RESOURCE CONSERVATION AND RECOVERY ACT
CA725 & CA750 ENVIRONMENTAL INDICATORS
SUPPORTING DOCUMENTATION

GENERAL MOTORS CORPORATION
SAGINAW METAL CASTING OPERATIONS (SMCO)
WASHINGTON AVE AND VETERANS MEMORIAL PARKWAY,
SAGINAW, MICHIGAN

MID 041 793 340

Prepared for

General Motors Corporation
Detroit, Michigan

Prepared by

ENVIRON International Corporation
Princeton, New Jersey

September 17, 2003

Worldwide Facilities Group
Remediation Team

September 17, 2003

Ms. Mirtha Capiro
Project Coordinator for MID 041 793 340
RCRA Enforcement Branch (DE-9J)
U.S. EPA, Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

RE: Submittal of Environmental Indicator Forms for the General Motors Corporation Saginaw Metal Casting Operations Plant in Saginaw, Michigan

Dear Ms. Capiro:

Enclosed please find two copies of Environmental Indicator (EI) Forms and supporting documentation for the General Mootors Corporation (GM) Saginaw Metal Casting Operations (SMCO) Plant, located in Saginaw, Michigan. GM's analysis of the data currently available indicate that both CA725 and CA750 are met at this Facility. Please call if you should have any questions regarding the data or the analysis and we will get you the information you need to make your analysis.

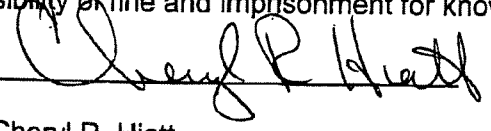
Sincerely,

Cheryl R. Hiatt
Project Coordinator
General Motors Corporation

Cc: George Bruchmann, MDEQ
Terry Walkington, MDEQ
Rhonda Klann, MDEQ
Ron Stone, MDEQ
Lisa Williams, USFWS

Troy Tech Park South, 1996 Technology Drive, Mail Code 483-610-256, Troy, MI 48083, FAX (248) 689-5100

"I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature: 

Name: Cheryl R. Hiatt

Title: Project Coordinator

Date: September 17, 2003

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name:	*General Motors Corporation* *Saginaw Metal Casting Operations (SMCO)*
Facility Address:	*Washington Avenue and Veterans Memorial Parkway, Saginaw, Michigan*
Facility EPA ID #:	*MID 041 793 340*

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   X If yes - check here and continue with #2 below.

   ___ If no - re-evaluate existing data, or

   ___ If data are not available skip to #6 and enter"IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

X If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

___ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

___ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

Section 3.0 of the EI Supporting Document (ENVIRON 2003) discusses the criteria used to identify contamination in groundwater. Section 4.0 discusses the presence of contamination in groundwater in each Investigative Unit.

Upper water bearing zone groundwater meets the definition of contamination based on detected concentrations of arsenic, chromium, cobalt, cyanide, lead, mercury, vanadium, SVOCs, vinyl chloride, PCBs, and ammonia in comparison with Michigan Part 201 generic cleanup criteria. pH levels in the upper water bearing zone groundwater also meet the definition of contamination in comparison with Michigan Part 201 generic cleanup criteria.

Based on comparisons with upgradient bedrock groundwater data, concentrations in the bedrock groundwater are determined not to meet the definition of contamination subject to corrective action.

Footnotes:

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

X If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

___ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

___ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

Section 4.0 of the EI Supporting Document (ENVIRON 2003) discusses the groundwater sampling results and whether contaminated groundwater is delineated. As indicated in this report, the areas of contaminated groundwater have been delineated horizontally; based on the hydrogeology and available bedrock groundwater data, vertical migration to the underlying bedrock aquifer is not reasonably expected. These areas of contaminated groundwater were determined to be stable based on data collected over several sampling events.

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

X If yes - continue after identifying potentially affected surface water bodies.

___ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

___ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

As discussed in the EI Supporting Document (ENVIRON 2003), based on comparisons with Michigan Part 201 generic groundwater-surface water interface (GSI) criteria, "contaminated" groundwater present in the upper water bearing zone present at the Facility discharges to the Saginaw River adjacent to the Facility. Specifically, ammonia, arsenic, chromium, cobalt, cyanide, lead, mercury, vanadium, PCBs and pH concentrations exceeded the generic GSI criteria.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

X If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgment/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

___ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

___ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

As discussed in Section 4.0 of the EI Supporting Document (ENVIRON 2003), the assessment of current conditions in the Saginaw River and the potential for contaminated upper water bearing zone groundwater discharges to significantly impact the Saginaw River, it is concluded that discharge of contaminated groundwater is likely to be insignificant. Specifically, direct measurement of arsenic, chromium, lead, vanadium, PCBs and pH in the River did not indicate any facility-related influence on surface water concentrations. Detections of cyanide and ammonia were all detected at concentrations less than 10 times their appropriate screening criteria, and therefore, are considered to represent an insignificant contribution to surface water. Dissolved concentrations of mercury and cobalt in filtered samples (which are considered to be more appropriate for evaluating potential adverse effects on aquatic organisms) were below the generic GSI criteria, and therefore, are considered to represent an insignificant contribution to surface

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

___ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

___ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

___ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

X — If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

— If no - enter "NO" status code in #8.

— If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

Based on the identification of areas of "contaminated" groundwater in the upper water bearing zone at the SMCO Facility, a monitoring program has been prepared to verify that groundwater contamination will not be migrating horizontally beyond the existing limits. The monitoring program is specified in Section 6 of the EI Supporting Document (ENVIRON 2003).

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

YE — YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the *General Motors Corporation Saginaw Metal Casting Operations (SMCO)*, EPA ID # *MID 041 793 340* located in *Saginaw, Michigan*. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater". This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

___ NO - Unacceptable migration of contaminated groundwater is observed or expected.

___ IN - More information is needed to make a determination.

Completed by	(signature) (print) (title)	Date

Supervisor	(signature) (print) (title)	Date
	(EPA Region or State)	

Locations where References may be found:
USEPA Region 5 has the following documents, which support this determination: *1. RCRA CA725 & CA750 EI Supporting Documentation (ENVIRON 2003)*

Contact telephone and e-mail numbers

(name)	
(phone #)	
(e-mail)	

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name:	*General Motors Corporation* *Saginaw Metal Casting Operations (SMCO)*
Facility Address:	*Washington Avenue and Veterans Memorial Parkway,* *Saginaw, Michigan*
Facility EPA ID #:	*MID 041 793 340*

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   X — If yes - check here and continue with #2 below.
   — If no - re-evaluate existing data, or
   — If data are not available skip to #6 and enter"IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater (upper zone)	X			As, Cr, Co, CN, Pb, Hg, V, SVOCs, vinyl chloride, PCBs, ammonia, pH
Groundwater (bedrock)		X		
Air (indoors)[2]		X		
Surface Soil (e.g., <2 ft)	X			Sb, B(a)P, Cr, Pb, PCBs
Surface Water		X		
Sediment	X			As, Pb. B(a)P
Subsurf. Soil (e.g., >2 ft)	X			As, B(a)P, Cr, Dibenz(a,h)anthracene, Formaldehyde, Pb, PCBs
Air (outdoors)		X		

___ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

X___ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

___ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

Section 3.0 of the EI Supporting Document (ENVIRON 2003) discusses the criteria used to identify contamination in soil, sediment, surface water and groundwater. Section 4.0 discusses the presence of contamination in these media in each Investigative Unit. Surface soil, subsurface soil, upper water bearing zone groundwater, and sediment meet the definition of contamination based on detected concentrations of the constituents listed above in comparison with Michigan Part 201 generic cleanup criteria. Based on data for upgradient monitoring wells, bedrock groundwater is not contaminated. Based on sampling at reference locations and adjacent to the Facility, surface water in the Saginaw River is not contaminated with constituents from the Facility.

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[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggests that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

"Contaminated" Media	Potential **Human Receptors** (Under Current Conditions) Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater (upper zone)	*No*	*No*	*No*	***Yes***	*No*	*No*	*No*
~~Groundwater (bedrock)~~							
~~Air (indoors)~~							
Soil (surface, e.g., <2 ft)	*No*	***Yes***	*No*	***Yes***	***Yes***	*No*	*No*
~~Surface Water~~							
Sediment	*No*	***Yes***	*No*	*No*	***Yes***	*No*	*No*
Soil (subsurface e.g., >2 ft)	*No*	*No*	*No*	***Yes***	*No*	*No*	*No*
~~Air (outdoors)~~							

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated" as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

___ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

X If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

___ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

The potential for current human exposure to media that meet the definition of contamination is discussed in Sections 1.7 and 2.0 of the EI Supporting Document (ENVIRON 2003).

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

X — If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

___ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

___ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

Sections 4.0 and 5.0 of the EI Supporting Document (ENVIRON 2003) discusses the significance of potential current exposures of routine workers, construction/maintenance workers and trespassers to contaminants detected in soil, groundwater, and/or sediments.

Evaluations of potential exposure of routine workers to soil show that contamination in soil does not pose a significant current exposure to this receptor population at the Facility. As discussed in Appendix C of the EI Supporting Document, exposures of excavation workers and trespassers to soil contamination are expected to be lower than those for a routine worker, and therefore, contamination in soil also does not pose a significant current exposure to these receptors. In addition, cumulative risk estimates based on reasonably likely current exposures of routine workers are within EPA's acceptable cancer risk range and below EPA's acceptable noncancer hazard index.

Evaluations of potential exposure of maintenance workers and trespassers to on-site sediments show that contamination in sediment does not pose a significant current exposure to these receptor populations.

Evaluations of potential exposure of construction workers to upper groundwater bearing zone groundwater show that contamination in shallow groundwater does not pose a significant current exposure to workers at the Facility.

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

___ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

___ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

___ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

YE — YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the *General Motors Corporation Saginaw Metal Casting Operations (SMCO)*, EPA ID # *MID 041 793 340* located in Saginaw, *Michigan* under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

___ NO - "Current Human Exposures" are NOT "Under Control."

___ IN - More information is needed to make a determination.

Completed by	(signature) (print) (title)	Date

Supervisor	(signature) (print) (title)	Date
	(EPA Region or State)	

Locations where References may be found:
USEPA Region 5 has the following documents, which support this determination: *1. RCRA CA725 & CA750 EI Supporting Documentation (ENVIRON 2003)*

Contact telephone and e-mail numbers

(name)	
(phone #)	
(e-mail)	

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

RESOURCE CONSERVATION AND RECOVERY ACT
CA725 & CA750 ENVIRONMENTAL INDICATORS
SUPPORTING DOCUMENTATION

GENERAL MOTORS CORPORATION
SAGINAW METAL CASTING OPERATIONS (SMCO)
WASHINGTON AVE AND VETERANS MEMORIAL PARKWAY,
SAGINAW, MICHIGAN

MID 041 793 340

Prepared for

General Motors Corporation
Detroit, Michigan

Prepared by

ENVIRON International Corporation
Princeton, New Jersey

September 17, 2003

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1.0 INTRODUCTION

The Saginaw Metal Casting Operations (SMCO) Facility is located at N. Washington Avenue and Veterans Memorial Parkway, in the City of Saginaw and in Buena Vista Township in Sections 5, 7, 8, 9, 17, and 18, Township 12 North, Range 4 East, Saginaw County, Michigan (Site).

Detailed information on the site setting, surrounding land use, geology, hydrogeology, surface water hydrology, groundwater use, and identification of potentially exposed populations is documented in the *Phase IA RFI Report and Phase IB RFI Workplan* submitted to EPA in April 2000 (EMCON 2000). The information pertinent to completing the Environmental Indicators CA725 and CA750 are summarized below.

1.1 Site Description

The SMCO Facility is an operating industrial site located on approximately 700 acres (Figure 1). Buildings include the SMCO Manufacturing Buildings, the Advanced Materials Development Center, the Wastewater Treatment Building, and the Advanced Development Laboratory. The former Chevrolet Parts Plant, Nodular Iron Plant and Administration Buildings have been demolished. The current plant area is approximately 1.8 million square feet and consists of the main SMCO manufacturing building and a few ancillary buildings. For the purpose of the RCRA Facility Investigation (RFI), the Facility was divided into the following investigation units (IUs):

- IU A: Former Sluice Sand Settling Area
- IU B: Former Chevrolet Parts Plant
- IU C: Inlet Reservoir
- IU D: The SMCO Plant
- IU E: The River Dock Area
- IU F: Former Administration Building
- IU G: Former Nodular Iron Plant
- IU H: Wastewater Treatment System
- IU I: Bulk Sand and Recyclable Materials Staging
- IU J: On-site Permitted Landfill

The Facility is bounded on the west/northwest by the Saginaw River, the City of Saginaw Wastewater Treatment Plant and the closed City of Saginaw Landfill, the Buena Vista Wastewater Treatment Plant to the north and east, agricultural areas to the east, a recycling facility and bulk petroleum transfer facility to the south and east, some residential areas to the southeast, and general small businesses to the south. There is a Consumers Power Easement on the south side of the eastern half. The site also contains the Chesapeake and Ohio Railroad Company easement, the Veterans Memorial Highway right of way, the City of Saginaw Storm water Ditch and a parcel owned by Larry Fairchild/Tri County Refuse Company.

Surface water bodies at the Site include the City of Saginaw storm water ditch, the north ditch, the Deikmann Drain, the SMCO wastewater settling ponds and recycle water reservoir, and an unnamed storm water ditch.

The topography is generally flat and lies partially in the 100-year floodplain.

1.2 Operational History

SMCO Plant (IU D; also referred to as the Grey Iron Plant) activities consist of casting iron and aluminum for automotive engines and cylinder heads, including core making, melting, molten metal pouring, and cleaning/roughing, and involves, aluminum, scrap iron, lake sand, sea coal, bentonite clay, and phenolic resin, with hydraulic oils used in the equipment. Foundry activities have taken place on the property since the turn of the 20th century. There was another foundry on this property, the former Nodular Iron Plant (IU G), which produced nodular iron automotive parts and the process was similar to that of Grey Iron with the addition of calcium carbide to the molten iron to reduce the sulfur content in the iron. The former Chevrolet Parts Plant (IU B) did machining of parts and storage of engine blocks and other metal products. Other activities on this property included the handling and storage of process foundry sand, including core butts, washed classified sand and staging of sand where metals reclamation takes place. There is a wastewater treatment facility (IU H) for the SMCO Plant, which treats process water and recycles the water through a closed loop system of ponds back to the plant.

1.3 Geology

The ground surface typically consists of a layer of fill of varying thickness, over fluvial/marsh deposits composed of silty sand and silty clay, which in turn overlies glaciolacustrine deposits composed of clay with thin discontinuous sand lenses overlying subglacial sand/gravel deposits. Bedrock in this area is encountered approximately 84 to 106 feet below the surface on the property and is composed of hard fine sandstone, part of the Pennsylvanian Saginaw Formation.

1.4 Hydrogeology

Groundwater underlying the Facility is present in the unconfined surface fill and sand units ("upper water-bearing zone") and in a deeper sand and bedrock aquifer. The two water bearing units are separated by the silty clay confining layer, which varies in thickness from 15 feet near the Saginaw River to 80 feet on the eastern side and which can have limited quantities of water in discontinuous sand units. Figure 2a shows the general flow pattern in the upper water-bearing zone across the Site. Flow in the unit is generally west/northwest toward the River, although the SMCO Plant (IU D) locally affects flow, by pumping drains around the buildings. Groundwater in the deeper bedrock aquifer flows generally north toward Saginaw Bay, as presented on Figure 2b.

1.5 Land Use

The Site land use is as an operating plant and is zoned industrial. The nearest residents to the facility are in the residential area southeast of the facility that is beyond the adjacent industrial and commercial areas.

1.6 Groundwater Use

According to the Hydrogeologic Atlas of Michigan, the first usable aquifer in the area of the facility is the fractured bedrock aquifer. However, drinking water for Saginaw (which also supplies water to Buena Vista) is obtained primarily from Lake Huron. Based on a search of well records, water supply wells were identified in the vicinity of the Site, including 17 commercial or domestic sand/bedrock aquifer wells within one mile of the Site. Groundwater is not used at the GM Facility.

In contrast to the sand/bedrock aquifer, the shallow upper water-bearing zone in the vicinity of the Site has not been used historically, is not currently used, and is not reasonably anticipated to be used in the future as a water supply.

1.7 Potential Receptors

Soil, Sediment and Surface Water

Based on a review of information pertinent to current land use at and around the Site, the potential for exposure to constituents in soil, sediment, and/or surface water are based on:

- Industrial land use at the Site; and
- Industrial/commercial, residential, and recreational land uses surrounding the Site.

The potentially exposed populations under these land uses are as follows:

- On-site and off-site workers

  The vast majority of workers at the Site are employed in manufacturing functions, which take place within manufacturing buildings. These workers rarely, if ever, perform job functions that would bring them into contact with the soil, sediment and/or surface water in an IU. For these workers, routine incidental contact with outdoor areas at the Site may occur during lunch, breaks, and walks to and from parking lots. The extent of such outdoor activities is expected to vary seasonally. A small number of the facility workers, however, may have more intensive contact with the IUs during maintenance or occasional excavation activities (e.g., replacing pavement, maintenance of underground utilities).

  Workers at the Site whose duties are to perform waste management functions are not considered a potentially exposed population for the purposes of the RFI baseline risk assessment. Such workers include those who manage manufacturing process wastes that are handled in on-site solid waste management units (e.g., dredging sediments from primary settling lagoons in IU H, or placing waste foundry sand in the licensed landfill in IU J). Potential exposures to these workers during performance of such job functions are monitored and controlled through procedures and practices established by SMCO.

  Based on the similarity of industrial and commercial land use surrounding the Site, workers at neighboring facilities are expected to have activity patterns similar to those for the majority of the workers at the Site. That is, the majority of these workers are expected to work mostly indoors and spend little of their workday outdoors.

- Off-site residents
  The nearest residents to the Site are in the residential area to the southeast that is beyond the adjacent industrial and commercial areas. They may be exposed to constituents in soil, sediment, and/or surface water at the Site via airborne transport of the constituents off-site. Trespassing by residents onto the Site is expected to be unlikely because perimeter fencing and guards largely control public access. However, for those areas of the Site that are not fully fenced or guarded, trespassing may occur and trespassers may be exposed to soil, sediment, and/or surface water in these specific IUs. Potential exposures to off-site surface water and sediment may also occur via recreational use of the Saginaw River.

Groundwater
Currently, no ground-water from the upper water-bearing unit or the sand/bedrock aquifer is used on-site. A nonpotable industrial supply well is located downgradient (north) of IU J, and other bedrock wells have been identified on the north side of the Saginaw River in Carrolton, Michigan. Drinking water for Saginaw and Buena Vista is obtained primarily from Lake Huron.

Use of the sand/bedrock aquifer as a future drinking water supply is reasonably expected. However, use of the shallow upper water-bearing zone as a drinking water supply is not reasonably expected, although the upper water-bearing zone is considered a medium for potential transport of constituents to the Saginaw River.

Potential human exposures to constituents transported via ground-water to the Saginaw River may result from recreation on the River. Additionally, direct exposures to on-site, shallow ground-water may occur during excavation activities that may be conducted at the Site.

2.0 CURRENT EXPOSURE PATHWAYS

The conceptual site model for the facility is included as Appendix A. The following sections outline potential complete pathways of exposures currently present at the Site.

2.1 Pathways of Exposure to Soil

- Direct Contact – Routine worker direct contact with surface soil in unpaved areas is possible. Construction worker direct contact with surface and subsurface soil is possible during excavation activities.
- Inhalation of Volatiles from Soil to Ambient Air – Inhalation of vapors from unpaved surface and subsurface soil migrating to ambient air is possible for routine workers.
- Inhalation of Particulates in Ambient Air from Surface Soil – Inhalation of particulates in ambient air from uncovered surface soil is possible for routine workers.
- Inhalation Volatiles from Soil to Indoor Air – Inhalation of vapors that could migrate from soil through cracks in building foundations to industrial indoor air is possible for routine workers in areas with buildings.

2.2 Pathways of Exposure to Groundwater

- Inhalation of Volatiles from Groundwater to Indoor Air – Inhalation of vapors that could migrate from shallow groundwater through cracks in building foundations to industrial indoor air is possible for routine workers in areas with buildings.
- Direct Contact – Construction worker direct contact with shallow groundwater is possible during excavation activities that extend into the groundwater table.

Groundwater is not currently used at the Site or immediately downgradient of the Site for drinking water.

2.3 Pathways of Exposure to Surface Water

- Direct Contact – Maintenance worker direct contact with surface water is possible during maintenance activities in the ponds, reservoirs, or ditches. Potential exposures may also occur via recreational use of the Saginaw River.

