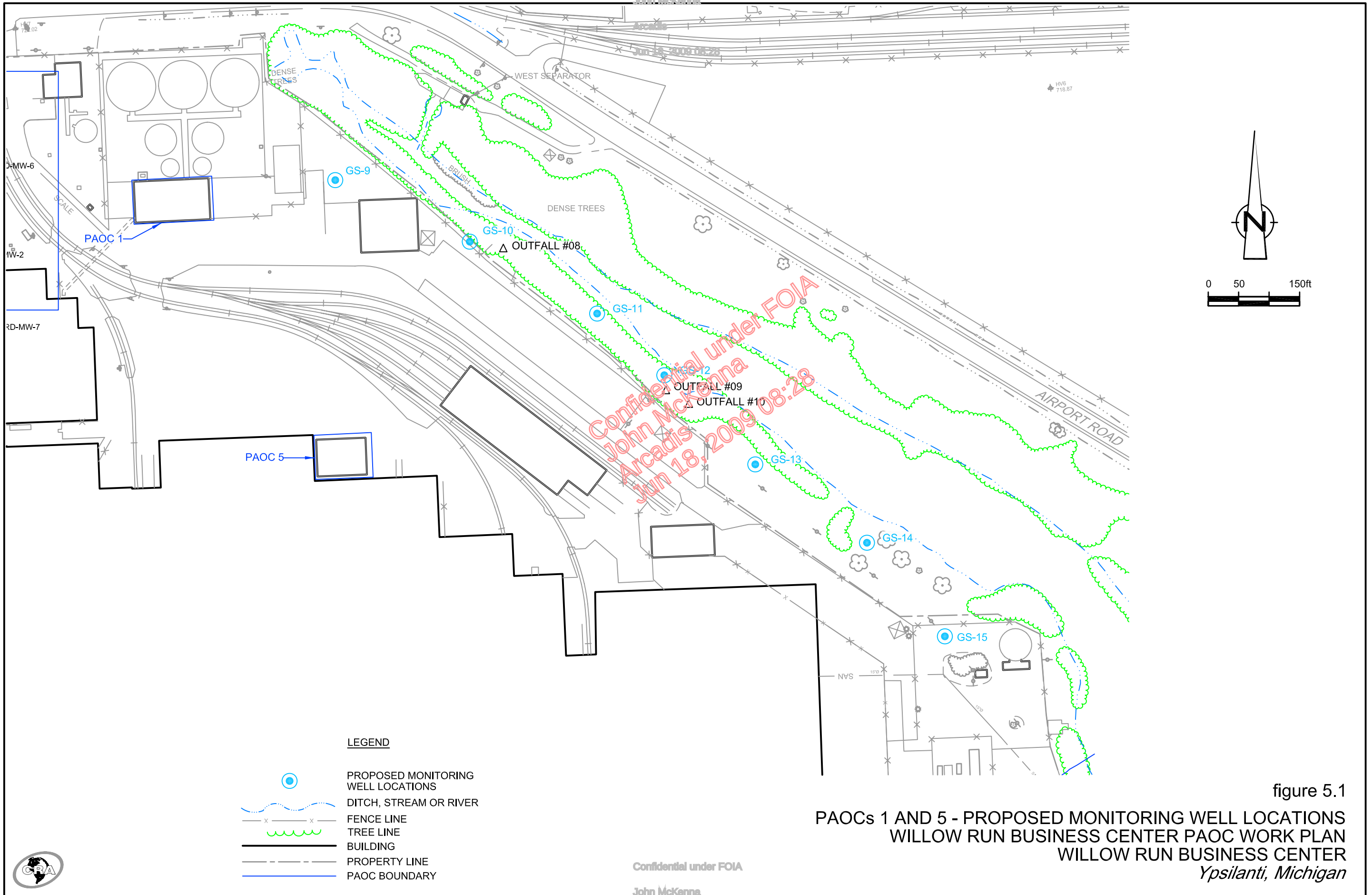
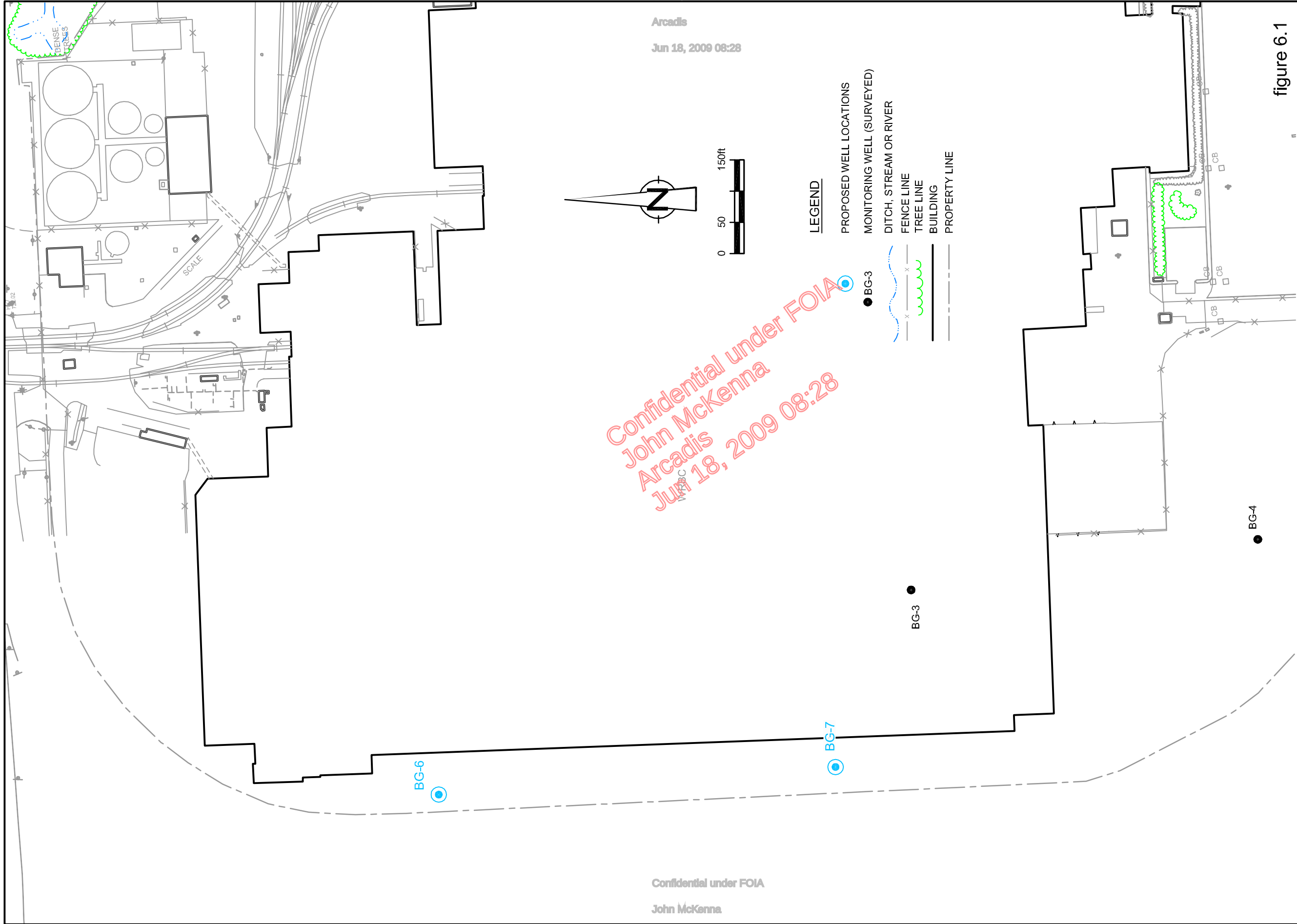


figure 5.1

PAOCs 1 AND 5 - PROPOSED MONITORING WELL LOCATIONS
WILLOW RUN BUSINESS CENTER PAOC WORK PLAN
WILLOW RUN BUSINESS CENTER
Ypsilanti, Michigan

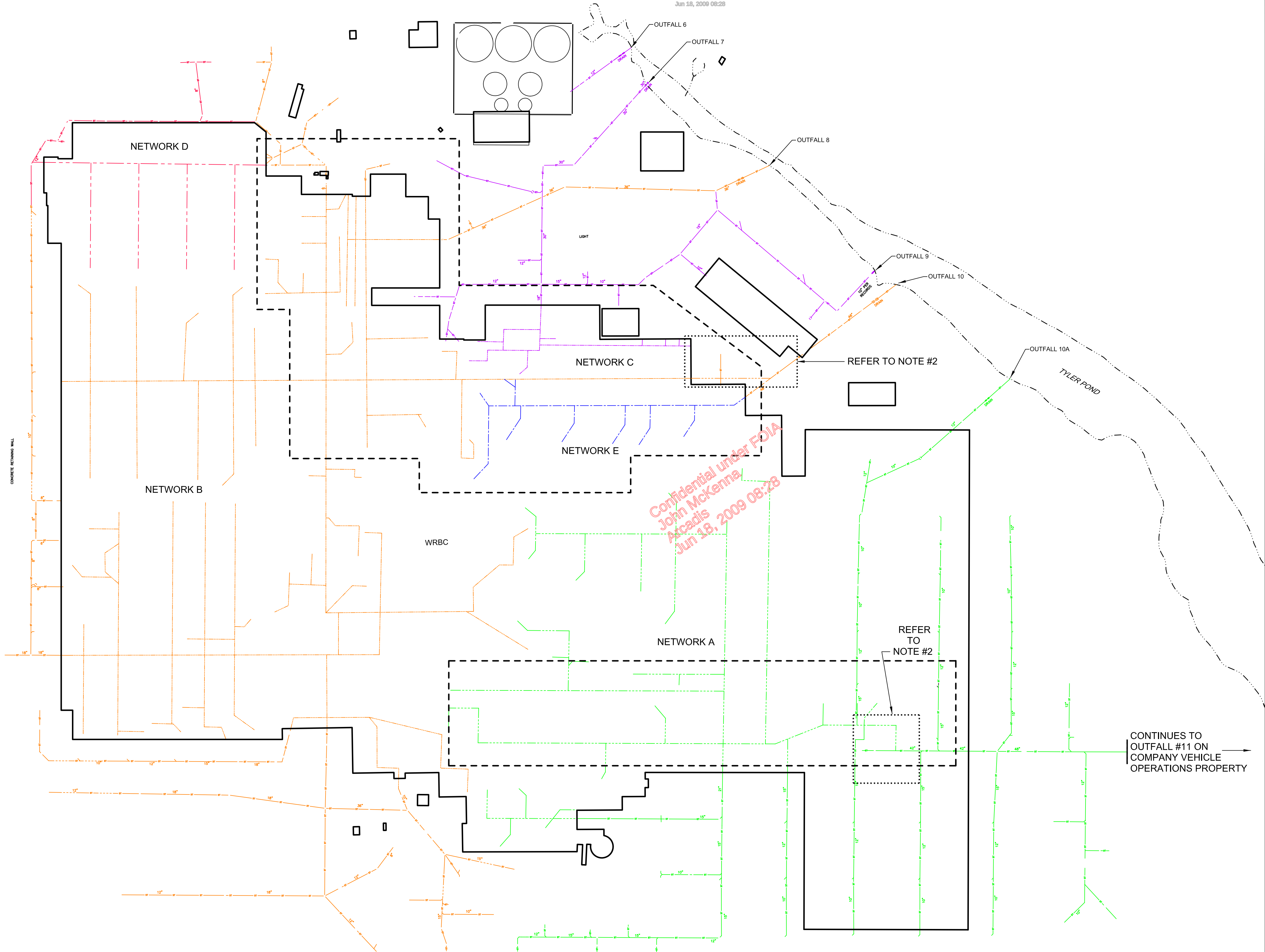




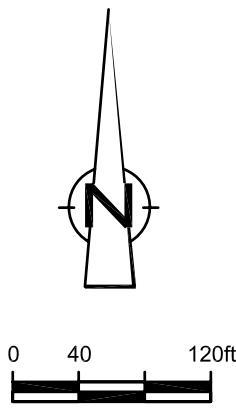
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figure 6.1
PROPOSED LOCATIONS OF BACKGROUND WELLS
WILLOW RUN BUSINESS CENTER PAOC WORK PLAN
WILLOW RUN BUSINESS CENTER
Ypsilanti, Michigan





No	Revision	Date	Initial



- LEGEND
- STORM SEWER NETWORK A
 - STORM SEWER NETWORK B
 - STORM SEWER NETWORK C
 - STORM SEWER NETWORK D
 - STORM SEWER NETWORK E
 - AREA OF LIMITED INVESTIGATION

- NOTES
- 1) THIS FIGURE IS A COMPILATION OF 3 DIFFERENT BASE MAPS ON 3 DIFFERENT COORDINATE SYSTEMS. STORM SEWER LOCATIONS ARE APPROXIMATE AND SOME INDOOR/OUTDOOR STORM SEWER CONNECTIONS HAVE BEEN INFERRED. FIELD CONFIRMATION IS REQUIRED.
 - 2) THIS CONNECTION/SEWER LAYOUT MUST BE FIELD CONFIRMED.
 - 3) INDOOR STORM SEWER PIPING IS NOT TO SCALE.
 - 4) INVESTIGATION MAY EXTEND PAST BOUNDARIES IF FIELD OBSERVATIONS WARRANT.
 - 5) OUTDOOR STORM SEWER MANHOLES AND CATCHBASINS WILL BE INVESTIGATED.
 - 6) SEWER LINES DEPICTED BY "ST" ON FIGURE DENOTE SEWER LINES THAT WERE LOCATED OUTSIDE OF THE ORIGINAL BUILDING

SCALE VERIFICATION

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



Approved

DRAWING STATUS

Status	Date	Initial

WILLOW RUN BUSINESS CENTER
YPSILANTI, MICHIGAN

PAOC WORK PLAN

STORM SEWER NETWORKS
WILLOW RUN BUSINESS CENTER



Source Reference:

Project Manager: F.BLUCKLE	Reviewed By: B. LANDALE	Date: JANUARY 2007
Scale: HORZ_SC	Project No: 17303-13	Report No: 012 Drawing No: 7.1

John McKenna

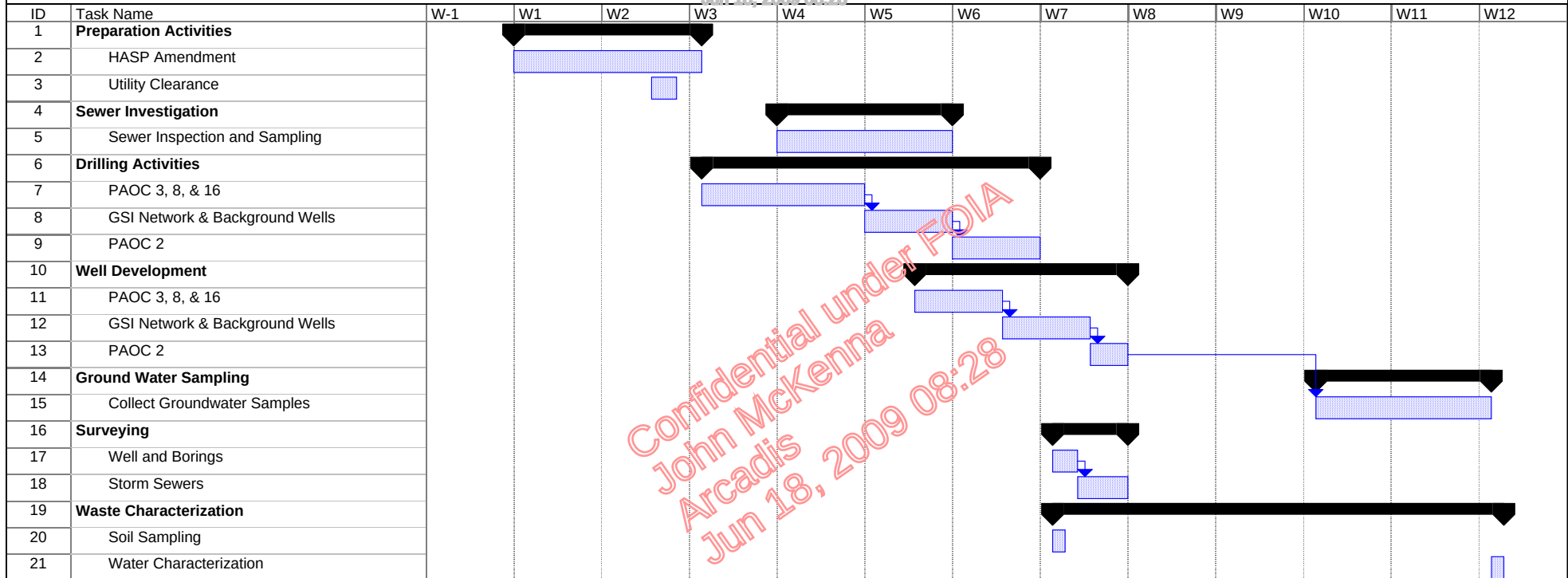
FIGURE 8.1

SCHEDULE

WILLOW RUN BUSINESS CENTER PAOC WORK PLAN
FORMER WILLOW RUN ASSEMBLY PLANT

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Project: 17303-RPT-12-MS SCHEDUL
Date: Wed 10/17/07

Task



Milestone



External Tasks



Split



Summary

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External Milestone



Progress



Project Summary

John McKenna

Deadline



John McKenna

TABLE 1.1
PROPOSED SOIL SAMPLING and MONITORING WELL INSTALLATION PROGRAM
PAOC WORK PLAN
WILLOW RUN BUSINESS CENTER
SUSILAND, MICHIGAN

Boring/Well ID	PAOC	Soil Borings			Monitoring Wells
		Borehole Depth	Soil Analysis ¹	Sample Intervals ² (ft. bgs)	Screen Interval (ft. bgs)
SB-2-100	2	1 ft. into clay	VOCs, SVOCs, Metals, PCBs	0-2 ft. bgs, 2 ft. interval above WT	Not Applicable
SB-2-101	2				
SB-2-102	2				
SB-2-103	2				
SB-2-104	2				
SB-2-105	2				
SB-2-106	2				
MW2-20	2	1 ft. into clay	VOCs, SVOCs, Metals, PCBs	0-2 ft. bgs, 2 ft. interval above WT	10 ft. screen with a 1 ft. sump into the confining layer. ⁴
MW2-21	2				
MW2-22	2				
SB-3-100	3	1 ft. into clay	SVOCs, Metals	0-2 ft. bgs, 2 ft. interval above WT	Not Applicable
MW-3-10	3	to clay	Oil in Soil Jar Test	Stained Soils and/or Water Table Smear Zone	10 ft. screen placed 2 ft. above WT 8 ft. in saturated zone; Presence of LNAPL requires straddling the water table.
MW-3-11	3				
MW-3-12	3				
MW-3-13	3				
MW-3-14	3				
MW-3-15	3				
MW-3-16	3				
RD-MW-9	8	to clay	VOCs, SVOCs, Metals, PCBs	Field Observations ³	10 ft. screen placed 2 ft. above water table (to detect LNAPLs) and 8 ft. into the saturated zone.
RD-MW-10	8				
RD-MW-11	8				
GS-9	1,5	1 ft. into clay	VOCs, SVOCs, Metals, PCBs	Field Observations ³	10 ft. screen placed 2 ft. above water table (to detect LNAPLs) and 8 ft. into the saturated zone with a 1 ft. sump into the confining layer. ⁴
GS-10	1,5				
GS-11	1,5				
GS-12	1,5				
GS-13	1,5				
GS-14	1,5				
GS-15	1,5				
BG-6	None	to clay	VOCs, SVOCs, Metals, PCBs	Field Observations ³	10 ft. screen placed 2 ft. above WT 8 ft. in saturated zone; Potential presence of LNAPL requires straddling the water table. ⁴
BG-7	None				

Notes

bgs - below ground surface

WT - water table

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
Site TAL Metals U.S. EPA Method SW846-6010/6020/7470

² Additional samples may be collected at intervals where field observations indicate impacts
(i.e. odors, staining, elevated PID readings).

³ Sample to be collected if field observations indicated impacts (i.e. visual staining, odors, elevated PID readings).

⁴ If LNAPLs are suspected and a 10-foot screen is of insufficient length to be placed 2 feet above the water table and one foot into the confining clay,
a second well may be installed to screen the top of the saturated zone.

TABLE 1.2

PROPOSED GROUNDWATER ANALYSIS PROGRAM
PAOC WORK PLAN
WILLOW RUN BUSINESS CENTER
YPSILANTI, MICHIGAN

Monitoring Well ID	Groundwater Analysis ¹
MW-2-20	VOCs, SVOCs, Metals, PCBs
MW-2-21	
MW-2-22	
MW-3-10	VOCs, SVOCs, Metals
MW-3-11	
MW-3-12	
MW-3-13	
MW-3-14	
MW-3-15	
MW-3-16	
RD-MW-9	VOCs, SVOCs, Metals, PCBs
RD-MW-10	
RD-MW-11	
GS-9	VOCs, SVOCs, Metals, PCBs
GS-10	
GS-11	
GS-12	
GS-13	
GS-14	
GS-15	
BG-3	PCBs, Metals
BG-4	VOCs, Metals
BG-6	VOCs, SVOCs, Metals, PCBs
BG-7	

Notes

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 SW846-6010/6020/7470 series
PCBs	U.S. EPA Method SW846-8082

TABLE 1.3

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PROPOSED NAPL SAMPLING PROGRAM

PAOC WORK PLAN

WILLOW RUN BUSINESS CENTER

YPSILANTI, MICHIGAN

PAOC	Sampling Parameters for NAPLs ¹
2	VOCs, SVOCs, Metals, PCBs, Corrosivity, Flashpoint, Fingerprinting
8	VOCs, SVOCs, Metals, PCBs, Corrosivity, Flashpoint, Fingerprinting
1 and 5	VOCs, SVOCs, Metals, PCBs, Corrosivity, Flashpoint, Fingerprinting

Notes

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 SW846-6010/6020/7470 series
PCBs	U.S. EPA Method SW846-8082
Corrosivity	U.S. EPA Method SW846-9045
Flashpoint	U.S. EPA Method SW846-1010
Fingerprinting	U.S. EPA Method SW846-8015

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APPENDIX A

COMMENTS AND RESPONSE TO COMMENTS LETTERS FROM THE MDEQ

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STATE OF MICHIGAN

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JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: <http://www.deq.state.mi.us>

RUSSELL J. HARDING, Director

REPLY TO:

JACKSON DISTRICT OFFICE
STATE OFFICE BUILDING
301 E LOUIS GLICK HWY
JACKSON MI 48201-1556

August 13, 1997

Mr. Mark Napolitan
Worldwide Facilities Group
Environmental & Regulatory Support
General Motors Corporation
Argonaut "A" Building
Mail Code #482-310-004
485 W. Milwaukee
Detroit, Michigan 48202

Post-it® Fax Note	7671	Date	8/18	# of pages	2
To	Fred Blicke	From	M. Napolitan		
Co./Dept.		Co.			
Phone #	Read & we	Phone #	with		
Fax #	discuss	Fax #			

Dear Mr. Napolitan:

SUBJECT: Description of Existing Conditions Report, Former Willow Run Assembly Plant Property, Ypsilanti, Michigan; Washtenaw County

I have completed my review of the Description of Existing Conditions Report. On certain Potential Areas of Concern (PAOCs) where future work is planned, and I generally agreed with the report, no comments were generated. However, I do have the following comments to offer on several Areas of Concern:

- #1 • PAOC #1: An aerial photo that shows the lagoons is requested, and the former boundaries of the lagoons should be depicted in Figure 5-4. In addition, the highest sample concentration is incorrectly stated in the text. *ok*
- #2 • PAOC #2: This area should not be eliminated as an area of concern based upon the fact that the dissolved concentration in the 1 micron filtered water was below GSI. The results of filtered samples using a 10 micron filter is appropriate to use when assessing this area and its potential impacts to surface water. *visit*
- #3 • PAOC #3: In Section 5.6.2.4, regarding the Phase II ESI, the text states that the results of naphthalene in groundwater are 100 ppb and 2,600 ppb and the lab data from groundwater samples are presented on Figure 5-5. It appears that this sentence should actually be in Section 5.6.3 because these samples were collected during the Phase III EOC Study. Also, Table 5-16 states the naphthalene result in 3-8 as 260, not 2,600. Is this a typing error? *rectify*

The rationale to eliminate PAOC #3 as an area of concern is insufficient. Additional investigation or evidence needs to be presented before PAOC #3 is eliminated as an AOC.