2.4 Pathways of Exposure to Sediment

- Direct Contact – Maintenance worker direct contact with sediment is possible during maintenance activities in the ponds, reservoirs, or ditches. Potential exposures may also occur via recreational use of the Saginaw River.

3.0 PRESENCE OF CONTAMINATION

The identification of "contamination" for the purposes of answering Question 2 of the CA725 and CA750 determinations is based on comparison of the RFI and non-RFI characterization data with the generic cleanup criteria developed by the Michigan Department of Environmental Quality (MDEQ) under Part 201 (Environmental Remediation) of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The Part 201 generic cleanup criteria used in evaluating the RFI (Phase 1A and 1B) and non-RFI data are those published by MDEQ on December 2002. The technical bases for these generic cleanup criteria are discussed in the MDEQ Part 201 Administrative Rules.

Part 201 generic cleanup criteria for the industrial land use category (which includes the Commercial I category) were used as screening levels for identifying "contamination" at on-site areas. Current land use at the Site is industrial/commercial and information reviewed during the Phase 1A RFI support a determination that reasonably anticipated future on-site land use will remain industrial/commercial.

3.1 Soil

For identifying contamination in soil, the following Part 201 generic cleanup criteria were selected for the potentially relevant pathways identified in Section 2 above.

- Industrial and Commercial II, III & IV Direct Contact Criteria
- Industrial and Commercial II, III & IV Finite Source Volatilization to Ambient Air for a 5 Meter Source Thickness

- Industrial and Commercial II, III & IV Particulate Soil Inhalation Criteria
- Industrial and Commercial II, III & IV Soil Volatilization to Indoor Air Inhalation Criteria

RFI and non-RFI soil characterization data[1] exceeding the criteria above are summarized on Table 1 by IU. The data on Table 1 include only valid data (i.e., no R-qualified data). Concentrations among duplicate pairs have been averaged to obtain a representative concentration for each pair. For each IU, Table 1 lists the detected constituents exceeding one or more of the screening criteria, detected concentrations, and the ratios of the concentrations to the screening criteria.

Contamination is identified when the ratio of the measured concentration to the screening criterion exceeds 1. Contamination identified based on comparison of detected constituent concentrations in soil with these criteria is discussed for each IU in Section 4.0.

3.2 Upper Groundwater-Bearing Zone

For identifying contamination in upper groundwater-bearing zone, the following Part 201 generic criteria were selected for the potentially relevant pathways identified in Section 2 above.

- Industrial and Commercial II, III, IV Groundwater Volatilization to Indoor Air Inhalation Criteria
- Groundwater Contact Criteria
- Groundwater Surface Water Interface Criteria (applied to wells located within approximately 200 feet of the Saginaw River, or the wells located closest to the river in IU G).

Recent RFI and non-RFI groundwater characterization data exceeding the criteria above are summarized on Table 2 by IU. The data on Table 2 include only valid data (i.e., no R-qualified data). Concentrations among duplicate pairs have been averaged to obtain a representative concentration for each pair. For each IU, Table 2 lists the detected constituents exceeding one or more of the screening criteria, detected concentrations, and the ratios of the concentrations to the screening criteria.

Contamination is identified when the ratio of the measured concentration to the screening criterion exceeds 1. Contamination identified based on comparison of detected constituent concentrations in shallow groundwater with these criteria is discussed for each IU in Section 4.0.

3.3 Bedrock Groundwater

For identifying contamination in bedrock groundwater the following criteria were selected for the potentially relevant pathways identified in Section 2 above.

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[1] Note that there are several compounds, such as manganese, that have been analyzed for during site investigation activities, which are not hazardous constituents, thus not subject to RCRA Corrective Action. The presence of these constituents is addressed in the RFI reports, but is not discussed herein.

- Maximum contaminant levels (MCLs) established under the Safe Drinking Water Act
- Part 201 generic Industrial and Commercial II, III, and IV Drinking Water Criteria

RFI groundwater characterization data exceeding the criteria above are summarized on Table 3 by IU. The data on Table 3 include only valid data (i.e., no R-qualified data). Concentrations among duplicate pairs have been averaged to obtain a representative concentration for each pair. For each IU, Table 3 lists the detected constituents exceeding one or more of the screening criteria, detected concentrations, and the ratios of the concentrations to the screening criteria.

Contamination is identified in groundwater when the ratio of the measured concentration to the screening criterion exceeds 1. Contamination identified based on comparison of detected constituent concentrations in bedrock groundwater with these criteria is discussed for each IU in Section 4.0.

3.4 Sediment

For identifying contamination in sediment within on-site waterbodies, the following Part 201 generic cleanup criteria for soil were selected as conservative screening levels for evaluating the potentially relevant pathways to sediment identified in Section 2 above.

- Industrial and Commercial II, III & IV Direct Contact Criteria

RFI sediment characterization data exceeding the criteria above are summarized on Table 4 by IU. The data on Table 4 include only valid data (i.e., no R-qualified data). Concentrations among duplicate pairs have been averaged to obtain a representative concentration for each pair. For each IU, Table 4 lists the detected constituents exceeding one or more of the screening criteria, detected concentrations, and the ratios of the concentrations to the screening criteria.

Contamination is identified when the ratio of the measured concentration to the screening criterion exceeds 1. Contamination identified based on comparison of detected constituent concentrations in sediment with these criteria is discussed for each IU in Section 4.0.

For determining whether site-related contamination is present in Saginaw River sediments, in August 2000, General Motors (GM) implemented a Saginaw River surface water and sediment sampling program as part of Phase IB of its ongoing RFI at the SMCO facility. As discussed in Section 5.5 of the Phase 1B Workplan (EMCON 2000) and subsequent correspondence with USEPA (GM 2001), the objective of the Saginaw River sampling program was to evaluate current chemistry of the water column and river bottom sediments along the SMCO facility relative to background "reference" conditions. As demonstrated in the *Evaluation of Phase IB RFI Saginaw River Sediment and Surface Water Data* (ENVIRON 2001), the data do not provide any indication of site-related influence on sediment concentrations relative to reference sampling locations that were selected in consultation with USEPA and MDEQ. Therefore, sediment in the Saginaw River is not discussed further in this report.

3.5 Surface Water

For identifying contamination in surface water in on-site waterbodies, the following Part 201 generic cleanup criteria for groundwater were selected for the evaluation of the potentially relevant pathways to on-site surface water identified in Section 2 above.

- Groundwater Contact Criteria

Surface water concentrations observed in samples collected during RFI sampling activities did not exceed the above criteria, and therefore, on-site surface water is not contaminated, and is not discussed further in this report.

For determining whether site-related contamination is present in Saginaw River surface water, in August 2000, GM implemented a Saginaw River surface water and sediment sampling program as part of Phase IB of its ongoing RFI at the SMCO facility. As discussed in Section 5.5 of the Phase 1B Workplan (EMCON 2000) and subsequent correspondence with USEPA (GM 2001), the objective of the Saginaw River sampling program was to evaluate current chemistry of the water column and river bottom sediments along the SMCO facility relative to background "reference" conditions. As demonstrated in the *Evaluation of Phase IB RFI Saginaw River Sediment and Surface Water Data* (ENVIRON 2001), the data do not provide any indication of site-related influence on surface water concentrations relative to reference sampling locations that were selected in consultation with USEPA and MDEQ. Therefore, surface water in the Saginaw River is not discussed further in this report.

4.0 ASSESSMENT OF POTENTIAL CONTAMINATION IN INVESTIGATIVE UNITS

Sampling at the Site has been done as part of the RFI and other individual investigations conducted by the Plant (non-RFI). Data from both have been used to identify "contamination" at the Site for the purposes of the CA725 and CA750 determinations. Sample results from each investigative unit (IU) and the significance of contamination identified above with respect to the CA725 and CA750 determinations are discussed in this section.

The following subsections that discuss assessment of soil contamination specifically addresses potential exposures of routine workers rather than all potential receptors. This approach simplifies the evaluation and is conservative because potential construction worker, maintenance worker and trespasser exposures would be lower than potential routine worker exposures, as demonstrated in the analysis presented in GM's *Health-Based Evaluation of Data to Streamline RCRA Facility Investigations (RFIs) at General Motors Facilities* (ENVIRON 2003; see Appendix C).

4.1 Investigative Unit A – Former Sluice Sand Settling Area

Sluice sand settling in IU A was discontinued in 1983. It is currently leased to an asphalt plant for their operations. The SMCO Facility currently sends its spent mold sand and quench slag by dump truck to IU A. It is then used as Aggregate material for asphalt. The asphalt company that leases the property from GM screens the sand and slag to remove pieces of metal and other debris. They have 2 or 3 people working in the area every day sorting and moving the material,

and there are typically 1 or 2 pay loaders in the area during working hours. Material piles in the area are regularly changing size and location. There are also site trailers located near the entrance from 6th Street (western portion of Area).

4.1.1 Soil

As indicated on Table 1, the concentration of chromium in one RFI sample at boring MW-00821 exceeds the Part 201 generic particulate soil inhalation criterion (PSIC) of 240 mg/kg with a concentration of 292 mg/kg. The sample is a surface sample located in an area that does not have routine vehicle traffic as assumed in MDEQ's derivation of the PSIC. This PSIC is also conservative because it assumes that chromium is present entirely as hexavalent chromium. Data from soil samples at other locations at the Site show that most chromium is actually in the less toxic trivalent form. Also, this sample is one of 8 surface soil samples collected in IU A for chromium. All other samples have chromium concentrations lower than 240 mg/kg; the 95% upper confidence limit on the mean (UCL[2]) of these samples is 181 mg/kg which is below the generic particulate soil inhalation criterion for chromium. Therefore, worker exposure to chromium in surface soil at IU A is not significant.

As indicated on Table 1, the concentration of formaldehyde in one RFI sample at boring SB-00516 exceeds the Part 201 generic industrial soil volatilization to indoor air inhalation criteria of 65 mg/kg and the industrial soil volatilization to ambient air inhalation criteria of 69 mg/kg with a concentration of 79 mg/kg. The industrial soil volatilization to indoor air criteria is not relevant for evaluating formaldehyde in this sample as no buildings are located in the area of this sample. This sample is also one of 21 soil samples collected in IU A from all depths. All other samples have formaldehyde concentrations lower than 65 mg/kg; the 95% UCL of these samples is 23.4 mg/kg which is well below the generic industrial soil volatilization to ambient air inhalation criteria for formaldehyde. Therefore, worker exposure to formaldehyde in soil at IU A is not significant.

4.1.2 Upper Water-bearing Zone Groundwater

As indicated on Table 2 and shown on Figure 3, the current data for IU A indicate that detected concentrations in the upper water-bearing zone groundwater do not exceed the screening criteria for on-site receptors.

4.1.3 Bedrock Groundwater

As indicated on Table 3 and shown on Figure 3, the concentration of antimony in one RFI bedrock groundwater sample (unfiltered) at MW-90124 exceeded the Part 201 generic industrial drinking water criterion of 0.006 mg/L with concentrations of 0.0346 mg/L. This monitoring well is located in a location that is side-gradient of the Facility. Antimony was also detected in

[2] The UCLs on the mean concentrations are calculated using a nonparametric bootstrap method known as the "BCa" (bias-corrected and accelerated) method (Efron and Tibshirani, 1998) with 4,000 bootstrap replications to ensure adequate accuracy. UCLs on the mean were calculated using data from surface soil (0- to 2-ft bgs) and soil data from all sampling depths. The UCLs used to further evaluate significance of potential exposures are the higher of these two values.

two upgradient bedrock wells (see IU F and IU I) at concentrations exceeding the generic industrial drinking water criterion. Thus, the concentration of antimony found in this bedrock groundwater sample is not due to a release at the Site.

4.1.4 Groundwater Surface Water Interface

As indicated on Table 2 and shown on Figure 13, the concentration of arsenic in one RFI groundwater sample collected in December 1998 at monitoring well MW-01329 exceeds the Part 201 groundwater surface water interface criteria of 0.15 mg/L with a concentration of 0.446 mg/L. This well is located approximately 60 feet from the bank of the Saginaw River. Subsequent sampling of this well in July 2000 indicated that arsenic was not present at concentrations above the groundwater surface water interface (GSI) criteria. Therefore, this data indicates that the discharge of arsenic in groundwater to surface water in the vicinity of MW-01329 is not significant.

As indicated on Table 2 and shown on Figure 3, concentrations of chromium and vanadium exceeded the generic GSI criteria:

- Chromium in RFI unfiltered groundwater samples at monitoring wells MW-00925 and MW-01329 exceeded the Part 201 groundwater surface water interface criteria of 0.011 mg/L with concentrations of 0.048 mg/L and 0.014 mg/L respectively. Monitoring well MW-00925 is located approximately 150 feet from the bank of the River. Monitoring well MW-01329 is located approximately 60 feet from the bank of the River. Subsequent sampling in July 2000 in well MW-00925 indicated that chromium was not present at a concentration above the groundwater surface water interface criteria in this well.

- Concentrations of vanadium in RFI unfiltered groundwater samples at monitoring wells MW-00124 and MW-00925 exceeded the Part 201 groundwater surface water interface criteria of 0.012 mg/L with concentrations ranging from 0.0205 mg/L to 0.077 mg/L. Monitoring well MW-00124 is located approximately 60 feet from the bank of the Saginaw River. Monitoring well MW-00925 is located approximately 150 feet from the bank of the River.

As discussed in Section 3.5, chromium and vanadium concentrations in surface water samples collected in the Saginaw River adjacent to and downgradient from the on-site monitoring well locations showed similar concentrations in surface water at upstream and cross-gradient reference locations. Therefore, discharge of chromium and vanadium in groundwater to surface water in the vicinity of IU A is considered to be not significant.

As indicated on Table 2 and shown on Figure 13, the concentration of cyanide in RFI groundwater samples collected at monitoring well MW-00925 in July 2000 exceeded the Part 201 groundwater surface water interface criteria of 0.0052 mg/L with concentrationof 0.01 mg/L. Monitoring well MW-00925 is located approximately 150 feet from the bank of the River. As indicated on Figure 3, cyanide was below the criteria in the wells located immediately east and west of MW-00925. It is noted that the Part 201 groundwater surface water interface criteria applies to amenable cyanide. Similarly, the federal ambient water criteria for cyanide are 0.022

mg/L (criteria maximum concentration, or "CMC") and 0.0052 mg/L (criteria continuous concentration or "CCC") are based on free cyanide. By comparison, cyanide concentrations reported for the RFI samples represent total cyanide, which includes all cyanides present, including low toxicity, inert species. The total cyanide concentrations reported in RFI groundwater samples are below the CMC but above the CCC; however, the detected concentrations are less that 10 times the CCC, and therefore, the discharge of groundwater containing cyanide at these concentrations are expected to be insignificant (USEPA 1999) [3].

As indicated on Table 2 and shown on Figure 13, concentrations of mercury in three RFI unfiltered groundwater samples at monitoring wells MW-00124 and MW-00925 exceeded the Part 201 groundwater surface water interface criteria of 1.3E-6 mg/L with concentrations of 0.0005 mg/L,and 0.0007 mg/L, respectively. Monitoring well MW-00124 is located approximately 60 feet from the bank of the Saginaw River. Monitoring well MW-00925 is located approximately 150 feet from the bank of the Saginaw River. Dissolved mercury concentrations were below the criterion. According to USEPA, the dissolved metal concentration should be used to evaluate the potential for adverse effects on aquatic organisms (Federal Register, v60, no.86, May 4, 1995). Therefore, based on the dissolved concentrations, discharge of mercury in groundwater to surface water is considered to be not significant.

4.2 Investigative Unit B – Former Chevrolet Parts Plant

IU B was formerly used for machining and storage of engine blocks. This area is currently a vacant lot with only intermittent use associated with SMCO operations.

4.2.1 Soil

As indicated on Table 1, the concentrations of benzo(a)pyrene in two RFI samples at borings SB-00308 and SB-00508 exceed the Part 201 generic soil direct contact criterion of 8 mg/kg with concentrations of 44 mg/kg and 16 mg/kg, respectively. These samples were collected beneath the surface gravel in an inactive area, so the potential for direct contact exposure will be limited. These samples are 2 of 76 soil samples in IU B from all depths that have been analyzed for benzo(a)pyrene. The 95% UCL for benzo(a)pyrene in samples from IU B is 3.98 mg/kg which is below the generic criterion. Therefore, worker exposure to benzo(a)pyrene in soil at IU B is not significant.

As indicated on Table 1, the concentration of dibenz(a,h)anthracene in one RFI sample at borings SB-00308 exceeds the Part 201 generic soil direct contact criterion of 8 mg/kg with a concentration of 11 mg/kg. This sample was collected beneath the surface gravel in an inactive area, so the potential for direct contact exposure is limited. This sample is one of 76 soil samples in IU B from all depths that have been analyzed for dibenz(a,h)anthracene. The 95% UCL for

[3] As presented in Appendix D, the estimated site-specific dilution factor for groundwater discharging from the upper groundwater bearing zone to the Saginaw River adjacent to the Site is over 100. Therefore, using a value of 10 as recommended by USEPA (1999) for assessing the potential significance of groundwater concentrations discharging to surface water is conservative for this Site.

dibenz(a,h)anthracene in samples from IU B is 1.76 mg/kg which is below the generic criterion. Therefore, worker exposure to dibenz(a,h)anthracene in soil at IU B is not significant.

As indicated on Table 1, the concentrations of lead in five RFI samples from borings SB-00104B, SB-00105, SB-00106, SB-00205, and SB-00508 and two non-RFI samples from borings B-15~B, B-7~B exceed the Part 201 generic soil direct contact criteria of 900 mg/kg; the lead concentrations in these seven samples range from 1,300 mg/kg to 5,490 mg/kg. Six of these samples are surface samples from borings B-15~B, B-7~B, SB-00105, SB-00205, SB-00205, and SB-00508. These 8 samples are among 78 soil samples in IU B that have been analyzed for lead. The arithmetic mean concentration of these samples in IU B is 449 mg/kg which is the appropriate exposure point concentration for evaluating potential exposures to lead in soil (66 FR 1206; January 5, 2001). This exposure point concentration is below the generic criterion, and is below the concentration range of 750 mg/kg to 1,750 mg/kg calculated using USEPA's recommended a blood lead modeling methodology for deriving soil lead criteria that are protective of potential exposures to soil lead in occupational settings (USEPA 1996). Therefore, worker exposure to lead in soil at IU B is not significant.

As indicated on Table 1, the concentration of PCBs (total) in one RFI sample at boring MW-00709 exceeds the Part 201 generic direct contact criteria of 16 mg/kg with a concentration of 43.5 mg/kg. This sample was not collected at ground surface (the sample was collected from 2 to 4 ft bgs), so direct contact with these deeper soils by routine workers is not be reasonably expected under current conditions. This sample is one of 46 soil samples for PCBs (total) located in the northeastern portion of IU B and adjacent northwestern portion of IU D (and its extent has been delineated). The 95% UCL for PCBs (total) in these samples is 4.97 mg/kg which is below the generic criteria. Therefore, worker exposure to PCBs in soil at IU B is not significant.

4.2.2 Upper Water-Bearing Zone Groundwater

As indicated on Table 2 and shown on Figures 4a and 4b, concentrations of hazardous constituents have been detected in the upper water-bearing zone groundwater at concentrations above the screening levels that are based on the Part 201 generic cleanup criteria for protection of worker contact with groundwater during occasional excavation activities. These screening levels are appropriate because the upper water-bearing zone is approximately 3 ft bgs and could be encountered during typical excavation activities, although there are no current plans for such activities in IU B.

- The concentrations of benzo(a)pyrene in three RFI samples at MW-00309, SB-00307c, and SB-00408a exceed the Part 201 generic groundwater contact criterion of 0.002 mg/L with concentrations of 0.003 mg/L. Subsequent sampling in December 2002 indicated that benzo(a)pyrene is not present in MW-00309. Sampling downgradient of SB-00307c and SB-00408a indicate that benzo(a)pyrene is not present at levels above the generic groundwater contact criteria. Therefore, the "existing area of contamination" for CA750 purposes has been defined, and data collected over several sampling events indicate that the extent of groundwater contamination in this area is stable.

- The concentrations of benzo(b)fluoranthene in three RFI samples at MW-00306, MW-00309, and SB-00408a exceed the Part 201 generic groundwater contact criterion of 0.002 mg/L with concentrations of 0.003 mg/L. Subsequent sampling in January 2002 and January 2003 indicated that benzo(b)fluoranthene is not present in MW-00306. Subsequent sampling in December 2002 indicated that benzo(b)fluoranthene is not present in MW-00309. Sampling downgradient of SB-00408a indicate that benzo(b)fluoranthene is not present at levels above the generic groundwater contact criteria. Therefore, the "existing area of contamination" has been defined, and data collected over several sampling events indicate that the extent of groundwater contamination in this area is stable.