The text states that a monitoring well was not installed northwest of MW-3-1, yet the northwest location depicted in Figure 5-7 is soil boring 3-8, which does have groundwater sample results reported in Table 5-16. Please explain this discrepancy or correct the text. The report states that the area of the

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Mr. Mark Napolitan
General Motors Corporation

-2-

August 13, 1997

LNAPL impact is small and can be addressed by hand bailing. Further information needs to be submitted upon the closure of this area.

- 2/1*
- PAOC #5: In Section 5.8.1, lead was established as the only COC. Please explain how this conclusion was reached. There is insufficient data presented to justify the elimination of the ELPO as a PAOC for groundwater. The absence of lead in the monitoring wells adjacent to Tyler Pond needs to be accompanied with additional data that would support elimination of groundwater as a pertinent pathway for contaminant migration into surface water at levels above GSI.
 - 155* • PAOC #6 Groundwater concentrations of dissolved lead in SB-6-9 and SB-6-10 indicate levels that exceed GSI criteria. There is only one data point downgradient that suggests the concentration of lead does not exceed GSI criteria. This is insufficient to eliminate PAOC #6 as a concern for groundwater respective of GSI exceedances.
 - 16* • PAOC #7: The area of PAOC #7 as depicted in Figure 1-3 does not match the sample locations shown on Figure 5-2. Figure 3-1 depicts the AOC as being to the north of where sample locations are indicated in Figure 5-2. Figure 5-4 indicates levels of dissolved lead do exceed GSI criteria. Further, the text states that concentration of lead were BDL in all filtered and unfiltered samples, but the following sentence contradicts that by saying concentrations of total lead consistently exceeded GSI criteria. The contradictions in this section need to be corrected. Further, a larger data set is necessary prior to eliminating this area as a concern.
 - So. Elevation Pit #7* • PAOC #16: There is insufficient data to eliminate PAOC #16 as an area of concern. There is only one data point or sampling event that indicates levels below detection limits when previous sampling events indicated levels above GSI criteria.

On August 12, 1997, we received notification that new GSI criteria are being developed, and that we should discontinue the use of old GSI criteria until further notice. This will undoubtedly affect the former GM Willow Run Assembly property as many of the above PAOCs ultimately deal with GSI issues. We have not been informed as to when the new criteria will be released.

If you have any questions regarding any of the above comments, please contact me at 517-780-7914.

Sincerely,

Vicki Katko

Vicki Katko
Environmental Quality Analyst
Environmental Response Division
Jackson District Office

VK:KL

cc: Mr. R. Dowe Parsons, DEQ

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Transmitted Via U.S. Mail

October 16, 1997

Ms. Vicki Katko
Michigan Department of Environmental Quality
Environmental Response Division
Jackson District Office
301 E. Louis Glick Highway
Jackson, Michigan 48201-1556

Re: Response to MDEQ Comments on "Description of Existing Conditions (DEC) Report,
Former Willow Run Assembly Plant Property, Ypsilanti, Michigan"
Project #: 480.75

Dear Ms. Katko:

On behalf of General Motors Corporation (GM), Blasland, Bouck & Lee (BBL) is providing responses to your comments dated August 13, 1997 on the above-referenced report. Michigan Department of Environmental Quality (MDEQ) comments precede each response. We are also providing revised pages for the DEC Report that should replace those pages affected in accordance with the instructions provided at the end of the correspondence. Revisions are presented as a series of attachments in our responses to your comments. Our responses follow:

PAOC #1: An aerial photo that shows the lagoons is requested, and the former boundaries of the lagoons should be depicted in Figure 5-4. In addition, the highest sample concentration is incorrectly stated in the text.

An aerial photograph of the lagoons is included as Attachment 1 and should be inserted in the DEC as Figure 5-16. The former boundaries of the lagoons are shown on Figure 1-3 (but will be added to Figure 5-4, as requested, and revised Figure 5-4 should replace existing Figure 5-4). The text has been revised to indicate that 9,580 mg/kg was the maximum aluminum concentration detected in soil at this PAOC. A revised page 5-9 is included in Attachment 1 that should replace page 5-9 in the DEC Report.

PAOC #2: This area should not be eliminated as an area of concern based upon the fact that the dissolved concentration in the 1 micron filtered water was below GSL. The results of filtered samples using a 10 micron filter is appropriate to use when assessing this area and its potential impacts to surface water.

This area was not eliminated as an area of concern solely on the basis of results of analysis of groundwater filtered with a 1-micron filter. As discussed in Section 5.5.3 of the text, data from two wells in the former South Culvert Area indicated that metals concentrations on colloidal-size particles are not mobile in the surficial water-bearing unit. As is discussed in Section 5.5, monitoring wells MW-2-12A and MW-2-13A were both installed in locations with high lead soil concentrations in the Former South Culvert. Although the same size filter pack was used in constructing each well, development water from MW-2-12A was described as clean and clear, while water from MW-2-13A was described as silty regardless of the efforts taken to clean the water. Purge water produced from MW-2-13A in subsequent sampling events was also

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described as silty. These wells were not sampled with a low-flow pump. As shown in Table 5-9, unfiltered groundwater samples from MW-2-13A usually had lead concentrations exceeding GSI, while those from MW-2-12A did not. This is evidence that lead concentrations truly are associated with the sediment content in the groundwater, and are not present in the dissolved phase. Although the construction details of the two wells were identical, MW-2-12A proved to be more successful as a point for obtaining representative samples of groundwater venting to surface water.

Analysis of groundwater samples collected with a 10-micron filter on September 18, 19, and 20, 1996 indicated that lead concentrations were below detection limits (BDL) on two of three days. Further, concentrations of cadmium in those samples, which slightly exceeded the then-current groundwater/surface water interface (GSI) value of 0.64 micrograms per liter ($\mu\text{g/L}$), do not exceed the revised, recently published GSI value of 3.4 $\mu\text{g/L}$. In fact, total cadmium concentrations are below the new draft GSI values on two of the three sampling events. Accordingly, full consideration of this information supports elimination of PAOC #2 as an area of concern. A detailed discussion of field filter application is provided in Section 5.3.3 of the DEC Report.

PAOC #3: In Section 5.6.2.4, regarding the Phase II ESI, the text states that the results of naphthalene in groundwater are 100 ppb and 2,600 ppb and the lab data from groundwater samples are presented on Figure 5-5. It appears that this sentence should actually be in Section 5.6.3 because these samples were collected during the Phase III EOC Study. Also, Table 5-6 states the naphthalene result in 3-8 as 260, not 2,600. Is this a typing error?

The naphthalene concentration of 260 $\mu\text{g/L}$ in Table 5-16 is correct. The text has been revised to reflect this, in the appropriate location (Section 5.6.3). The groundwater data that should have been (and is now) reported in Section 5.6.2.4 was a concentration of 177 $\mu\text{g/L}$ in a sample collected from MW-3-1 during the Phase II ESI, and shown on Figure 5-5 and Table 5-14. Tables 5-14 and 5-16 have been revised to reflect the current GSI value for naphthalene of 34 $\mu\text{g/L}$. Revised text and tables for this section are provided in Attachment 2.

Therefore, groundwater is not an issue at PAOC #3 and LNAPL is the only outstanding issue at PAOC #3 pursuant to rules contained in Part 201. Further information will be submitted when this area is closed.

The rationale to eliminate PAOC #3 as an area of concern is insufficient. Additional investigation or evidence needs to be presented before PAOC #3 is eliminated as an AOC.

For the following reasons, which are included in revised Section 5.6, PAOC #3 should be eliminated as a concern for groundwater:

Monitoring wells MW-3-5, MW-3-7, and MW-3-8 were all sampled and analyzed for SVOCs. Groundwater analytical data from the Phase III EOC at PAOC #3 are summarized in Table 5-16. None of the published GCC were exceeded, and only naphthalene was detected in excess of the GSI in wells MW-3-6 and MW-3-8. Regardless, this area is not considered a PAOC for groundwater for the following reasons:

1. Well MW-3-7 is in the most appropriate location to evaluate immediate downgradient GSI concentrations and SVOCs were not detected in this well (refer to Figure 5-14 for groundwater flow direction;

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2. GW-7-1 and GW-7-2 are further downgradient from PAOC #3 and Table 5-27 shows that there were not positive detections of SVOCs at these locations; and,
3. SVOCs generally considered to be relatively immobile in groundwater and the closest opportunity for groundwater to vent to surface water is Tyler Pond, which is nearly 800 feet from PAOC #3.

The text states that a monitoring well was not installed northwest of MW-3-1, yet the northwest location depicted in Figure 5-7 is soil boring 3-8, which does have groundwater sample results reported in Table 5-16. Please explain this discrepancy or correct the text. The report states that the area of the LNAPL impact is small and can be addressed by hand bailing. Further information needs to be submitted upon closure of this area.

The text in Section 5.6.3 was corrected and Figure 5-7 was revised to illustrate all of the sampling conducted at PAOC #3. These revisions are included in Attachment 2, as stated previously, LNAPL is still an issue at PAOC #3 which will be addressed prior to closure at PAOC #3.

PAOC #5: In Section 5.8.1, lead was established as the only COC. Please explain how this conclusion was reached. There is insufficient data presented to justify the elimination of the ELPO as a PAOC for groundwater. The absence of lead in the monitoring well adjacent to Tyler Pond needs to be accompanied with additional data that would support the elimination of groundwater as a pertinent pathway for contaminant migration into surface water at levels above GSI.

ELPO is a water-based paint that is applied on auto bodies through cathodic electrodeposition, so solvents are not an issue. Further, lead is the metal of concern present in ELPO, as shown in the MSDS provided in Attachment 3. Accordingly, lead was identified as the only COC for PAOC #5. As discussed in Section 5.8.2.4, a series of five monitoring wells along Tyler Pond were sampled for lead and none of them exhibited a consistent or reproducible exceedance of the GSI for lead in filtered samples. Accordingly, PAOC #5 should be eliminated as a concern for groundwater.

PAOC #6: Groundwater concentrations of dissolved lead in SB-6-9 and SB-6-10 indicate levels that exceed GSI criteria. There is only one data point down-gradient that suggests the concentration of lead does not exceed GSI criteria. This is insufficient to eliminate PAOC # 6 as a concern for groundwater respective of GSI exceedances.

Analytical data from groundwater samples obtained from temporary wells are generally not considered as accurate as data from groundwater samples collected from a properly installed monitoring well. Therefore, permanent monitoring well MW-6-5A was installed close to and slightly down-gradient of SB-6-9 and SB-6-10, the temporary well locations in PAOC # 6 where lead concentrations exceeded the GSI criterion. Figure 5-15 has been added to show the location of this well and other sampling conducted to evaluate PAOC #6. Groundwater samples collected from well MW-6-5A are representative of groundwater in the vicinity of SB-6-9 and SB-6-10. As stated in the text, concentrations of dissolved lead were BDL on two of three occasions when a 1-micron filter was used. Concentrations of both total and dissolved lead were BDL in groundwater collected during three sampling events when 10-micron filters were used; accordingly, PAOC #6 is eliminated from further evaluation because GSI criteria are not exceeded. Also, it is not physically possible to install a well further down-gradient of MW-6-5A due to the proximity of Tyler Pond. Revised text and Figure 5-15 are included in Attachment 4.

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PAOC # 7: (1) The area of PAOC # 7 as depicted in Figure 1-3 does not match the sampling locations shown on Figure 5-2. Figure 3-1 depicts the AOC as being north of where sample locations are indicated in Figure 5-2. (2) Figure 5-4 indicates levels of dissolved lead do exceed GSI criteria. (3) Further, the text states that concentration of lead were BDL in all filtered and unfiltered samples but the following sentence contradicts that by saying that concentrations of total lead consistently exceeded GSI criteria. The contradictions in this section need to be corrected. Further, a larger data set is necessary prior to eliminating this area as a concern.

(1) The two areas do not agree because the approximate location of PAOC # 7 was estimated based on an old map of the site when it was operated by Kaiser-Frazer (provided in Attachment 5). The map did not have a scale. During Phase II Assessment, sample locations were adjusted to correspond to more recently uncovered historical information.

During November, 1996, BBL provided an environmental specialist to observe the installation of a 24-inch water main at the Willow Run property, as part of the Willow Run Creek Cleanup. The water main was installed near the fence line and transected the entire area where the Cinder Storage area might have been located. During this effort, BBL inspected, excavated, and exposed soils for evidence of environmental impacts. If warranted, soil samples were to be collected for visual field screening and laboratory analysis. As a result of the field screening, several samples were collected for laboratory analysis. Suspect soils and wooden blocks were encountered (locations shown in Figure 5-17, included as Attachment 6). The location where wooden blocks were found are thought to correspond to area #12 on the Kaiser-Frazer map (Attachment 5). Therefore, gray-stained soils observed at the location where Composite A was collected (northwest of the wooden blocks) likely correspond to the true location of PAOC #7.

Soil samples collected during the water main installation revealed the presence of constituents that required further investigation including installation of monitoring wells. The work has been classified as the Supplemented Phase II ESI-Water Main Installation, and the text from Section 5.10 of the DEC has been revised to address this work. This revised text is provided in Attachment 7. The tables referenced in this revised text (5-41 through 5-44) are included in Attachment 8 and should be inserted into the DEC following Table 5-40.

This text concludes that soil and groundwater in this area are below applicable guidance criteria, and that further evaluation is not warranted.

(2) The data presented on Figure 5-4 are from temporary wells. Analytical data from groundwater samples obtained from temporary wells are generally considered to be less accurate than data from groundwater samples collected from a properly installed monitoring well. Therefore, permanent monitoring well MW-7-3 was installed down-gradient of SB-7-1 and SB-7-2, the temporary well locations in PAOC # 7 where lead concentrations exceeded the GSI criterion. Groundwater samples collected from this well should be representative of groundwater in the vicinity of SB-7-1 and SB-7-2. As stated in the text, concentrations of dissolved lead were BDL on all three occasions when a 1-micron filter was used. Concentrations of both total and dissolved lead were BDL in groundwater collected during three sampling events when 10-micron filters were used.

(3) The sentence stating that concentrations of lead consistently exceeded the GSI criteria described the results of the April 1996 sampling event and belongs earlier in the paragraph. Section 5.10.3 has been revised to reflect accurate information and is included in Attachment 7.

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PAOC # 16: There is insufficient data to eliminate PAOC #16 as an area of concern. There is only one data point or sampling event that indicates levels below detection limits when previous sampling events indicated levels above GSI criteria.

Actually, groundwater concentrations of polynuclear aromatic hydrocarbons(PAH) exceeded GSI criteria in only one sampling event, whereas concentrations of PAH were BDL in three subsequent sampling events. Further, the initial high PAH concentrations were over an order of magnitude higher than the theoretical solubility of these compounds in water, so it is likely that the first sampling result is a false-positive laboratory report. Three consecutive samples from a compliance point well that exhibit no positive detections is adequate data to eliminate this area as a PAOC for groundwater.

Since the initial submittal of the DEC, BBL has discovered that revisions to several generic industrial soil and groundwater criteria published by MDEQ ERD on January 25, 1996 had not been included in the DEC summary tables. The changes include:

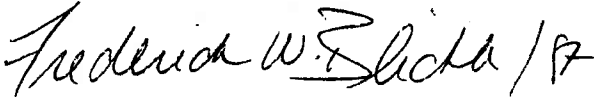
- A revised (higher) value for the DCV of arsenic;
- Soil criteria for 2-methylnaphthalene (naphthalene criteria are used); and
- GSI values for arsenic and naphthalene. BBL recognizes that these GSI criteria are currently being revised, however the tables have been changed for consistency.

The amended tables are included as Attachment 8. Please note that the changes do not affect any of the conclusions in the report.

Should you have any questions, please do not hesitate to contact Fred Blickle at 561-750-7334 x112, or Mark R. Napolitan, GM, at 313-556-5436.

Sincerely,

BLASLAND, BOUCK & LEE, INC.



Frederick W. Blickle, P.E.
Program Manager



Barbara A. Sullivan, P.G.
Senior Project Geologist I

FWB/st

Enclosures

cc: Mr. Mark R. Napolitan, P.E., GM
Mr. David I. Faerman, P.E., BBL

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Dec-18-02 03:49pm From-

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T-253 P.02/25 F-875

Jun 18, 2009 08:28

STATE OF MICHIGAN



JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: www.deq.state.mi.us

RUSSELL J. HARDING, Director

REPLY TO

JACKSON DISTRICT OFFICE
STATE OFFICE BUILDING
301 E LOUIS GLICK HWY
JACKSON MI 49201-1556

#11905

March 10, 1998

Mr. Mark Napolitan
Worldwide Facilities Group
Environmental & Regulatory Support
General Motors Corporation
Argonaut "A" Building
Mail Code #482-310-004
485 W Milwaukee
Detroit, Michigan 48202

Dear Mr. Napolitan:

SUBJECT: Response to Comments on the Description of Existing Conditions Report, Former GM Willow Run Assembly Plant Property, Ypsilanti, Washtenaw County

I have reviewed your response to my comments dated October 16, 1997. The following comprise my comments:

PAOC #1: We disagree that PAOC#1 should be eliminated as an area of concern. There is insufficient basis merely by saying that concentrations fall within the range of that which is expected to occur naturally within the eastern United States. Site specific background or data from the Michigan Background Soil Survey can be used to demonstrate concentrations of metal is naturally occurring. Further cadmium, lead and nickel soil values exceed Groundwater-surface water interface protection criteria (GSWIP).

PAOC #2: GSI criteria have changed. Prior to submitting a RAP for the property, please obtain a copy of the Part 201 Training materials and refer to the new formula being used to develop GSI values for lead and groundwater. Corrective action or control is required for lead and trichloroethylene in soil.

PAOC #3: Napthalene at 2810 ppb exceeds the GSWIP criteria of 850 ppb. PAOC#3 should not be eliminated as an area of concern because groundwater contamination in this area is documented by your own data. This area will require control in any future RAP.

PAOC #5: It is necessary to perform a groundwater model that will document GSI criteria exceedances at the source will not migrate and eventually vent into Tyler Pond. Absent further documentation that the GSI will not be exceeded at Tyler Pond at some point in the future, the monitoring points at Tyler Pond will require monitoring for compliance with GSI criteria until it can be demonstrated no longer necessary. The mere absence of lead or other metals in the monitoring points presently does not mean that the source areas that have been documented to be non compliant for GSI can be ignored. As stated

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March 10, 1998

above, the GSI values have changed and some are site specific based upon the hardness of the receiving body of water. Please calculate the new GSI criteria and re-evaluate the current conditions.

If you have any questions regarding the above, please feel free to contact me at 517-780-7914.

Sincerely,

Vicki Katko

Vicki Katko
Environmental Quality Analyst
Environmental Response Division
Jackson District Office

VK:kl

cc: Mr. R. Dowe Parsons, DEQ

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APPENDIX B

MARCH 2006 SAMPLING RESULTS AT WRBC

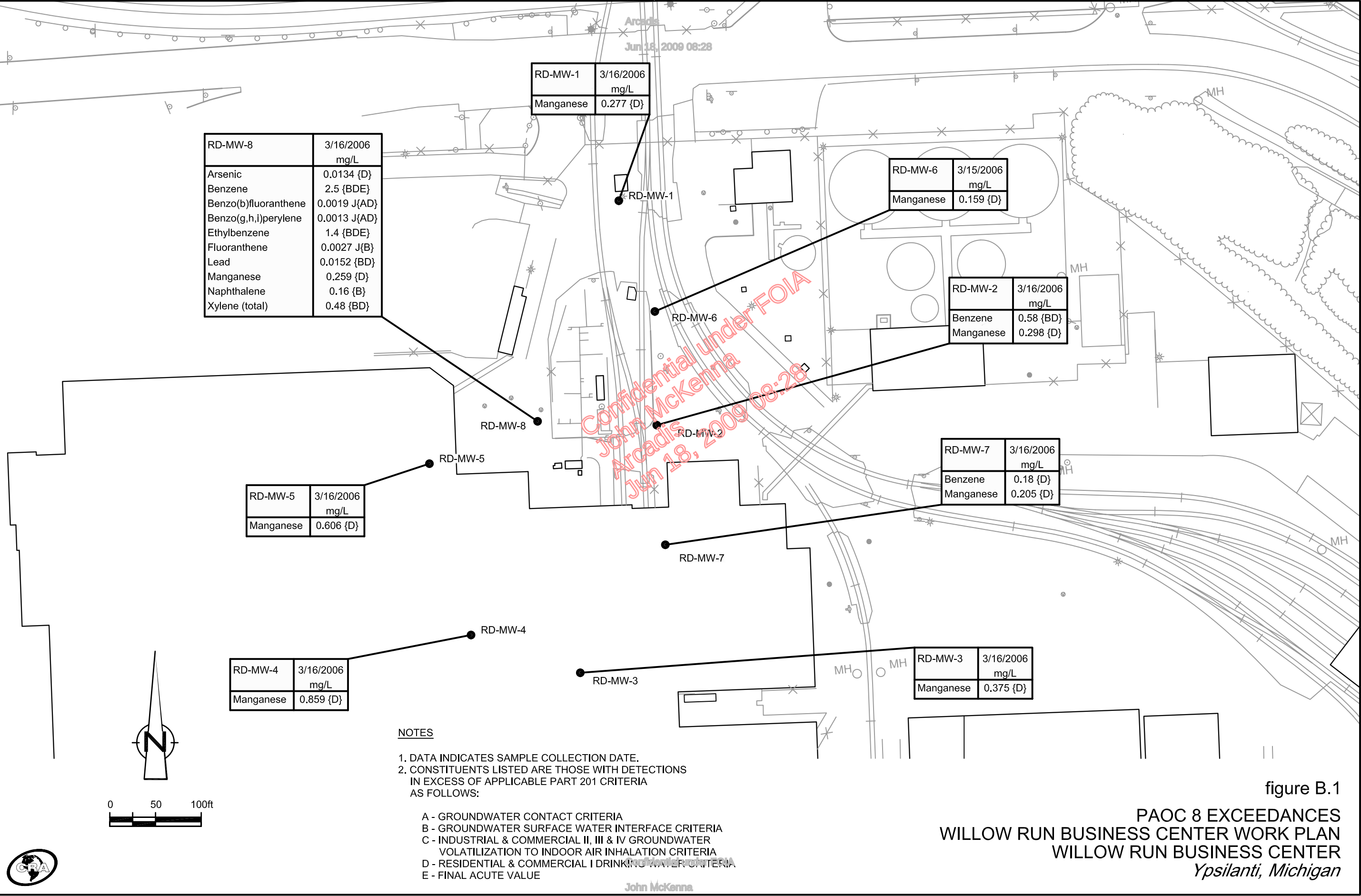
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TABLE 1

WELL STATUS
PRELIMINARY INVESTIGATION AND SAMPLING
WILLOW RUN BUSINESS CENTER
YPSILANTI, MICHIGAN

Well ID	Location	Description	Groundwater Sampled	Product
<u>Site Wide Wells</u>				
BG-1	Northwest parking area	Capped with concrete	NO	--
BG-2	Not Found	Unknown - covered by inventory inside warehouse	NO	--
BG-3	Column O53	Operational - lock and j-plug need replacement	YES (1)	NO
BG-4	Southwest parking area	Operational - lock and j-plug replaced, needs new concrete pad and flushmount	YES (1)	NO
BG-5	Not Found	Buried Under Warehouse Addition	NO	--
MW-1-5	Not Found	Damaged or removed during the Tyler Pond remediation in the late 1990's	NO	--
MW-6-5A	Not Found	Damaged or removed during the Tyler Pond remediation in the late 1990's	NO	--
MW-7-3	Not Found	Damaged or removed during the Tyler Pond remediation in the late 1990's	NO	--
MW-16-1	Not Found	Covered under new concrete surrounding elevator.	NO	--
<u>PAOC 2</u>				
MW-2-12A	East of Substation	Operational - lock and j-plug replaced	YES (1)	NO
MW-2-13A	East of Substation	Needs redevelopment, lock, j-plug, concrete pad, flushmount	NO	NO
MW-8	East of Substation	Needs redevelopment, lock, j-plug, concrete pad, flushmount	YES (1)	NO
<u>PAOC 3</u>				
MW-3-6	Column C17	Operational - lock and j-plug replaced	NO	LNAPL
MW-3-7	Column C17	Operational - lock and j-plug replaced	NO	LNAPL
MW-3-8	Column C17	Operational - lock and j-plug replaced	NO	LNAPL
<u>PAOC 4/8/9</u>				
RD-MW-1	Southwest of WWTP	Operational - lock and j-plug replaced	YES (1)	NO
RD-MW-2	Southwest of WWTP	Operational - lock and j-plug replaced	YES (1)	NO
RD-MW-3	Column AA23	Operational - lock and j-plug replaced, needs new concrete pad and flushmount	YES (1)	NO
RD-MW-4	Column Y24	Operational - lock and j-plug replaced	YES (1)	NO
RD-MW-5	Column W30	Operational - lock and j-plug replaced, needs new flushmount	YES (1)	NO
RD-MW-6	Southwest of WWTP	Operational - lock and j-plug replaced	YES (1)	NO
RD-MW-7	Column DD25	Operational - lock and j-plug replaced	YES (1)	NO
RD-MW-8	Southwest of WWTP	Operational - lock and j-plug replaced	YES (1)	NO
MW-2B	South of WWTP	Buried Under Gravel	NO	--
MW-Y	West of WWTP	Capped with concrete	NO	--

Notes

-- Not applicable as well was not found.