- The concentration of chrysene in one RFI sample at SB-00408a exceeds the Part 201 generic groundwater contact criterion of 0.005 mg/L with a concentration of 0.01 mg/L. Sampling downgradient of SB-00408a indicate that chrysene is not present at levels above the generic groundwater contact criteria. Therefore, the "existing area of contamination" has been defined, and data collected over several sampling events indicate that the extent of groundwater contamination in this area is stable.

- The concentration of indeno(1,2,3-cd)pyrene in two RFI samples at SB-00408a and MW-00309 exceed the Part 201 generic groundwater contact criterion of 0.002 mg/L with a concentrations of 0.003 mg/L and 0.0035 mg/L. Sampling downgradient of SB-00408a and MW-00309 indicate that indeno(1,2,3-cd)pyrene is not present at levels above the generic groundwater contact criteria. Therefore, the "existing area of contamination" has been defined, and data collected over several sampling events indicate that the extent of groundwater contamination in this area is stable.

- The concentrations of vinyl chloride in three RFI samples at MW-00509 and VAP-00208 exceed the Part 201 generic groundwater contact criterion of 1 mg/L with concentrations ranging from 1.3 mg/L to 3.0 mg/L. Sampling downgradient of MW-00509 and VAP-00208 indicate that vinyl chloride is not present at levels above the generic groundwater contact criteria. Therefore, the "existing area of contamination" has been defined, and data collected over several sampling events indicate that the extent of groundwater contamination in this area is stable.

There are no current plans for routine operational activities or plans for excavation activities in IU B, and any such excavations in the future would be conducted under SMCO's health and safety procedures to ensure that appropriate precautions are taken to avoid unacceptable exposures to constituents in the groundwater. Therefore, potential worker exposure to constituents in groundwater at IU B is not significant and current groundwater data show that the extent of groundwater contamination in IU B is stable.

4.3 Investigative Unit C – Inlet Reservoir

The inlet reservoir is part of SMCO's closed-loop water recirculation system and is currently used to store water which is recirculated from the wastewater treatment system for re-use in the SMCO plant.

4.3.1 Sediment

As indicated on Table 4, the concentration of arsenic in one RFI sample at sediment sampling location C1 exceeds the Part 201 generic soil direct contact criteria of 37 mg/kg with a concentration of 65 mg/kg. This sample is 1 of 2 sediment samples collected that were analyzed for arsenic in IU C. The other sample exhibited an arsenic concentration of 25 mg/kg, which is lower than 37 mg/kg. The average arsenic concentration of the two samples is 35 mg/kg which is lower than the generic criteria. Routine worker exposures are not reasonably anticipated under normal conditions. Potential exposures of maintenance workers to these concentrations are unlikely to result in significant risks as the exposure frequency and exposure duration of typical maintenance activities at these locations are expected to be much lower than those assumed by MDEQ in deriving the generic soil direct contact criteria[4]. Based on the measured concentrations and the infrequent nature of activities that might bring maintenance workers into contact with these sediments, worker exposure to arsenic in sediment in IU C is not significant.

As indicated on Table 4, the concentrations of lead in two RFI samples at sediment sampling locations C1 and C3 exceed the Part 201 generic soil direct contact criteria of 900 mg/kg with concentrations ranging from 1,150 mg/kg to 1,550 mg/kg. Two methods, SW6010M and SW7421, were used to analyze for lead in these two samples. The results from the two methods showed good agreement. These concentrations are within the concentration range of 750 mg/kg to 1,750 mg/kg calculated using USEPA's recommended blood lead modeling methodology for deriving soil lead criteria that are protective of potential exposures to soil lead in occupational settings (USEPA 1996). Potential exposures of maintenance workers to these concentrations are unlikely to result in significant risks as the exposure frequency and exposure duration of typical maintenance activities at these locations are expected to be much lower than those assumed by MDEQ in deriving the generic soil direct contact criteria.

4.3.2 Surface Water

The current data for IU C indicate that detected concentrations in surface water do not exceed the screening criteria for on-site receptors.

4.4 Investigative Unit D – SMCO Plant

4.4.1 Soil

As indicated on Table 1, benzo(a)pyrene, PCBs and antimony were detected at concentrations exceeding Part 201 generic soil direct contact criteria:

[4] As indicated in Appendix C, exposures associated with occasional maintenance activities at GM facilities are likely to be an order of magnitude lower than exposures estimated using standard default assumptions for evaluating reasonable maximum exposures to soil in commercial/industrial settings.

- The concentration of benzo(a)pyrene in one RFI surface soil sample at boring SB-00911 exceeds the Part 201 generic soil direct contact criterion of 8 mg/kg with a concentration of 30 mg/kg. This sample is in an inactive area that is currently gravel covered, so the potential for direct contact exposure of routine workers is not expected. This sample is also one of 75 other surface soil samples collected in IU D, all having benzo(a)pyrene concentrations lower than 8 mg/kg; the 95% UCL for benzo(a)pyrene among these samples is 2.92 mg/kg which is much lower than the generic criterion. Therefore, worker exposure to benzo(a)pyrene in soil at IU D is not significant.

- The concentrations of PCBs (total) in 2 RFI samples and 107 non-RFI samples exceed the MDEQ direct contact criterion of 16 mg/kg. All of these samples, except one, are in an area under the paved basement floor of the Grey Iron Plant building in the #8 Mold Line. This one sample at boring SB-298 is in an area that is currently gravel covered, so direct contact exposure of routine workers is not expected.

- The concentration of antimony in one RFI surface soil sample at boring SB-00710 exceeds the Part 201 generic soil direct contact criteria of 670 mg/kg with a concentration of 946 mg/kg. This sample is in an inactive area that is currently gravel covered so direct contact exposure of routine workers is not expected. This sample is one out of 62 soil samples in IU D from all depths that have been analyzed for antimony. The 95% UCL for antimony among samples from IU D is 177 mg/kg which is below the generic criterion. Therefore, worker exposure to antimony in soil at IU D is not significant.

Because the sample locations having concentrations exceeding generic direct contact criteria are either under the SMCO building or under gravel cover, potential direct contact exposure of routine workers is not expected. There are no current plans for excavations or building renovations in this area, and such activities in the future would be conducted under SMCO's site health and safety procedures to ensure that appropriate precautions are taken to avoid unacceptable exposures in these areas. Therefore, potential worker exposure to these constituents in IU D soil is not significant.

As indicated on Table 1, the concentration of formaldehyde in one sample at boring SB-02510 exceeds the Part 201 generic soil volatilization to indoor air criterion of 65 mg/kg and soil volatilization to ambient air criterion of 69 mg/kg with a concentration of 84 mg/kg. Because there is no building at this location, the soil volatilization to indoor air criterion is not relevant under current conditions. This sample was collected from beneath existing pavement and therefore, the volatilization to ambient air criterion is also not relevant. In addition, the sample is 1 of 21 soil samples from all depths collected in IU D. All the other samples have formaldehyde concentrations lower than 65 mg/kg. The 95% UCL for formaldehyde among these samples is 19 mg/kg which is well below the generic soil volatilization to indoor air and ambient air criteria. Therefore, worker exposure to formaldehyde in soil at IU D is not significant under current conditions.

As indicated on Table 1, the concentrations of chromium in seven RFI samples from borings MW-00812, MW-02410 and SB-02510, SB-198, and SB-298, exceed the Part 201 generic PSIC of 240 mg/kg. Four of these samples are surface samples located within an inactive area that is currently gravel (MW-00812, SB-198, and SB-298) and asphalt covered (SB-02510) so particulate emissions are not expected. Two of the samples from the east side of the plant (MW-02410 and SB-02510) were collected from beneath the existing pavement and therefore, the PSIC is not relevant. The other three samples are subsurface samples, and therefore, the PSIC is also not relevant to these samples. Further, this PSIC is highly conservative because it assumes that chromium is present entirely as hexavalent chromium. Data from soil samples at other locations at the Site show that most of the chromium in Site soils is actually in the less toxic trivalent form. Therefore, under current conditions, worker exposure to chromium concentrations in IU D surface soil is not significant. There are no current plans for excavation activities in IU D, and any such excavations in the future would be conducted under SMCO's health and safety procedures to ensure that appropriate precautions are taken to avoid unacceptable exposures to constituents in the soil.

4.4.2 Upper Water-bearing Zone Groundwater

As indicated on Table 2 and Figure 5, the current data for IU D indicate that detected concentrations in the upper water-bearing zone groundwater do not exceed the screening criteria for on-site receptors.

4.5 Investigative Unit E – The River Dock Area

This area includes a receiving dock, railroad sidings, bulk materials storage, the Advanced Development Laboratory, and the SMCO Powerhouse.

4.5.1 Soil

As indicated on Table 1, the concentrations of chromium in four RFI samples exceed the Part 201 generic PSIC of 240 mg/kg.

- One of the samples is a surface soil sample at boring MW-02320 and is the only surface soil sample among 11 collected in IU E which exceeds the Part 201 generic PSIC criteria with a concentration of 291 mg/kg. The 95% UCL for chromium among the 11 surface samples is 164 mg/kg, which is below the generic criterion. In addition, boring MW-02320 is in an area that does not have routine vehicle traffic. Therefore, the appropriate PSIC is 2,500 mg/kg, based solely on wind erosion as explained in the Discussion Paper on the Michigan Part 201 PSIC (see Appendix B). This alternate PSIC is still highly conservative because it assumes that chromium is present entirely as hexavalent chromium. Data from soil samples at other locations at the Site show that most chromium is actually in the less toxic trivalent form.

- The other three samples are subsurface samples and are located at a depth below ground surface greater than 2 ft. Because these samples are not at ground surface, the PSIC is not relevant.

Therefore, under current conditions, potential worker exposure to chromium concentrations in IU E surface soil is not significant. There are no current plans for excavation activities in IU E, and any such excavations in the future would be conducted under SMCO's health and safety procedures to ensure that appropriate precautions are taken to avoid unacceptable exposures to constituents in the soil.

As indicated on Table 1, concentrations of lead and PCBs were detected at concentrations above the Part 201 generic direct soil contact criteria,

- The concentration of lead in one sample (B00081^0^1^RFI) at boring MW-03235 exceeds the Part 201 generic direct contact criterion of 900 mg/kg with a concentration of 2,030 mg/kg. Samples collected around this boring show that the lead concentrations in the surrounding soil are much lower. This sample is among 25 surface soil samples collected in the eastern portion of IU E (east of the storm water ditch) that have been analyzed for lead. The arithmetic mean among the 25 samples is approximately 117 mg/kg, which is well below the Part 201 generic direct contact criterion of 900 mg/kg, and is below the concentration range of 750 mg/kg to 1,750 mg/kg calculated using USEPA's recommended blood lead modeling methodology for deriving soil lead criteria that are protective of potential exposures to soil lead in occupational settings (USEPA 1996). Therefore, worker exposure to lead in soil at IU E is not significant.

- The concentrations of PCBs (total) in two RFI samples exceed the Part 201 generic soil direct contact criterion of 16 mg/kg with concentrations of 52.2 mg/kg and 18.3 mg/kg, respectively. These two samples are surface soil samples and are located at borings MW-03734 and SB-03737A. RFI samples around this boring show that the PCBs (total) concentrations in the surrounding soil are much lower. The 95% UCL of PCBs among the 56 surface soil samples in IU E is approximately 5.38 mg/kg, which is below the generic criterion of 16 mg/kg. Therefore, worker exposure to PCBs (total) in soil at IU E is not significant.

4.5.2 Upper Water-bearing Zone Groundwater

As indicated on Table 2 and shown on Figure 6, the concentrations of certain polycyclic aromatic hydrocarbons (PAHs) at MW-01119 exceed the Part 201 generic groundwater contact criterion.

- Benzo(a)pyrene in one RFI sample at MW-01119 slightly exceeds the Part 201 generic groundwater contact criterion of 0.002 mg/L with a concentration of 0.006 mg/L.

- Benzo(b)fluoranthene in one RFI sample at MW-01119 slightly exceeds the Part 201 generic groundwater contact criterion of 0.002 mg/L with a concentration of 0.005 mg/L.

- Benzo(k)fluoranthene in one RFI sample at MW-01119 slightly exceeds the Part 201 generic groundwater contact criterion of 0.005 mg/L with a concentration of 0.0055 mg/L

- Chrysene in one RFI sample at MW-01119 slightly exceeds the Part 201 generic groundwater contact criterion of 0.005 mg/L with a concentration of 0.0055 mg/L.

- Indeno(1,2,3-cd)pyrene in one RFI sample at MW-01119 slightly exceeds the Part 201 generic groundwater contact criterion of 0.002 mg/L with a concentration of 0.0035 mg/L.

Monitoring well MW-00821 (located in IU A) downgradient of MW-01119 indicates that these PAHs are not present at levels above the generic groundwater contact criteria. Therefore, the "existing area of contamination" has been defined, and the extent of groundwater contamination in this area is stable.

Because the depth to groundwater in IU E is approximately 4 ft bgs, potential exposure to construction workers is possible during excavations activities that take place at depths below the water table. There are no active operations in IU E that would likely require excavation work. There are no current plans for excavation activities in IU E, and any such excavations in the future would be conducted under SMCO's health and safety procedures to ensure that appropriate precautions are taken to avoid unacceptable exposures to constituents in the groundwater. Therefore, potential worker exposure to constituents in groundwater at IU E is not significant and current groundwater data show that the extent of groundwater contamination in IU E is stable.

4.5.3 Groundwater Surface Water Interface

As indicated on Table 2 and shown on Figure 13, the concentration of chromium, lead, and vanadium were detected at concentrations above the Part 201 generic GSI criteria.

- Chromium was detected in unfiltered RFI groundwater samples at monitoring wells MW-01827, MW-02432, MW-03240, and MW-03746 exceeded the GSI criterion of 0.011 mg/L with concentrations ranging from 0.042 mg/L to 0.39 mg/L. Monitoring well MW-01827 is located approximately 120 feet from the bank of the Saginaw River. Monitoring well MW-02432 is located approximately 20 feet from the bank of the Saginaw River. Monitoring well MW-03240 is located approximately 50 feet from the bank of the Saginaw River. Monitoring well MW-03746 is located approximately 50 feet from the bank of the Saginaw River.

- Concentrations of lead in unfiltered RFI groundwater samples at monitoring well MW-03240 exceeded the GSI criterion of 0.19 mg/L with a concentration of 2.16 mg/L. Monitoring well MW-03240 is located approximately 50 feet from the bank of the Saginaw River. Dissolved lead concentrations in groundwater at MW-03240 do not exceed the groundwater surface water interface criteria.

- Concentrations of vanadium in unfiltered RFI groundwater samples at monitoring wells MW-01827, MW-02432, MW-03240, and MW-03746 exceeded the GSI criterion of 0.012 mg/L with concentrations ranging from 0.0357 mg/L to 0.107 mg/L. Monitoring well MW-01827 is located approximately 120 feet from the bank of the Saginaw River. Monitoring well MW-02432 is located approximately 20 feet from the bank of the Saginaw River. Monitoring well MW-03240 is located approximately 50 feet from the

bank of the Saginaw River. Monitoring well MW-03746 is located approximately 50 feet from the bank of the Saginaw River. Subsequent sampling in July 2000 in well MW-02432 indicated that vanadium was not present at concentrations above the GSI criterion.

As discussed in Section 3.5, chromium, lead and vanadium concentrations in surface water samples collected in the Saginaw River adjacent to and downgradient from the on-Facility monitoring well locations showed similar concentrations in surface water at upstream and cross-gradient reference locations. Therefore, discharge of these constituents in groundwater in IU E to surface water is considered to be not significant.

As indicated on Table 2 and shown on Figure 13, the concentration of cobalt in one unfiltered RFI groundwater sample at monitoring well MW-03240 exceeded the Part 201 groundwater surface water interface criteria of 0.1 mg/L with a concentration of 0.3145 mg/L. Monitoring well MW-03240 is located approximately 50 feet from the banks of the Saginaw River. Dissolved cobalt concentrations were below the criterion. According to USEPA, the dissolved metal concentration should be used to evaluate the potential for adverse effects on aquatic organisms (Federal Register, v60, no.86, May 4, 1995). Therefore, based on the dissolved concentrations, discharge of cobalt in groundwater to surface water is considered to be not significant.

As indicated on Table 2 and shown on Figure 13, the concentration of mercury in unfiltered RFI groundwater samples at monitoring wells MW-01827, MW-02432, and MW-03240 exceeded the GSI criterion of 1.3E-6 mg/L with concentrations ranging from 0.0003 mg/L to 0.001 mg/L. Monitoring well MW-01827 is located approximately 120 feet from the bank of the Saginaw River. Monitoring well MW-02432 is located approximately 20 feet from the bank of the Saginaw River. Monitoring well MW-03240 is located approximately 50 feet from the bank of the Saginaw River. Dissolved mercury concentrations in groundwater at these wells do not exceed the GSI criterion. According to USEPA, the dissolved metal concentration should be used to evaluate the potential for adverse effects on aquatic organisms (Federal Register, v60, no.86, May 4, 1995). Therefore, based on the dissolved concentrations, discharge of mercury in groundwater from IU E to surface water is not significant.

4.6 Investigative Unit F – Former Administration Building

This area includes the former Administration Building and two former gas stations.

4.6.1 Soil

As indicated on Table 1, the data for IU F indicate that detected concentrations in soil do not exceed the screening criteria for on-site receptors.

4.6.2 Upper Water-bearing Zone Groundwater

As indicated on Table 2 and shown on Figure 7, the latest data for IU F indicate that detected concentrations in the upper water-bearing zone groundwater do not exceed the screening criteria for on-site receptors.

4.6.3 Bedrock Groundwater

As indicated on Table 3 and shown on Figure 7, the concentration of antimony in one RFI bedrock groundwater sample at MW-93205 exceeded the Part 201 generic industrial drinking water criterion of 0.006 mg/L with concentrations of 0.0268 mg/L. This monitoring well is located at the upgradient boundary of the Site. Note that similar concentrations were detected in upgradient/sidegradient bedrock wells located in IU A and IU I. Thus, the concentration of antimony found in this bedrock groundwater sample is not due to a release at the Site.

4.7 Investigative Unit G – Former Nodular Iron Plant

IU G is the location of the former Nodular Iron Plant. This plant has been demolished, and the area is being considered for redevelopment.

4.7.1 Soil

As indicated on Table 1, the concentration of arsenic from one non-RFI sample at boring EB-114 exceeds the Part 201 generic soil direct contact criteria of 37 mg/kg. This sample was collected 4 ft below the ground surface and therefore, routine worker contact with this concentration is not expected. This sample is one of 128 arsenic samples collected from IU G. The 95% UCL for arsenic in these samples is 5.44 mg/kg which is below the generic criterion. Therefore, worker exposure to arsenic in soil at IU G is not significant.

As indicated on Table 1, the concentrations of chromium from three RFI samples at borings B-11, B-12, and MW-04250 and one non-RFI sample (B80211) at boring TMW-04635 exceed the Part 201 generic PSIC of 240 mg/kg. Considering the 232 soil samples collected in IU G for chromium, the 95% UCL for chromium in IU G soils is 60.5 mg/kg, which is below this criterion. In addition, the RFI samples from these borings are at depths greater than 2 ft bgs, and therefore, the PSIC is not relevant. The non-RFI sample, with a concentration of 309 mg/kg, was collected at the surface but is located in an area of the Site that does not have routine vehicle traffic. Therefore, the appropriate PSIC is 2,500 mg/kg, based solely on wind erosion as explained in ENVIRON's Discussion Paper on the Michigan Part 201 PSIC (see Appendix B). This alternate PSIC is still highly conservative because it assumes that chromium is present entirely as hexavalent chromium. Data from soil samples at other locations at the Site show that most chromium is actually in the less toxic trivalent form. Therefore, potential worker exposure to chromium in soil at IU G is not significant under current conditions.

4.7.2 Upper Water-bearing Zone Groundwater

As indicated on Table 2 and shown on Figures 8a, 8b and 8c, the latest data for IU G indicate that detected concentrations in the upper water-bearing zone groundwater do not exceed the screening criteria for on-site receptors.

4.7.3 Groundwater Surface Water Interface

As indicated on Table 2 and shown on Figure 13, concentrations of chromium, PCBs and vanadium were detected at concentrations above the generic GSI criteria.

- Chromium concentrations in three unfiltered RFI groundwater samples (and a duplicate) at monitoring wells MW-04250, MW-04757, and MW-04864 exceeded the GSI criterion of 0.01 mg/L with concentrations ranging from 0.015 mg/L to 0.18 mg/L. Monitoring well MW-04250 is located approximately 400 feet from the bank of the Saginaw River. Monitoring well MW-04757 is located approximately 250 feet from the bank of the Saginaw River. Monitoring well MW-04864 is located approximately 350 feet from the bank of the Saginaw River.

- The concentration of PCBs (total) in one RFI groundwater sample at monitoring well MW-04757 exceeded the GSI criterion of 0.0002 mg/L with a concentration of 0.0006 mg/L. Monitoring well MW-04757 is located approximately 250 feet from the banks of the Saginaw River. Subsequent sampling of MW-04757 did not detect PCBs.

- Concentrations of vanadium in six RFI groundwater samples and three unfiltered samples at monitoring wells MW-04250, MW-04757, and MW-04864 exceeded the GSI criterion of 0.012 mg/L with concentrations ranging from 0.0136 mg/L to 0.0865 mg/L. Monitoring well MW-04250 is located approximately 400 feet from the bank of the Saginaw River. Monitoring well MW-04757 is located approximately 250 feet from the bank of the Saginaw River. Monitoring well MW-04864 is located approximately 350 feet from the bank of the Saginaw River.

As discussed in Section 3.5, chromium, PCB and vanadium concentrations in surface water samples collected in the Saginaw River adjacent to and downgradient from the on-Facility monitoring well locations showed similar concentrations in surface water at upstream and cross-gradient reference locations. Therefore, discharge of these constituents in groundwater at these wells to surface water is not significant.

As indicated on Table 2 and shown on Figure 13, the concentration of ammonia in one RFI groundwater sample at monitoring wells MW-04864 exceeded the Part 201 groundwater surface water interface criteria of 0.736 mg/L with a concentration of 6.6 mg/L. Monitoring well MW-04864 is located approximately 350 feet from the banks of the Saginaw River. It is noted that the federal ambient water criteria for ammonia are approximately 5.6 mg/L (CMC, at a pH of 8) and 1.3 mg/L (CCC at a pH of 8). By comparison, detected concentrations are less that 10 times the CMC and CCC, and therefore, the discharge of groundwater containing ammonia at this concentration are expected to be insignificant (USEPA 1999).

As indicated on Table 2 and shown on Figure 13, concentration of cyanide in two RFI groundwater samples at monitoring wells MW-04250 and MW-04757 marginally exceeded the GSI criterion of 0.0052 mg/L with concentrations of 0.007 mg/L. Monitoring well MW-04250 is located approximately 400 feet from the bank of the Saginaw River. Monitoring well MW-04757 is located approximately 250 feet from the bank of the Saginaw River. It is noted that the Part 201 GSI criterion applies to amenable cyanide. Similarly, the federal ambient water criteria for cyanide are 0.022 mg/L (criteria maximum concentration, or "CMC") and 0.0052 mg/L (criteria continuous concentration , or "CCC") are based on free cyanide. By comparison, cyanide concentrations reported for the RFI samples represent total cyanide, which includes all

cyanides present, including low toxicity, inert species. The total cyanide concentrations reported in RFI groundwater samples are below the CMC but above the CCC; however, the detected concentrations are less that 10 times the CCC, and therefore, the discharge of groundwater containing cyanide at these concentrations are expected to be insignificant (USEPA 1999).

As indicated on Table 2 and shown on Figure 13, the concentration of mercury in one RFI groundwater sample at monitoring well MW-04250 exceeded the GSI criterion of 1.3E-6 mg/L with a concentration of 0.0002 mg/L. Monitoring well MW-04250 is located approximately 400 feet from the bank of the Saginaw River. Dissolved mercury concentrations in groundwater at this well do not exceed the GSI criterion. According to USEPA, the dissolved metal concentration should be used to evaluate the potential for adverse effects on aquatic organisms (Federal Register, v60, no.86, May 4, 1995). Therefore, based on the dissolved concentrations, discharge of mercury in groundwater from IU G to surface water is not significant.

As indicated on Table 2 and shown on Figure 13, the pH values in four RFI groundwater samples (and 2 duplicates) at monitoring wells MW-04250 and MW-04864 exceeded the GSI criterion of 9 SU with values ranging from 10.15 SU to 11.68 SU. Monitoring well MW-04250 is located approximately 400 feet from the bank of the Saginaw River. Monitoring well MW-04864 is located approximately 350 feet from the bank of the Saginaw River. As shown on Figure 12, pH values were not measured in surface water samples collected in the Saginaw River downgradient from the location of well MW-04757 (location SW-2A, SW-1A) at levels above a pH level of 8.5 SU. Therefore, discharge of groundwater with high pH in IU G to surface water is not significant.

4.8 Investigative Unit H – Waste Water Treatment System

4.8.1 Soil

As indicated on Table 1, the data for IU H indicate that detected concentrations in soil do not exceed the screening criteria for on-site receptors.

4.8.2 Sediment

As indicated on Table 4, the concentration of arsenic in one RFI sample at sediment sampling location H4 exceeds the Part 201 generic soil direct contact criteria of 37 mg/kg with a concentration of 47 mg/kg. This sample is one of 9 sediment samples collected that were analyzed for arsenic in IU H. All the other samples have arsenic concentrations lower than 37 mg/kg; the 95% UCL for arsenic among these samples is 32.7 mg/kg which is below the generic criteria. Routine worker exposures are not reasonably anticipated under normal conditions; potential exposures of maintenance workers to these concentrations are unlikely to result in significant risks as the exposure frequency and exposure duration of typical maintenance activities at these locations are expected to be much less than those assumed in deriving the soil direct contact criteria by MDEQ (see Appendix C). Based on the measured concentrations and the infrequent nature of activities that might bring maintenance workers into contact with these sediments, worker exposure to arsenic in sediment in IU H is not significant.

As indicated on Table 4, the concentrations of lead in four RFI samples at sediment sampling locations H1, H2, and H4 exceed the Part 201 generic soil direct contact criteria of 900 mg/kg with concentrations ranging from 1,580 mg/kg to 2,490 mg/kg. Two methods, SW6010M and SW6010M, were used to analyze lead for these four samples. The results from the two methods showed relatively high consistency. Eighteen sediment samples were collected and analyzed for lead in IU H. The average lead concentration is 1,160 mg/kg which is higher than the generic criterion, but is within the concentration range of 750 mg/kg to 1,750 mg/kg calculated using USEPA's recommended blood lead modeling methodology for deriving soil lead criteria that are protective of potential exposures to soil lead in occupational settings (USEPA 1996). Potential exposures of maintenance workers to these concentrations are unlikely to result in significant risks as the exposure frequency and exposure duration of typical maintenance activities at these locations are expected to be much less than those assumed in deriving the soil direct contact criteria by MDEQ. Based on the measured concentrations and the infrequent nature of activities that might bring maintenance workers into contact with these sediments, worker exposure to lead in sediment in IU H is not significant.

4.8.3 Upper Water-bearing Zone Groundwater

As indicated on Table 2 and Figure 9, the latest data for IU H indicate that detected concentrations in the upper water-bearing zone groundwater do not exceed the screening criteria for on-site receptors.

4.8.4 Surface Water

The current data for IU H indicate that detected concentrations in surface water do not exceed the screening criteria for on-site receptors.

4.9 Investigative Unit I – Waste Water Treatment System

4.9.1 Soil

As indicated on Table 1, the concentration of formaldehyde in one sample at boring MW-06951 exceeds the Part 201 generic volatilization to indoor air criterion of 65 mg/kg and the volatilization to ambient air criterion of 69 mg/kg with a concentration of 78 mg/kg. The industrial soil volatilization to indoor air criteria is not relevant for evaluating this exceedance as no buildings are located at this location. This sample is also one of 55 other soil samples collected in IU I from all depths. All the other samples have formaldehyde concentrations lower than 65 mg/kg; the 95% UCL of formaldehyde in these samples is 18.6 mg/kg which is well below the generic industrial soil volatilization to ambient air inhalation criteria for formaldehyde. Therefore, potential worker exposure to formaldehyde in soil at IU I is not significant under current conditions.

4.9.2 Upper Water-bearing Zone Groundwater

As indicated on Table 2 and Figure 10, the current data for IU I indicate that detected concentrations in the upper water-bearing zone groundwater do not exceed the screening criteria for on-site receptors.

4.9.3 Bedrock Groundwater

As indicated on Table 3 and shown on Figure 10, the concentrations of several hazardous constituents exceeded MCLs and/or Part 201 generic industrial drinking water criteria.

- The concentration of 1,2-dichloropropane in one RFI bedrock groundwater sample at MW-97948 exceeded the generic industrial drinking water criterion of 0.005 mg/L with a concentration of 0.0063 mg/L. Subsequent sampling at this well did not detect 1,2-dichloropropane above the screening criteria.

- The concentration of aluminum in one RFI bedrock groundwater sample at MW-97948 exceeded the Part 201 generic industrial drinking water criterion of 4.1 mg/L with a concentration of 5.04 mg/L. Aluminum was not detected in the filtered (dissolved) sample.

- The concentration of antimony in one RFI bedrock groundwater sample at MW-96939 exceeded the Part 201 generic industrial drinking water criterion of 0.006 mg/L with a concentration of 0.0239 mg/L. Antimony was not detected in the filtered (dissolved) sasmple. Note that similar unfiltered concentrations were detected in upgradient/sidegradient bedrock wells located in IU A and IU F.

- The concentration of benzene in one RFI bedrock groundwater sample at MW-97948 exceeded the Part 201 generic industrial drinking water criterion of 0.005 mg/L with a concentration of 0.016 mg/L. Subsequent sampling at this well did not detect benzene above the screening criteria.

- As indicated on Table 3 and shown on Figure 10, the pH in one RFI bedrock groundwater sample at MW-97948 exceeded the Part 201 generic industrial drinking water criterion of 8.5 SU with a value of 9.72 SU. Subsequent sampling at this well did not report pH above the screening criteria.

This monitoring wells in which constituent concentrations were detected above the screening criteria are located sidegradient or upgradient of the Site. Thus, the constituent concentrations found in these bedrock groundwater samples are not due to a release at the Site.

4.10 Investigative Unit J – On-site Permitted Landfill

4.10.1 Soil

As indicated on Table 1, the data for IU J indicate that detected concentrations in soil do not exceed the screening criteria for on-site receptors.

4.10.2 Sediment

As indicated on Table 4, the data from IU J indicate that detected concentrations in sediment do not exceed the screening criteria for on-site receptors.

4.10.3 Upper Water-bearing Zone Groundwater

The upper water-bearing zone identified in the unconfined surface fill and sand units beneath IUs A, B, D, E, F, G, H and I is not present in the area of IU J. The overburden wells located in IU J are screened within the clay till unit, which is the same unit that is present beneath the unconfined surface fill and sand units in the other areas of the Site. As indicated on Table 2, the current data for IU J indicate that detected concentrations in these clay till unit wells do not exceed the screening criteria for on-site receptors.

4.10.4 Bedrock Groundwater

As indicated on Table 3 and shown on Figure 11, the concentration of lead in one RFI bedrock groundwater sample at MW-96080 slightly exceeded the Part 201 generic industrial drinking water criterion of 0.004 mg/L with a concentration of 0.0056 mg/L. However, the detected concentration is below the action level of 0.015 mg/L specified under the Safe Drinking Water Act. In addition, the dissolved lead concentration, which better represents the potential exposure concentration for a drinking water well[5], from MW-96080 was below drinking water screening criteria.

As indicated on Table 3 and shown on Figure 11, the concentration of aluminum in one RFI bedrock groundwater sample at MW-96080 exceeded the Part 201 generic industrial drinking water criterion of 4.1 mg/L with a average concentration of 5.02 mg/L. A similar concentration was reported in the upgradient bedrock well in IU I. Samples collected for dissolved aluminum from MW-96080 yielded concentrations below detection limits and thus below drinking water screening criteria.

Since these constituents were not detected above drinking water screening levels in dissolved samples collected from MW-96080, potential exposure to aluminum and lead in bedrock groundwater at IU J is not significant under current conditions.

4.10.5 Surface Water

The data for IU J indicate that detected concentrations in surface water do not exceed the screening criteria for on-site receptors.

5.0 CUMMULATIVE RISK ESTIMATES

5.1 Soil

Upper-bound estimates of the cumulative cancer risk and noncancer HI for routine worker exposures to on-site soil are calculated based on the maximum concentrations of constituents

[5] Because of the natural filtering action and low velocities typical in the saturated zone, groundwater used for drinking is generally free of suspended solids. Typically, residential wells are engineered to provide the maximum quantities of water available through proper screen inlet and gravel pack sizing and extensive development. Low suspended solids are maintained in residential wells through continual use. Suspended solids can be found in wells that are not engineered for use as drinking water wells and which are not developed to the extent drinking water wells would be.

detected in soil at any depth in each IU investigated, and the standard default exposure factors that are used to derive USEPA Region 9 risk-based PRGs for soil exposures in generic commercial/industrial settings (USEPA 2002a). These risk estimates are considered upper-bound estimates because actual cumulative cancer and noncancer HIs for an area would be lower if concentrations representative of the IU were used instead of maximum concentrations, and if site-specific exposure factors were used to account for the magnitude, frequency, and duration of exposures appropriate for the particular IU.

The estimated cancer risks and HQs based on the maximum detected constituent concentration in each IU for the routine worker exposure scenario are presented on Table 5a, and the estimated cumulative cancer risk and HIs are presented for each IU on Table 5b. As summarized on Table 5b, the upper-bound estimates of cumulative cancer risk and noncancer HIs for on-site workers are less than USEPA's established goals of 10^{-4} and 1 (61 FR 19432, May 1, 1996; USEPA 1991), respectively for the following IUs:

- IU A: Former Sluice Sand Settling Area
- IU F: Former Administration Building
- IU H: Wastewater Treatment System
- IU I: Bulk Sand and Recyclable Materials Staging
- IU J: On-site Permitted Landfill

As indicated on Table 5b, the following IUs have upper-bound cumulative cancer risks and/or noncancer HIs that are higher than USEPA's acceptable levels, based on using the maximum concentrations of constituents detected at each area:

- IU B: Former Chevrolet Parts Plant
- IU D: The SMCO Plant
- IU E: The River Dock Area
- IU G: Former Nodular Iron Plant

The significance of potential exposure at these IUs is further evaluated below using 95% upper confidence limits (UCLs) on the mean concentration for those constituents whose maximum concentrations contribute the most significantly to the upper-bound estimate of cumulative cancer and/or noncancer HIs (see Table 5a). This approach is efficient in that it avoids calculation of 95% UCLs that would not materially affect cumulative risk estimates, and is consistent with USEPA guidance (1989).

The 95% UCLs are calculated using a nonparametric bootstrap method known as the "BCa" (bias-corrected and accelerated) method (Efron and Tibshirani 1998) with 4,000 bootstrap replications to ensure adequate accuracy. Nonparametric bootstrap methods do not require identification of a probability distribution for the data and are reliable for a wide range of distributions including normal and lognormal data. Current USEPA guidance now recommends the use of nonparametric methods (including nonparametric bootstrap methods) n favor of methods recommended in older guidance (USEPA 2002b), especially for situations where the probability distribution of a data set is not normal or is difficult to identify.

UCLs on the mean were calculated using data from surface soil (0 to 2-ft bgs) and soil data from all sampling depths. The UCL used to further evaluate the significance of potential exposure was conservatively based on the greater of these two values.

As summarized on Table 5c, with the exception of IU D, the estimated cumulative cancer risk and noncancer HI for these IUs using the refined EPCs based on 95% UCLs for the constituents contributing most significantly to the initial risk estimates (see Table 5a), do not exceed USEPA's goals of 10^{-4} and 1, respectively. It should be noted that the estimated risk for IU D is primarily due to the PCB concentrations detected in the subsurface soil samples collected beneath the basement floor slab of the SMCO Plant. However, routine workers would only be exposed to surface soil and the 95% UCL on the mean for PCBs (total) concentrations in surface soil in IU D is 3.06 mg/kg. Using this more appropriate exposure concentration lowers the HI for routine workers exposed to soil in IU D to below USEPA's established goal. Therefore risks to routine workers due to constituent concentrations in this IU are not expected to be significant.

The potential for exposure of construction workers to soil is initially evaluated by conservatively using the risk estimates for routine workers as a surrogate. Potential construction worker exposure to soil would be lower than that of routine workers (soil ingestion and dermal contact LADD and ADD for construction/maintenance workers are at least 10 times lower than for routine workers). This is discussed and demonstrated in the comparison presented in Appendix C. There are no routine active operations in IU D that would likely require excavation work, especially not beneath the basement floor slab. For these reasons, construction worker exposure to subsurface soil in IU D is not expected to be significant. However, if excavation work is conducted, GM will implement standard health and safety procedures as appropriate to ensure that no unacceptable exposures occur.

5.2 Sediment

Upper-bound estimates of the cumulative cancer risk and noncancer HI for routine worker exposures to sediment in on-site waterbodies are calculated based on the maximum concentrations of constituents detected in sediment in each IU investigated, and the standard default exposure factors that are used to derive USEPA Region 9 risk-based PRGs for soil exposures in generic commercial/industrial settings (USEPA 2002a). These risk estimates are considered upper-bound estimates because actual cumulative cancer and noncancer HIs for an area would be lower if concentrations representative of the IU were used instead of maximum concentrations, and if site-specific exposure factors for exposure to sediment (instead of soil) were used to account for the magnitude, frequency, and duration of exposures appropriate for sediments in the particular IU.

The estimated cancer risks and HQs based on the maximum detected constituent concentration in each IU for the routine worker exposure scenario are presented on Table 6a, and the estimated cumulative cancer risk and HIs are presented for each IU on Table 6b. As summarized on Table 6b, the upper-bound estimates of cumulative cancer risk and noncancer HIs for on-site workers are less than USEPA's established goals of 10^{-4} and 1 (61 FR 19432, May 1, 1996; USEPA 1991), respectively for the following IUs:

- IU C: Inlet Reservoir
- IU J: On-site Permitted Landfill

The following IU has an upper-bound noncancer HI slightly higher than USEPA's acceptable level, based on using the maximum concentrations of constituents detected in the area:

- IU H: Wastewater Treatment System

It should be noted that the estimated risk in IU H is primarily due to PCB concentration in the sediment. As indicated above, the potential for exposure of maintenance workers to soil is initially evaluated by conservatively using risk estimates based on routine worker exposure factors for evaluating potential exposures to soil. Potential maintenance worker exposure to sediment would be lower than that of routine worker exposure to soil due to a much shorter exposure frequency and duration during maintenance activities. This is discussed and demonstrated in the comparison presented in Appendix C. Because the upper-bound HI is only slightly higher than the USEPA's acceptable level and maintenance worker exposure to sediment in IU H would be much lower than that of a routine worker exposed to soil (i.e., risk estimates are based on the assumption that concentrations are in soil and receptor is a routine worker), maintenance worker exposure to sediment in IU H is not expected to be significant. However, if maintenance work is conducted in IU H, GM will implement standard health and safety procedures as appropriate to ensure that there would be no unacceptable exposures.

6.0 PROPOSED GROUNDWATER MONITORING PLAN

To confirm that the existing areas of groundwater contamination at the Site remain stable, the monitoring program summarized on Table 7 will be followed until the Corrective Measures Study (CMS) is completed. The wells listed on Table 7 were selected based on their location relative to current groundwater contamination and groundwater flow directions at the Site, and include wells located downgradient of the areas of groundwater contamination.