(1) - well sampled for TCL VOCs, TCL SVOCs, Site TAL Metals and PCBs, BG-3 sampled in July 2006

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TABLE 2
PHYSICAL WELL PROPERTIES
PRELIMINARY INVESTIGATION AND SAMPLING
WILLOW RUN BUSINESS CENTER
YPSILANTI, MICHIGAN

Well ID	TOC Elevation feet amsl	DTW feet btoc	DTP feet btoc	DTB feet btoc	LNAPL Thickness feet	LNAPL Elevations feet amsl	Groundwater Elevations feet amsl	Corrected Groundwater Elevations ¹ feet amsl
March 14, 2006								
RD-MW-1	720.13	6.97	--	17.24	--	--	713.16	--
RD-MW-2	719.34	6.72	--	16.01	--	--	712.62	--
RD-MW-3	720.37	10.16	--	18.35	--	--	710.21	--
RD-MW-4	720.46	9.32	--	16.26	--	--	711.14	--
RD-MW-5	716.69	4.26	--	12.18	--	--	712.43	--
RD-MW-6	720.20	6.30	--	14.32	--	--	713.90	--
RD-MW-7	720.98	10.92	--	15.42	--	--	710.06	--
RD-MW-8	717.15	4.63	--	11.01	--	--	712.52	--
MW-2-12A	715.15	10.37	--	17.90	--	--	704.78	--
MW-2-13A ²	714.58	10.10	--	11.23	--	--	704.48	--
MW-8 ²	716.18	9.70	--	18.00	--	--	706.48	--
MW-3-6 ¹	720.93	11.50	11.35	17.94	0.15	709.58	709.43	709.56
MW-3-7 ¹	720.90	11.65	11.17	12.95	0.48	709.73	709.25	709.70
MW-3-8 ¹	721.12	12.29	11.39	17.35	0.90	709.73	708.83	709.59
BG-4	720.89	8.57	--	19.03	--	--	712.32	--
BG-3	Well Not Found	--	--	--	--	--	--	--
June 26 and 27, 2006								
RD-MW-1	720.13	8.37	--	17.39	--	--	711.76	--
RD-MW-2	719.34	7.56	--	16.98	--	--	711.78	--
RD-MW-3	720.37	9.96	--	18.43	--	--	710.41	--
RD-MW-4	720.46	8.95	--	16.17	--	--	711.51	--
RD-MW-5	716.69	4.35	--	12.16	--	--	712.34	--
RD-MW-6	720.20	7.58	--	14.30	--	--	712.62	--
RD-MW-7	720.98	11.09	--	15.45	--	--	709.89	--
RD-MW-8	717.15	4.29	--	11.01	--	--	712.86	--
MW-2-12A	715.15	10.75	--	17.90	--	--	704.40	--
MW-2-13A ²	714.58	10.42	--	11.23	--	--	704.16	--
MW-8 ²	716.18	9.68	--	18.00	--	--	706.50	--
MW-3-6 ¹	720.93	11.19	11.00	17.94	0.19	709.93	709.74	709.90
MW-3-7 ¹	720.90	11.19	10.92	12.95	0.27	709.98	709.71	709.96
MW-3-8 ¹	721.12	11.91	11.11	17.35	0.80	710.01	709.21	709.88
BG-4	720.89	8.57	--	19.03	--	--	712.32	--
BG-3	720.20	7.45	--	19.14	--	--	712.75	--

Notes

TOC - top of casing elevation

DTW - depth to water

DTP - depth to product

DTB - depth to bottom

amsl - above mean sea level

btoc - below top of casing

¹ - Groundwater elevations in wells containing LNAPL were converted to corrected groundwater elevations using an LNAPL specific gravity of 0.93 for MW-3-7 and 0.84 for MW-3-6 and MW-3-8.

² -Depth to bottom may not be accurate because of silt presence in the well.

TABLE 3
GROUNDWATER SAMPLING RESULTS
PRELIMINARY INVESTIGATION AND SAMPLING
WILLOW RUN BUSINESS CENTER
YPSILANTI, MICHIGAN

Sample Location:						Site Wide Wells					PAOC 2		PAOC 8							
						BG-4 WG-17303-031506- LA-0974 3/15/2006	BG-4 WG-17303-031506- LA-0975 3/15/2006	BG-3 WG-17303-071206- NRS-001 7/12/2006	MW-2-12-A WG-17303-031506- NR-0977 3/15/2006	MW-8 WG-17303-031506- NR-0976 3/15/2006	RD-MW-1 WG-17303-031606- EV-0979 3/16/2006	RD-MW-2 WG-17303-031606- LA-0980 3/16/2006	RD-MW-3 WG-17303-031606- EV-0982 3/16/2006	RD-MW-4 WG-17303-031606- NR-0983 3/16/2006	RD-MW-5 WG-17303-031606- NR-0985 3/16/2006	RD-MW-6 WG-17303-031506- LA-0978 3/15/2006	RD-MW-7 WG-17303- 031606-LA-0981 3/16/2006	RD-MW-8 WG-17303-031606-EV- 0984 3/16/2006		
Sample ID:	GCC	GSI	IVIAC	RDWC	FAV															
Sample Date:																				
Sample Type:																				
Parameter:																				
VOCs	Units																			
1,1,1-Trichloroethane	mg/L	1300 S	0.2	1300 S	0.2 A	1.6	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.0075	0.001 U	0.005 U	0.077 U		
1,1,2,2-Tetrachloroethane	mg/L	4.7	0.078 X	77	0.0085	1.8	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U		
1,1,2-Trichloroethane	mg/L	21	0.33 X	110	0.005 A	5.6	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U		
1,1-Dichloroethane	mg/L	2400	0.74	2300	0.88	13	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.0037	0.001 U	0.005 U	0.077 U		
1,1-Dichloroethene	mg/L	11	0.065 X	1.3	0.007 A	2.3	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U		
1,2,4-Trichlorobenzene	mg/L	19	0.03	300 S	0.07 A	0.2	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.083 U	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U	0.38 U	
1,2-Dibromo-3-chloropropane (DBCP)	mg/L	0.39		1.2 S	0.0002 A	NA	0.001 U	0.001 U	0.001 UJ	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U		
1,2-Dibromoethane (Ethylene Dibromide)	mg/L	0.025	0.0002 X	15	0.00005 A		0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U		
1,2-Dichlorobenzene	mg/L	160 S	0.016	160 S	0.6 A	0.28	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U		
1,2-Dichloroethane	mg/L	19	0.36 X	59	0.005 A	15	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.00017 J	0.001 U	0.001 U	0.005 U	0.077 U	
1,2-Dichloropropane	mg/L	16	0.29 X	36	0.005 A	4.0	0.001 U	0.001 U	0.001 U	0.001 U	0.0002 J	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U		
1,3-Dichlorobenzene	mg/L	2	0.038	ID	0.0066	0.2	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U		
1,4-Dichlorobenzene	mg/L	6.4	0.013	74 S	0.075 A	0.2	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U		
2-Butanone (Methyl Ethyl Ketone)	mg/L	240000 S	2.2	240000 S	13	40	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.42 U	0.025 U	0.025 U	0.025 U	0.025 U	0.12 U	1.9 U	
2-Hexanone	mg/L	5200		8700	1	NA	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.83 U	0.05 U	0.05 U	0.05 U	0.05 U	0.25 U	3.8 U	
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	mg/L	13000	ID	20000 S	1.8	ID	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.83 U	0.05 U	0.05 U	0.05 U	0.05 U	0.25 U	3.8 U	
Acetone	mg/L	31000	1.7	1000000 D,S	0.73	30	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.42 U	0.025 U	0.025 U	0.025 U	0.025 U	0.12 U	1.9 U	
Benzene	mg/L	11	0.2 X	35	0.005 A	1.8	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.58 ^{GSI, RDWC}	0.001 U	0.001 U	0.001 U	0.001 U	0.18 ^{RDWC}	2.5 ^{GSI, FAV}	
Bromodichloromethane	mg/L	14	ID	37	0.08 A,W	ID	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U	
Bromoform	mg/L	140	ID	3100 S	0.08 A,W	ID	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U	
Bromomethane (Methyl Bromide)	mg/L	70	0.035	9	0.01	0.64	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U	
Carbon disulfide	mg/L	1200 S	ID	550	0.8	ID	0.005 U	0.005 U	0.005 UJ	0.005 U	0.005 U	0.005 U	0.083 U	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U	0.38 U	
Carbon tetrachloride	mg/L	4.6	0.045 X	2.4	0.005 A	1.6	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U	
Chlorobenzene	mg/L	86	0.047	470 S	0.1 A	0.85	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U	
Chloroethane	mg/L	440	ID	5700 S	0.43	ID	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U	
Chloroform (Trichloromethane)	mg/L	150	0.17 X	180	0.08 A,W	2.6	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U	
Chloromethane (Methyl Chloride)	mg/L	490	ID	45	0.26	ID	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.017 U	0.001 U	0.001 U	0.001 U	0.001 UJ	0.005 U	0.077 U	
cis-1,2-Dichloroethene	mg/L	200	0.62	210	0.07 A	11	0.001 U	0.001 U	0.001 U	0.001 U	0.0067	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U	
cis-1,3-Dichloropropene	mg/L					NA	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U	
Cyclohexane	mg/L						0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00048 J	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.13	
Dibromochloromethane	mg/L	18	ID	110	0.08 A,W	ID	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U	
Dichlorodifluoromethane (CFC-12)	mg/L	300 S	ID	300 S	1.7	ID	0.001 U	0.001 U	0.001 UJ	0.001 U	0.001 U	0.001 UJ	0.017 UJ	0.001 UJ	0.001 UJ	0.001 UJ	0.001 U	0.005 UJ	0.077 UJ	
Ethylbenzene	mg/L	170 S	0.018	170 S	0.074 E	0.32	0.001 UJ	0.001 UJ	0.001 U	0.001 UJ	0.001 UJ	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 UJ	0.005 U	1.4 ^{GSI, RDWC, FAV}	
Isopropylbenzene	mg/L	56 S	ID	56 S	0.8	ID	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.083 U	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U	0.029 J	
Methyl acetate	mg/L						0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.17 U	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U	0.77 U	
Methyl cyclohexane	mg/L						0.001 U	0.001 U	0.001 UJ	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.047 J	
Methyl Tert Butyl Ether	mg/L	610	0.73 X	47000 S	0.04 E		0.005 U	0.005 U	0.005 U	0.005 U	0.0004 J	0.005 U	0.014 J	0.005 U	0.005 U	0.005 U	0.005 U	0.0079 J	0.38 U	
Methylene chloride	mg/L	220	0.94 X	1400	0.005 A	17	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.083 U	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U	0.38 U	
Styrene	mg/L	9.7	0.08	310 S	0.1 A	2.9	0.001 UJ	0.001 UJ	0.001 U	0.001 UJ	0.001 UJ	0.001 U	0.017 U	0.001 UJ	0.001 U	0.001 UJ	0.001 UJ	0.005 U	0.077 U	
Tetrachloroethene	mg/L	12	0.045 X	170	0.005 A	0.71	0.001 UJ	0.001 UJ	0.001 U	0.001 UJ	0.001 UJ	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 UJ	0.005 U	0.077 U	
Toluene	mg/L	530 S	0.14	530 S	0.79 E	1.7	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.054 J	
trans-1,2-Dichloroethene	mg/L	220	1.5	200	0.1 A	28	0.001 U	0.001 U	0.001 U	0.001 U	0.00054 J	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U	
trans-1,3-Dichloropropene	mg/L					NA	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U	
Trichloroethene	mg/L	22	0.2 X	97	0.005 A	3.5	0.001 U	0.001 U	0.001 U	0.0014	0.0095 ^{RDWC}	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	0.077 U	
Trichlorofluoromethane (CFC-11)	mg/L	1100 S		1100 S	2.6		0.001 U	0.001 U	0.001.											

GROUNDWATER SAMPLING RESULTS
PRELIMINARY INVESTIGATION AND SAMPLING
WILLOW RUN BUSINESS CENTER
YPSILANTI, MICHIGAN

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TABLE 3
GROUNDWATER SAMPLING RESULTS
PRELIMINARY INVESTIGATION AND SAMPLING
WILLOW RUN BUSINESS CENTER
YPSILANTI, MICHIGAN

Sample Location:						Site Wide Wells			PAOC 2		PAOC 8							
						BG-4	BG-4	BG-3	MW-2-12-A	MW-8	RD-MW-1	RD-MW-2	RD-MW-3	RD-MW-4	RD-MW-5	RD-MW-6	RD-MW-7	RD-MW-8
Sample ID:	GCC	GSI	IVIAC	RDWC	FAV	WG-17303-031506- LA-0974	WG-17303-031506- LA-0975	WG-17303-071206- NRS-001	WG-17303-031506- NR-0977	WG-17303-031506- NR-0976	WG-17303-031606- EV-0979	WG-17303-031606- LA-0980	WG-17303-031606- EV-0982	WG-17303-031606- NR-0983	WG-17303-031606- NR-0985	WG-17303-031506- LA-0978	WG-17303- 031606-LA-0981	WG-17303- 0984
Sample Date:						3/15/2006	3/15/2006	7/12/2006	3/15/2006	3/15/2006	3/16/2006	3/16/2006	3/16/2006	3/16/2006	3/16/2006	3/15/2006	3/16/2006	3/16/2006
Sample Type:							Duplicate											
Parameter:																		
Metals																		
Antimony	mg/L	68	0.13 X	NLV	0.006 A	0.00015 J	0.00014 J	0.002 U	0.00018 J	0.00032 J	0.0011 J	0.00041 J	0.000085 J	0.00028 J	0.000099 J	0.001 J	0.00016 J	0.0012 J
Arsenic	mg/L	4.3	0.15 X	NLV	0.01 A	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.0061	0.0057	0.0061	0.005 U	0.005 U	0.005 U	0.0134 ^{RDWC}
Barium	mg/L	14000	1.87 X	NLV	2 A	0.521	0.548	0.123	0.098 J	0.0921 J	0.133	0.226	0.114	0.0812 J	0.139	0.231	0.0561 J	0.457
Beryllium	mg/L	290	0.075	NLV	0.004 A	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Cadmium	mg/L	190	0.0025 X	NLV	0.005 A	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00042 J	0.00043 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00068 J
Chromium Total	mg/L	460	0.011	NLV	0.1 A	0.005 U	0.005 U	0.005 U	0.002 J	0.01	0.005 U	0.005 U	0.005 U	0.0017 J	0.005 U	0.005 U	0.005 U	0.005 U
Cobalt	mg/L	2400	0.1	NLV	0.04	0.007 U	0.007 U	0.007 U	0.007 U	0.004 J	0.007 U	0.0022 J	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U
Copper	mg/L	7400	0.029	NLV	1 E	0.004	0.0043	0.002 U	0.0035	0.0018 J	0.002 U	0.002 U	0.002 U	0.0047	0.002 U	0.0026	0.002 U	0.0105
Lead	mg/L	ID	0.014 X	NLV	0.004 L	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.0152 ^{GSI, RDWC}
Manganese	mg/L	9100	1.75 X	NLV	0.05 E	0.646 ^{RDWC}	0.678 ^{RDWC}	0.499 ^{RDWC}	0.128 ^{RDWC}	0.663 ^{RDWC}	0.277 ^{RDWC}	0.298 ^{RDWC}	0.375 ^{RDWC}	0.859 ^{RDWC}	0.606 ^{RDWC}	0.159 ^{RDWC}	0.205 ^{RDWC}	0.259 ^{RDWC}
Mercury	mg/L	0.056 S	0.0000013	0.056 S	0.002 A	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Nickel	mg/L	74000	0.16	NLV	0.1 A	0.0015 J	0.0018 J	0.02 U	0.02 U	0.189 ^{GSI, RDWC}	0.0025 J	0.0032 J	0.02 U	0.0038 J	0.0017 J	0.02 U	0.0021 J	0.0036 J
Selenium	mg/L	970	0.005	NLV	0.05 A	0.005 U	0.005 U	0.005 U	0.0041 J	0.0037 J	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Silver	mg/L	1500	0.0002 M	NLV	0.034	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.000067 J	0.0002 U	0.0002 U	0.0002 U	0.000086 J	0.000063 J	0.000063 J	0.000082 J
Thallium	mg/L	13	0.0037 X	NLV	0.002 A	0.000037 J	0.000033 J	0.001 U	0.000023 J	0.0004 J	0.001 U	0.001 U	0.001 U	0.0001 J	0.001 U	0.001 U	0.001 U	0.000038 J
Vanadium	mg/L	970	0.012	NLV	0.0045	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
Zinc	mg/L	110000	0.38	NLV	2.4	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.0521	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
PCBs																		
Aroclor-1016 (PCB-1016)	mg/L	0.0033 AA	0.0002 M	0.045 S	0.0005 A	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U
Aroclor-1221 (PCB-1221)	mg/L	0.0033 AA	0.0002 M	0.045 S	0.0005 A	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U
Aroclor-1232 (PCB-1232)	mg/L	0.0033 AA	0.0002 M	0.045 S	0.0005 A	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U
Aroclor-1242 (PCB-1242)	mg/L	0.0033 AA	0.0002 M	0.045 S	0.0005 A	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U
Aroclor-1248 (PCB-1248)	mg/L	0.0033 AA	0.0002 M	0.045 S	0.0005 A	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U
Aroclor-1254 (PCB-1254)	mg/L	0.0033 AA	0.0002 M	0.045 S	0.0005 A	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U
Aroclor-1260 (PCB-1260)	mg/L	0.0033 AA	0.0002 M	0.045 S	0.0005 A	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.000048 J	0.0001 U	0.0001 U	0.0001 U

- Notes:
- U Not present at or above the associated value.

J Estimated concentration.

UJ Estimated reporting limit.

R Rejected.

GCC Groundwater Contact Criteria.

GSI Groundwater Surface Water Interface Criteria.

IDWC Industrial Drinking Water Criteria.

IVIAC Industrial Groundwater Volatilization To Indoor Air Criteria.

RDWC Residential Drinking Water Criteria.

FAV Final Acute Value.

HB Health Based.
- ID Insufficient data to develop criterion.

X Gsi criterion shown is not protective of for surface water used as a drinking source.

A State of Michigan Drinking Water Standard.

AA articles and filtered samples for groundwater evaluation.

M Calculated criterion is below analytical target detection limit.

S Criterion defaults to hazardous substance specific water solubility limit.

NLV Not Likely to Volatilize.

E Criterion is the aesthetic drinking water value.

L Criteria for lead are derived using a biologically based model.

D Calculated criterion exceeds 100%.