7.0 REFERENCES

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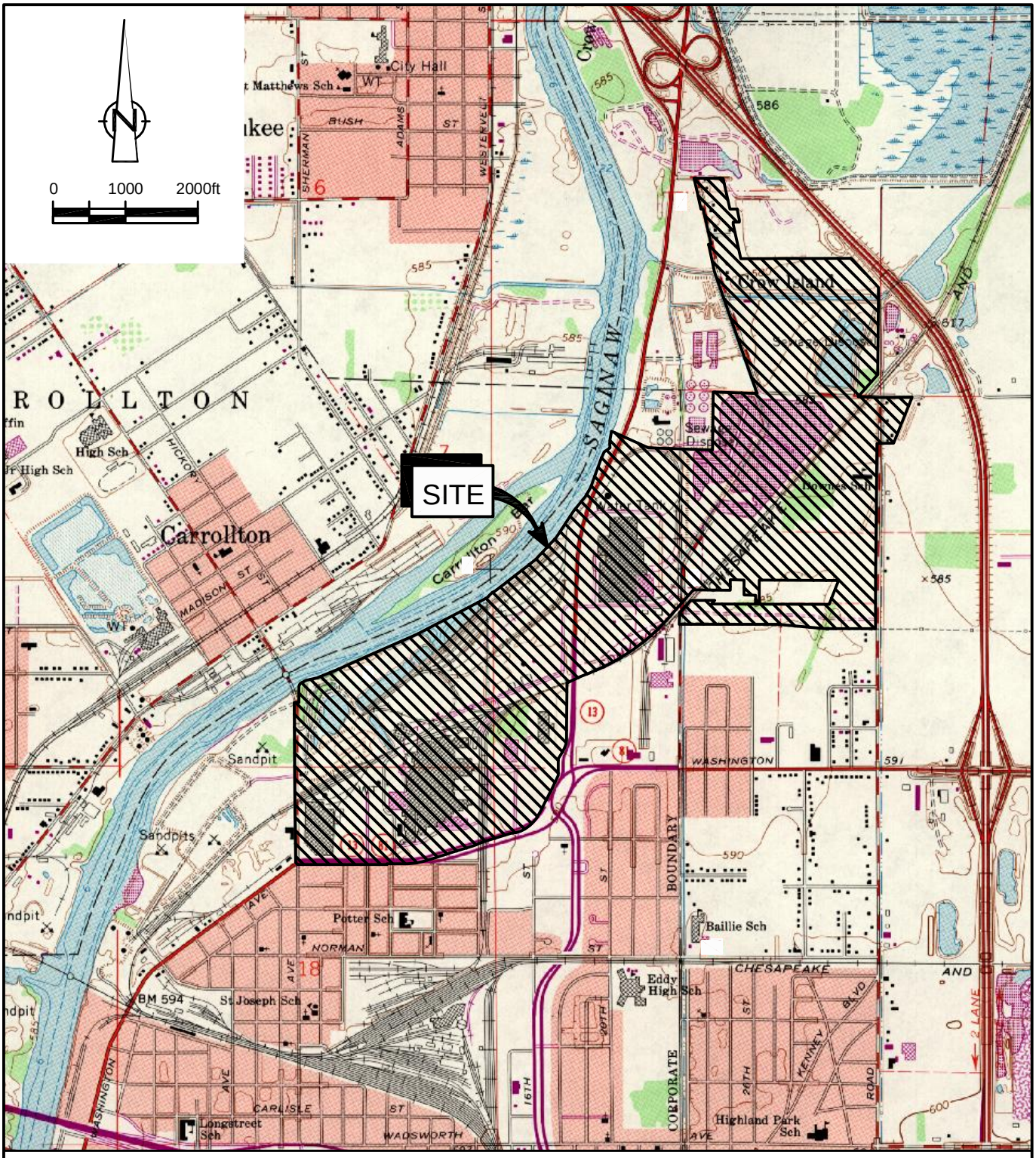
FIGURES

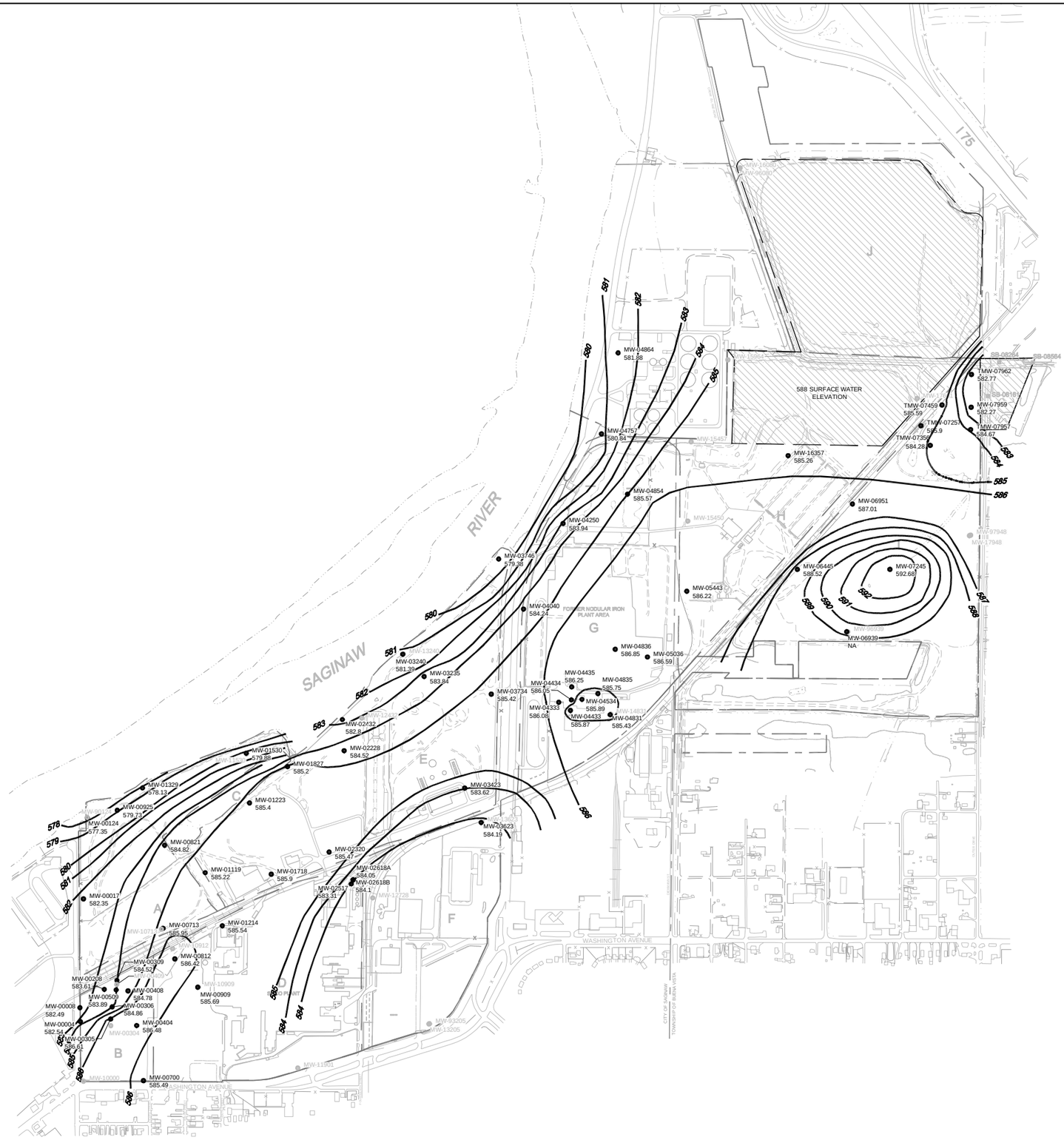


SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE; SAGINAW, MICHIGAN 1967

figure 1

SITE LOCATION
SAGINAW METAL CASTING OPERATIONS
GENERAL MOTORS CORPORATION
Saginaw, Michigan

17075-16(PRES015)GN-WA017 AUG 26/2003



SCALE VERIFICATION

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

GENERAL MOTORS CORPORATION
SAGINAW METAL CASTING OPERATIONS

SAGINAW, MICHIGAN

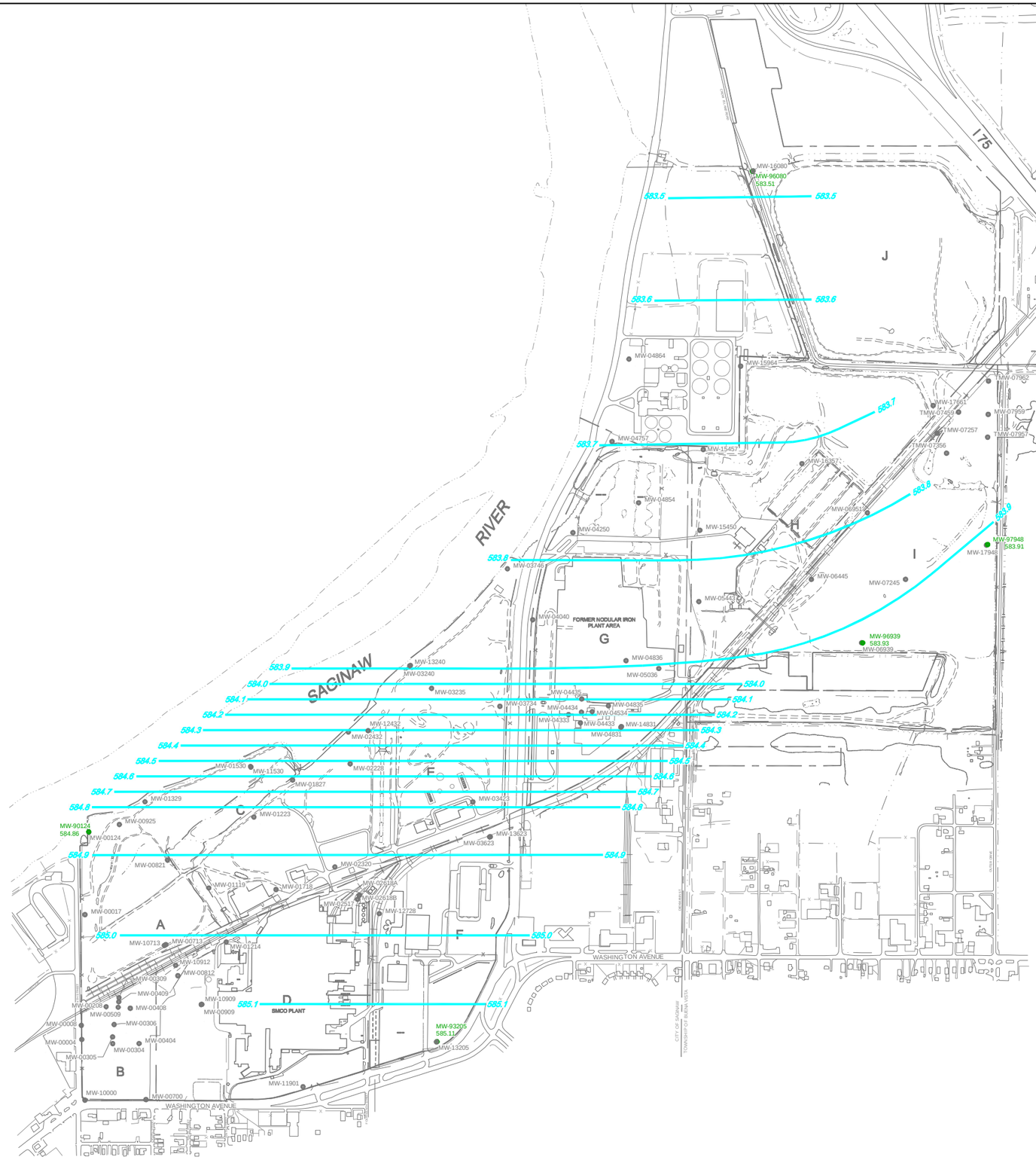
GROUNDWATER CONTOUR MAP
UPPER SATURATED ZONE
JANUARY 2003

CRA **CONESTOGA-ROVERS & ASSOCIATES**

Source Reference:
MICHIGAN STATE PLANE SOUTH, NAD 83 USING INTERNATIONAL FEET, NGVD 88

Project Manager:	Reviewed By:	Date:	
I.R.	D.D.	AUGUST 2003	
Scale: 1" = 500'	Project N°: 17075-16	Report N°: PRES015	Drawing N°: 2a

17075-16(PRES015)GN-WA018 AUG 26/2003



0 200 500ft

LEGEND

585.0	GROUNDWATER ELEVATION FT. AMSL (NAVD 88)
MW-17661 (582.59)	EXISTING MONITORING WELLS WITH ELEVATIONS (JANUARY 2003)
MW-17661	EXISTING MONITORING WELLS

SCALE VERIFICATION

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

GENERAL MOTORS CORPORATION
SAGINAW METAL CASTING OPERATIONS

SAGINAW, MICHIGAN

GROUNDWATER CONTOUR MAP
BEDROCK AQUIFER
JANUARY 2003

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
MICHIGAN STATE PLANE SOUTH, NAD 83 USING INTERNATIONAL FEET, NGVD 88

Project Manager:	Reviewed By:	Date:	
I.R.	D.D.	AUGUST 2003	
Scale: 1" = 500'	Project N°: 17075-16	Report N°: PRES015	Drawing N°: 2b

17075-16(PRES015)GN-WA019 AUG 26/2003

Chemical Name	Commercial and Industrial I, II & IV				
	Drinking Water A	Groundwater Volatilization to Indoor Air B		Groundwater Contact C	Groundwater Surface Water Interface D
Metals					
Aluminum	4.1			64000	
Aluminum (Dissolved)	4.1			64000	
Antimony	0.006			68	0.13
Antimony (Dissolved)	0.006			68	0.13
Arsenic	0.05			4.3	0.15
Arsenic (Dissolved)	0.05			4.3	0.15
Beryllium	0.004			290	1.2
Beryllium (Dissolved)	0.004			290	1.2
Cadmium	0.005			190	0.13
Cadmium (Dissolved)	0.005			190	0.13
Chromium	0.1			460	0.011
Chromium (Dissolved)	0.1			460	0.011
Chromium, Hexavalent	0.1			460	0.011
Chromium, Hexavalent (Dissolved)	0.1			460	0.011
Cobalt	0.1			2400	0.1
Cobalt (Dissolved)	0.1			2400	0.1
Cyanide (total)	0.2			57	0.0052
Iron	5.6			58000	
Iron (Dissolved)	5.6			58000	
Lead	0.004				0.19
Lead (Dissolved)	0.004				0.19
Mercury	0.002	0.056		0.056	0.0000013
Mercury (Dissolved)	0.002	0.056		0.056	0.0000013
Nickel	0.1			74000	210
Nickel (Dissolved)	0.1			74000	210
Selenium	0.05			970	0.005
Selenium (Dissolved)	0.05			970	0.005
Vanadium	0.062			970	0.012
Vanadium (Dissolved)	0.062			970	0.012
Zinc	5			1100000	22
Zinc (Dissolved)	5			1100000	22
Polychlorinated Biphenyls					
Total PCBs	0.0005	0.045		0.0033	0.0002
Semi-Volatile Organic Compounds					
2,4-Dimethylphenol	1			520	0.38
Benzo(a)pyrene	0.005			0.002	
Benzo(b)fluoranthene	0.002			0.002	
Benzo(k)fluoranthene	0.005			0.005	
bis(2-Ethylhexyl)phthalate	0.006			0.32	0.032
Carbazole	0.35			7.4	0.01
Chrysene	0.005			0.005	
Dibenz(a,h)anthracene	0.002			0.002	
Fluoranthene	0.21	0.21		0.21	0.005
Indeno(1,2,3-cd)pyrene	0.002			0.002	
Methylphenol (Cresol)	1			810	0.071
Naphthalene	1.5	31		31	0.013
Pentachlorophenol	0.001			0.2	0.0028
Phenanthrene	0.15	1		1	0.005
Phenol	13			29000	0.21
Volatile Organic Compounds					
1,1-Dichloroethene	0.007	1.3		11	0.065
1,2-Dichloropropane	0.005	36		16	0.29
2-Butanone	38	240000		240000	2.2
Benzene	0.005	35		11	0.2
cis-1,2-Dichloroethene	0.07	210		200	0.62
Ethylbenzene	0.7	170		170	0.018
Trichloroethene	0.005	97		22	0.2
Vinyl chloride	0.002	13		1	0.015
Xylene (total)	10	190		190	0.035
General Chemistry					
Formaldehyde	3.8	360		30000	0.12
Ammonia	10	7100			0.736
pH Field	8.5				9

MW-90124	12/14/99	07/20/00
Metals		
Aluminum	0.117	0.092
Aluminum (Dissolved)	ND (0.05)	ND (0.05)
Antimony	ND (0.06)	ND (0.05)
Antimony (Dissolved)	ND (0.05)	0.035 J [J]
Arsenic	ND (0.005)	ND (0.025)
Arsenic (Dissolved)	ND (0.005)	ND (0.025)
Beryllium	ND (0.005)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.045 [J]	-
Chromium (Dissolved)	ND (0.005)	ND (0.005)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	0.034	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	0.01 J [J]
Iron	23.3 J	-
Iron (Dissolved)	4.85	-
Lead	0.149	0.034
Lead (Dissolved)	ND (0.002)	ND (0.002)
Mercury	0.001 [J]	-
Mercury (Dissolved)	ND (0.0002)	-
Nickel	0.056	0.025
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	0.057 [J]	0.01 [J]
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Zinc	0.23	0.059
Zinc (Dissolved)	0.01	0.003 J
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	0.001	ND (0.001)
2-Butanone	R	R
Benzene	ND (0.001)	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)	0.0001 J
Trichloroethene	ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	0.0035 J
WQ		
pH Field	-	7.2

MW-01329	12/04/98	07/24/00
Metals		
Aluminum	1.83	0.086
Aluminum (Dissolved)	ND (0.05)	0.043 J
Antimony	ND (0.06)	ND (0.05)
Antimony (Dissolved)	ND (0.06)	ND (0.05)
Arsenic	0.446 [J]	0.022
Arsenic (Dissolved)	0.01	0.008
Beryllium	ND (0.005)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	ND (0.005)	-
Chromium (Dissolved)	ND (0.005)	-
Chromium, Hexavalent	-	ND (0.01)
Cobalt	ND (0.01)	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)
Iron	178 J	-
Iron (Dissolved)	9.71	-
Lead	0.007	ND (0.002)
Lead (Dissolved)	ND (0.002)	ND (0.002)
Mercury	ND (0.0002)	-
Mercury (Dissolved)	ND (0.0002)	-
Nickel	ND (0.02)	ND (0.02)
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	0.022 J	ND (0.01)
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Zinc	0.022	0.008 J
Zinc (Dissolved)	ND (0.01)	0.003 J
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)
2-Butanone	R	R
Benzene	ND (0.001)	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	6.85

MW-01530	12/07/98	07/24/00
Metals		
Aluminum	2.33	1.72
Aluminum (Dissolved)	ND (0.05)	0.034 J
Antimony	ND (0.06)	ND (0.05)
Antimony (Dissolved)	ND (0.06)	ND (0.05)
Arsenic	0.022	0.009
Arsenic (Dissolved)	0.013	0.013
Beryllium	ND (0.005)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.008	-
Chromium (Dissolved)	ND (0.005)	ND (0.01)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	ND (0.01)	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)
Iron	33.6 J	-
Iron (Dissolved)	4.57	-
Lead	0.005	0.003
Lead (Dissolved)	ND (0.002)	ND (0.002)
Mercury	ND (0.0002)	-
Mercury (Dissolved)	ND (0.0002)	-
Nickel	ND (0.02)	ND (0.02)
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	ND (0.01)	0.007 J
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Zinc	0.018	0.011
Zinc (Dissolved)	0.012	ND (0.01)
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)
2-Butanone	R	R
Benzene	ND (0.001)	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	7.85

MW-11530	12/02/98	07/18/00
Metals		
Aluminum	174	15.7
Aluminum (Dissolved)	ND (0.05)	ND (0.05)
Antimony	0.054	ND (0.05)
Antimony (Dissolved)	ND (0.05)	ND (0.05)
Arsenic	0.084	0.018
Arsenic (Dissolved)	ND (0.005)	0.004 J
Beryllium	0.01	0.001 J
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.327	-
Chromium (Dissolved)	ND (0.005)	ND (0.005)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	0.129	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)
Iron	365	-
Iron (Dissolved)	0.097 J	-
Lead	0.081	0.014
Lead (Dissolved)	ND (0.002)	ND (0.002)
Mercury	0.0003	-
Mercury (Dissolved)	ND (0.001)	-
Nickel	0.365	0.103
Nickel (Dissolved)	ND (0.02)	0.039
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	0.339	0.042
Vanadium (Dissolved)	0.01	0.008 J
Zinc	1.04	0.089
Zinc (Dissolved)	ND (0.01)	0.003 J
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	0.017
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)
2-Butanone	R	R
Benzene	ND (0.001)	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	7.88

MW-00124	12/03/98	07/27/00
Metals		
Aluminum	0.282	13.3
Aluminum (Dissolved)	ND (0.05)	0.037 J
Antimony	ND (0.06)	ND (0.05)
Antimony (Dissolved)	ND (0.06)	0.029 J
Arsenic	0.141	0.085
Arsenic (Dissolved)	0.011	0.007
Beryllium	ND (0.005)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	ND (0.005)	ND (0.01)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	ND (0.01)	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)
Iron	0.455	-
Iron (Dissolved)	14.8 J	-
Lead	0.088	0.04
Lead (Dissolved)	ND (0.002)	ND (0.002)
Mercury	0.001 [J]	-
Mercury (Dissolved)	ND (0.001)	-
Nickel	ND (0.02)	0.024
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	0.041 [J]	0.034 J
Vanadium (Dissolved)	ND (0.01)	0.137 J
Zinc (Dissolved)	ND (0.01)	0.008 J
OTHER		
Formaldehyde	-	0.098
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)
2-Butanone	R	R
Benzene	ND (0.001)	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	8.77

MW-00825	12/04/98	07/14/00
Metals		
Aluminum	35.9	8.67
Aluminum (Dissolved)	ND (0.06)	ND (0.05)
Antimony	ND (0.05)	0.023 J
Antimony (Dissolved)	ND (0.06)	ND (0.05)
Arsenic	0.031	0.011
Arsenic (Dissolved)	0.007	0.001 J
Beryllium	ND (0.005)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.045 [J]	-
Chromium (Dissolved)	ND (0.005)	ND (0.005)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	0.034	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	0.01 J [J]
Iron	23.3 J	-
Iron (Dissolved)	4.85	-
Lead	0.149	0.034
Lead (Dissolved)	ND (0.002)	ND (0.002)
Mercury	0.001 [J]	-
Mercury (Dissolved)	ND (0.0002)	-
Nickel	0.056	0.025
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	0.057 [J]	0.01 [J]
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Zinc	0.23	0.059
Zinc (Dissolved)	0.01	0.003 J
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)
2-Butanone	R	R
Benzene	ND (0.001)	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	6.82

MW-00017	11/18/98	07/13/00
Metals		
Aluminum	53.2	58.2
Aluminum (Dissolved)	ND (0.05)	4.13
Antimony	ND (0.05)	0.04 J
Antimony (Dissolved)	ND (0.05)	0.023 J
Arsenic	0.051	0.041
Arsenic (Dissolved)	ND (0.005)	0.009 J
Beryllium	ND (0.005)	0.002 J
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	0.004 J
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.177	-
Chromium (Dissolved)	ND (0.005)	0.008
Chromium, Hexavalent	-	ND (0.01)
Cobalt	0.022	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)
Iron	145	-
Iron (Dissolved)	3.5 J	-
Lead	1.49	1.78
Lead (Dissolved)	ND (0.002)	ND (0.002)
Mercury	0.001	-
Mercury (Dissolved)	ND (0.0002)	-
Nickel	0.189	0.219
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	0.088	0.102
Vanadium (Dissolved)	ND (0.01)	0.014
Zinc	0.49	0.828 J
Zinc (Dissolved)	ND (0.01)	0.028 J
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	0.001
Benzo(b)fluoranthene	ND (0.01)	0.001
Benzo(k)fluoranthene	ND (0.01)	0.001
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	0.001
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	0.008 J
Naphthalene	ND (0.002) JND (0.01)	0.002
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	0.002
Phenol	ND (0.01)	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001) J	ND (0.001)
1,2-Dichloropropane	ND (0.001) J	ND (0.001)
2-Butanone	R	R
Benzene	ND (0.001) J	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001) J	ND (0.001)
Ethylbenzene	ND (0.001) J	ND (0.001)
Trichloroethene	ND (0.001) J	ND (0.001)
Vinyl chloride	ND (0.001) J	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	7.23

MW-10713	12/08/98	07/24/00
Metals		
Aluminum	21.1 J/31.2 J	2.34
Aluminum (Dissolved)	ND (0.05)/ND (0.05)	ND (0.05)
Antimony	ND (0.06)/ND (0.06)	0.022 J
Antimony (Dissolved)	ND (0.06)/ND (0.06)	ND (0.05)
Arsenic	0.037/0.041	0.014
Arsenic (Dissolved)	0.014/0.016	0.01
Beryllium	ND (0.005)/ND (0.005)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)/ND (0.005)	ND (0.005)
Cadmium	ND (0.004)/ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)/ND (0.004)	ND (0.005)
Chromium	0.03 J/0.045 J	-
Chromium (Dissolved)	ND (0.005)/ND (0.005)	ND (0.01)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	0.016/0.02	-
Cobalt (Dissolved)	ND (0.01)/ND (0.01)	-
Cyanide (total)	ND (0.01)/ND (0.01)	ND (0.01)
Iron	77 J/9.8 J	-
Iron (Dissolved)	38.1/40.4	-
Lead	0.02/0.025	0.002
Lead (Dissolved)	ND (0.002)/ND (0.002)	ND (0.002)
Mercury	ND (0.0002)/ND (0.0002)	-
Mercury (Dissolved)	ND (0.0002)/ND (0.0002)	-
Nickel	0.03 J/0.044 J	ND (0.02)
Nickel (Dissolved)	ND (0.02)/ND (0.02)	ND (0.02)
Selenium	ND (0.005) JND (0.005) J	-
Selenium (Dissolved)	ND (0.005) JND (0.005) J	-
Vanadium	0.05/0.069	0.01 J
Vanadium (Dissolved)	ND (0.01)/ND (0.01)	ND (0.01)
Zinc	0.12/0.19	0.012
Zinc (Dissolved)	ND (0.01)/ND (0.01)	ND (0.01)
OTHER		
Formaldehyde	-	0.05
PCBs		
Total PCBs	ND (0.0002)/ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)/ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)/ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)/ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)/ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)/ND (0.01)	ND (0.01)
Naphthalene	ND (0.002) JND (0.01) J	ND (0.01)
Pentachlorophenol	ND (0.025)/ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)/ND (0.01)	ND (0.01)
Phenol	ND (0.01)/ND (0.01)	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001)/ND (0.001)	ND (0.001)
1,2-Dichloropropane	0.006/0.006	0.001
2-Butanone	R/R	R
Benzene	ND (0.001)/ND (0.001)	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)/ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)/ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)/ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)/ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)/ND (0.001)	ND (0.001)
WQ		
pH Field	-	6.85

MW-00713	11/19/98	09/05/00
Metals		
Aluminum	57	10.4 J/8.84 J
Aluminum (Dissolved)	0.39	0.043 J/0.037 J
Antimony	ND (0.05)	0.025 J/0.033 J
Antimony (Dissolved)	ND (0.05)	ND (0.05) JND (0.05) J
Arsenic	0.028	0.015 J/0.016 J
Arsenic (Dissolved)	ND (0.006)	ND (0.025)ND (0.025)
Beryllium	ND (0.005)	0.0003 J/0.0003 J
Beryllium (Dissolved)	ND (0.005)	ND (0.005)ND (0.005)
Cadmium	ND (0.004)	ND (0.005)ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)ND (0.005)
Chromium	0.175	-
Chromium (Dissolved)	ND (0.006)	ND (0.01)ND (0.01) J
Chromium, Hexavalent	-	ND (0.01)ND (0.01)
Cobalt	0.027	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)ND (0.01)
Iron	110	-
Iron (Dissolved)	0.91	-
Lead	1.67	1.21/1.03
Lead (Dissolved)	0.011	0.002 JND (0.002)
Mercury	ND (0.0002)	-
Mercury (Dissolved)	ND (0.0002)	-
Nickel	0.165	0.078/0.069
Nickel (Dissolved)	ND (0.02)	0.023 J/0.023 J
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	0.119	0.023/0.021
Vanadium (Dissolved)	ND (0.01)	ND (0.01)ND (0.01)
Zinc	0.304	0.034/0.033
Zinc (Dissolved)	ND (0.01)	ND (0.01)ND (0.01)
OTHER		
Formaldehyde	-	0.038/0.04
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)R
Benzo(a)pyrene	ND (0.01)	ND (0.01)ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)ND (0.01)
Carbazole	-	ND (0.01)ND (0.01)
Chrysene	ND (0.01)	ND (0.01)ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)ND (0.01)
Methylphenol (Cresol)	ND (0.01)

Chemical Name	Commercial and Industrial I, II & IV Drinking Water A	Groundwater Volatilization to Indoor Air B	Groundwater Contact C	Groundwater Surface Water Interface D
Metals				
Aluminum	4.1		64000	
Aluminum (Dissolved)	4.1		64000	
Antimony	0.006		68	0.13
Antimony (Dissolved)	0.006		68	0.13
Arsenic	0.05		4.3	0.15
Arsenic (Dissolved)	0.05		4.3	0.15
Beryllium	0.004		290	1.2
Beryllium (Dissolved)	0.004		290	1.2
Cadmium	0.005		190	0.13
Cadmium (Dissolved)	0.005		190	0.13
Chromium	0.1		460	0.011
Chromium (Dissolved)	0.1		460	0.011
Chromium, Hexavalent	0.1		460	0.011
Chromium, Hexavalent (Dissolved)	0.1		460	0.011
Cobalt	0.1		2400	0.1
Cobalt (Dissolved)	0.1		2400	0.1
Cyanide (total)	0.2		57	0.0052
Iron	5.6		58000	
Iron (Dissolved)	5.6		58000	
Lead	0.004			0.19
Lead (Dissolved)	0.004			0.19
Mercury	0.002	0.056	0.056	0.0000013
Mercury (Dissolved)	0.002	0.056	0.056	0.0000013
Nickel	0.1		74000	210
Nickel (Dissolved)	0.1		74000	210
Selenium	0.05		970	0.005
Selenium (Dissolved)	0.05		970	0.005
Vanadium	0.062		970	0.012
Vanadium (Dissolved)	0.062		970	0.012
Zinc	5		1100000	22
Zinc (Dissolved)	5		1100000	22
Polychlorinated Biphenyls				
Total PCBs	0.0005	0.045	0.0033	0.0002
Semi-Volatile Organic Compounds				
2,4-Dimethylphenol	1		520	0.38
Benzo(a)pyrene	0.005		0.002	
Benzo(b)fluoranthene	0.002		0.002	
Benzo(k)fluoranthene	0.005		0.005	
bis(2-Ethylhexyl)phthalate	0.006		0.32	0.032
Carbazole	0.35		7.4	0.01
Chrysene	0.005		0.005	
Dibenz(a,h)anthracene	0.002		0.002	
Fluoranthene	0.21	0.21	0.21	0.005
Indeno(1,2,3-cd)pyrene	0.002		0.002	
Methylphenol (Cresol)	1		810	0.071
Naphthalene	1.5	31	31	0.013
Pentachlorophenol	0.001		0.2	0.0028
Phenanthrene	0.15	1	1	0.005
Phenol	13		29000	0.21
Volatile Organic Compounds				
1,1-Dichloroethene	0.007	1.3	11	0.065
1,2-Dichloropropane	0.005	36	16	0.29
2-Butanone	38	240000	240000	2.2
Benzene	0.005	35	11	0.2
cis-1,2-Dichloroethene	0.07	210	200	0.62
Ethylbenzene	0.7	170	170	0.018
Trichloroethene	0.005	97	22	0.2
Vinyl chloride	0.002	13	1	0.015
Xylene (total)	10	190	190	0.035
General Chemistry				
Formaldehyde	3.8	360	30000	0.12
Ammonia	10	7100		0.736
pH Field	8.5			9

SB-00208	06/21/00
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	0.001 J
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	0.001 J
Xylene (total)	ND (0.001)

VAP-00208 (2-7)	12/18/02
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	0.001
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	0.0004 J
Pentachlorophenol	ND (0.0256)
Phenanthrene	0.001 J
Phenol	ND (0.01)
WQ	
pH Field	6.85

VAP-00208A (7-12)	12/18/02
SVOAs	
2,4-Dimethylphenol	ND (0.01)ND (0.01)
Benzo(a)pyrene	ND (0.01)ND (0.01)
Benzo(b)fluoranthene	ND (0.01)ND (0.01)
Benzo(k)fluoranthene	ND (0.01)ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)ND (0.01)
Carbazole	ND (0.01)ND (0.01)
Chrysene	ND (0.01)ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)ND (0.01)
Fluoranthene	ND (0.01)ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)ND (0.01)
Methylphenol (Cresol)	ND (0.01)ND (0.01)
Naphthalene	ND (0.01)ND (0.01)
Pentachlorophenol	ND (0.024)ND (0.024)
Phenanthrene	ND (0.01)ND (0.01)
Phenol	ND (0.01)ND (0.01)
WQ	
pH Field	6.39/6.39

VAP-00208A (12-17)	12/18/02
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.024)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
WQ	
pH Field	7.29

VAP-00208A (17-22)	12/18/02
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.024)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
WQ	
pH Field	0.001

VAP-00208A (22-27)	12/18/02
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	0.001 J
Xylene (total)	ND (0.001)
WQ	
pH Field	6.99/6.99

MW-00309	07/31/00	12/18/02
Metals		
Aluminum	47.4 J/55.8 J	-
Aluminum (Dissolved)	ND (0.05)/1.07	-
Antimony	0.021 J/0.031 J	-
Antimony (Dissolved)	ND (0.05)/ND (0.05)	-
Arsenic	0.027/0.035	-
Arsenic (Dissolved)	0.002 J/0.004 J	-
Beryllium	0.004 J/0.004 J	-
Beryllium (Dissolved)	ND (0.005)/0.001 J	-
Cadmium	0.021/0.019	-
Cadmium (Dissolved)	ND (0.005)/0.001 J	-
Chromium (Dissolved)	ND (0.01)/ND (0.01)	-
Chromium, Hexavalent	ND (0.01)/ND (0.01)	-
Cyanide (total)	ND (0.01)/ND (0.01)	-
Lead	0.838/0.809	-
Lead (Dissolved)	ND (0.002)/0.011	-
Nickel	0.18/0.155	-
Nickel (Dissolved)	ND (0.02)/0.008 J	-
Vanadium	0.117/0.12	-
Vanadium (Dissolved)	ND (0.01)/0.005 J	-
Zinc	0.42/0.1	-
Zinc (Dissolved)	0.031/1.01	-
OTHER		
Formaldehyde	ND (0.05)/ND (0.05)	-
PCBs		
Total PCBs	ND (0.0002)/ND (0.0002)	-
SVOAs		
2,4-Dimethylphenol	ND (0.01)R	ND (0.01)
Benzo(a)pyrene	*0.0026/0.003 (C)*	ND (0.01)
Benzo(b)fluoranthene	*0.0026/0.003 (C)*	ND (0.01)
Benzo(k)fluoranthene	0.002/0.003	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)ND (0.01)	ND (0.01)
Carbazole	ND (0.01)ND (0.01)	ND (0.01)
Chrysene	0.002/0.003	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)ND (0.01)	ND (0.01)
Fluoranthene	0.004/0.006	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)/0.002	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.01)ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)/0.03	ND (0.024)
Phenanthrene	0.002/0.003	ND (0.01)
Phenol	0.001R	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001)ND (0.001)	-
1,2-Dichloropropane	ND (0.001)ND (0.001)	-
2-Butanone	RR	-
Benzene	ND (0.001)ND (0.001)	-
cis-1,2-Dichloroethene	ND (0.001)ND (0.001)	-
Ethylbenzene	ND (0.001)ND (0.001)	-
Trichloroethene	0.001/0.001	-
Vinyl chloride	ND (0.001)ND (0.001)	-
Xylene (total)	ND (0.001)ND (0.001)	-
WQ		
pH Field	6.78/6.78	7.03

MW-00409	12/20/01
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WQ	
pH Field	7.94

SB-00408s	09/22/00
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	*0.009 (C)*
Benzo(b)fluoranthene	*0.002 (C)*
Benzo(j)fluoranthene	0.002
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	*0.01 (C)*
Dibenz(a,h)anthracene	ND (0.1)
Fluoranthene	0.005
Indeno(1,2,3-cd)pyrene	*0.002 (C)*
Methylphenol (Cresol)	ND (0.01)
Naphthalene	0.002
Pentachlorophenol	ND (0.025)
Phenanthrene	0.009
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)ND (0.001)
1,2-Dichloropropane	ND (0.001)ND (0.001)
2-Butanone	RR
Benzene	ND (0.001)ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)ND (0.001)
Ethylbenzene	ND (0.001)ND (0.001)
Trichloroethene	ND (0.001)ND (0.001)
Vinyl chloride	ND (0.001)ND (0.001)
Xylene (total)	ND (0.001)ND (0.001)
WQ	
pH Field	7.12

VAP-00510 (3.5-8.5)	12/18/02
SVOAs	
2,4-Dimethylphenol	ND (0.01) J
Benzo(a)pyrene	ND (0.01) J
Benzo(b)fluoranthene	ND (0.01) J
Benzo(k)fluoranthene	ND (0.01) J
bis(2-Ethylhexyl)phthalate	ND (0.01) J
Carbazole	ND (0.01) J
Chrysene	ND (0.01) J
Dibenz(a,h)anthracene	ND (0.01) J
Fluoranthene	ND (0.01) J
Indeno(1,2,3-cd)pyrene	ND (0.01) J
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01) J
Pentachlorophenol	ND (0.024) J
Phenanthrene	0.001 J
Phenol	ND (0.01) J
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	0.0004 J
WQ	
pH Field	7.2

VAP-00510 (8.5-13.5)	12/18/02
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.024)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WQ	
pH Field	8.26

VAP-00510 (13.5-18.5	12/18/02
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.024)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
WQ	
pH Field	7.2

VAP-00510 (18.5-23.5	12/18/02
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.024)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
WQ	
pH Field	7.06

VAP-00510 (23.5-28.5	01/09/03
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	0.001
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.024) J
Phenanthrene	0.001 J
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	0.0001
Ethylbenzene	0.0002
Trichloroethene	0.0002
Vinyl chloride	ND (0.001)
Xylene (total)	0.001
WQ	
pH Field	6.79

VAP-00510 (28.5-33.5	01/09/03
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	0.0004
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	0.002
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.024)
Phenanthrene	ND (0.01)
Phenol	0.001 J
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	0.0001
Ethylbenzene	0.0002
Trichloroethene	0.0002
Vinyl chloride	ND (0.001)
Xylene (total)	0.001
WQ	
pH Field	7.05

TMW-04088	12/17/01
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	0.0001
Ethylbenzene	0.0002
Trichloroethene	0.0002
Vinyl chloride	ND (0.001)
Xylene (total)	0.001
WQ	
pH Field	6.79

VAP-00208 (3-8)	12/18/02
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	0.0004
Ethylbenzene	ND (0.001)
Trichloroethene	0.001
Vinyl chloride	0.0008
Xylene (total)	ND (0.001)
WQ	
pH Field	7.02

VAP-00208 (8-13)	12/18/02
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	0.001
Ethylbenzene	ND (0.001)
Trichloroethene	0.001
Vinyl chloride	0.002
Xylene (total)	ND (0.001)
WQ	
pH Field	7.76

VAP-00208 (13-18)	12/18/02
VOAs	
1,1-Dichloroethene	0.0002
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	0.0001
cis-1,2-Dichloroethene	0.005
Ethylbenzene	0.001
Trichloroethene	0.006
Vinyl chloride	0.002
Xylene (total)	0.004
WQ	
pH Field	7.16

VAP-00208 (18-23)	12/18/02
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	0.0003
Ethylbenzene	ND (0.001)
Trichloroethene	0.0002
Vinyl chloride	0.001
Xylene (total)	ND (0.001)
WQ	
pH Field	6.79

VAP-00209 (22-27)	01/07/03
VOAs	
1,1-Dichloroethene	0.0001
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	0.0003
cis-1,2-Dichloroethene	0.011
Ethylbenzene	0.0003
Trichloroethene	0.009
Vinyl chloride	0.021
Xylene (total)	0.001
WQ	
pH Field	6.88

VAP-00208 (27-32)	01/09/03
VOAs	
1,1-Dichloroethene	0.0001
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	0.0003
cis-1,2-Dichloroethene	0.022
Ethylbenzene	0.0002
Trichloroethene	0.0004
Vinyl chloride	0.066
Xylene (total)	0.001
WQ	
pH Field	7.34

VAP-00208 (32-37)	01/05/05
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	0.016
Ethylbenzene	0.0002
Trichloroethene	0.0002
Vinyl chloride	0.043
Xylene (total)	0.001
WQ	
pH Field	7.39

VAP-00208 (37-42)	01/03/05
VOAs	
1,1-Dichloroethene	0.0005/0.0006
1,2-Dichloropropane	ND (0.001)/ND (0.001)
2-Butanone	R/R
Benzene	ND (0.001)/ND (0.001)
cis-1,2-Dichloroethene	0.1/0.089
Ethylbenzene	ND (0.001)/ND (0.001)
Trichloroethene	ND (0.001)/ND (0.001)
Vinyl chloride	0.24/0.24
Xylene (total)	0.001/0.001
WQ	
pH Field	6.79/6.79

VAP-00208 (42-47)	01/02/03
VOAs	
1,1-Dichloroethene	0.0001
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	0.029
Ethylbenzene	ND (0.001)
Trichloroethene	0.0002
Vinyl chloride	0.13
Xylene (total)	ND (0.001)
WQ	
pH Field	6.47