John McKenna

Arcadis

Jun 18, 2009 08:28

TABLE 4
RECOVERED LNAPL ANALYSIS SUMMARY
PRELIMINARY INVESTIGATION AND SAMPLING
WILLOW RUN BUSINESS CENTER
YPSILANTI, MICHIGAN

<i>Sample Location:</i>		<i>MW-3-7</i>	<i>MW-3-8</i>
<i>Sample ID:</i>		<i>W-17303-032106-NR-0998</i>	<i>W-17303-032106-NR-0995</i>
<i>Sample Date:</i>		<i>3/21/2006</i>	<i>3/21/2006</i>
VOCs	Units		
1,1,1-Trichloroethane	ug/kg	150000 U	140000 U
1,1,2,2-Tetrachloroethane	ug/kg	150000 U	140000 U
1,1,2-Trichloroethane	ug/kg	150000 U	140000 U
1,1-Dichloroethane	ug/kg	150000 U	140000 U
1,1-Dichloroethene	ug/kg	150000 U	140000 U
1,2,4-Trichlorobenzene	ug/kg	290000 U	280000 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	290000 U	280000 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	150000 U	140000 U
1,2-Dichlorobenzene	ug/kg	290000 U	280000 U
1,2-Dichloroethane	ug/kg	150000 U	140000 U
1,2-Dichloropropane	ug/kg	150000 U	140000 U
1,3-Dichlorobenzene	ug/kg	290000 U	280000 U
1,4-Dichlorobenzene	ug/kg	290000 U	280000 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	600000 U	580000 U
2-Hexanone	ug/kg	600000 U	580000 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	600000 U	580000 U
Acetone	ug/kg	600000 U	580000 U
Benzene	ug/kg	50000 U	140000 U
Bromodichloromethane	ug/kg	150000 U	140000 U
Bromoform	ug/kg	150000 U	140000 U
Bromomethane (Methyl Bromide)	ug/kg	290000 U	280000 U
Carbon disulfide	ug/kg	15000 U	140000 U
Carbon tetrachloride	ug/kg	150000 U	140000 U
Chlorobenzene	ug/kg	150000 U	140000 U
Chloroethane	ug/kg	290000 U	280000 U
Chloroform (Trichloromethane)	ug/kg	150000 U	140000 U
Chloromethane (Methyl Chloride)	ug/kg	290000 U	280000 U
cis-1,2-Dichloroethene	ug/kg	75000 U	72000 U
cis-1,3-Dichloropropene	ug/kg	150000 U	140000 U
Cyclohexane	ug/kg	600000 U	580000 U
Dibromochloromethane	ug/kg	150000 U	140000 U
Dichlorodifluoromethane (CFC-12)	ug/kg	290000 U	280000 U
Ethylbenzene	ug/kg	150000 U	140000 U
Isopropylbenzene	ug/kg	11000 J	280000 U
Methyl acetate	ug/kg	290000 U	280000 U
Methyl cyclohexane	ug/kg	20000 J	140000 U
Methyl Tert Butyl Ether	ug/kg	600000 U	580000 U
Methylene chloride	ug/kg	150000 U	140000 U
Styrene	ug/kg	150000 U	140000 U
Tetrachloroethene	ug/kg	150000 U	140000 U
Toluene	ug/kg	150000 U	140000 U
trans-1,2-Dichloroethene	ug/kg	75000 U	72000 U
trans-1,3-Dichloropropene	ug/kg	150000 U	140000 U
Trichloroethene	ug/kg	150000 U	140000 U
Trichlorofluoromethane (CFC-11)	ug/kg	290000 U	280000 U
Trifluorotrichloroethane (Freon 113)	ug/kg	600000 U	580000 U
Vinyl chloride	ug/kg	290000 U	280000 U
Xylene (total)	ug/kg	140000 J	140000 U

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TABLE 4
RECOVERED LNAPL ANALYSIS SUMMARY
PRELIMINARY INVESTIGATION AND SAMPLING
WILLOW RUN BUSINESS CENTER
YPSILANTI, MICHIGAN

Sample Location:	MW-3-7	MW-3-8
Sample ID:	W-17303-032106-NR-0998	W-17303-032106-NR-0995
Sample Date:	3/21/2006	3/21/2006

SVOCs	Units		
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	1000000 U	200000 U
2,4,5-Trichlorophenol	ug/kg	1000000 U	200000 U
2,4,6-Trichlorophenol	ug/kg	1000000 U	200000 U
2,4-Dichlorophenol	ug/kg	1000000 U	200000 U
2,4-Dimethylphenol	ug/kg	1000000 U	200000 U
2,4-Dinitrophenol	ug/kg	4800000 U	960000 U
2,4-Dinitrotoluene	ug/kg	1000000 U	200000 U
2,6-Dinitrotoluene	ug/kg	1000000 U	200000 U
2-Chloronaphthalene	ug/kg	1000000 U	200000 U
2-Chlorophenol	ug/kg	1000000 U	200000 U
2-Methylnaphthalene	ug/kg	1100000	170000 J
2-Methylphenol	ug/kg	1000000 U	200000 U
2-Nitroaniline	ug/kg	4800000 U	960000 U
2-Nitrophenol	ug/kg	1000000 U	200000 U
3,3'-Dichlorobenzidine	ug/kg	4800000 U	960000 U
3-Nitroaniline	ug/kg	4800000 U	960000 U
4,6-Dinitro-2-methylphenol	ug/kg	4800000 U	960000 U
4-Bromophenyl phenyl ether	ug/kg	1000000 U	200000 U
4-Chloro-3-methylphenol	ug/kg	1000000 U	200000 U
4-Chloroaniline	ug/kg	1000000 U	200000 U
4-Chlorophenyl phenyl ether	ug/kg	1000000 U	200000 U
4-Methylphenol	ug/kg	1000000 U	200000 U
4-Nitroaniline	ug/kg	4800000 U	960000 U
4-Nitrophenol	ug/kg	4800000 U	960000 U
Acenaphthene	ug/kg	1000000 U	200000 U
Acenaphthylene	ug/kg	1000000 U	200000 U
Acetophenone	ug/kg	1000000 U	200000 U
Anthracene	ug/kg	1000000 U	200000 U
Atrazine	ug/kg	1000000 U	200000 U
Benzaldehyde	ug/kg	1000000 U	200000 U
Benzo(a)anthracene	ug/kg	1000000 U	200000 U
Benzo(a)pyrene	ug/kg	1000000 U	200000 U
Benzo(b)fluoranthene	ug/kg	1000000 U	200000 U
Benzo(g,h,i)perylene	ug/kg	1000000 U	200000 U
Benzo(k)fluoranthene	ug/kg	1000000 U	200000 U
Biphenyl	ug/kg	1000000 U	200000 U
bis(2-Chloroethoxy)methane	ug/kg	1000000 U	200000 U
bis(2-Chloroethyl)ether	ug/kg	1000000 U	200000 U
bis(2-Ethylhexyl)phthalate	ug/kg	1000000 U	200000 U
Butyl benzylphthalate	ug/kg	1000000 U	200000 U
Caprolactam	ug/kg	1000000 U	200000 U
Carbazole	ug/kg	1000000 U	200000 U
Chrysene	ug/kg	1000000 U	200000 U
Dibenz(a,h)anthracene	ug/kg	1000000 U	200000 U
Dibenzofuran	ug/kg	1000000 U	200000 U
Diethyl phthalate	ug/kg	1000000 U	200000 U
Dimethyl phthalate	ug/kg	1000000 U	200000 U
Di-n-butylphthalate	ug/kg	1000000 U	200000 U
Di-n-octyl phthalate	ug/kg	1000000 U	200000 U
Fluoranthene	ug/kg	1000000 U	200000 U
Fluorene	ug/kg	1000000 U	200000 U
Hexachlorobenzene	ug/kg	1000000 U	200000 U
Hexachlorobutadiene	ug/kg	1000000 U	200000 U
Hexachlorocyclopentadiene	ug/kg	4800000 U	960000 U
Hexachloroethane	ug/kg	1000000 U	200000 U
Indeno(1,2,3-cd)pyrene	ug/kg	1000000 U	200000 U

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TABLE 4

**RECOVERED LNAPL ANALYSIS SUMMARY
PRELIMINARY INVESTIGATION AND SAMPLING
WILLOW RUN BUSINESS CENTER
YPSILANTI, MICHIGAN**

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Isophorone	ug/kg	1000000 U	200000 U
Naphthalene	ug/kg	8500000	860000
Nitrobenzene	ug/kg	1000000 U	200000 U
<i>Sample Location:</i>		<i>MW-3-7</i>	<i>MW-3-8</i>
<i>Sample ID:</i>		<i>W-17303-032106-NR-0998</i>	<i>W-17303-032106-NR-0995</i>
<i>Sample Date:</i>		<i>3/21/2006</i>	<i>3/21/2006</i>
	Units		
N-Nitrosodi-n-propylamine	ug/kg	1000000 U	200000 U
N-Nitrosodiphenylamine	ug/kg	1000000 U	200000 U
Pentachlorophenol	ug/kg	1000000 U	200000 U
Phenanthrene	ug/kg	1000000 U	200000 U
Phenol	ug/kg	1000000 U	200000 U
Pyrene	ug/kg	1000000 U	200000 U

Metals

Antimony	mg/kg	6.0 J	0.35 J
Arsenic	mg/kg	0.87 J	0.90 J
Barium	mg/kg	1.1 J	1.0 J
Beryllium	mg/kg	0.50 U	0.50 U
Cadmium	mg/kg	0.50 U	0.50 U
Chromium Total	mg/kg	1.0 U	0.16 J
Cobalt	mg/kg	5.0 U	0.46 J
Copper	mg/kg	2.5 U	2.5 U
Lead	mg/kg	0.66 J	10.0 U
Manganese	mg/kg	0.51 J	1.5 U
Mercury	mg/kg	0.10 UJ	0.10 UJ
Nickel	mg/kg	5.0 U	0.44 J
Selenium	mg/kg	25.0 U	0.39 J
Silver	mg/kg	1.0 U	1.0 U
Thallium	mg/kg	200 U	0.55 J
Vanadium	mg/kg	5.0 U	5.0 U
Zinc	mg/kg	1.5 J	1.2 J

PCBs

Aroclor-1016 (PCB-1016)	ug/kg	1000 U	1000 U
Aroclor-1221 (PCB-1221)	ug/kg	1000 U	1000 U
Aroclor-1232 (PCB-1232)	ug/kg	1000 U	1000 U
Aroclor-1242 (PCB-1242)	ug/kg	1000 U	1000 U
Aroclor-1248 (PCB-1248)	ug/kg	1000 U	1000 U
Aroclor-1254 (PCB-1254)	ug/kg	1000 U	1000 U
Aroclor-1260 (PCB-1260)	ug/kg	1000 U	1000 U

Petroleum Products

Total Petroleum Hydrocarbons - extractable (DRO)	mg/kg	1000000	970000
--	-------	---------	--------

General Chemistry

Heating value	Btu/lb	18200	19000
Ignitability	Deg F	146	180
Specific gravity	g/mL	0.93	0.84
Viscosity	cP	20.0	22.5

Notes:

- U Not present at or above the associated value
- J Estimated concentration
- UJ Estimated reporting limit

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APPENDIX C

WRBC ACTIVE PAOC HISTORICAL DATA

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APPENDIX C
GROUNDWATER ANALYTICAL DATA - ACTIVE PAOCs
WILLIAMS BUSINESS CENTER
PAOC WORK PLAN
YPSILANTI, MICHIGAN

Jun 18, 2009 08:28

PAOC		RCDWC	GSI	FAV	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 03
Sample Location:					GW-2-1	MW-2-12A	MW-2-12A	MW-2-12A	MW-2-12A	MW-2-12A	MW-2-12A	MW-2-13A	MW-2-13A	MW-2-13A	MW-2-13A	MW-2-13A	MW-2-13A	MW-8	GW-3-1
Sample ID:					GW-2-1	GW-2-12	MW-2-12-A	MW-2-12-A	MW-2-12-A	MW-2-12-A	WG-17303-031506-NR-0977	GW-2-13	MW-2-13-A	MW-2-13-A	MW-2-13-A	MW-2-13-A	MW-2-13-A	WG-17303-031506-NR-0976	GW-3-1
Sample Date:					6/9/1995	6/10/1995	4/14/1996	4/15/1996	4/16/1996	3/15/2006	6/10/1995	4/14/1996	4/15/1996	4/16/1996	9/18/1996	9/19/1996	9/20/1996	3/15/2006	6/10/1995
Parameter:	Units	a	b	c															
VOCs																			
1,1,1-Trichloroethane	mg/L	0.2	0.2	1.6	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
1,1,2,2-Tetrachloroethane	mg/L	0.0085	0.0031	1.8	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
1,1,2-Trichloroethane	mg/L	0.005	0.012	5.6	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
1,1-Dichloroethane	mg/L	0.88	0.74	13	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
1,1-Dichloroethene	mg/L	0.007	0.024	2.3	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
1,2,3-Trichlorobenzene	mg/L				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	mg/L	0.07	0.03	0.2	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--
1,2,4-Trimethylbenzene	mg/L	0.063	0.017	0.31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane (DBCP)	mg/L	0.0002			--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
1,2-Dibromoethane (Ethylene Dibromide)	mg/L	0.00005	0.00005	0.28	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
1,2-Dichlorobenzene	mg/L	0.6	0.016	0.28	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
1,2-Dichloroethane	mg/L	0.005	0.006	15	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
1,2-Dichloropropane	mg/L	0.005	0.0091	4.0	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.0002 J	--
1,3,5-Trimethylbenzene	mg/L	0.072	0.045	0.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	mg/L	0.0066	0.038	0.2	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
1,4-Dichlorobenzene	mg/L	0.075	0.013	0.2	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
2-Butanone (Methyl Ethyl Ketone)	mg/L	13	2.2	40	--	--	--	--	--	0.023 U	--	--	--	--	--	--	--	0.025 U	--
2-Hexanone	mg/L	1			--	--	--	--	--	0.05 U	--	--	--	--	--	--	--	0.05 U	--
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	mg/L	1.8			--	--	--	--	--	0.05 U	--	--	--	--	--	--	--	0.05 U	--
Acetone	mg/L	0.73	1.7	30	--	--	--	--	--	0.05 U	--	--	--	--	--	--	--	0.025 U	--
Benzene	mg/L	0.005	0.012	1.8	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Bromodichloromethane	mg/L	0.08			--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Bromoform	mg/L	0.08			--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Bromomethane (Methyl Bromide)	mg/L	0.01	0.035	0.64	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Carbon disulfide	mg/L	0.8			--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--
Carbon tetrachloride	mg/L	0.005	0.0056	1.6	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Chlorobenzene	mg/L	0.1	0.047	0.85	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Chloroethane	mg/L	0.43		20	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Chloroform (Trichloromethane)	mg/L	0.08	0.077	2.6	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Chloromethane (Methyl Chloride)	mg/L	0.26			--	--	--	--	--	0.001 UJ	--	--	--	--	--	--	--	0.001 UJ	--
cis-1,2-Dichloroethene	mg/L	0.07	0.62	11	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.0067	--
cis-1,3-Dichloropropene	mg/L				--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Cyclohexane	mg/L				--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Dibromochloromethane	mg/L	0.08			--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Dichlorodifluoromethane (CFC-12)	mg/L	1.7			--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Ethylbenzene	mg/L	0.074	0.018	0.32	--	--	--	--	--	0.001 UJ	--	--	--	--	--	--	--	0.001 UJ	--
Isopropylbenzene	mg/L	0.8			--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--
Methyl acetate	mg/L				--	--	--	--	--	0.01 U	--	--	--	--	--	--	--	0.01 U	--
Methyl cyclohexane	mg/L				--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Methyl Tert Butyl Ether	mg/L	0.04	0.1	13	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.0004 J	--
Methylene chloride	mg/L	0.005	0.047	17	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--
n-Propylbenzene	mg/L	0.08			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene	mg/L	0.1	0.08	2.9	--	--	--	--	--	0.001 UJ	--	--	--	--	--	--	--	0.001 UJ	--
Tetrachloroethene	mg/L	0.005	0.011	0.71	--	--	--	--	--	0.001 UJ	--	--	--	--	--	--	--	0.001 UJ	--
Toluene	mg/L	0.79	0.14	1.7	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
trans-1,2-Dichloroethene	mg/L	0.1	1.5	28	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.00054 J	--
trans-1,3-Dichloropropene	mg/L				--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Trichloroethene	mg/L	0.005	0.029	3.5	--	--	--	--	--	0.0014	--	--	--	--	--	--	--	0.0095*	--
Trichlorofluoromethane (CFC-11)	mg/L	2.6			--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Trifluorotrichloroethane (Freon 113)	mg/L	170	0.032	0.57	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Vinyl chloride	mg/L	0.002	0.015	17	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.00068 J	--
Xylene (total)	mg/L	0.28	0.035	0.63	--	--	--	--	--	0.002 U	--	--	--	--	--	--	--	0.002 U	--
SVOCs																			
1-Methylnaphthalene	mg/L				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	mg/L				--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--
2,4,5-Trichlorophenol	mg/L	0.73			--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--
2,4,6-Trichlorophenol	mg/L	0.12	0.0044	0.079	--	--	--	--	--	0.004 U	--	--	--	--	--	--	--	0.004 U	--

APPENDIX C
GROUNDWATER ANALYTICAL DATA - ACTIVE PAOCs
WILLIAMS BUSINESS CENTER
PAOC WORK PLAN
YPSILANTI, MICHIGAN

Jun 18, 2009 08:28

		RCDWC	GSI	FAV	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 03	
Sample Location:					GW-2-1	MW-2-12A	MW-2-12A	MW-2-12A	MW-2-12A	MW-2-12A	WG-17303-031506-NR-0977	MW-2-13A	MW-2-13A	MW-2-13A	MW-2-13A	MW-2-13A	MW-2-13A	MW-8	GW-3-1	
Sample ID:					GW-2-1	GW-2-12	MW-2-12-A	MW-2-12-A	MW-2-12-A	MW-2-12-A		GW-2-13	MW-2-13-A	MW-2-13-A	MW-2-13-A	MW-2-13-A	MW-2-13-A	WG-17303-031506-NR-0976	GW-3-1	
Sample Date:					6/9/1995	6/10/1995	4/14/1996	4/15/1996	4/16/1996		3/15/2006	6/10/1995	4/14/1996	4/15/1996	4/16/1996	9/18/1996	9/19/1996	9/20/1996	3/15/2006	6/10/1995
Parameter:	Units	a	b	c																
2,4-Dichlorophenol	mg/L	0.073	0.019	0.32	--	--	--	--	--	0.01 U	--	--	--	--	--	--	--	0.01 U	--	
2,4-Dimethylphenol	mg/L	0.37	0.38	2.7	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
2,4-Dinitrophenol	mg/L			0.27	--	--	--	--	--	0.02 U	--	--	--	--	--	--	--	0.02 U	--	
2,4-Dinitrotoluene	mg/L	0.0077			--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
2,6-Dinitrotoluene	mg/L				--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
2-Chloronaphthalene	mg/L	1.8			--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
2-Chlorophenol	mg/L	0.045	0.022	0.43	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
2-Methylnaphthalene	mg/L	0.26			--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
2-Methylphenol	mg/L	0.37	0.071	1.5	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
2-Nitroaniline	mg/L				--	--	--	--	--	0.02 U	--	--	--	--	--	--	--	0.02 U	--	
2-Nitrophenol	mg/L	0.02			--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
3,3'-Dichlorobenzidine	mg/L	0.0011	0.0003	0.081	--	--	--	--	--	0.004 U	--	--	--	--	--	--	--	0.004 U	--	
3-Nitroaniline	mg/L				--	--	--	--	--	0.02 U	--	--	--	--	--	--	--	0.02 U	--	
4,6-Dinitro-2-methylphenol	mg/L	0.02			--	--	--	--	--	0.02 U	--	--	--	--	--	--	--	0.02 U	--	
4-Bromophenyl phenyl ether	mg/L				--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
4-Chloro-3-methylphenol	mg/L	0.15	0.0074	0.13	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
4-Chloroaniline	mg/L				--	--	--	--	--	0.01 U	--	--	--	--	--	--	--	0.01 U	--	
4-Chlorophenyl phenyl ether	mg/L				--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	GW-3-1	
4-Methylphenol	mg/L	0.37	0.071	0.45	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
4-Nitroaniline	mg/L				--	--	--	--	--	0.02 U	--	--	--	--	--	--	--	0.02 U	--	
4-Nitrophenol	mg/L			1.1	--	--	--	--	--	0.02 U	--	--	--	--	--	--	--	0.02 U	--	
Acenaphthene	mg/L	1.3	0.019	0.2	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
Acenaphthylene	mg/L	0.052			--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
Acetophenone	mg/L	1.5			--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
Anthracene	mg/L	0.043			--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
Atrazine	mg/L	0.003	0.0043	0.1	--	--	--	--	--	0.003 U	--	--	--	--	--	--	--	0.003 U	--	
Benzaldehyde	mg/L				--	--	--	--	--	0.01 U	--	--	--	--	--	--	--	0.01 U	--	
Benzo(a)anthracene	mg/L	0.0021			--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--	
Benzo(a)pyrene	mg/L	0.005			--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--	
Benzo(b)fluoranthene	mg/L	0.0015			--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--	
Benzo(g,h,i)perylene	mg/L	0.001			--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--	
Benzo(k)fluoranthene	mg/L	0.001			--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--	
Biphenyl	mg/L		0.11		--	--	--	--	--	0.01 U	--	--	--	--	--	--	--	0.01 U	--	
bis(2-Chloroethoxy)methane	mg/L				--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
bis(2-Chloroethyl)ether	mg/L	0.002	0.001		--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--	
bis(2-Ethylhexyl)phthalate	mg/L	0.006	0.032	0.285	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
Butyl benzylphthalate	mg/L	1.2	0.0069	0.63	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
Caprolactam	mg/L	5.8			--	--	--	--	--	0.01 U	--	--	--	--	--	--	--	0.01 U	--	
Carbazole	mg/L	0.085	0.01	0.072	--	--	--	--	--	0.01 U	--	--	--	--	--	--	--	0.01 U	--	
Chrysene	mg/L	0.0016			--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--	
Dibenz(a,h)anthracene	mg/L	0.002			--	--	--	--	--	0.002 U	--	--	--	--	--	--	--	0.002 U	--	
Dibenzofuran	mg/L		0.004	0.072	--	--	--	--	--	0.004 U	--	--	--	--	--	--	--	0.004 U	--	
Diethyl phthalate	mg/L	5.5	0.11	2	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
Dimethyl phthalate	mg/L	73			--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
Di-n-butylphthalate	mg/L	0.88	0.0097	0.075	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
Di-n-octyl phthalate	mg/L	0.13			--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
Fluoranthene	mg/L	0.21	0.0016	0.028	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--	
Fluorene	mg/L	0.88	0.012	0.22	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
Hexachlorobenzene	mg/L	0.001	0.0002		--	--	--	--	--	0.0002 U	--	--	--	--	--	--	--	0.0002 U	--	
Hexachlorobutadiene	mg/L	0.015	0.00005	0.015	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--	
Hexachlorocyclopentadiene	mg/L	0.05			--	--	--	--	--	R	--	--	--	--	--	--	--	R	--	
Hexachloroethane	mg/L	0.0073	0.0053	0.21	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
Indeno(1,2,3-cd)pyrene	mg/L	0.002			--	--	--	--	--	0.002 U	--	--	--	--	--	--	--	0.002 U	--	
Isophorone	mg/L	0.77	0.31	9.2	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
Naphthalene	mg/L	0.52	0.013	0.2	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	0.177 ^b	
Nitrobenzene	mg/L	0.0034	0.0047	2.1	--	--	--	--	--	0.003 U	--	--	--	--	--	--	--	0.003 U	--	
N-Nitrosodi-n-propylamine	mg/L	0.005			--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
N-Nitrosodiphenylamine	mg/L	0.27			--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	
Pentachlorophenol	mg/L	0.001	0.0018	0.0224	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--	