MW-00208	07/31/00
Metals	
Aluminum	3.11 J
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.026 J
Arsenic (Dissolved)	0.026 J
Beryllium	0.0002 J
Beryllium (Dissolved)	ND (0.005)
Cadmium	0.001 J
Cadmium (Dissolved)	ND (0.005)
Chromium (Dissolved)	ND (0.01)
Chromium, Hexavalent	ND (0.01)
Cyanide (total)	0.02
Lead	0.022
Lead (Dissolved)	ND (0.002)
Nickel	0.029
Nickel (Dissolved)	0.018 J
Vanadium	0.007 J
Vanadium (Dissolved)	ND (0.01)
Zinc	0.026
Zinc (Dissolved)	0.033 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.024)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WQ	
pH Field	7.3

VAP-00208 (5-10)	12/20/01
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	0.0003
Ethylbenzene	ND (0.001)
Trichloroethene	0.002
Vinyl chloride	0.0004
Xylene (total)	0.0003 J
WQ	
pH Field	8.04

VAP-00208 (10-15)	12/18/01
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	0.0001
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	0.001
Vinyl chloride	ND (0.001)
Xylene (total)	0.0004 J
WQ	
pH Field	7.02

VAP-00208 (15-20)	12/18/01
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	0.0001
cis-1,2-Dichloroethene	0.0002
Ethylbenzene	0.0004
Trichloroethene	0.0002
Vinyl chloride	0.001
Xylene (total)	0.003

VAP-00208 (20-25)	12/20/01
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	0.001
Ethylbenzene	0.0003
Trichloroethene	0.002
Vinyl chloride	0.001
Xylene (total)	0.002
WQ	
pH Field	6.98

VAP-00208 (25-30)	12/20/01
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	0.001
cis-1,2-Dichloroethene	0.009
Ethylbenzene	0.001
Trichloroethene	0.0002
Vinyl chloride	0.18
Xylene (total)	0.005
WQ	
pH Field	8.58

VAP-00208 (30-35)	12/20/01
VOAs	
1,1-Dichloroethene	0.001
1,2-Dichloropropane	ND (0.003)
2-Butanone	R
Benzene	0.001
cis-1,2-Dichloroethene	0.34
Ethylbenzene	ND (0.003)
Trichloroethene	ND (0.003)
Vinyl chloride	*1.2 (C)*
Xylene (total)	ND (0.003)
WQ	
pH Field	6.5

VAP-00208 (35-40)	12/20/01
VOAs	
1,1-Dichloroethene	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)/ND (0.001)
2-Butanone	R/R
Benzene	0.0005/0.0005
cis-1,2-Dichloroethene	0.005/0.005
Ethylbenzene	ND (0.001)/ND (0.001)
Trichloroethene	0.0003/0.0003
Vinyl chloride	0.035/0.036
Xylene (total)	ND (0.001)/ND (0.001)
WQ	
pH Field	6.48/6.49

VAP-00208 (40-45)	12/18/01
VOAs	
1,1-Dichloroethene	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)/ND (0.001)
2-Butanone	R/R
Benzene	0.0003/0.0003
cis-1,2-Dichloroethene	0.001/0.001
Ethylbenzene	0.0003/0.0003
Trichloroethene	ND (0.001)/0.0004
Vinyl chloride	0.023/0.018
Xylene (total)	0.001 J/0.001 J
WQ	
pH Field	6.58/6.58

VAP-00307D (0-5)	12/18/01
VOAs	
1,1-Dichloroethene	ND (0.001)ND (0.001)
1,2-Dichloropropane	ND (0.001)ND (0.001)
2-Butanone	R/R
Benzene	ND (0.001)ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)ND (0.001)
Ethylbenzene	ND (0.001)ND (0.001)
Trichloroethene	ND (0.001)ND (0.001)
Vinyl chloride	ND (0.001)ND (0.001)
Xylene (total)	ND (0.001)ND (0.001)
WQ	
pH Field	7.09/7.06

VAP-00307D (5-10)	12/18/01
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WQ	
pH Field	7.05

VAP-00307D (10-15)	12/17/01
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	0.001
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WQ	
pH Field	6.89

VAP-00307D (15-20)	12/18/01
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	0.0001
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)

Chemical Name	Commercial and Industrial I, II & IV			
	Groundwater Drinking Water A	Groundwater Volatilization to Indoor Air B	Groundwater Contact C	Groundwater Surface Water Interface D
Metals				
Aluminum	4.1		64000	
Aluminum (Dissolved)	4.1		64000	
Antimony	0.006		68	0.13
Antimony (Dissolved)	0.006		68	0.13
Arsenic	0.05		4.3	0.15
Arsenic (Dissolved)	0.05		4.3	0.15
Beryllium	0.004		290	1.2
Beryllium (Dissolved)	0.004		290	1.2
Cadmium	0.005		190	0.13
Cadmium (Dissolved)	0.005		190	0.13
Chromium	0.1		460	0.011
Chromium (Dissolved)	0.1		460	0.011
Chromium, Hexavalent	0.1		460	0.011
Chromium, Hexavalent (Dissolved)	0.1		460	0.011
Cobalt	0.1		2400	0.1
Cobalt (Dissolved)	0.1		2400	0.1
Cyanide (total)	0.2		57	0.0052
Iron	5.6		58000	
Iron (Dissolved)	5.6		58000	
Lead	0.004			0.19
Lead (Dissolved)	0.004			0.19
Mercury	0.002	0.056	0.056	0.0000013
Mercury (Dissolved)	0.002	0.056	0.056	0.0000013
Nickel	0.1		74000	210
Nickel (Dissolved)	0.1		74000	210
Selenium	0.05		970	0.005
Selenium (Dissolved)	0.05		970	0.005
Vanadium	0.062		970	0.012
Vanadium (Dissolved)	0.062		970	0.012
Zinc	5		1100000	22
Zinc (Dissolved)	5		1100000	22
Polychlorinated Biphenyls				
Total PCBs	0.0005	0.045	0.0033	0.0002
Semi-Volatile Organic Compounds				
2,4-Dimethylphenol	1		520	0.38
Benzo(a)pyrene	0.005		0.002	
Benzo(b)fluoranthene	0.002		0.002	
Benzo(k)fluoranthene	0.005		0.005	
bis(2-Ethylhexyl)phthalate	0.006		0.32	0.032
Carbazole	0.35		7.4	0.01
Chrysene	0.005		0.005	
Dibenz(a,h)anthracene	0.002		0.002	
Fluoranthene	0.21	0.21	0.21	0.005
Indeno(1,2,3-cd)pyrene	0.002		0.002	
Methylphenol (Cresol)	1		810	0.071
Naphthalene	1.5	31	31	0.013
Pentachlorophenol	0.001		0.2	0.0028
Phenanthrene	0.15	1	1	0.005
Phenol	13		29000	0.21
Volatile Organic Compounds				
1,1-Dichloroethene	0.007	1.3	11	0.065
1,2-Dichloropropane	0.005	36	16	0.29
2-Butanone	38	240000	240000	2.2
Benzene	0.005	35	11	0.2
cis-1,2-Dichloroethene	0.07	210	200	0.62
Ethylbenzene	0.7	170	170	0.018
Trichloroethene	0.005	97	22	0.2
Vinyl chloride	0.002	13	1	0.015
Xylene (total)	10	190	190	0.035
General Chemistry				
Formaldehyde	3.8	360	30000	0.12
Ammonia	10	7100		0.736
pH Field	8.5			9

VAP-00108 (3-8)	12/16/02
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WQ	
pH Field	8.89

VAP-00108 (8-13)	12/16/02
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WQ	
pH Field	7.32

VAP-00109 (13-18)	12/17/02
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WQ	
pH Field	6.89

VAP-00109 (18-23)	12/17/02
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WQ	
pH Field	6.01

VAP-00108 (23-28)	01/08/03
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	0.003
Ethylbenzene	ND (0.001)
Trichloroethene	0.0002
Vinyl chloride	0.0003
Xylene (total)	0.017
WQ	
pH Field	6.66

VAP-00108 (28-33)	01/09/03
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	0.0003
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	0.008
Trichloroethene	ND (0.001)
Vinyl chloride	0.002
Xylene (total)	0.095
WQ	
pH Field	6.28

VAP-00108 (33-38)	01/03/03
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	0.0003
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	0.001
Trichloroethene	ND (0.001)
Vinyl chloride	0.001
Xylene (total)	0.004
WQ	
pH Field	7.21

VAP-00108 (38-43)	01/02/03
VOAs	
1,1-Dichloroethene	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)/ND (0.001)
2-Butanone	R/R
Benzene	0.0009/0.0009
cis-1,2-Dichloroethene	ND (0.001)/ND (0.001)
Ethylbenzene	0.020/0.022
Trichloroethene	ND (0.001)/ND (0.001)
Vinyl chloride	0.001/0.001
Xylene (total)	0.008/0.009
WQ	
pH Field	6.36/6.36

VAP-00307 (8-10)	12/17/02
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	0.009 J
Benzene	0.0002
cis-1,2-Dichloroethene	0.0001
Ethylbenzene	ND (0.001)
Trichloroethene	0.0002
Vinyl chloride	0.0003
Xylene (total)	0.0001 J
WQ	
pH Field	6.83

VAP-00307 (10-18)	12/17/02
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	0.005 J
Benzene	0.0002
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	0.0003
Vinyl chloride	ND (0.001)
Xylene (total)	0.0004 J
WQ	
pH Field	6.18

VAP-00307 (18-20)	12/17/02
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	0.001
Xylene (total)	0.0008 J
WQ	
pH Field	6.98

VAP-00307 (20-26)	12/17/02
VOAs	
1,1-Dichloroethene	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)/ND (0.001)
2-Butanone	R/R
Benzene	ND (0.001)/ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)/ND (0.001)
Ethylbenzene	ND (0.001)/ND (0.001)
Trichloroethene	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001)/ND (0.001)
Xylene (total)	ND (0.001)/ND (0.001)
pH Field	8.09/8.09

VAP-00307 (25-30)	01/02/03
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WQ	
pH Field	6.67

SB-00208a	08/22/00
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.1)
Benzo(b)fluoranthene	ND (0.1)
Benzo(k)fluoranthene	ND (0.1)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.1)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.1)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.039)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)/0.001 J
1,2-Dichloropropane	ND (0.001)/ND (0.001)
2-Butanone	R/R
Benzene	ND (0.001)/ND (0.001)
cis-1,2-Dichloroethene	0.0058/0.3
Ethylbenzene	0.0003/ND (0.001)
Trichloroethene	0.001/0.001
Vinyl chloride	0.01 J/0.68 J
Xylene (total)	0.0004 J/ND (0.001)

SB-00307b	08/22/00
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.039)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	0.001 J
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	0.008 J
Xylene (total)	ND (0.001)

SB-00307c	08/22/00
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	0.003 JQ
Benzo(b)fluoranthene	0.002
Benzo(k)fluoranthene	0.002
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	0.003
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	0.006
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.039)
Phenanthrene	0.006
Phenol	0.002
VOAs	
1,1-Dichloroethene	0.001 J
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	0.008 J
Xylene (total)	ND (0.001)

TMW-00408B	12/18/01
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	0.0002
Vinyl chloride	ND (0.001)
Xylene (total)	0.0008 J
WQ	
pH Field	7.57

MW-00404	12/21/01
Metals	
Aluminum	0.04
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.002
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.005)
Chromium, Hexavalent	ND (0.01)
Cyanide (total)	ND (0.01)
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Nickel	0.079
Nickel (Dissolved)	0.061
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.005
Zinc (Dissolved)	0.005
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.039)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WQ	
Ammonia	0.04
pH Field	7.11

MW-00306	08/09/00	01/16/02	01/02/03
Metals			
Aluminum	2.8 J	-	-
Aluminum (Dissolved)	0.118 J	-	0.039 J
Antimony	ND (0.06) J	-	-
Antimony (Dissolved)	ND (0.06) J	-	ND (0.06)
Arsenic	0.015 J	-	-
Arsenic (Dissolved)	0.01 J	-	ND (0.01)
Beryllium	0.0002 J	-	-
Beryllium (Dissolved)	ND (0.005)	-	ND (0.005)
Cadmium	ND (0.005)	-	-
Cadmium (Dissolved)	ND (0.005)	-	ND (0.005)
Chromium (Dissolved)	0.002 J	-	ND (0.005)
Chromium, Hexavalent	ND (0.01)	-	-
Cyanide (total)	0.14	-	-
Lead	0.097	-	-
Lead (Dissolved)	0.009 J	-	ND (0.002)
Nickel	0.128	-	-
Nickel (Dissolved)	0.096	-	ND (0.02)
Vanadium	0.015	-	-
Vanadium (Dissolved)	0.008 J	-	ND (0.01)
Zinc	0.083	-	-
Zinc (Dissolved)	ND (0.01)	-	0.008 J
OTHER			
Formaldehyde	0.08	-	-
PCBs			
Total PCBs	0.001 J	ND (0.0002)/ND (0.0002)	0.0004 J
SVOAs			
2,4-Dimethylphenol	0.007	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(a)pyrene	0.002	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	0.002	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	0.002	ND (0.01)/ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)/ND (0.01)	ND (0.01)
Carbazole	0.015	0.003/0.004	ND (0.01)
Chrysene	0.003	ND (0.01)/ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)/ND (0.01)	ND (0.01)
Fluoranthene	0.005	ND (0.01)/ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)/ND (0.01)	ND (0.01)
Methylphenol (Cresol)	0.03 J	0.007 J/0.005 J	ND (0.01)
Naphthalene	0.014 J	0.007/0.006	ND (0.01)
Pentachlorophenol	ND (0.039)	ND (0.039)/ND (0.039)	ND (0.039)
Phenanthrene	0.008 J	0.002/0.001	ND (0.01)
Phenol	0.41 J	0.017/0.016	ND (0.01)
VOAs			
1,1-Dichloroethene	ND (0.001)	-	ND (0.001)
1,2-Dichloropropane	ND (0.001)	-	ND (0.001)
2-Butanone	0.034 J	-	R
Benzene	0.001	-	ND (0.001)
cis-1,2-Dichloroethene	0.001	-	ND (0.001)
Ethylbenzene	0.0001	-	ND (0.001)
Trichloroethene	0.002	-	0.0005
Vinyl chloride	ND (0.001)	-	ND (0.001)
Xylene (total)	0.001	-	ND (0.001)
WQ			
pH Field	7.98	-	7.29

MW-00708	12/03/98	07/13/00
Metals		
Aluminum	55.3	2.41/2.91
Aluminum (Dissolved)	ND (0.05)	0.049 J/0.055
Antimony	ND (0.06)	ND (0.06)/ND (0.06)
Antimony (Dissolved)	ND (0.06)	ND (0.06)/ND (0.06)
Arsenic	0.013	0.0070/0.006
Arsenic (Dissolved)	ND (0.005)	0.005 J/0.005 J
Beryllium	ND (0.005)	ND (0.005)/ND (0.005)
Beryllium (Dissolved)	ND (0.005)	ND (0.005)/ND (0.005)
Cadmium	ND (0.005)	ND (0.005)/ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)/ND (0.005)
Chromium	1.18	-
Chromium (Dissolved)	ND (0.006)	ND (0.005)/ND (0.005)
Chromium, Hexavalent	-	ND (0.01)/ND (0.01)
Cobalt	0.036	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)/ND (0.01)
Iron	105	-
Iron (Dissolved)	0.066 J	-
Lead	0.036	0.004/0.004
Lead (Dissolved)	ND (0.002)	ND (0.002)/ND (0.002)
Mercury	ND (0.0002)	-
Mercury (Dissolved)	ND (0.001)	-
Nickel	0.053	0.0270/0.021
Nickel (Dissolved)	0.275	ND (0.02)/ND (0.02)
Selenium	ND (0.005)	-
Selenium (Dissolved)	ND (0.005)	-
Vanadium	0.121	0.0130/0.012
Vanadium (Dissolved)	ND (0.01)	ND (0.01)/ND (0.01)
Zinc	0.187	0.012 J/0.012 J
Zinc (Dissolved)	ND (0.01)	0.075 JND (0.01)
OTHER		
Formaldehyde	-	ND (0.05)/ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)/ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)/ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)/ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)/ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)/ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)/ND (0.01)
Carbazole	-	ND (0.01)/ND (0.01)
Chrysene	ND (0.01)	ND (0.01)/ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)/ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)/ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)/ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)/ND (0.01)
Naphthalene	ND (0.01)	ND (0.01)/ND (0.01)
Pentachlorophenol	ND (0.039)	ND (0.039)/ND (0.039)
Phenanthrene	ND (0.01)	ND (0.01)/ND (0.01)
Phenol	ND (0.01)	ND (0.01)/ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)/ND (0.001)
2-Butanone	R	R/R
Benzene	ND (0.001)	ND (0.001)/ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)/ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)/ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)/ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)/ND (0.001)
WQ		
pH Field	-	7.13/7.13

MW-00009	12/03/98	07/14/00
Metals		
Aluminum	3.73	0.731
Aluminum (Dissolved)	ND (0.05)	ND (0.05)
Antimony	ND (0.06)	ND (0.06)
Antimony (Dissolved)	ND (0.06)	ND (0.05)
Arsenic	0.012	0.003 J
Arsenic (Dissolved)	ND (0.005)	0.003 J
Beryllium	ND (0.005)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.01	-
Chromium (Dissolved)	ND (0.005)	ND (0.005)
Chromium, Hexavalent	-	-
Cobalt	0.014	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)
Iron	13.8	-
Iron (Dissolved)	4.1 J	-
Lead	0.02	0.004
Lead (Dissolved)	ND (0.002)	ND (0.002)
Mercury	ND (0.0002)	-
Mercury (Dissolved)	ND (0.001)	-
Nickel	ND (0.02)	ND (0.02)
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	0.015	0.005 J
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Zinc	0.045	0.020 J
Zinc (Dissolved)	ND (0.01)	ND (0.01)
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.039)	ND (0.039)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	0.004
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)
2-Butanone	R	R
Benzene	ND (0.001)	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	6.84

MW-10000	12/08/98	07/25/00
Metals		
Aluminum	76.9 J	8.07
Aluminum (Dissolved)	ND (0.05)	ND (0.05)
Antimony	ND (0.06)	ND (0.06)
Antimony (Dissolved)	ND (0.06)	ND (0.06)
Arsenic	0.235	0.016
Arsenic (Dissolved)	0.013	0.012
Beryllium	ND (0.005)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.134 J	-
Chromium (Dissolved)	ND (0.005)	ND (0.01)
Chromium, Hexavalent	-	0.017
Cobalt	0.091	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)
Iron	182 J	-
Iron (Dissolved)	0.088	-
Lead	0.057	0.007
Lead (Dissolved)	ND (0.002)	ND (0.002)
Mercury	0.001	-
Mercury (Dissolved)	ND (0.0002)	-
Nickel	0.218 J	ND (0.02)
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	0.013 J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	0.179	0.019
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Zinc	0.046	0.016
Zinc (Dissolved)	ND (0.01)	ND (0.01)
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.039)	ND (0.039)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	0.004
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)
2-Butanone	R	R
Benzene	ND (0.001)	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	7.78

MW-00304	12/18/02
Metals	
Aluminum (Dissolved)	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic (Dissolved)	0.007 J
Beryllium (Dissolved)	ND (0.005)
Cadmium (Dissolved)	0.001 J
Chromium (Dissolved)	0.003 J
Lead (Dissolved)	ND (0.002)
Nickel (Dissolved)	0.091
Vanadium (Dissolved)	ND (0.01)
Zinc (Dissolved)	0.282
PCBs	
Total PCBs	ND (0.2)
SVOAs	
2,4-Dimethylphenol	0.049
Benzo(a)pyrene	ND (0.098)
Benzo(b)fluoranthene	ND (0.098)
Benzo(k)fluoranthene	ND (0.098)
bis(2-Ethylhexyl)phthalate	ND (0.098)
Carbazole	0.029
Chrysene	ND (0.098)
Dibenz(a,h)anthracene	ND (0.098)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.098)
Methylphenol (Cresol)	0.055
Naphthalene	0.009 J
Pentachlorophenol	ND (0.024)
Phenanthrene	0.009 J
Phenol	0.016
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	0.025
Benzene	0.0023
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	0.0002
Vinyl chloride	ND (0.001)
Xylene (total)	0.001
WQ	
pH Field	7.93