ATTENDIX C
GROUNDWATER ANALYTICAL DATA - ACTIVE PAOCs
WILLARD BUSINESS CENTER
PAOC WORK PLAN
YPSILANTI, MICHIGAN

Jun 18, 2009 08:28

PAOC	RCDWC	GSI	FAV	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 03
Sample Location:				GW-2-1	MW-2-12A	MW-2-12A	MW-2-12A	MW-2-12A	MW-2-12A	MW-2-12A	MW-2-13A	MW-2-13A	MW-2-13A	MW-2-13A	MW-2-13A	MW-2-13A	MW-2-13A	MW-8	GW-3-1
Sample ID:				GW-2-1	GW-2-12	MW-2-12-A	MW-2-12-A	MW-2-12-A	MW-2-12-A	WG-17303-031506-NR-0977	GW-2-13	MW-2-13-A	MW-2-13-A	MW-2-13-A	MW-2-13-A	MW-2-13-A	MW-2-13-A	WG-17303-031506-NR-0976	GW-3-1
Sample Date:				6/9/1995	6/10/1995	4/14/1996	4/15/1996	4/16/1996	4/16/1996	3/15/2006	6/10/1995	4/14/1996	4/15/1996	4/16/1996	9/18/1996	9/19/1996	9/20/1996	3/15/2006	6/10/1995
Parameter:	Units	a	b	c															
Phenanthrene	mg/L	0.052	0.0024	0.043	--	--	--	--	--	0.002 U	--	--	--	--	--	--	--	0.002 U	--
Phenol	mg/L	4.4	0.21	6.8	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--
Pyrene	mg/L	0.14			--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--
Metals																			
Aluminum	mg/L	0.05			5.78 ^a	16.3 ^a	--	--	--	--	1.96 ^a	--	--	--	--	--	--	--	--
Aluminum (Dissolved)	mg/L	0.05			0.2 U	0.2 U	--	--	--	--	0.2 U	--	--	--	--	--	--	--	--
Antimony	mg/L	0.006	0.002	2.3	--	--	--	--	--	0.00018 J	--	--	--	--	--	--	--	0.00032 J	--
Arsenic	mg/L	0.01	0.05	0.68	--	--	--	--	--	0.005 U	--	--	--	--	--	--	--	0.005 U	--
Arsenic (Dissolved)	mg/L	0.01	0.05	0.68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	mg/L	2	1.866	10.7	--	--	--	--	--	0.098 J	--	--	--	--	--	--	--	0.0921 J	--
Barium (Dissolved)	mg/L	2	1.866	10.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	mg/L	0.004	0.0753	1.35	--	--	--	--	--	0.001 U	--	--	--	--	--	--	--	0.001 U	--
Cadmium	mg/L	0.005	0.0025	0.0373	0.024 ^{ab}	0.39 ^{abc}	0.00016	0.00014	0.000050 U	0.001 U	0.2 ^{abc}	0.15 ^{abc}	0.064 ^{abc}	0.15 ^{abc}	0.0059 ^{ab}	0.0021	0.0021	0.001 U	--
Cadmium (Dissolved)	mg/L	0.005	0.0025	0.0373	0.022 ^{ab}	0.019 ^{ab}	0.00036	0.00023	0.00016	--	0.012 ^{ab}	0.00014	0.00015	0.000084	0.00079	0.00057	0.00066	--	--
Chromium Total	mg/L	0.1	0.011		--	--	--	--	--	0.002 J	--	--	--	--	--	--	--	0.01	--
Chromium Total (Dissolved)	mg/L	0.1	0.011		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	mg/L	0.04	0.1	0.74	--	--	--	--	--	0.007 U	--	--	--	--	--	--	--	0.004 J	--
Copper	mg/L	1	0.0287	0.0972	--	--	--	--	--	0.0035	--	--	--	--	--	--	--	0.0018 J	--
Copper (Dissolved)	mg/L	1	0.0287	0.0972	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide (total)	mg/L	0.2	0.0052		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	mg/L	0.004	0.014	0.779	0.61 ^{ab}	1.55 ^{abc}	0.0050 U	0.0050 U	0.0050 U	0.003 U	0.88 ^{abc}	0.49 ^{ab}	0.37 ^{ab}	0.61 ^{ab}	0.028 ^{ab}	0.007 ^a	0.007 ^a	0.003 U	--
Lead (Dissolved)	mg/L	0.004	0.014	0.779	0.88 ^{abc}	0.07 ^{ab}	0.0050 U	0.0050 U	0.0050 U	--	0.14 ^{ab}	0.0050 U	0.0050 U	0.0050 U	0.018 ^{ab}	0.0050 U	0.0050 U	--	--
Manganese	mg/L	0.05	3.6	27.6	--	--	--	--	--	0.128 ^a	--	--	--	--	--	--	--	0.663 ^a	--
Mercury	mg/L	0.002	0.0000013		0.0002 U	0.0002 U	0.00020 U	0.00020 U	0.00020 U	0.0002 U	0.0003 ^b	0.00020 U	0.00020 U	0.00020 U	--	--	--	0.0002 U	--
Mercury (Dissolved)	mg/L	0.002	0.0000013		0.0002 U	0.0002 ^b	0.00020 U	0.00020 U	0.00020 U	--	0.0003 ^b	0.00020 U	0.00020 U	0.00020 U	--	--	--	--	--
Nickel	mg/L	0.1	0.165	2.97	0.2 U	0.56 ^{ab}	--	--	--	0.02 U	0.2 U	--	--	--	--	--	--	0.189 ^{ab}	--
Nickel (Dissolved)	mg/L	0.1	0.165	2.97	0.2 U	0.2 U	--	--	--	--	0.2 U	--	--	--	--	--	--	--	--
Selenium	mg/L	0.05	0.005	0.12	--	--	--	--	--	0.0041 J	--	--	--	--	--	--	--	0.0037 J	--
Selenium (Dissolved)	mg/L	0.05	0.005	0.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	mg/L	0.034	0.0002	0.0011	--	--	--	--	--	0.0002 U	--	--	--	--	--	--	--	0.0002 U	--
Silver (Dissolved)	mg/L	0.034	0.0002	0.0011	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	mg/L	0.002	0.002	0.094	--	--	--	--	--	0.000045 J	--	--	--	--	--	--	--	0.0004 J	--
Vanadium	mg/L	0.0045	0.012	0.22	--	--	--	--	--	0.004 U	--	--	--	--	--	--	--	0.004 U	--
Zinc	mg/L	2.4	0.375	0.745	0.2 U	0.2 U	--	--	--	0.02 U	0.4 ^b	--	--	--	--	--	--	0.02 U	--
Zinc (Dissolved)	mg/L	2.4	0.375	0.745	0.2 U	2.02 ^{bc}	--	--	--	--	0.2 U	--	--	--	--	--	--	--	--
PCBs																			
Aroclor-1016 (PCB-1016)	mg/L	0.0005	0.0002		--	--	--	--	--	0.0001 U	--	--	--	--	--	--	--	0.0001 U	--
Aroclor-1221 (PCB-1221)	mg/L	0.0005	0.0002		--	--	--	--	--	0.0001 U	--	--	--	--	--	--	--	0.0001 U	--
Aroclor-1232 (PCB-1232)	mg/L	0.0005	0.0002		--	--	--	--	--	0.0001 U	--	--	--	--	--	--	--	0.0001 U	--
Aroclor-1242 (PCB-1242)	mg/L	0.0005	0.0002		--	--	--	--	--	0.0001 U	--	--	--	--	--	--	--	0.0001 U	--
Aroclor-1248 (PCB-1248)	mg/L	0.0005	0.0002		--	--	--	--	--	0.0001 U	--	--	--	--	--	--	--	0.0001 U	--
Aroclor-1254 (PCB-1254)	mg/L	0.0005	0.0002		--	--	--	--	--	0.0001 U	--	--	--	--	--	--	--	0.0001 U	--
Aroclor-1260 (PCB-1260)	mg/L	0.0005	0.0002		--	--	--	--	--	0.0001 U	--	--	--	--	--	--	--	0.0001 U	--

Notes:
FAV Final Acute Value
GSI Groundwater Surface Water Interface Criteria
RCDWC Residential & Commercial Drinking Water Criteria
J Estimated concentration
R Rejected
U Not present at or above the associated value
UJ Estimated reporting limit

ATTENDIA C
GROUNDWATER ANALYTICAL DATA - ACTIVE PAOCs
WILLIAMS BUSINESS CENTER
PAOC WORK PLAN
YPSILANTI, MICHIGAN

Jun 18, 2009 08:28

		RCDWC	GSI	FAV	WRBC PAOC 03	WRBC PAOC 03	WRBC PAOC 03	WRBC PAOC 05	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08
Sample Location:					MW-3-6	MW-3-7	MW-3-8	SB-5-2	L-17	L-17	L-17	L-17	L-17	L-17	RD-MW-1	RD-MW-2	RD-MW-3	RD-MW-3	RD-MW-3
Sample ID:					MW-3-6	MW-3-7	MW-3-8	GW-5-2	L-17	L-17	L-17	L-17	L-17	L-17	WG-17303-031606-EV-0979	WG-17303-031606-LA-0980	MW-3	MW-3	MW-3
Sample Date:					4/1/1996	4/1/1996	4/1/1996	6/6/1995	2/1/1997	5/1/1997	8/1/1997	11/1/1997	8/1/1998	8/1/1998	3/16/2006	3/16/2006	2/1/1997	5/1/1997	8/1/1997
Parameter:	Units	a	b	c															
VOCs																			
1,1,1-Trichloroethane	mg/L	0.2	0.2	1.6	--	--	--	--	0.001 U	0.001 U	0.001 U	--	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	--
1,1,2,2-Tetrachloroethane	mg/L	0.0085	0.0031	1.8	--	--	--	--	--	--	0.001 U	--	--	0.001 U	0.017 U	--	--	0.001 U	--
1,1,2-Trichloroethane	mg/L	0.005	0.012	5.6	--	--	--	--	--	--	0.001 U	--	--	0.001 U	0.017 U	--	--	0.001 U	--
1,1-Dichloroethane	mg/L	0.88	0.74	13	--	--	--	--	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	mg/L	0.007	0.024	2.3	--	--	--	--	--	--	--	--	--	--	0.001 U	0.017 U	--	--	--
1,2,3-Trichlorobenzene	mg/L				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	mg/L	0.07	0.03	0.2	--	--	--	--	--	--	--	--	--	--	0.005 U	0.083 U	--	--	--
1,2,4-Trimethylbenzene	mg/L	0.063	0.017	0.31	--	--	--	--	--	--	--	--	0.003	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane (DBCP)	mg/L	0.0002			--	--	--	--	--	--	--	--	--	--	0.001 U	0.017 U	--	--	--
1,2-Dibromoethane (Ethylene Dibromide)	mg/L	0.00005	0.00005	0.28	--	--	--	--	--	--	--	--	--	--	0.001 U	0.017 U	--	--	--
1,2-Dichlorobenzene	mg/L	0.6	0.016	0.28	--	--	--	--	--	--	--	--	--	--	0.001 U	0.017 U	--	--	--
1,2-Dichloroethane	mg/L	0.005	0.006	15	--	--	--	--	--	--	0.001 U	--	--	--	0.001 U	0.017 U	--	--	0.001 U
1,2-Dichloropropane	mg/L	0.005	0.0091	4.0	--	--	--	--	--	--	0.001 U	--	--	--	0.001 U	0.017 U	--	--	0.001 U
1,3,5-Trimethylbenzene	mg/L	0.072	0.045	0.81	--	--	--	--	--	--	--	--	0.001 U	--	--	--	--	--	--
1,3-Dichlorobenzene	mg/L	0.0066	0.038	0.2	--	--	--	--	--	--	--	--	--	--	0.001 U	0.017 U	--	--	--
1,4-Dichlorobenzene	mg/L	0.075	0.013	0.2	--	--	--	--	--	--	--	--	--	--	0.001 U	0.017 U	--	--	--
2-Butanone (Methyl Ethyl Ketone)	mg/L	13	2.2	40	--	--	--	--	--	--	--	--	--	--	0.025 U	0.42 U	--	--	--
2-Hexanone	mg/L	1			--	--	--	--	--	--	--	--	--	--	0.05 U	0.83 U	--	--	--
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	mg/L	1.8			--	--	--	--	--	--	--	--	--	--	0.05 U	0.83 U	--	--	--
Acetone	mg/L	0.73	1.7	30	--	--	--	--	--	--	--	--	--	--	0.025 U	0.42 U	--	--	--
Benzene	mg/L	0.005	0.012	1.8	--	--	--	--	0.001 U	0.0076 ^a	0.005 U	0.025 ^{ab}	0.003	0.001 U	0.58 ^{ab}	0.0014	0.001 U	0.005 U	0.005 U
Bromodichloromethane	mg/L	0.08			--	--	--	--	--	--	--	--	--	--	0.001 U	0.017 U	--	--	--
Bromoform	mg/L	0.08			--	--	--	--	--	--	--	--	--	--	0.001 U	0.017 U	--	--	--
Bromomethane (Methyl Bromide)	mg/L	0.01	0.035	0.64	--	--	--	--	--	--	--	--	--	--	0.001 U	0.017 U	--	--	--
Carbon disulfide	mg/L	0.8			--	--	--	--	--	--	--	--	--	--	0.005 U	0.083 U	--	--	--
Carbon tetrachloride	mg/L	0.005	0.0056	1.6	--	--	--	--	--	--	0.001 U	--	--	--	0.001 U	0.017 U	--	--	0.001 U
Chlorobenzene	mg/L	0.1	0.047	0.85	--	--	--	--	--	--	0.001 U	--	--	--	0.001 U	0.017 U	--	--	0.001 U
Chloroethane	mg/L	0.43		20	--	--	--	--	0.001 U	0.001 U	--	--	0.005 U	0.001 U	0.017 U	0.001 U	0.001 U	--	--
Chloroform (Trichloromethane)	mg/L	0.08	0.077	2.6	--	--	--	--	--	--	0.001 U	--	--	--	0.001 U	0.017 U	--	--	0.001 U
Chloromethane (Methyl Chloride)	mg/L	0.26			--	--	--	--	--	--	--	--	--	--	0.001 U	0.017 U	--	--	--
cis-1,2-Dichloroethene	mg/L	0.07	0.62	11	--	--	--	--	--	--	0.001 U	0.001 U	0.001 U	0.001 U	0.017 U	--	--	0.001 U	0.001 U
cis-1,3-Dichloropropene	mg/L				--	--	--	--	--	--	0.001 U	--	--	--	0.001 U	0.017 U	--	--	0.001 U
Cyclohexane	mg/L				--	--	--	--	--	--	--	--	--	--	0.00048 J	0.017 U	--	--	--
Dibromochloromethane	mg/L	0.08			--	--	--	--	--	--	--	--	--	--	0.001 U	0.017 U	--	--	--
Dichlorodifluoromethane (CFC-12)	mg/L	1.7			--	--	--	--	--	--	--	--	--	--	0.001 UJ	0.017 UJ	--	--	--
Ethylbenzene	mg/L	0.074	0.018	0.32	--	--	--	--	0.0018	0.001 U	0.001 U	0.005	0.003	0.001 U	0.017 U	0.0094	0.001 U	0.002	0.002
Isopropylbenzene	mg/L	0.8			--	--	--	--	--	--	--	--	0.001 U	0.005 U	0.083 U	--	--	--	--
Methyl acetate	mg/L				--	--	--	--	--	--	--	--	--	--	0.01 U	0.17 U	--	--	--
Methyl cyclohexane	mg/L				--	--	--	--	--	--	--	--	--	--	0.001 U	0.017 U	--	--	--
Methyl Tert Butyl Ether	mg/L	0.04	0.1	13	--	--	--	--	--	0.01 U	--	--	--	--	0.005 U	0.014 J	--	0.001 U	--
Methylene chloride	mg/L	0.005	0.047	17	--	--	--	--	--	--	--	--	--	--	0.005 U	0.083 U	--	--	--
n-Propylbenzene	mg/L	0.08			--	--	--	--	--	--	--	--	0.001 U	--	--	--	--	--	--
Styrene	mg/L	0.1	0.08	2.9	--	--	--	--	--	--	--	--	--	--	0.001 U	0.017 U	--	--	--
Tetrachloroethene	mg/L	0.005	0.011	0.71	--	--	--	--	--	--	0.001 U	--	--	--	0.001 U	0.017 U	--	--	0.001 U
Toluene	mg/L	0.79	0.14	1.7	--	--	--	--	0.001 U	0.0019	0.001 U	0.002	0.001 U	0.001 U	0.017 U	0.001	0.001 U	0.001 U	0.001 U
trans-1,2-Dichloroethene	mg/L	0.1	1.5	28	--	--	--	--	--	--	0.001 U	--	--	--	0.001 U	0.017 U	--	--	0.001 U
trans-1,3-Dichloropropene	mg/L				--	--	--	--	--	--	0.001 U	--	--	--	0.001 U	0.017 U	--	--	0.001 U
Trichloroethene	mg/L	0.005	0.029	3.5	--	--	--	--	--	--	0.001 U	--	--	--	0.001 U	0.017 U	--	--	0.001 U
Trichlorofluoromethane (CFC-11)	mg/L	2.6			--	--	--	--	--	--	--	--	--	--	0.001 U	0.017 U	--	--	--
Trifluorotrichloroethane (Freon 113)	mg/L	170	0.032	0.57	--	--	--	--	--	--	--	--	--	--	0.001 U	0.017 U	--	--	--
Vinyl chloride	mg/L	0.002	0.015	17	--	--	--	--	--	--	--	--	--	--	0.001 U	0.017 U	--	--	--
Xylene (total)	mg/L	0.28	0.035	0.63	--	--	--	--	0.0094	0.0036	0.003 U	0.019	0.013	0.002 U	0.033 U	0.044 ^b	0.002 U	0.003 U	0.008
SVOCs																			
1-Methylnaphthalene	mg/L				--	--	--	--	0.01 U	--	--	--	--	--	--	--	0.01 U	--	--
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	mg/L				--	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--
2,4,5-Trichlorophenol	mg/L	0.73			--	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--
2,4,6-Trichlorophenol	mg/L	0.12	0.0044	0.079	--	--	--	--	--	--	--	--	--	--	0.004 U	0.004 U	--	--	--

ATTENDIA C
GROUNDWATER ANALYTICAL DATA - ACTIVE PAOCs
WILLIAMSON BUSINESS CENTER
PAOC WORK PLAN
YPSILANTI, MICHIGAN

Jun 18, 2009 08:28

		RCDWC	GSI	FAV	WRBC PAOC 03	WRBC PAOC 03	WRBC PAOC 03	WRBC PAOC 05	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08
Sample Location:					MW-3-6	MW-3-7	MW-3-8	SB-5-2	L-17	L-17	L-17	L-17	L-17	RD-MW-1	RD-MW-2	RD-MW-3	RD-MW-3	RD-MW-3	RD-MW-3
Sample ID:					MW-3-6	MW-3-7	MW-3-8	GW-5-2	L-17	L-17	L-17	L-17	L-17	WG-17303-031606-EV-0979	WG-17303-031606-LA-0980	MW-3	MW-3	MW-3	MW-3
Sample Date:					4/1/1996	4/1/1996	4/1/1996	6/6/1995	2/1/1997	5/1/1997	8/1/1997	11/1/1997	8/1/1998	3/16/2006	3/16/2006	2/1/1997	5/1/1997	8/1/1997	11/1/1997
Parameter:	Units	a	b	c															
2,4-Dichlorophenol	mg/L	0.073	0.019	0.32	--	--	--	--	--	--	--	--	--	0.01 U	0.01 U	--	--	--	--
2,4-Dimethylphenol	mg/L	0.37	0.38	2.7	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
2,4-Dinitrophenol	mg/L			0.27	--	--	--	--	--	--	--	--	--	0.02 U	0.02 U	--	--	--	--
2,4-Dinitrotoluene	mg/L	0.0077			--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
2,6-Dinitrotoluene	mg/L				--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
2-Chloronaphthalene	mg/L	1.8			--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
2-Chlorophenol	mg/L	0.045	0.022	0.43	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
2-Methylnaphthalene	mg/L	0.26			0.01 U	0.01 U	0.012	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
2-Methylphenol	mg/L	0.37	0.071	1.5	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
2-Nitroaniline	mg/L				--	--	--	--	--	--	--	--	--	0.02 U	0.02 U	--	--	--	--
2-Nitrophenol	mg/L	0.02			--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
3,3'-Dichlorobenzidine	mg/L	0.0011	0.0003	0.081	--	--	--	--	--	--	--	--	--	0.004 U	0.004 U	--	--	--	--
3-Nitroaniline	mg/L				--	--	--	--	--	--	--	--	--	0.02 U	0.02 U	--	--	--	--
4,6-Dinitro-2-methylphenol	mg/L	0.02			--	--	--	--	--	--	--	--	--	0.02 U	0.02 U	--	--	--	--
4-Bromophenyl phenyl ether	mg/L				--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
4-Chloro-3-methylphenol	mg/L	0.15	0.0074	0.13	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
4-Chloroaniline	mg/L				--	--	--	--	--	--	--	--	--	0.01 U	0.01 U	--	--	--	--
4-Chlorophenyl phenyl ether	mg/L				--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
4-Methylphenol	mg/L	0.37	0.071	0.45	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
4-Nitroaniline	mg/L				--	--	--	--	--	--	--	--	--	0.02 U	0.02 U	--	--	--	--
4-Nitrophenol	mg/L			1.1	--	--	--	--	--	--	--	--	--	0.02 U	0.02 U	--	--	--	--
Acenaphthene	mg/L	1.3	0.019	0.2	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Acenaphthylene	mg/L	0.052			--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Acetophenone	mg/L	1.5			--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Anthracene	mg/L	0.043			--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Atrazine	mg/L	0.003	0.0043	0.1	--	--	--	--	--	--	--	--	--	0.003 U	0.003 U	--	--	--	--
Benzaldehyde	mg/L				--	--	--	--	--	--	--	--	--	0.01 U	0.01 U	--	--	--	--
Benzo(a)anthracene	mg/L	0.0021			--	--	--	--	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Benzo(a)pyrene	mg/L	0.005			--	--	--	--	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Benzo(b)fluoranthene	mg/L	0.0015			--	--	--	--	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Benzo(g,h,i)perylene	mg/L	0.001			--	--	--	--	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Benzo(k)fluoranthene	mg/L	0.001			--	--	--	--	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Biphenyl	mg/L			0.11	--	--	--	--	--	--	--	--	--	0.01 U	0.01 U	--	--	--	--
bis(2-Chloroethoxy)methane	mg/L				--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
bis(2-Chloroethyl)ether	mg/L	0.002	0.001		--	--	--	--	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
bis(2-Ethylhexyl)phthalate	mg/L	0.006	0.032	0.285	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Butyl benzylphthalate	mg/L	1.2	0.0069	0.63	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Caprolactam	mg/L	5.8			--	--	--	--	--	--	--	--	--	0.01 U	0.01 U	--	--	--	--
Carbazole	mg/L	0.085	0.01	0.072	--	--	--	--	--	--	--	--	--	0.01 U	0.01 U	--	--	--	--
Chrysene	mg/L	0.0016			--	--	--	--	0.005 U	--	--	--	--	0.001 U	0.001 U	0.005 U	--	--	--
Dibenz(a,h)anthracene	mg/L	0.002			--	--	--	--	--	--	--	--	--	0.002 U	0.002 U	--	--	--	--
Dibenzofuran	mg/L		0.004	0.072	--	--	--	--	--	--	--	--	--	0.004 U	0.004 U	--	--	--	--
Diethyl phthalate	mg/L	5.5	0.11	2	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Dimethyl phthalate	mg/L	73			--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Di-n-butylphthalate	mg/L	0.88	0.0097	0.075	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Di-n-octyl phthalate	mg/L	0.13			--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Fluoranthene	mg/L	0.21	0.0016	0.028	--	--	--	--	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Fluorene	mg/L	0.88	0.012	0.22	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Hexachlorobenzene	mg/L	0.001	0.0002		--	--	--	--	--	--	--	--	--	0.0002 U	0.0002 U	--	--	--	--
Hexachlorobutadiene	mg/L	0.015	0.00005	0.015	--	--	--	--	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Hexachlorocyclopentadiene	mg/L	0.05			--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Hexachloroethane	mg/L	0.0073	0.0053	0.21	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Indeno(1,2,3-cd)pyrene	mg/L	0.002			--	--	--	--	--	--	--	--	--	0.002 U	0.002 U	--	--	--	--
Isophorone	mg/L	0.77	0.31	9.2	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Naphthalene	mg/L	0.52	0.013	0.2	0.1 ^b	0.005 U	0.26 ^{bc}	--	--	0.005 U	--	--	0.013	0.005 U	0.005 U	--	--	--	--
Nitrobenzene	mg/L	0.0034	0.0047	2.1	--	--	--	--	--	--	--	--	--	0.003 U	0.003 U	--	--	--	--
N-Nitrosodi-n-propylamine	mg/L	0.005			--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
N-Nitrosodiphenylamine	mg/L	0.27			--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Pentachlorophenol	mg/L	0.001	0.0018	0.0224	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--

ATTENDIX C
GROUNDWATER ANALYTICAL DATA - ACTIVE PAOCs
WILLARD BUSINESS CENTER
PAOC WORK PLAN
YPSILANTI, MICHIGAN

Jun 18, 2009 08:28

PAOC		RCDWC	GSI	FAV	WRBC PAOC 03	WRBC PAOC 03	WRBC PAOC 03	WRBC PAOC 05	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08
Sample Location:					MW-3-6	MW-3-7	MW-3-8	SB-5-2	L-17	L-17	L-17	L-17	L-17	L-17	RD-MW-1	RD-MW-2	RD-MW-3	RD-MW-3	RD-MW-3
Sample ID:					MW-3-6	MW-3-7	MW-3-8	GW-5-2	L-17	L-17	L-17	L-17	L-17	L-17	WG-17303-031606-EV-0979	WG-17303-031606-LA-0980	MW-3	MW-3	MW-3
Sample Date:					4/1/1996	4/1/1996	4/1/1996	6/6/1995	2/1/1997	5/1/1997	8/1/1997	11/1/1997	8/1/1998	3/16/2006	3/16/2006	2/1/1997	5/1/1997	8/1/1997	11/1/1997
Parameter:	Units	a	b	c															
Phenanthrene	mg/L	0.052	0.0024	0.043	--	--	--	--	--	--	--	--	--	0.002 U	0.002 U	--	--	--	--
Phenol	mg/L	4.4	0.21	6.8	--	--	--	--	--	--	--	--	--	0.005 U	0.0099	--	--	--	--
Pyrene	mg/L	0.14			--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Metals																			
Aluminum	mg/L	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum (Dissolved)	mg/L	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	mg/L	0.006	0.002	2.3	--	--	--	--	--	--	--	--	--	0.0011 J	0.00041 J	--	--	--	--
Arsenic	mg/L	0.01	0.05	0.68	--	--	--	--	--	--	--	--	--	0.005 U	0.0061	--	--	--	--
Arsenic (Dissolved)	mg/L	0.01	0.05	0.68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	mg/L	2	1.866	10.7	--	--	--	--	--	--	--	--	--	0.133	0.226	--	--	--	--
Barium (Dissolved)	mg/L	2	1.866	10.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	mg/L	0.004	0.0753	1.35	--	--	--	--	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Cadmium	mg/L	0.005	0.0025	0.0373	--	--	--	--	--	--	--	--	--	0.00042 J	0.00043 J	--	--	--	--
Cadmium (Dissolved)	mg/L	0.005	0.0025	0.0373	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium Total	mg/L	0.1	0.011		--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Chromium Total (Dissolved)	mg/L	0.1	0.011		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	mg/L	0.04	0.1	0.74	--	--	--	--	--	--	--	--	--	0.007 U	0.0022 J	--	--	--	--
Copper	mg/L	1	0.0287	0.0972	--	--	--	--	--	--	--	--	--	0.002 U	0.002 U	--	--	--	--
Copper (Dissolved)	mg/L	1	0.0287	0.0972	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide (total)	mg/L	0.2	0.0052		--	--	--		--	--	--	--	--	--	--	--	--	--	--
Lead	mg/L	0.004	0.014	0.779	--	--	--	0.66 ^{ab}	--	--	--	--	--	0.003 U	0.003 U	--	--	--	--
Lead (Dissolved)	mg/L	0.004	0.014	0.779	--	--	--	0.66 ^{ab}	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	0.05	3.6	27.6	--	--	--	--	--	--	--	--	--	0.277 ^a	0.298 ^a	--	--	--	--
Mercury	mg/L	0.002	0.0000013		--	--	--	--	--	--	--	--	--	0.0002 U	0.0002 U	--	--	--	--
Mercury (Dissolved)	mg/L	0.002	0.0000013		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	0.1	0.165	2.97	--	--	--	--	--	--	--	--	--	0.0025 J	0.0032 J	--	--	--	--
Nickel (Dissolved)	mg/L	0.1	0.165	2.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	mg/L	0.05	0.005	0.12	--	--	--	--	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Selenium (Dissolved)	mg/L	0.05	0.005	0.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	mg/L	0.034	0.0002	0.0011	--	--	--	--	--	--	--	--	--	0.000067 J	0.0002 U	--	--	--	--
Silver (Dissolved)	mg/L	0.034	0.0002	0.0011	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	mg/L	0.002	0.002	0.094	--	--	--	--	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Vanadium	mg/L	0.0045	0.012	0.22	--	--	--	--	--	--	--	--	--	0.004 U	0.004 U	--	--	--	--
Zinc	mg/L	2.4	0.375	0.745	--	--	--	--	--	--	--	--	--	0.0521	0.02 U	--	--	--	--
Zinc (Dissolved)	mg/L	2.4	0.375	0.745	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs																			
Aroclor-1016 (PCB-1016)	mg/L	0.0005	0.0002		--	--	--	--	--	--	--	--	--	0.0001 U	0.0001 U	--	--	--	--
Aroclor-1221 (PCB-1221)	mg/L	0.0005	0.0002		--	--	--	--	--	--	--	--	--	0.0001 U	0.0001 U	--	--	--	--
Aroclor-1232 (PCB-1232)	mg/L	0.0005	0.0002		--	--	--	--	--	--	--	--	--	0.0001 U	0.0001 U	--	--	--	--
Aroclor-1242 (PCB-1242)	mg/L	0.0005	0.0002		--	--	--	--	--	--	--	--	--	0.0001 U	0.0001 U	--	--	--	--
Aroclor-1248 (PCB-1248)	mg/L	0.0005	0.0002		--	--	--	--	--	--	--	--	--	0.0001 U	0.0001 U	--	--	--	--
Aroclor-1254 (PCB-1254)	mg/L	0.0005	0.0002		--	--	--	--	--	--	--	--	--	0.0001 U	0.0001 U	--	--	--	--
Aroclor-1260 (PCB-1260)	mg/L	0.0005	0.0002		--	--	--	--	--	--	--	--	--	0.0001 U	0.0001 U	--	--	--	--

Notes:
FAV Final Acute Value
GSI Groundwater Surface Water Interface Criteria
RCDWC Residential & Commercial Drinking Water Criteria
J Estimated concentration
R Rejected
U Not present at or above the associated value
UJ Estimated reporting limit

ATTENDIX C
GROUNDWATER ANALYTICAL DATA - ACTIVE PAOCs
WILLIAMS BUSINESS CENTER
PAOC WORK PLAN
YPSILANTI, MICHIGAN

Jun 18, 2009 08:28

PAOC		RCDWC	GSI	FAV	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08
Sample Location:					RD-MW-3	RD-MW-4	RD-MW-5	RD-MW-5	RD-MW-5	RD-MW-5	RD-MW-5	RD-MW-5	RD-MW-5	RD-MW-6	RD-MW-7	RD-MW-7	RD-MW-7
Sample ID:					WG-17303-031606-EV-0982	WG-17303-031606-NR-0983	MW-5	MW-5	MW-5	MW-5	MW-5	WG-17303-031606-NR-0985	WG-17303-031606-LA-0978	MW-7	MW-7	MW-7	MW-7
Sample Date:					3/16/2006	3/16/2006	2/1/1997	5/1/1997	8/1/1997	11/1/1997	8/1/1998	3/16/2006	3/15/2006	2/1/1997	5/1/1997	8/1/1997	11/1/1997
Parameter:	Units	a	b	c													
VOCs																	
1,1,1-Trichloroethane	mg/L	0.2	0.2	1.6	0.001 U	0.001 U	0.0027	0.0051	0.007	--	0.021	0.0075	0.001 U	0.001 U	0.001 U	0.001 U	--
1,1,2,2-Tetrachloroethane	mg/L	0.0085	0.0031	1.8	0.001 U	0.001 U	--	--	0.001 U	--	--	0.001 U	0.001 U	--	--	0.001 U	--
1,1,2-Trichloroethane	mg/L	0.005	0.012	5.6	0.001 U	0.001 U	--	--	0.001 U	--	--	0.001 U	0.001 U	--	--	0.001 U	--
1,1-Dichloroethane	mg/L	0.88	0.74	13	0.001 U	0.001 U	0.0052	0.0058	0.008	0.005	0.029	0.0037	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	mg/L	0.007	0.024	2.3	0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
1,2,3-Trichlorobenzene	mg/L				--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	mg/L	0.07	0.03	0.2	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
1,2,4-Trimethylbenzene	mg/L	0.063	0.017	0.31	--	--	--	--	--	--	0.001 U	--	--	--	--	--	0.001 U
1,2-Dibromo-3-chloropropane (DBCP)	mg/L	0.0002			0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
1,2-Dibromoethane (Ethylene Dibromide)	mg/L	0.00005	0.00005	0.28	0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
1,2-Dichlorobenzene	mg/L	0.6	0.016	0.28	0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
1,2-Dichloroethane	mg/L	0.005	0.006	15	0.001 U	0.00017 J	--	--	0.001 U	--	--	0.001 U	0.001 U	--	--	0.001 U	--
1,2-Dichloropropane	mg/L	0.005	0.0091	4.0	0.001 U	0.001 U	--	--	0.001 U	--	--	0.001 U	0.001 U	--	--	0.001 U	--
1,3,5-Trimethylbenzene	mg/L	0.072	0.045	0.81	--	--	--	--	--	--	0.001 U	--	--	--	--	--	0.001 U
1,3-Dichlorobenzene	mg/L	0.0066	0.038	0.2	0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
1,4-Dichlorobenzene	mg/L	0.075	0.013	0.2	0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
2-Butanone (Methyl Ethyl Ketone)	mg/L	13	2.2	40	0.025 U	0.025 U	--	--	--	--	--	0.025 U	0.025 U	--	--	--	--
2-Hexanone	mg/L	1			0.05 U	0.05 U	--	--	--	--	--	0.05 U	0.05 U	--	--	--	--
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	mg/L	1.8			0.05 U	0.05 U	--	--	--	--	--	0.05 U	0.05 U	--	--	--	--
Acetone	mg/L	0.73	1.7	30	0.025 U	0.025 U	--	--	--	--	--	0.025 U	0.025 U	--	--	--	--
Benzene	mg/L	0.005	0.012	1.8	0.001 U	0.001 U	0.0011	0.0011	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.0018	0.001 U	0.005 U	0.0011
Bromodichloromethane	mg/L	0.08			0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Bromoform	mg/L	0.08			0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Bromomethane (Methyl Bromide)	mg/L	0.01	0.035	0.64	0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Carbon disulfide	mg/L	0.8			0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
Carbon tetrachloride	mg/L	0.005	0.0056	1.6	0.001 U	0.001 U	--	--	0.001 U	--	--	0.001 U	0.001 U	--	--	0.001 U	--
Chlorobenzene	mg/L	0.1	0.047	0.85	0.001 U	0.001 U	--	--	0.001 U	--	--	0.001 U	0.001 U	--	--	0.001 U	--
Chloroethane	mg/L	0.43		20	0.001 U	0.001 U	0.001 U	0.001 U	--	--	0.005 U	0.001 U	0.001 U	0.001 U	--	--	0.005 U
Chloroform (Trichloromethane)	mg/L	0.08	0.077	2.6	0.001 U	0.001 U	--	--	0.001 U	--	--	0.001 U	0.001 U	--	--	0.001 U	--
Chloromethane (Methyl Chloride)	mg/L	0.26			0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 UJ	--	--	--	--
cis-1,2-Dichloroethene	mg/L	0.07	0.62	11	0.001 U	0.001 U	--	--	0.001	0.001 U	0.001 U	0.001 U	0.001 U	--	--	0.001 U	0.001 U
cis-1,3-Dichloropropene	mg/L				0.001 U	0.001 U	--	--	0.001 U	--	--	0.001 U	0.001 U	--	--	0.001 U	--
Cyclohexane	mg/L				0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Dibromochloromethane	mg/L	0.08			0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Dichlorodifluoromethane (CFC-12)	mg/L	1.7			0.001 UJ	0.001 UJ	--	--	--	--	--	0.001 UJ	0.001 U	--	--	--	--
Ethylbenzene	mg/L	0.074	0.018	0.32	0.001 U	0.001 U	0.0045	0.001 U	0.002	0.002	0.001 U	0.001 UJ	0.001 UJ	0.012	0.001 U	0.001	0.003
Isopropylbenzene	mg/L	0.8			0.005 U	0.005 U	--	--	--	--	0.001 U	0.005 U	0.005 U	--	--	--	0.001 U
Methyl acetate	mg/L				0.01 U	0.01 U	--	--	--	--	--	0.01 U	0.01 U	--	--	--	--
Methyl cyclohexane	mg/L				0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Methyl Tert Butyl Ether	mg/L	0.04	0.1	13	0.005 U	0.005 U	--	0.01 U	--	--	--	0.005 U	0.005 U	--	0.01 U	--	--
Methylene chloride	mg/L	0.005	0.047	17	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
n-Propylbenzene	mg/L	0.08			--	--	--	--	--	--	0.001 U	--	--	--	--	--	0.001 U
Styrene	mg/L	0.1	0.08	2.9	0.001 UJ	0.001 U	--	--	--	--	--	0.001 U	0.001 UJ	--	--	--	--
Tetrachloroethene	mg/L	0.005	0.011	0.71	0.001 U	0.001 U	--	--	0.001 U	--	--	0.001 U	0.001 UJ	--	--	0.001 U	--
Toluene	mg/L	0.79	0.14	1.7	0.001 U	0.001 U	0.0018	0.0029	0.001 U	0.003	0.001 U	0.001 U	0.001 U	0.0017	0.001 U	0.001 U	0.001
trans-1,2-Dichloroethene	mg/L	0.1	1.5	28	0.001 U	0.001 U	--	--	0.001 U	--	--	0.001 U	0.001 U	--	--	0.001 U	--
trans-1,3-Dichloropropene	mg/L				0.001 U	0.001 U	--	--	0.001 U	--	--	0.001 U	0.001 U	--	--	0.001 U	--
Trichloroethene	mg/L	0.005	0.029	3.5	0.001 U	0.001 U	--	--	0.001 U	--	--	0.001 U	0.001 U	--	--	0.001 U	--
Trichlorofluoromethane (CFC-11)	mg/L	2.6			0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Trifluorotrichloroethane (Freon 113)	mg/L	170	0.032	0.57	0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Vinyl chloride	mg/L	0.002	0.015	17	0.001 UJ	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--
Xylene (total)	mg/L	0.28	0.035	0.63	0.002 U	0.002 U	0.029	0.0059	0.004	0.005	0.003 U	0.002 U	0.002 U	0.056 ^b	0.002 U	0.003 U	0.012
SVOCs																	
1-Methylnaphthalene	mg/L				--	--	0.01 U	--	--	--	--	--	--	0.01 U	--	--	--
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	mg/L				0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
2,4,5-Trichlorophenol	mg/L	0.73			0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--
2,4,6-Trichlorophenol	mg/L	0.12	0.0044	0.079	0.004 U	0.004 U	--	--	--	--	--	0.004 U	0.004 U	--	--	--	--

ATTENDIX C
GROUNDWATER ANALYTICAL DATA - ACTIVE PAOCs
WILLIAMS BUSINESS CENTER
PAOC WORK PLAN
YPSILANTI, MICHIGAN

Jun 18, 2009 08:28

PAOC	RCDWC	GSI	FAV	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08
Sample Location:				RD-MW-3	RD-MW-4	RD-MW-5	RD-MW-5	RD-MW-5	RD-MW-5	RD-MW-5	RD-MW-5	RD-MW-5	RD-MW-6	RD-MW-7	RD-MW-7	RD-MW-7	RD-MW-7	RD-MW-7
Sample ID:				WG-17303-031606-EV-0982	WG-17303-031606-NR-0983	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	WG-17303-031606-NR-0985	WG-17303-031506-LA-0978	MW-7	MW-7	MW-7	MW-7	MW-7
Sample Date:				3/16/2006	3/16/2006	2/1/1997	5/1/1997	8/1/1997	11/1/1997	8/1/1998		3/16/2006	3/15/2006	2/1/1997	5/1/1997	8/1/1997	11/1/1997	8/1/1998
Parameter:	Units	a	b	c														
2,4-Dichlorophenol	mg/L	0.073	0.019	0.32	0.01 U	0.01 U	--	--	--	--	--	0.01 U	0.01 U	--	--	--	--	--
2,4-Dimethylphenol	mg/L	0.37	0.38	2.7	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
2,4-Dinitrophenol	mg/L			0.27	0.02 U	0.02 U	--	--	--	--	--	0.02 U	0.02 U	--	--	--	--	--
2,4-Dinitrotoluene	mg/L	0.0077			0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
2,6-Dinitrotoluene	mg/L				0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
2-Chloronaphthalene	mg/L	1.8			0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
2-Chlorophenol	mg/L	0.045	0.022	0.43	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
2-Methylnaphthalene	mg/L	0.26			0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
2-Methylphenol	mg/L	0.37	0.071	1.5	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
2-Nitroaniline	mg/L				0.02 U	0.02 U	--	--	--	--	--	0.02 U	0.02 U	--	--	--	--	--
2-Nitrophenol	mg/L	0.02			0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
3,3'-Dichlorobenzidine	mg/L	0.0011	0.0003	0.081	0.004 U	0.004 U	--	--	--	--	--	0.004 U	0.004 U	--	--	--	--	--
3-Nitroaniline	mg/L				0.02 U	0.02 U	--	--	--	--	--	0.02 U	0.02 U	--	--	--	--	--
4,6-Dinitro-2-methylphenol	mg/L	0.02			0.02 U	0.02 U	--	--	--	--	--	0.02 U	0.02 U	--	--	--	--	--
4-Bromophenyl phenyl ether	mg/L				0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
4-Chloro-3-methylphenol	mg/L	0.15	0.0074	0.13	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
4-Chloroaniline	mg/L				0.01 U	0.01 U	--	--	--	--	--	0.01 U	0.01 U	--	--	--	--	--
4-Chlorophenyl phenyl ether	mg/L				0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
4-Methylphenol	mg/L	0.37	0.071	0.45	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
4-Nitroaniline	mg/L				0.02 U	0.02 U	--	--	--	--	--	0.02 U	0.02 U	--	--	--	--	--
4-Nitrophenol	mg/L			1.1	0.02 U	0.02 U	--	--	--	--	--	0.02 U	0.02 U	--	--	--	--	--
Acenaphthene	mg/L	1.3	0.019	0.2	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Acenaphthylene	mg/L	0.052			0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Acetophenone	mg/L	1.5			0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Anthracene	mg/L	0.043			0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Atrazine	mg/L	0.003	0.0043	0.1	0.003 U	0.003 U	--	--	--	--	--	0.003 U	0.003 U	--	--	--	--	--
Benzaldehyde	mg/L				0.01 U	0.01 U	--	--	--	--	--	0.01 U	0.01 U	--	--	--	--	--
Benzo(a)anthracene	mg/L	0.0021			0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--	--
Benzo(a)pyrene	mg/L	0.005			0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--	--
Benzo(b)fluoranthene	mg/L	0.0015			0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--	--
Benzo(g,h,i)perylene	mg/L	0.001			0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--	--
Benzo(k)fluoranthene	mg/L	0.001			0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--	--
Biphenyl	mg/L		0.11		0.01 U	0.01 U	--	--	--	--	--	0.01 U	0.01 U	--	--	--	--	--
bis(2-Chloroethoxy)methane	mg/L				0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
bis(2-Chloroethyl)ether	mg/L	0.002	0.001		0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	mg/L	0.006	0.032	0.285	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Butyl benzylphthalate	mg/L	1.2	0.0069	0.63	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Caprolactam	mg/L	5.8			0.01 U	0.01 U	--	--	--	--	--	0.01 U	0.01 U	--	--	--	--	--
Carbazole	mg/L	0.085	0.01	0.072	0.01 U	0.01 U	--	--	--	--	--	0.01 U	0.01 U	--	--	--	--	--
Chrysene	mg/L	0.0016			0.001 U	0.001 U	0.005 U	--	--	--	--	0.001 U	0.001 U	0.005 U	--	--	--	--
Dibenz(a,h)anthracene	mg/L	0.002			0.002 U	0.002 U	--	--	--	--	--	0.002 U	0.002 U	--	--	--	--	--
Dibenzofuran	mg/L		0.004	0.072	0.004 U	0.004 U	--	--	--	--	--	0.004 U	0.004 U	--	--	--	--	--
Diethyl phthalate	mg/L	5.5	0.11	2	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Dimethyl phthalate	mg/L	73			0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Di-n-butylphthalate	mg/L	0.88	0.0097	0.075	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Di-n-octyl phthalate	mg/L	0.13			0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Fluoranthene	mg/L	0.21	0.0016	0.028	0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--	--
Fluorene	mg/L	0.88	0.012	0.22	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Hexachlorobenzene	mg/L	0.001	0.0002		0.0002 U	0.0002 U	--	--	--	--	--	0.0002 U	0.0002 U	--	--	--	--	--
Hexachlorobutadiene	mg/L	0.015	0.00005	0.015	0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--	--
Hexachlorocyclopentadiene	mg/L	0.05			R	0.005 U	--	--	--	--	--	0.005 U	R	--	--	--	--	--
Hexachloroethane	mg/L	0.0073	0.0053	0.21	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	mg/L	0.002			0.002 U	0.002 U	--	--	--	--	--	0.002 U	0.002 U	--	--	--	--	--
Isophorone	mg/L	0.77	0.31	9.2	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Naphthalene	mg/L	0.52	0.013	0.2	0.005 U	0.005 U	--	0.005 U	--	--	0.005 U	0.005 U	0.005 U	--	0.0056	--	--	0.005 U
Nitrobenzene	mg/L	0.0034	0.0047	2.1	0.003 U	0.003 U	--	--	--	--	--	0.003 U	0.003 U	--	--	--	--	--
N-Nitrosodi-n-propylamine	mg/L	0.005			0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
N-Nitrosodiphenylamine	mg/L	0.27			0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Pentachlorophenol	mg/L	0.001	0.0018	0.0224	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--

ATTENDIX C
GROUNDWATER ANALYTICAL DATA - ACTIVE PAOCs
WILLIAMS IN BUSINESS CENTER
PAOC WORK PLAN
YPSILANTI, MICHIGAN

Jun 18, 2009 08:28

PAOC	RCDWC	GSI	FAV	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08
Sample Location:				RD-MW-3	RD-MW-4	RD-MW-5	RD-MW-5	RD-MW-5	RD-MW-5	RD-MW-5	RD-MW-5	RD-MW-5	RD-MW-5	RD-MW-6	RD-MW-7	RD-MW-7	RD-MW-7	RD-MW-7
Sample ID:				WG-17303-031606-EV-0982	WG-17303-031606-NR-0983	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	WG-17303-031506-LA-0978	MW-7	MW-7	MW-7	MW-7
Sample Date:				3/16/2006	3/16/2006	2/1/1997	5/1/1997	8/1/1997	11/1/1997	8/1/1998		3/16/2006	3/16/2006	2/1/1997	5/1/1997	8/1/1997	11/1/1997	8/1/1998
Parameter:	Units	a	b	c														
Phenanthrene	mg/L	0.052	0.0024	0.043	0.002 U	0.002 U	--	--	--	--	--	0.002 U	0.002 U	--	--	--	--	--
Phenol	mg/L	4.4	0.21	6.8	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Pyrene	mg/L	0.14			0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Metals																		
Aluminum	mg/L	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum (Dissolved)	mg/L	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	mg/L	0.006	0.002	2.3	0.000085 J	0.00028 J	--	--	--	--	--	0.000099 J	0.001 J	--	--	--	--	--
Arsenic	mg/L	0.01	0.05	0.68	0.0057	0.0061	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Arsenic (Dissolved)	mg/L	0.01	0.05	0.68	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	mg/L	2	1.866	10.7	0.114	0.0812 J	--	--	--	--	--	0.139	0.231	--	--	--	--	--
Barium (Dissolved)	mg/L	2	1.866	10.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	mg/L	0.004	0.0753	1.35	0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--	--
Cadmium	mg/L	0.005	0.0025	0.0373	0.001 U	0.001 U	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--	--
Cadmium (Dissolved)	mg/L	0.005	0.0025	0.0373	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium Total	mg/L	0.1	0.011		0.005 U	0.0017 J	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Chromium Total (Dissolved)	mg/L	0.1	0.011		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	mg/L	0.04	0.1	0.74	0.007 U	0.007 U	--	--	--	--	--	0.007 U	0.007 U	--	--	--	--	--
Copper	mg/L	1	0.0287	0.0972	0.002 U	0.0047	--	--	--	--	--	0.002 U	0.0026	--	--	--	--	--
Copper (Dissolved)	mg/L	1	0.0287	0.0972	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide (total)	mg/L	0.2	0.0052		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	mg/L	0.004	0.014	0.779	0.003 U	0.003 U	--	--	--	--	--	0.003 U	0.003 U	--	--	--	--	--
Lead (Dissolved)	mg/L	0.004	0.014	0.779	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	0.05	3.6	27.6	0.375 ^a	0.859 ^a	--	--	--	--	--	0.606 ^a	0.159 ^a	--	--	--	--	--
Mercury	mg/L	0.002	0.0000013		0.0002 U	0.0002 U	--	--	--	--	--	0.0002 U	0.0002 U	--	--	--	--	--
Mercury (Dissolved)	mg/L	0.002	0.0000013		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	0.1	0.165	2.97	0.02 U	0.0038 J	--	--	--	--	--	0.0017 J	0.02 U	--	--	--	--	--
Nickel (Dissolved)	mg/L	0.1	0.165	2.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	mg/L	0.05	0.005	0.12	0.005 U	0.005 U	--	--	--	--	--	0.005 U	0.005 U	--	--	--	--	--
Selenium (Dissolved)	mg/L	0.05	0.005	0.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	mg/L	0.034	0.0002	0.0011	0.0002 U	0.0002 U	--	--	--	--	--	0.0002 U	0.000086 J	--	--	--	--	--
Silver (Dissolved)	mg/L	0.034	0.0002	0.0011	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	mg/L	0.002	0.002	0.094	0.001 U	0.0001 J	--	--	--	--	--	0.001 U	0.001 U	--	--	--	--	--
Vanadium	mg/L	0.0045	0.012	0.22	0.004 U	0.004 U	--	--	--	--	--	0.004 U	0.004 U	--	--	--	--	--
Zinc	mg/L	2.4	0.375	0.745	0.02 U	0.02 U	--	--	--	--	--	0.02 U	0.02 U	--	--	--	--	--
Zinc (Dissolved)	mg/L	2.4	0.375	0.745	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs																		
Aroclor-1016 (PCB-1016)	mg/L	0.0005	0.0002		0.0001 U	0.0001 U	--	--	--	--	--	0.0001 U	0.0001 U	--	--	--	--	--
Aroclor-1221 (PCB-1221)	mg/L	0.0005	0.0002		0.0001 U	0.0001 U	--	--	--	--	--	0.0001 U	0.0001 U	--	--	--	--	--
Aroclor-1232 (PCB-1232)	mg/L	0.0005	0.0002		0.0001 U	0.0001 U	--	--	--	--	--	0.0001 U	0.0001 U	--	--	--	--	--
Aroclor-1242 (PCB-1242)	mg/L	0.0005	0.0002		0.0001 U	0.0001 U	--	--	--	--	--	0.0001 U	0.0001 U	--	--	--	--	--
Aroclor-1248 (PCB-1248)	mg/L	0.0005	0.0002		0.0001 U	0.0001 U	--	--	--	--	--	0.0001 U	0.0001 U	--	--	--	--	--
Aroclor-1254 (PCB-1254)	mg/L	0.0005	0.0002		0.0001 U	0.0001 U	--	--	--	--	--	0.0001 U	0.0001 U	--	--	--	--	--
Aroclor-1260 (PCB-1260)	mg/L	0.0005	0.0002		0.0001 U	0.0001 U	--	--	--	--	--	0.000048 J	0.0001 U	--	--	--	--	--

Notes:
FAV Final Acute Value
GSI Groundwater Surface Water Interface Criteria
RCDWC Residential & Commercial Drinking Water Criteria
J Estimated concentration
R Rejected
U Not present at or above the associated value
UJ Estimated reporting limit

APPENDIX C
GROUNDWATER ANALYTICAL DATA - ACTIVE PAOCs
WILLARD BUSINESS CENTER
PAOC WORK PLAN
YPSILANTI, MICHIGAN

PAOC		RCDWC	GSI	FAV	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08
Sample Location:					RD-MW-7	RD-MW-8	RD-MW-8	RD-MW-8	RD-MW-8	RD-MW-8	RD-MW-8
Sample ID:					WG-17303-031606-LA-0981	MW-8	MW-8	MW-8	MW-8	MW-8	WG-17303-031606-EV-0984
Sample Date:					3/16/2006	2/1/1997	5/1/1997	8/1/1997	11/1/1997	8/1/1998	3/16/2006
Parameter:	Units	a	b	c							
VOCs											
1,1,1-Trichloroethane	mg/L	0.2	0.2	1.6	0.005 U	0.001 U	0.001 U	0.01 U	--	0.01 U	0.077 U
1,1,2,2-Tetrachloroethane	mg/L	0.0085	0.0031	1.8	0.005 U	--	--	0.01 U	--	--	0.077 U
1,1,2-Trichloroethane	mg/L	0.005	0.012	5.6	0.005 U	--	--	0.01 U	--	--	0.077 U
1,1-Dichloroethane	mg/L	0.88	0.74	13	0.005 U	0.0072	0.02	0.054	0.043	0.15	0.077 U
1,1-Dichloroethene	mg/L	0.007	0.024	2.3	0.005 U	--	--	--	--	--	0.077 U
1,2,3-Trichlorobenzene	mg/L	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	mg/L	0.07	0.03	0.2	0.025 U	--	--	--	--	--	0.38 U
1,2,4-Trimethylbenzene	mg/L	0.063	0.017	0.31	--	--	--	--	--	1.3 ^{abc}	--
1,2-Dibromo-3-chloropropane (DBCP)	mg/L	0.0002			0.005 U	--	--	--	--	--	0.077 U
1,2-Dibromoethane (Ethylene Dibromide)	mg/L	0.00005	0.00005	0.28	0.005 U	--	--	--	--	--	0.077 U
1,2-Dichlorobenzene	mg/L	0.6	0.016	0.28	0.005 U	--	--	--	--	--	0.077 U
1,2-Dichloroethane	mg/L	0.005	0.006	15	0.005 U	--	--	0.01 U	--	--	0.077 U
1,2-Dichloropropane	mg/L	0.005	0.0091	4.0	0.005 U	--	--	0.01 U	--	--	0.077 U
1,3,5-Trimethylbenzene	mg/L	0.072	0.045	0.81	--	--	--	--	--	0.3 ^{ab}	--
1,3-Dichlorobenzene	mg/L	0.0066	0.038	0.2	0.005 U	--	--	--	--	--	0.077 U
1,4-Dichlorobenzene	mg/L	0.075	0.013	0.2	0.005 U	--	--	--	--	--	0.077 U
2-Butanone (Methyl Ethyl Ketone)	mg/L	13	2.2	40	0.12 U	--	--	--	--	--	1.9 U
2-Hexanone	mg/L	1			0.25 U	--	--	--	--	--	3.8 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	mg/L	1.8			0.25 U	--	--	--	--	--	3.8 U
Acetone	mg/L	0.73	1.7	30	0.23 U	--	--	--	--	--	1.9 U
Benzene	mg/L	0.005	0.012	1.8	0.23 ^{ab}	0.35 ^{ab}	0.97 ^{ab}	2.4 ^{abc}	2.5 ^{abc}	5.8 ^{abc}	2.5 ^{abc}
Bromodichloromethane	mg/L	0.08			0.005 U	--	--	--	--	--	0.077 U
Bromoform	mg/L	0.08			0.005 U	--	--	--	--	--	0.077 U
Bromomethane (Methyl Bromide)	mg/L	0.01	0.035	0.64	0.005 U	--	--	--	--	--	0.077 U
Carbon disulfide	mg/L	0.8			0.025 U	--	--	--	--	--	0.38 U
Carbon tetrachloride	mg/L	0.005	0.0056	1.6	0.005 U	--	--	0.01 U	--	--	0.077 U
Chlorobenzene	mg/L	0.1	0.047	0.85	0.005 U	--	--	0.01 U	--	--	0.077 U
Chloroethane	mg/L	0.43		20	0.005 U	0.0039	0.012	--	--	0.12	0.077 U
Chloroform (Trichloromethane)	mg/L	0.08	0.077	2.6	0.005 U	--	--	0.01 U	--	--	0.077 U
Chloromethane (Methyl Chloride)	mg/L	0.26			0.005 U	--	--	--	--	--	0.077 U
cis-1,2-Dichloroethene	mg/L	0.07	0.62	11	0.005 U	--	--	0.026	0.001 U	0.01 U	0.077 U
cis-1,3-Dichloropropene	mg/L				0.005 U	--	--	0.01 U	--	--	0.077 U
Cyclohexane	mg/L				0.005 U	--	--	--	--	--	0.13
Dibromochloromethane	mg/L	0.08			0.005 U	--	--	--	--	--	0.077 U
Dichlorodifluoromethane (CFC-12)	mg/L	1.7			0.005 UJ	--	--	--	--	--	0.077 UJ
Ethylbenzene	mg/L	0.074	0.018	0.32	0.005 U	0.22 ^{ab}	0.22 ^{ab}	0.54 ^{abc}	0.8 ^{abc}	2.1 ^{abc}	1.4 ^{abc}
Isopropylbenzene	mg/L	0.8			0.025 U	--	--	--	--	0.044	0.029 J
Methyl acetate	mg/L				0.05 U	--	--	--	--	--	0.77 U
Methyl cyclohexane	mg/L				0.005 U	--	--	--	--	--	0.047 J
Methyl Tert Butyl Ether	mg/L	0.04	0.1	13	0.0079 J	--	0.015	--	--	--	0.38 U
Methylene chloride	mg/L	0.005	0.047	17	0.025 U	--	--	--	--	--	0.38 U
n-Propylbenzene	mg/L	0.08			--	--	--	--	--	0.12 ^a	--
Styrene	mg/L	0.1	0.08	2.9	0.005 U	--	--	--	--	--	0.077 U
Tetrachloroethene	mg/L	0.005	0.011	0.71	0.005 U	--	--	0.01 U	--	--	0.077 U
Toluene	mg/L	0.79	0.14	1.7	0.005 U	0.32 ^b	0.37 ^b	0.36 ^b	0.38 ^b	1.3 ^{ab}	0.054 J
trans-1,2-Dichloroethene	mg/L	0.1	1.5	28	0.005 U	--	--	0.01 U	--	--	0.077 U
trans-1,3-Dichloropropene	mg/L				0.005 U	--	--	0.01 U	--	--	0.077 U
Trichloroethene	mg/L	0.005	0.029	3.5	0.005 U	--	--	0.01 U	--	--	0.077 U
Trichlorofluoromethane (CFC-11)	mg/L	2.6			0.005 U	--	--	--	--	--	0.077 U
Trifluorotrichloroethane (Freon 113)	mg/L	170	0.032	0.57	0.005 U	--	--	--	--	--	0.077 U
Vinyl chloride	mg/L	0.002	0.015	17	0.005 U	--	--	--	--	--	0.077 U
Xylene (total)	mg/L	0.28	0.035	0.63	0.01 U	1.7 ^{abc}	1.3 ^{abc}	2.9 ^{abc}	3 ^{abc}	7.7 ^{abc}	0.48 ^{ab}
SVOCs											
1-Methylnaphthalene	mg/L				--	0.014	--	--	--	--	--
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	mg/L				0.005 U	--	--	--	--	--	0.02 U
2,4,5-Trichlorophenol	mg/L	0.73			0.005 U	--	--	--	--	--	0.02 U
2,4,6-Trichlorophenol	mg/L	0.12	0.0044	0.079	0.004 U	--	--	--	--	--	0.016 U

APPENDIX C
GROUNDWATER ANALYTICAL DATA - ACTIVE PAOCs
WILLIAMS IN BUSINESS CENTER
PAOC WORK PLAN
YPSILANTI, MICHIGAN

PAOC		RCDWC	GSI	FAV	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08
Sample Location:					RD-MW-7	RD-MW-8	RD-MW-8	RD-MW-8	RD-MW-8	RD-MW-8	RD-MW-8
Sample ID:					WG-17303-031606-LA-0981	MW-8	MW-8	MW-8	MW-8	MW-8	WG-17303-031606-EV-0984
Sample Date:					3/16/2006	2/1/1997	5/1/1997	8/1/1997	11/1/1997	8/1/1998	3/16/2006
Parameter:	Units	a	b	c							
2,4-Dichlorophenol	mg/L	0.073	0.019	0.32	0.01 U	--	--	--	--	--	0.04 U
2,4-Dimethylphenol	mg/L	0.37	0.38	2.7	0.005 U	--	--	--	--	--	0.0068 J
2,4-Dinitrophenol	mg/L			0.27	0.02 U	--	--	--	--	--	0.08 U
2,4-Dinitrotoluene	mg/L	0.0077			0.005 U	--	--	--	--	--	0.02 U
2,6-Dinitrotoluene	mg/L				0.005 U	--	--	--	--	--	0.02 U
2-Chloronaphthalene	mg/L	1.8			0.005 U	--	--	--	--	--	0.02 U
2-Chlorophenol	mg/L	0.045	0.022	0.43	0.005 U	--	--	--	--	--	0.02 U
2-Methylnaphthalene	mg/L	0.26			0.005 U	--	--	--	--	--	0.0076 J
2-Methylphenol	mg/L	0.37	0.071	1.5	0.005 U	--	--	--	--	--	0.02 U
2-Nitroaniline	mg/L				0.02 U	--	--	--	--	--	0.08 U
2-Nitrophenol	mg/L	0.02			0.005 U	--	--	--	--	--	0.02 U
3,3'-Dichlorobenzidine	mg/L	0.0011	0.0003	0.081	0.004 U	--	--	--	--	--	0.016 U
3-Nitroaniline	mg/L				0.02 U	--	--	--	--	--	0.08 U
4,6-Dinitro-2-methylphenol	mg/L	0.02			0.02 U	--	--	--	--	--	0.08 U
4-Bromophenyl phenyl ether	mg/L				0.005 U	--	--	--	--	--	0.02 U
4-Chloro-3-methylphenol	mg/L	0.15	0.0074	0.13	0.005 U	--	--	--	--	--	0.02 U
4-Chloroaniline	mg/L				0.01 U	--	--	--	--	--	0.04 U
4-Chlorophenyl phenyl ether	mg/L				0.005 U	--	--	--	--	--	0.02 U
4-Methylphenol	mg/L	0.37	0.071	0.45	0.005 U	--	--	--	--	--	0.02 U
4-Nitroaniline	mg/L				0.02 U	--	--	--	--	--	0.08 U
4-Nitrophenol	mg/L			1.1	0.02 U	--	--	--	--	--	0.08 U
Acenaphthene	mg/L	1.3	0.019	0.2	0.005 U	--	--	--	--	--	0.02 U
Acenaphthylene	mg/L	0.052			0.005 U	--	--	--	--	--	0.02 U
Acetophenone	mg/L	1.5			0.005 U	--	--	--	--	--	0.02 U
Anthracene	mg/L	0.043			0.005 U	--	--	--	--	--	0.02 U
Atrazine	mg/L	0.003	0.0043	0.1	0.003 U	--	--	--	--	--	0.012 U
Benzaldehyde	mg/L				0.01 U	--	--	--	--	--	0.04 U
Benzo(a)anthracene	mg/L	0.0021			0.001 U	--	--	--	--	--	0.0012 J
Benzo(a)pyrene	mg/L	0.005			0.001 U	--	--	--	--	--	0.00097 J
Benzo(b)fluoranthene	mg/L	0.0015			0.001 U	--	--	--	--	--	0.0019 J ^a
Benzo(g,h,i)perylene	mg/L	0.001			0.001 U	--	--	--	--	--	0.0013 J ^a
Benzo(k)fluoranthene	mg/L	0.001			0.001 U	--	--	--	--	--	0.004 U
Biphenyl	mg/L			0.11	0.01 U	--	--	--	--	--	0.04 U
bis(2-Chloroethoxy)methane	mg/L				0.005 U	--	--	--	--	--	0.02 U
bis(2-Chloroethyl)ether	mg/L	0.002	0.001		0.001 U	--	--	--	--	--	0.004 U
bis(2-Ethylhexyl)phthalate	mg/L	0.006	0.032	0.285	0.005 U	--	--	--	--	--	0.02 U
Butyl benzylphthalate	mg/L	1.2	0.0069	0.63	0.005 U	--	--	--	--	--	0.02 U
Caprolactam	mg/L	5.8			0.01 U	--	--	--	--	--	0.04 U
Carbazole	mg/L	0.085	0.01	0.072	0.01 U	--	--	--	--	--	0.04 U
Chrysene	mg/L	0.0016			0.001 U	0.0054 ^a	--	--	--	--	0.0016 J
Dibenz(a,h)anthracene	mg/L	0.002			0.002 U	--	--	--	--	--	0.008 U
Dibenzofuran	mg/L		0.004	0.072	0.004 U	--	--	--	--	--	0.016 U
Diethyl phthalate	mg/L	5.5	0.11	2	0.005 U	--	--	--	--	--	0.02 U
Dimethyl phthalate	mg/L	73			0.005 U	--	--	--	--	--	0.02 U
Di-n-butylphthalate	mg/L	0.88	0.0097	0.075	0.005 U	--	--	--	--	--	0.02 U
Di-n-octyl phthalate	mg/L	0.13			0.005 U	--	--	--	--	--	0.02 U
Fluoranthene	mg/L	0.21	0.0016	0.028	0.001 U	--	--	--	--	--	0.0027 J ^b
Fluorene	mg/L	0.88	0.012	0.22	0.005 U	--	--	--	--	--	0.02 U
Hexachlorobenzene	mg/L	0.001	0.0002		0.0002 U	--	--	--	--	--	0.0008 U
Hexachlorobutadiene	mg/L	0.015	0.00005	0.015	0.001 U	--	--	--	--	--	0.004 U
Hexachlorocyclopentadiene	mg/L	0.05			0.005 U	--	--	--	--	--	0.02 U
Hexachloroethane	mg/L	0.0073	0.0053	0.21	0.005 U	--	--	--	--	--	0.02 U
Indeno(1,2,3-cd)pyrene	mg/L	0.002			0.002 U	--	--	--	--	--	0.00092 J
Isophorone	mg/L	0.77	0.31	9.2	0.005 U	--	--	--	--	--	0.02 U
Naphthalene	mg/L	0.52	0.013	0.2	0.005 U	--	0.005 U	--	--	0.39 ^{bc}	0.16 ^b
Nitrobenzene	mg/L	0.0034	0.0047	2.1	0.003 U	--	--	--	--	--	0.012 U
N-Nitrosodi-n-propylamine	mg/L	0.005			0.005 U	--	--	--	--	--	0.02 U
N-Nitrosodiphenylamine	mg/L	0.27			0.005 U	--	--	--	--	--	0.02 U
Pentachlorophenol	mg/L	0.001	0.0018	0.0224	0.005 U	--	--	--	--	--	0.02 U

ATTENDIX C
GROUNDWATER ANALYTICAL DATA - ACTIVE PAOCs
WILLARD BUSINESS CENTER
PAOC WORK PLAN
YPSILANTI, MICHIGAN

PAOC	RCDWC	GSI	FAV	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08
Sample Location:				RD-MW-7	RD-MW-8	RD-MW-8	RD-MW-8	RD-MW-8	RD-MW-8	RD-MW-8	RD-MW-8
Sample ID:				WG-17303-031606-LA-0981	MW-8	MW-8	MW-8	MW-8	MW-8	MW-8	WG-17303-031606-EV-0984
Sample Date:				3/16/2006	2/1/1997	5/1/1997	8/1/1997	11/1/1997	8/1/1998		3/16/2006
Parameter:	Units	a	b	c							
Phenanthrene	mg/L	0.052	0.0024	0.043	0.002 U	--	--	--	--	--	0.0014 J
Phenol	mg/L	4.4	0.21	6.8	0.0022 J	--	--	--	--	--	0.028
Pyrene	mg/L	0.14			0.005 U	--	--	--	--	--	0.0024 J
Metals											
Aluminum	mg/L	0.05			--	--	--	--	--	--	--
Aluminum (Dissolved)	mg/L	0.05			--	--	--	--	--	--	--
Antimony	mg/L	0.006	0.002	2.3	0.00016 J	--	--	--	--	--	0.0012 J
Arsenic	mg/L	0.01	0.05	0.68	0.005 U	--	--	--	--	--	0.0134 ^a
Arsenic (Dissolved)	mg/L	0.01	0.05	0.68	--	--	--	--	--	--	--
Barium	mg/L	2	1.866	10.7	0.0561 J	--	--	--	--	--	0.457
Barium (Dissolved)	mg/L	2	1.866	10.7	--	--	--	--	--	--	--
Beryllium	mg/L	0.004	0.0753	1.35	0.001 U	--	--	--	--	--	0.001 U
Cadmium	mg/L	0.005	0.0025	0.0373	0.001 U	--	--	--	--	--	0.00068 J
Cadmium (Dissolved)	mg/L	0.005	0.0025	0.0373	--	--	--	--	--	--	--
Chromium Total	mg/L	0.1	0.011		0.005 U	--	--	--	--	--	0.005 U
Chromium Total (Dissolved)	mg/L	0.1	0.011		--	--	--	--	--	--	--
Cobalt	mg/L	0.04	0.1	0.74	0.007 U	--	--	--	--	--	0.007 U
Copper	mg/L	1	0.0287	0.0972	0.002 U	--	--	--	--	--	0.0105
Copper (Dissolved)	mg/L	1	0.0287	0.0972	--	--	--	--	--	--	--
Cyanide (total)	mg/L	0.2	0.0052		--	--	--	--	--	--	--
Lead	mg/L	0.004	0.014	0.779	0.003 U	--	--	--	--	--	0.0152 ^{ab}
Lead (Dissolved)	mg/L	0.004	0.014	0.779	--	--	--	--	--	--	--
Manganese	mg/L	0.05	3.6	27.6	0.205 ^a	--	--	--	--	--	0.259 ^a
Mercury	mg/L	0.002	0.0000013		0.0002 U	--	--	--	--	--	0.0002 U
Mercury (Dissolved)	mg/L	0.002	0.0000013		--	--	--	--	--	--	--
Nickel	mg/L	0.1	0.165	2.97	0.002 J	--	--	--	--	--	0.0036 J
Nickel (Dissolved)	mg/L	0.1	0.165	2.97	--	--	--	--	--	--	--
Selenium	mg/L	0.05	0.005	0.12	0.005 U	--	--	--	--	--	0.005 U
Selenium (Dissolved)	mg/L	0.05	0.005	0.12	--	--	--	--	--	--	--
Silver	mg/L	0.034	0.0002	0.0011	0.000063 J	--	--	--	--	--	0.000082 J
Silver (Dissolved)	mg/L	0.034	0.0002	0.0011	--	--	--	--	--	--	--
Thallium	mg/L	0.002	0.002	0.094	0.001 U	--	--	--	--	--	0.000038 J
Vanadium	mg/L	0.0045	0.012	0.22	0.004 U	--	--	--	--	--	0.004 U
Zinc	mg/L	2.4	0.375	0.745	0.02 U	--	--	--	--	--	0.02 U
Zinc (Dissolved)	mg/L	2.4	0.375	0.745	--	--	--	--	--	--	--
PCBs											
Aroclor-1016 (PCB-1016)	mg/L	0.0005	0.0002		0.0001 U	--	--	--	--	--	0.0001 U
Aroclor-1221 (PCB-1221)	mg/L	0.0005	0.0002		0.0001 U	--	--	--	--	--	0.0001 U
Aroclor-1232 (PCB-1232)	mg/L	0.0005	0.0002		0.0001 U	--	--	--	--	--	0.0001 U
Aroclor-1242 (PCB-1242)	mg/L	0.0005	0.0002		0.0001 U	--	--	--	--	--	0.0001 U
Aroclor-1248 (PCB-1248)	mg/L	0.0005	0.0002		0.0001 U	--	--	--	--	--	0.0001 U
Aroclor-1254 (PCB-1254)	mg/L	0.0005	0.0002		0.0001 U	--	--	--	--	--	0.0001 U
Aroclor-1260 (PCB-1260)	mg/L	0.0005	0.0002		0.0001 U	--	--	--	--	--	0.0001 U

Notes:
FAV Final Acute Value
GSI Groundwater Surface Water Interface Criteria
RCDWC Residential & Commercial Drinking Water Criteria
J Estimated concentration
R Rejected
U Not present at or above the associated value
UJ Estimated reporting limit

John McKenna
APPENDIX C
SOIL ANALYTICAL DATA
ACTIVE PAOCs
WILLOW RUN BUSINESS CENTER
PAOC WORK PLAN
JULY 2009

		RPSIC	RVSIC	RDCC	RSVIAIC	IVSIC	DCIC	ISVIAIC	IPSIC	GSIPC	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	
Sample Location:											SB-2-1	SB-2-2	SB-2-2	SB-2-3/SB-2-3A	SB-2-4	SB-2-5	SB-2-5	SB-2-6	SB-2-6	SB-2-7	SB-2-8	SB-2-9	SB-2-10	SB-2-10	SB-2-11	SB-2-11	SB-2-12	
Sample ID:											SB-2-1S11E13	SB-2-2S11E12	SB-2-2S9E11	SB-2-3AS4E-5	SB-2-4S11E12	SB-2-5S3E5	SB-2-5S5E7	SB-2-6S11E13	SB-2-6S7E9	SB-2-7S10E13	SB-2-8S9E13	SB-2-9S3E5	SB-2-9S9E13	SB-2-10S5E7	SB-2-10S9E3	SB-2-11S3E5	SB-2-11S9E9	SB-2-12S14E17
Sample Date:											6/8/1995	6/7/1995	6/7/1995	6/7/1995	6/7/1995	6/7/1995	6/7/1995	6/7/1995	6/7/1995	6/9/1995	6/8/1995	6/8/1995	6/8/1995	6/8/1995	6/8/1995	6/8/1995	6/8/1995	6/8/1995
Sample Depth:											(11-13)	(11-12)	(9-11)	(4-5)	(11-12)	(3-5)	(5-6.5)	(11-13)	(7-9)	(9.5-13)	(8.5-12.5)	(3-5)	(8.5-12.5)	(5-7)	(8.5-12.5)	(3-5)	(8.5-9)	(14-16.5)
Parameter:	Units	a	b	c	d	e	f	g	h	i																		
VOCs																												
cis-1,2-Dichloroethene	mg/kg	2300000	180	640	22	210	640	41	1000000	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	mg/kg	10000000	720	140	87	2400	140	140	13000000	0.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	mg/kg	27000000	2800	250	250	3300	250	250	12000000	2.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylene (total)	mg/kg	290000000	46000	150	150	54000	150	150	130000000	0.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs																												
1,2,3-Trichlorobenzene	mg/kg										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnaphthalene	mg/kg										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4,5-Trichlorophenol	mg/kg	23000000		23000			73000		10000000		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	mg/kg			8100			26000				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	mg/kg	14000000	81000	41000	190000	97000	130000	350000	6200000	4.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	mg/kg	2300000	2200	1600	1600	2700	5200	3000	1000000		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	mg/kg	67000000	1400000	230000	1000000	1600000	730000	1000000	29000000		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	mg/kg			20			80				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	mg/kg	1500		2			8	1900			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	mg/kg			20			80				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	mg/kg	800000		2500			7000	350000			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	mg/kg			200			800				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	mg/kg	700000		2800			10000	890000			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butyl benzylphthalate	mg/kg	47000000		310			310	21000000	26		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	mg/kg			2000			8000				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	mg/kg			2			8				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran	mg/kg									1.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	mg/kg	9300000	740000	46000	1000000	890000	130000	1000000	4100000	5.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene	mg/kg	9300000	130000	27000	580000	150000	87000	1000000	4100000	5.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	mg/kg	140000	130	100	130	460	350	350	180000	0.091	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	mg/kg			20			80				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	mg/kg	200000	300	16000	250	350	52000	470	88000	0.87	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Butylbenzene	mg/kg			2500			8000				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	mg/kg			1700			7800				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	mg/kg	6700	160	1600	2800	190	5200	5100	2900	5.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	mg/kg	6700000	650000	29000	1000000	780000	84000	1000000	2900000		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																												
Aluminum	mg/kg			50000			370000				--	--	3110	--	--	1040	--	--	5430	--	--	5380	--	5600	--	4830	--	--
Arsenic	mg/kg	720		7.6			37	910	70		--	--	2 U	--	--	2 U	--	--	2 U	--	--	2.46	--	2 U	--	12.4 ^f	--	--
Barium	mg/kg	330000		37000			130000	150000			--	--	14.5	--	--	393	--	--	82.2	--	--	74.8	--	391	--	360	--	--
Cadmium	mg/kg	1700		550			2100	2200			--	--	1.57	--	--	40.8	--	--	5.73	--	--	5.85	--	32.5	--	6.35	--	--
Chromium Total	mg/kg	260		2500			9200	240	3.3		--	--	8.32 ^f	--	--	2.37	--	--	17.3 ^f	--	--	18.8 ^f	--	111 ^f	--	12 ^f	--	--
Chromium VI (Hexavalent)	mg/kg	260		2500			9200	240	3.3		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	mg/kg	130000		20000			73000	59000			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide (total)	mg/kg	250		12			250	250	0.1		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	mg/kg	100000		400			900	44000			--	--	5.51	--	--	1500 ^g	--	--	214	--	--	545 ^g	--	2580 ^g	--	10900 ^g	--	--
Mercury	mg/kg	20000	52	160	48	62	580	89	8800	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/kg	13000		40000			150000	16000			--	--	44.2	--	--	21.3	--	--	8.15	--	--	9.6	--	133	--	11.3	--	--
Selenium	mg/kg	130000		2600			9600	59000	0.4		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	mg/kg	6700		2500			9000	2900	0.1		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	mg/kg			170000			630000				--	--	19.1	--	--	1700	--	--	480	--	--	580	--	580	--	2200	--	--
PCBs																												
Aroclor-1260 (PCB-1260)	mg/kg	5200	240	4	3000	810	16	16000	6500		0.33 U	0.33 U	--	0.33 U	0.33 U	--	0.33 U	0.33 U	--	0.33 U	0.33 U	--	0.33 U	--	0.33 U	--	0.33 U	0.33 U
Misc																												
Total Organic Carbon (TOC)	mg/kg										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
DCIC Direct Contact Industrial and Commercial II
GSIPC Groundwater Surface Water Interface Protection Criteria
IPISIC Industrial Particulate Soil Inhalation Criteria
ISVIAIC Industrial Soil Volatilization to Indoor Air Inhalation Criteria
IVSIC Industrial Infinite Source Volatile Soil Inhalation Criteria
J Estimated concentration
R Rejected
RDCC Residential Direct Contact Criteria
RPSIC Residential Particulate Soil Inhalation Criteria
RSVIAIC Residential Soil Volatilization to Indoor Air Inhalation Criteria
RVSIC Residential Infinite Source Volatile Soil Inhalation Criteria
U Not present at or above the associated value
UJ Estimated reporting limit

John McKenna
APPENDIX C
SOIL ANALYTICAL DATA
ACTIVE PAOCs
WILLOW RUN BUSINESS CENTER
PAOC WORK PLAN
JULY 2009

		RPSIC	RVSIC	RDCC	RSVIAIC	IVSIC	DCIC	ISVIAIC	IPSIC	GSIPC	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02	WRBC PAOC 02
Sample Location:											SB-2-12	SB-2-13	SB-2-13	SB-2-14	SB-2-14	SB-2-15	SB-2-27	SB-2-27	SB-2-27	SB-2-27	SB-2-27	SB-2-28	SB-2-28	SB-2-28	SB-2-29	SB-2-29	
Sample ID:											SB-2-12S5E7	SB-2-13S11E13	SB-2-13S12E13	SB-2-14S5E7	SB-2-14S9E13	SB-2-15S13E17	SB-2-27S11E13	SB-2-27S1E3	SB-2-27S3E5	SB-2-27S5E7	SB-2-27S7E9	SB-2-27S9E11	SB-2-28S1E3	SB-2-28S3E5	SB-2-28S5E7	SB-2-28S7E9	SB-2-29S1E3
Sample Date:											6/8/1995	6/8/1995	6/8/1995	6/8/1995	6/8/1995	6/9/1995	4/15/1996	4/15/1996	4/15/1996	4/15/1996	4/15/1996	4/15/1996	4/15/1996	4/15/1996	4/15/1996	4/15/1996	4/12/1996
Sample Depth:											(5-7)	(11-13)	(11.5-12.5)	(5-7)	(8.5-12.5)	(13-17)	(11-13)	(1-3)	(3-5)	(5-7)	(7-9)	(9-11)	(1-3)	(3-5)	(5-7)	(7-9)	(1-3)
Parameter:	Units	a	b	c	d	e	f	g	h	i																	
VOCs																											
cis-1,2-Dichloroethene	mg/kg	2300000	180	640	22	210	640	41	1000000	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	mg/kg	10000000	720	140	87	2400	140	140	13000000	0.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	mg/kg	27000000	2800	250	250	3300	250	250	12000000	2.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylene (total)	mg/kg	290000000	46000	150	150	54000	150	150	130000000	0.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs																											
1,2,3-Trichlorobenzene	mg/kg										--	0.022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnaphthalene	mg/kg										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4,5-Trichlorophenol	mg/kg	23000000		23000			73000		10000000		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	mg/kg			8100			26000				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	mg/kg	14000000	81000	41000	190000	97000	130000	350000	6200000	4.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	mg/kg	2300000	2200	1600	1600	2700	5200	3000	1000000		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	mg/kg	67000000	1400000	230000	1000000	1600000	730000	1000000	29000000		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	mg/kg			20			80				--	0.944	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	mg/kg	1500		2			8	1900			--	0.684	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	mg/kg			20			80				--	1.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	mg/kg	800000		2500			7000	350000			--	0.871	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	mg/kg			200			800				--	0.743	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	mg/kg	700000		2800			10000		890000		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butyl benzylphthalate	mg/kg	47000000		310			310	21000000	26		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	mg/kg			2000			8000				--	1.34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	mg/kg			2			8				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran	mg/kg									1.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	mg/kg	9300000	740000	46000	1000000	890000	130000	1000000	4100000	5.5	--	1.47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene	mg/kg	9300000	130000	27000	580000	150000	87000	1000000	4100000	5.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	mg/kg	140000	130	100	130	460	350	350	180000	0.091	--	0.022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	mg/kg			20			80				--	0.754	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	mg/kg	200000	300	16000	250	350	52000	470	88000	0.87	--	0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Butylbenzene	mg/kg			2500			8000				--	0.015	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	mg/kg			1700			7800				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	mg/kg	6700	160	1600	2800	190	5200	5100	2900	5.3	--	1.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	mg/kg	6700000	650000	29000	1000000	780000	84000	1000000	2900000		--	3.95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																											
Aluminum	mg/kg			50000			370000					38200	--	--	23200	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	mg/kg	720		7.6			37		910	70		2 U	--	--	6.8	--	--	--	--	--	--	--	--	--	--	--	--
Barium	mg/kg	330000		37000			130000		150000		--	348	--	--	522	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	mg/kg	1700		550			2100		2200			45.6	--	--	50	--	--	--	--	--	--	--	--	--	--	--	--
Chromium Total	mg/kg	260		2500			9200		240	3.3	118 ^d	--	--	80.3 ^d	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium VI (Hexavalent)	mg/kg	260		2500			9200		240	3.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	mg/kg	130000		20000			73000		59000		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide (total)	mg/kg	250		12			250		250	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	mg/kg	100000		400			900		44000		839 ^e	--	--	6440 ^d	--	1200 ^d	58	33	240	75	370	54	7	5	6	7	
Mercury	mg/kg	20000	52	160	48	62	580	89	8800	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/kg	13000		40000			150000		16000		64	--	--	77.7	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	mg/kg	130000		2600			9600		59000	0.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	mg/kg	6700		2500			9000		2900	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	mg/kg			170000			630000				2300	--	--	2000	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs																											
Aroclor-1260 (PCB-1260)	mg/kg	5200	240	4	3000	810	16	16000	6500		--	--	0.33 U	--	0.33 U	1.84	--	--	--	--	--	--	--	--	--	--	--
Misc																											
Total Organic Carbon (TOC)	mg/kg										--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
DCIC Direct Contact Industrial and Commercial II
GSIPC Groundwater Surface Water Interface Protection Criteria
IPISIC Industrial Particulate Soil Inhalation Criteria
ISVIAIC Industrial Soil Volatilization to Indoor Air Inhalation Criteria
IVSIC Industrial Infinite Source Volatile Soil Inhalation Criteria
J Estimated concentration
R Rejected
RDCC Residential Direct Contact Criteria
RPSIC Residential Particulate Soil Inhalation Criteria
RSVIAIC Residential Soil Volatilization to Indoor Air Inhalation Criteria
RVSIC Residential Infinite Source Volatile Soil Inhalation Criteria
U Not present at or above the associated value
UJ Estimated reporting limit

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APPENDIX C
SOIL ANALYTICAL DATA
ACTIVE PAOCs
WILLOW RUN BUSINESS CENTER
PAOC WORK PLAN
JULY 2009

		RPSIC	RVSIC	RDCC	RSVIAIC	IVSIC	DCIC	ISVIAIC	IPSIC	GSIPC	WRBC PAOC 03	WRBC PAOC 03	WRBC PAOC 03	WRBC PAOC 03	WRBC PAOC 03	WRBC PAOC 03	WRBC PAOC 03	WRBC PAOC 05	WRBC PAOC 05	WRBC PAOC 05	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08	WRBC PAOC 08
Sample Location:											SB-3-2	SB-3-3	SB-3-4	SB-3-5	SB-3-6	SB-3-7	SB-3-8	SB-5-1	SB-5-2	SB-5-3	SB-8-1	SB-8-2	SB-8-2	SB-8-3
Sample ID:											SB-3-2-10-13	SB-3-3-10-13	SB-3-4-10-13	SB-3-5S8E10	SB-3-6S8E10	SB-3-7S10E12	SB-3-8S10E12	SB-5-1	SB-5-2	SB-5-3	SB-8-1	SB-8-2	SB-8-2	SB-8-3
Sample Date:											6/5/1995	6/5/1995	6/5/1995	4/1/1996	4/1/1996	4/1/1996	4/1/1996	6/6/1995	6/6/1995	6/6/1995	2/1/1997	2/1/1997	2/1/1997	2/1/1997
Sample Depth:											(10-13)	(10-13)	(10-13)	(8-10)	(8-10)	(10-12)	(10-12)	(8.5-10.5)	(1-3)	(8-10)				
Parameter:	Units	a	b	c	d	e	f	g	h	i														
VOCs																								
cis-1,2-Dichloroethene	mg/kg	2300000	180	640	22	210	640	41	1000000	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	mg/kg	10000000	720	140	87	2400	140	140	13000000	0.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	mg/kg	27000000	2800	250	250	3300	250	250	12000000	2.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylene (total)	mg/kg	290000000	46000	150	150	54000	150	150	130000000	0.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs																								
1,2,3-Trichlorobenzene	mg/kg										--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnaphthalene	mg/kg										--	--	--	0.33 U	0.33 U	2.6	2.2	--	--	--	--	--	--	--
2,4,5-Trichlorophenol	mg/kg	23000000		23000			73000		10000000		--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	mg/kg			8100			26000				--	--	--	0.33 U	0.33 U	2.5	2.2	--	--	--	--	--	--	--
Acenaphthene	mg/kg	14000000	81000	41000	190000	97000	130000	350000	6200000	4.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	mg/kg	2300000	2200	1600	1600	2700	5200	3000	1000000		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	mg/kg	67000000	1400000	230000	1000000	1600000	730000	1000000	29000000		--	--	--	0.64	0.33 U	0.33 U	0.33 U	--	--	--	--	--	--	--
Benzo(a)anthracene	mg/kg			20			80				--	--	--	0.83	0.33 U	0.33 U	0.33 U	--	--	--	--	--	--	--
Benzo(a)pyrene	mg/kg	1500		2			8	1900			--	--	--	0.66	0.33 U	0.33 U	0.33 U	--	--	--	--	--	--	--
Benzo(b)fluoranthene	mg/kg			20			80				--	--	--	1	0.33 U	0.33 U	0.33 U	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	mg/kg	800000		2500			7000	350000			--	--	--	0.54	0.33 U	0.33 U	0.33 U	--	--	--	--	--	--	--
Benzo(k)fluoranthene	mg/kg			200			800				--	--	--	0.35	0.33 U	0.33 U	0.33 U	--	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	mg/kg	700000		2800			10000		890000		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butyl benzylphthalate	mg/kg	47000000		310			310	21000000	26		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	mg/kg			2000			8000				--	--	--	0.79	0.33 U	0.33 U	0.33 U	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	mg/kg			2			8				--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran	mg/kg									1.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	mg/kg	9300000	740000	46000	1000000	890000	130000	1000000	4100000	5.5	--	--	--	2.2	0.33 U	0.33 U	0.33 U	--	--	--	--	--	--	--
Fluorene	mg/kg	93000000	130000	27000	580000	150000	87000	1000000	4100000	5.3	--	--	--	0.54	0.33 U	0.33 U	0.33 U	--	--	--	--	--	--	--
Hexachlorobutadiene	mg/kg	140000	130	100	130	460	350	350	180000	0.091	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	mg/kg			20			80				--	--	--	0.45	0.33 U	0.33 U	0.33 U	--	--	--	--	--	--	--
Naphthalene	mg/kg	200000	300	16000	250	350	52000	470	88000	0.87	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	2.2 ¹	7.3 ¹	--	--	--	--	--	--	--
n-Butylbenzene	mg/kg			2500			8000				--	--	--	--	--	--	--	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	mg/kg			1700			7800				--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	mg/kg	6700	160	1600	2800	190	5200	5100	2900	5.3	--	--	--	2	0.33 U	0.33 U	0.33 U	--	--	--	--	--	--	--
Pyrene	mg/kg	6700000	650000	29000	1000000	780000	84000	1000000	2900000		--	--	--	2.7	0.33 U	0.33 U	0.33 U	--	--	--	--	--	--	--
Metals																								
Aluminum	mg/kg			50000			370000				--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	mg/kg	720		7.6			37		910	70	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	mg/kg	330000		37000			130000		150000		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	mg/kg	1700		550			2100		2200		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium Total	mg/kg	260		2500			9200		240	3.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium VI (Hexavalent)	mg/kg	260		2500			9200		240	3.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	mg/kg	130000		20000			73000		59000		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide (total)	mg/kg	250		12			250		250	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	mg/kg	100000		400			900		44000		--	--	--	--	--	--	--	3	3.34	2.39	--	--	--	--
Mercury	mg/kg	20000	52	160	48	62	580	89	8800	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/kg	13000		40000			150000		16000		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	mg/kg	130000		2600			9600		59000	0.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	mg/kg	6700		2500			9000		2900	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	mg/kg			170000			630000				--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs																								
Aroclor-1260 (PCB-1260)	mg/kg	5200	240	4	3000	810	16	16000	6500		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Misc																								
Total Organic Carbon (TOC)	mg/kg										--	--	--	--	--	--	--	--	--	--	5300	1200	870	900

Notes:
DCIC Direct Contact Industrial and Commercial II
GSIPC Groundwater Surface Water Interface Protection Criteria
IPSIC Industrial Particulate Soil Inhalation Criteria
ISVIAIC Industrial Soil Volatilization to Indoor Air Inhalation Criteria
IVSIC Industrial Infinite Source Volatile Soil Inhalation Criteria
J Estimated concentration
R Rejected
RDCC Residential Direct Contact Criteria
RPSIC Residential Particulate Soil Inhalation Criteria
RSVIAIC Residential Soil Volatilization to Indoor Air Inhalation Criteria
RVSIC Residential Infinite Source Volatile Soil Inhalation Criteria
U Not present at or above the associated value
UJ Estimated reporting limit

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APPENDIX D

OilScreenSoil® SUDAN IV JAP FIELD SCREENING INSTRUCTION MANUAL

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MANUFACTURER'S GUARANTEE:

We will replace any broken or defective kits.
If you are not satisfied with our product, return any defective kits to Cheiron for a refund. We reserve the right not to provide refunds if the kits have been tampered with in any way, or if not used in accordance WITH the product MSDS and Instruction Manual.

Cheiron Resources Ltd provides the information contained in this publication in good faith but makes no representation as to its comprehensiveness or accuracy. The information provided is intended only as a guide to the appropriate handling and use of the OilScreenSoil™ kits by a properly trained person who is qualified to use the materials being tested. Individuals reviewing this information must exercise their independent judgment in determining its appropriateness for a particular purpose or application.

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**Manufacturers of Petroleum Hydrocarbon &
Chlorinated Solvents Field Screening Kits**



IL screen SOIL (SUDAN IV)

Field Screening Test Instruction Manual



"Congratulations on purchasing the easiest and fastest test kit available for screening petroleum hydrocarbons and chlorinated solvents!"

INTRODUCTION:

The **OILSCREENSOIL (SUDAN IV)**[™] screening kit is composed of a styrene bottle; a label indicating recommended soil and water levels; a small polystyrene bead, and a water soluble cube (containing finely dispersed dyes) glued to the inside of the jar lid.

In the Sudan IV version of the screening test kit, the water soluble cube is impregnated with two dyes:

- A de minimus amount of SUDAN IV, (a red Disazo dye soluble in most petroleum hydrocarbons) which stains oils and a
- Fluorescent green/yellow water soluble dye to stain the water, providing a stronger visual contrast to the red oil staining dye.

The dual dye method is employed to improve detection by the user. This is the only OilScreenSoil[™] test kit that contains dual dyes.

USING THE KIT:

OILSCREENSOIL (SUDAN IV)[™] kits are designed with ease of use in mind. Simply follow the instructions on the label:

Step 1 Fill the bottle with soil to the line "Fill soil to HERE" →

Note: Do not compact the soil.

Step 2 Fill the bottle to the line "Fill water to HERE" →

Note: ensure water is warm enough to dissolve the cube.

Step 3 Replace cap on bottle and shake jar until cube is **completely** dissolved.

At higher levels, (usually around the 2500ppm TPH level) DNAPLs or petroleum products will be indicated by a red meniscus on top of the water – typically within 30-60 seconds. If red coloration is not immediately apparent in the jar – check the polystyrene bead. The presence of ANY red color on the bead (even a faint pink halo or hue) likely indicates the presence of more than 500ppm TPH in that sample. Conversely, a "clean" bead either indicates the absence of petroleum, or at the very least, petroleum under the 500ppm TPH level.

It is helpful to hold a clean unused bead up against the used bead in the test kit for comparison purposes at levels below the 1,000ppm TPH levels

Note: Most DNAPLs dissolve styrene. Therefore, when chlorinated solvents are present in the soil sample - red spotting may appear on the sides of the jar.

Note: Whenever possible, use potable water for the screening tests. However, salt water can be used if necessary.

Cold water can inhibit the rapid release of viscous hydrocarbons from soil thus causing False Negative results. Therefore, at temperatures below 68° F (20° C), we recommend users carry a thermos of hot water for field testing purposes.

RECOMMENDED PROTECTIVE EQUIPMENT:

Please follow safety instructions outlined in the MSDS. Always use gloves and safety glasses when using the **OILSCREENSOIL (SUDAN IV)**[™] kits.

DISPOSAL OF USED KITS:

As per the MSDS and local regulations.

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APPENDIX E
MANHOLE INSPECTION REPORT

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**CONESTOGA-ROVERS
& ASSOCIATES**

John McKenna

Arcadis

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1880 Assumption Street, Unit 200

Windsor, Ontario N8Y 1C4

Telephone: (519) 966-9886 Fax: (519) 966-3894

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MANHOLE INSPECTION REPORT

Manhole ID #: _____ Location: _____ Drainage Area: _____

 Sewer Type: ☐ Storm ☐ Sanitary ☐ Process ☐ Combined

Project: _____

Project No.: _____

Date: _____

Time: _____

Inspector: _____

 Weather: Temp. _____ ☐ °F ☐ °C ☐ No rain ☐ Rain ☐ Snow

INVENTORY

Item	Construction Material	Condition		
		Good	Fair	Poor
Manhole Cover		☐	☐	☐
Ring (frame)		☐	☐	☐
Walls		☐	☐	☐
Steps		☐	☐	☐
Other: _____		☐	☐	☐

OBSERVATIONS

1. Diameter of manhole opening: _____
2. Holes in cover: ☐ No ☐ Yes Number: _____ Size: _____ Description: _____
3. Visible infiltration through joints, cracks, lines, etc.; height above sewer invert, estimated flow rates: _____
4. High-water marks in manhole; height of marks above sewer invert: _____
5. Debris in manhole: ☐ No ☐ Yes Type: _____ Depth: _____
6. Special problems or conditions, sources of inflow, overflows, bypasses, etc.:

Manhole ID #: _____

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Pipe No.	Pipe Diameter [in.]	Pipe Direction	Construction Material	Depth from Top of Ring to Invert [decimal ft..]

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Depth to Bottom [ft.]:

Depth of Water [in.]:

Solids Thickness [in.]:

Liquids Present: ☐ No ☐ Yes Sheen: ☐ No ☐ Yes Odor: _____

Liquid Type: ☐ Water ☐ Oil ☐ Other: _____ Flow Type: ☐ Heavy ☐ Slow ☐ Stagnant