MW-00305	08/09/00	12/19/01	01/03/03
Metals			
Aluminum (Dissolved)	-	-	0.021 J
Antimony (Dissolved)	-	-	ND (0.05)
Arsenic (Dissolved)	-	-	0.003 J
Beryllium (Dissolved)	-	-	ND (0.005)
Cadmium (Dissolved)	-	-	ND (0.005)
Chromium (Dissolved)	-	-	ND (0.005)
Lead (Dissolved)	-	-	ND (0.002)
Nickel (Dissolved)	-	-	ND (0.02)
Vanadium (Dissolved)	-	-	ND (0.01)
Zinc (Dissolved)	-	-	0.012
PCBs			
Total PCBs	ND (2)	ND (0.0002)	ND (0.0002)
SVOAs			
2,4-Dimethylphenol	-	ND (0.01)	ND (0.01)
Benzo(a)pyrene	-	0.001	ND (0.01)
Benzo(b)fluoranthene	-	0.001	ND (0.01)
Benzo(k)fluoranthene	-	0.001	ND (0.01)
bis(2-Ethylhexyl)phthalate	-	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)	ND (0.01)
Chrysene	-	0.002	ND (0.01)
Dibenz(a,h)anthracene	-	ND (0.01)	0.001
Fluoranthene	-	0.004	0.001
Indeno(1,2,3-cd)pyrene	-	ND (0.01)	0.001
Methylphenol (Cresol)	-	ND (0.01)	ND (0.01)

Chemical Name	Commercial and Industrial, III & IV				
	Drinking Water A	Groundwater Volatilization to Indoor Air B		Groundwater Contact C	Groundwater Surface Water Interface D
Metals					
Aluminum	4.1			64000	
Aluminum (Dissolved)	4.1			64000	
Antimony	0.006			68	0.13
Antimony (Dissolved)	0.006			68	0.13
Arsenic	0.05			4.3	0.15
Arsenic (Dissolved)	0.05			4.3	0.15
Beryllium	0.004			290	1.2
Beryllium (Dissolved)	0.004			290	1.2
Cadmium	0.005			190	0.13
Cadmium (Dissolved)	0.005			190	0.13
Chromium	0.1			460	0.011
Chromium (Dissolved)	0.1			460	0.011
Chromium, Hexavalent	0.1			460	0.011
Chromium, Hexavalent (Dissolved)	0.1			460	0.011
Cobalt	0.1			2400	0.1
Cobalt (Dissolved)	0.1			2400	0.1
Cyanide (total)	0.2			57	0.0052
Iron	5.6			58000	
Iron (Dissolved)	5.6			58000	
Lead	0.004				0.19
Lead (Dissolved)	0.004				0.19
Mercury	0.002	0.056		0.056	0.0000013
Mercury (Dissolved)	0.002	0.056		0.056	0.0000013
Nickel	0.1			74000	210
Nickel (Dissolved)	0.1			74000	210
Selenium	0.05			970	0.005
Selenium (Dissolved)	0.05			970	0.005
Vanadium	0.062			970	0.012
Vanadium (Dissolved)	0.062			970	0.012
Zinc	5			110000	22
Zinc (Dissolved)	5			110000	22
Polychlorinated Biphenyls					
Total PCBs	0.0005	0.045		0.0033	0.0002
Semi-Volatile Organic Compounds					
2,4-Dimethylphenol	1			520	0.38
Benzo(a)pyrene	0.005			0.002	
Benzo(b)fluoranthene	0.002			0.002	
Benzo(k)fluoranthene	0.005			0.005	
bis(2-Ethylhexyl)phthalate	0.006			0.32	0.032
Carbazole	0.35			7.4	0.01
Chrysene	0.005			0.005	
Dibenz(a,h)anthracene	0.002			0.002	
Fluoranthene	0.21	0.21		0.21	0.005
Indeno(1,2,3-cd)pyrene	0.002			0.002	
Methylphenol (Cresol)	1			810	0.071
Naphthalene	1.5	31		31	0.013
Pentachlorophenol	0.001			0.2	0.0028
Phenanthrene	0.15	1		1	0.005
Phenol	13			29000	0.21
Volatile Organic Compounds					
1,1-Dichloroethene	0.007	1.3		11	0.065
1,2-Dichloropropane	0.005	36		16	0.29
2-Butanone	38	240000		240000	2.2
Benzene	0.005	35		11	0.2
cis-1,2-Dichloroethene	0.07	210		200	0.62
Ethylbenzene	0.7	170		170	0.018
Trichloroethene	0.005	97		22	0.2
Vinyl chloride	0.002	13		1	0.015
Xylene (total)	10	190		190	0.035
General Chemistry					
Formaldehyde	3.8	360		30000	0.12
Ammonia	10	7100			0.736
pH Field	8.5				9

MW-01214	12/14/98	07/25/00
Metals		
Aluminum	26.1/28.2	23.2
Aluminum (Dissolved)	ND (0.05)/ND (0.05)	ND (0.05)
Antimony	ND (0.05)/ND (0.05)	ND (0.05)
Antimony (Dissolved)	ND (0.05)/ND (0.05)	ND (0.05)
Arsenic	0.013/0.01	0.009
Arsenic (Dissolved)	ND (0.005)/ND (0.005)	0.003 J
Beryllium	ND (0.005)/ND (0.005)	0.001 J
Beryllium (Dissolved)	ND (0.005)/ND (0.005)	ND (0.005)
Cadmium	ND (0.004)/ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)/ND (0.004)	ND (0.005)
Chromium	0.078/0.069	-
Chromium (Dissolved)	ND (0.005)/ND (0.005)	ND (0.01)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	0.014/0.01	-
Cobalt (Dissolved)	ND (0.01)/ND (0.01)	-
Cyanide (total)	ND (0.01)/ND (0.01)	ND (0.01)
Iron	84.8/45.8	-
Iron (Dissolved)	2.48/5.17	-
Lead	0.119/.0.123	0.1
Lead (Dissolved)	ND (0.002)/ND (0.002) J	0.003
Mercury	ND (0.0002)/ND (0.0002)	-
Mercury (Dissolved)	ND (0.0002)/ND (0.0002)	-
Nickel	0.078/0.069	0.074
Nickel (Dissolved)	ND (0.02)/ND (0.02)	ND (0.02)
Selenium	ND (0.006) JND (0.006) J	-
Selenium (Dissolved)	ND (0.006) JND (0.006) J	-
Vanadium	0.068/0.044	0.044
Vanadium (Dissolved)	ND (0.01)/ND (0.01)	ND (0.01)
Zinc	0.179/0.161	0.146
Zinc (Dissolved)	0.014/0.017	0.005 J
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0009)/ND (0.0092)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)/ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)/ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)/ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)/ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)/ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.002)/ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)/ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)/ND (0.01)	ND (0.01)
Phenol	ND (0.01)/ND (0.01)	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001)/ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)/ND (0.001)	ND (0.001)
2-Butanone	R/R	R
Benzene	ND (0.001)/ND (0.001)	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)/ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)/ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)/ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)/ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)/ND (0.001)	ND (0.001)
WQ		
pH Field	-	7.17

MW-02410	12/15/98	07/27/00
Metals		
Aluminum	91	19.2
Aluminum (Dissolved)	ND (0.05)	ND (0.05)
Antimony	0.05	ND (0.05)
Antimony (Dissolved)	ND (0.05)	ND (0.05)
Arsenic	0.02	0.007
Arsenic (Dissolved)	0.006	0.003 J
Beryllium	ND (0.005)	0.001 J
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.339	-
Chromium (Dissolved)	ND (0.005)	ND (0.01)
Chromium, Hexavalent	-	0.005 J
Cobalt	0.034	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	0.005 J
Iron	79 J	-
Iron (Dissolved)	0.043 J	-
Lead	0.037	0.024
Lead (Dissolved)	ND (0.002)	ND (0.002)
Mercury	ND (0.0002)	-
Mercury (Dissolved)	ND (0.0002)	-
Nickel	0.274	0.542
Nickel (Dissolved)	0.037	0.09
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.01) J	-
Vanadium	0.135	0.049
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Zinc	0.2	0.178 J
Zinc (Dissolved)	ND (0.01)	0.004 J
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	0.004
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	0.009 J
Naphthalene	ND (0.002)/ND (0.01)	0.005 J
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	0.009
Phenol	ND (0.01)	0.11
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)
2-Butanone	R	R
Benzene	0.001	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	8.99

MW-3	04/23/98
SVOAs	
Benzo(a)pyrene	ND (0.001)ND (0.001)
Benzo(b)fluoranthene	ND (0.001)ND (0.001)
Benzo(k)fluoranthene	ND (0.001)ND (0.001)
Chrysene	ND (0.002)ND (0.002)
Dibenz(a,h)anthracene	ND (0.005)ND (0.002)
Fluoranthene	ND (0.001)ND (0.001)
Indeno(1,2,3-cd)pyrene	ND (0.001)ND (0.001)
Naphthalene	0.01/0.011
Phenanthrene	ND (0.001)ND (0.001)

MW-026187	12/19/01
Metals	
Aluminum	0.068 J
Aluminum (Dissolved)	0.036
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.003 J
Arsenic (Dissolved)	0.002 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.005)
Chromium (Dissolved)	ND (0.005)
Chromium, Hexavalent	ND (0.01)
Chromium, Hexavalent (Dissolved)	ND (0.01)
Cyanide (total)	ND (0.01)
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Selenium	ND (0.005)
Selenium (Dissolved)	ND (0.005)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.01)
Zinc (Dissolved)	ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	0.001 J
WQ	
Ammonia	2.05
pH Field	8.18

MW-026188	12/19/01
Metals	
Aluminum	0.088
Aluminum (Dissolved)	0.085
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.003 J
Arsenic (Dissolved)	0.003 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.005)
Chromium (Dissolved)	ND (0.005)
Chromium, Hexavalent	ND (0.01)
Chromium, Hexavalent (Dissolved)	ND (0.01)
Cyanide (total)	ND (0.01)
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Selenium	ND (0.005)
Selenium (Dissolved)	ND (0.005)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.01)
Zinc (Dissolved)	ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	0.0004
WQ	
Ammonia	1.89
pH Field	8.8

MW-02418	11/17/98
Metals	
Aluminum	49.7 J/22 J
Aluminum (Dissolved)	ND (0.05)/ND (0.05)
Antimony	0.054/0.061
Antimony (Dissolved)	ND (0.05)/ND (0.05)
Arsenic	0.03 J/0.014 J
Arsenic (Dissolved)	ND (0.005)/ND (0.005)
Beryllium	ND (0.005)/ND (0.005)
Beryllium (Dissolved)	ND (0.005)/ND (0.005)
Cadmium	0.009/ND (0.004)
Cadmium (Dissolved)	ND (0.004)/ND (0.004)
Chromium	0.198 J/0.087 J
Chromium (Dissolved)	ND (0.005)/ND (0.005)
Cobalt	0.038 J/0.017 J
Cobalt (Dissolved)	ND (0.01)/ND (0.01)
Cyanide (total)	ND (0.01)/ND (0.01)
Iron	370/198
Iron (Dissolved)	19.9/21.5
Lead	2.04 J/0.895 J
Lead (Dissolved)	ND (0.002)/ND (0.002)
Mercury	0.001/ND (0.0002) J
Mercury (Dissolved)	ND (0.0002)/ND (0.0002) J
Nickel	0.823 J/0.259 J
Nickel (Dissolved)	ND (0.02)/ND (0.02)
Selenium	ND (0.005) JND (0.005) J
Selenium (Dissolved)	ND (0.005) JND (0.005) J
Vanadium	0.111 J/0.059 J
Vanadium (Dissolved)	ND (0.01)/ND (0.01)
Zinc	2.33 J/0.808 J
Zinc (Dissolved)	ND (0.01)/ND (0.01)
PCBs	
Total PCBs	ND (0.0005)/ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)/ND (0.01)
Benzo(a)pyrene	ND (0.01)/ND (0.01) J
Benzo(b)fluoranthene	ND (0.01)/ND (0.01) J
Benzo(k)fluoranthene	ND (0.01)/ND (0.01) J
bis(2-Ethylhexyl)phthalate	ND (0.01)/ND (0.01) J
Chrysene	ND (0.01)/ND (0.01) J
Dibenz(a,h)anthracene	ND (0.01)/ND (0.01) J
Fluoranthene	ND (0.01)/ND (0.01) J
Indeno(1,2,3-cd)pyrene	ND (0.01)/ND (0.01) J
Methylphenol (Cresol)	ND (0.01)/ND (0.01)
Naphthalene	ND (0.002) JND (0.01)/ND (0.002) JND (0.01) J
Pentachlorophenol	ND (0.025)/ND (0.025)
Phenanthrene	ND (0.01)/ND (0.01) J
Phenol	ND (0.01)/ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001) JND (0.001) J
1,2-Dichloropropane	ND (0.001) JND (0.001) J
2-Butanone	R/R
Benzene	ND (0.001) JND (0.001) J
cis-1,2-Dichloroethene	ND (0.001) JND (0.001) J
Ethylbenzene	ND (0.001) JND (0.001) J
Trichloroethene	ND (0.001) JND (0.001) J
Vinyl chloride	ND (0.001) JND (0.001) J
Xylene (total)	ND (0.001)ND (0.001)

MW-02417	07/31/00	12/13/01
Metals		
Aluminum	71 J	-
Aluminum (Dissolved)	ND (0.05)	-
Antimony	0.056 J	-
Antimony (Dissolved)	ND (0.05)	-
Arsenic	0.043	-
Arsenic (Dissolved)	ND (0.005)	-
Beryllium	0.004 J	-
Beryllium (Dissolved)	ND (0.005)	-
Cadmium	0.002 J	-
Cadmium (Dissolved)	ND (0.005)	-
Chromium (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	-
Lead	0.979	-
Lead (Dissolved)	ND (0.002)	-
Nickel	0.318	-
Nickel (Dissolved)	0.023	-
Vanadium	0.128	-
Vanadium (Dissolved)	ND (0.01)	-
Zinc	1.49	-
Zinc (Dissolved)	0.034	-
OTHER		
Formaldehyde	ND (0.05)	-
PCBs		
Total PCBs	0.002 J	ND (0.0007)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	-
Benzo(a)pyrene	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	-
Carbazole	ND (0.01)	-
Chrysene	ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)	-
Fluoranthene	ND (0.01)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	-
Methylphenol (Cresol)	ND (0.01)	-
Naphthalene	ND (0.01)	-
Pentachlorophenol	ND (0.025)	-
Phenanthrene	ND (0.01)	-
Phenol	ND (0.01)	-
VOAs		
1,1-Dichloroethene	ND (0.001)	-
1,2-Dichloropropane	ND (0.001)	-
2-Butanone	R	-
Benzene	ND (0.001)	-
cis-1,2-Dichloroethene	ND (0.001)	-
Ethylbenzene	ND (0.001)	-
Trichloroethene	ND (0.001)	-
Vinyl chloride	ND (0.001)	-
Xylene (total)	ND (0.001)	-
WQ		
pH Field	7.87	8.79

MW-00912	12/04/98	07/19/00
Metals		
Aluminum	36.4	28.7
Aluminum (Dissolved)	ND (0.05)	ND (0.05)
Antimony	ND (0.05)	0.035 J
Antimony (Dissolved)	ND (0.05)	ND (0.05)
Arsenic	0.013	0.029 J
Arsenic (Dissolved)	ND (0.005)	ND (0.005)
Beryllium	ND (0.005)	0.001 J
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	0.004 J
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.102	-
Chromium (Dissolved)	ND (0.005)	ND (0.01)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	0.019	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)
Iron	67.8 J	-
Iron (Dissolved)	8.18	-
Lead	0.139	0.179 J
Lead (Dissolved)	ND (0.002)	ND (0.004) J
Mercury	0.0002	-
Mercury (Dissolved)	ND (0.0002)	-
Nickel	0.084	0.143
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	ND (0.006) J	-
Selenium (Dissolved)	ND (0.006) J	-
Vanadium	0.068	0.098
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Zinc	0.198	0.199 J
Zinc (Dissolved)	ND (0.01)	ND (0.01)
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	0.008 J
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)
2-Butanone	R	R
Benzene	ND (0.001)	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	7.5

MW-00909	12/10/98	07/26/00
Metals		
Aluminum	67.8	3.68
Aluminum (Dissolved)	ND (0.05)	ND (0.05)
Antimony	ND (0.05)	ND (0.05)
Antimony (Dissolved)	ND (0.05)	ND (0.05)
Arsenic	0.039	0.006
Arsenic (Dissolved)	0.015	0.002 J
Beryllium	ND (0.005)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.187	-
Chromium (Dissolved)	ND (0.005)	ND (0.01)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	0.042	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	0.007 J
Iron	118 J	-
Iron (Dissolved)	8.58	-
Lead	0.342	0.012
Lead (Dissolved)	ND (0.002)	0.001 J
Mercury	ND (0.0002)	-
Mercury (Dissolved)	ND (0.0002)	-
Nickel	0.186	0.022
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	ND (0.006) J	-
Selenium (Dissolved)	ND (0.006) J	-
Vanadium	0.128	0.006 J
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Zinc	0.328	0.018
Zinc (Dissolved)	ND (0.01)	0.002 J
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	0.008 J
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)
2-Butanone	R/R	R
Benzene	ND (0.001)	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	8.98

MW-10909	12/10/98	07/24/00
Metals		
Aluminum	1,567/1.23	4,845.28
Aluminum (Dissolved)	ND (0.05)/ND (0.05)	ND (0.05)/ND (0.05)
Antimony	ND (0.05)/ND (0.05)	ND (0.05)/ND (0.05)
Antimony (Dissolved)	ND (0.05)/ND (0.05)	ND (0.05)/ND (0.05)
Arsenic	0.039/0.005	0.007/0.007
Arsenic (Dissolved)	ND (0.005)/ND (0.005)	0.004 J/0.004 J
Beryllium	ND (0.005)/ND (0.005)	ND (0.005)/ND (0.005)
Beryllium (Dissolved)	ND (0.005)/ND (0.005)	ND (0.005)/ND (0.005)
Cadmium	ND (0.004)/ND (0.004)	ND (0.005)/ND (0.005)
Cadmium (Dissolved)	ND (0.004)/ND (0.004)	ND (0.005)/ND (0.005)
Chromium	ND (0.005)/ND (0.005)	-
Chromium (Dissolved)	ND (0.005)/ND (0.005)	ND (0.01)/ND (0.01)
Chromium, Hexavalent	-	ND (0.01)/ND (0.01)
Cobalt	ND (0.01)/ND (0.01)	-
Cobalt (Dissolved)	ND (0.01)/ND (0.01)	-
Cyanide (total)	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Iron	2,83 J/2.16 J	-
Iron (Dissolved)	0.099/0.116	-
Lead	ND (0.002)/ND (0.002)	0.008/0.004
Lead (Dissolved)	ND (0.002)/ND (0.002)	ND (0.002)/ND (0.002)
Mercury	ND (0.0002)/ND (0.0002)	-
Mercury (Dissolved)	ND (0.0002)/ND (0.0002)	-
Nickel	ND (0.02)/ND (0.02)	ND (0.02)/0.023
Nickel (Dissolved)	ND (0.02)/ND (0.02)	ND (0.02)/ND (0.02)
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) JND (0.005) J	-
Vanadium	ND (0.01)/ND (0.01)	0.013/0.012
Vanadium (Dissolved)	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Zinc	ND (0.01)/ND (0.01)	0.024/0.02
Zinc (Dissolved)	ND (0.01)/ND (0.01)	0.003 JND (0.01)
OTHER		
Formaldehyde	-	ND (0.05)/ND (0.05)
PCBs		
Total PCBs	ND (0.0002)/ND (0.0002)	ND (0.0002)/ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Benzo(a)pyrene	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Benzo(b)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Benzo(k)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Carbazole	-	ND (0.01)/ND (0.01)
Chrysene	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Methylphenol (Cresol)	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Naphthalene	ND (0.002) JND (0.01)/ND (0.002) JND (0.01)	ND (0.025)/ND (0.025)
Pentachlorophenol	ND (0.025)/ND (0.025)	ND (0.01)/ND (0.01)
Phenanthrene	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Phenol	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001)/ND (0.001)	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)/ND (0.001)	ND (0.001)/ND (0.001)
2-Butanone	R/R	R/R
Benzene	0.001/0.001	ND (0.001)/ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)/ND (0.001)	ND (0.001)/ND (0.001)
Ethylbenzene	ND (0.001)/ND (0.001)	0.0001/0.0002
Trichloroethene	ND (0.001)/ND (0.001)	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001)/ND (0.001)	ND (0.001)/ND (0.001)
Xylene (total)	ND (0.001)/ND (0.001)	0.0003/ND (0.001)
WQ		
pH Field	-	7.17/7.77

MW-1901	12/11/98	07/27/00
Metals		
Aluminum	34.8	2,32.05
Aluminum (Dissolved)	ND (0.05)	ND (0.05)/0.033 J
Antimony	ND (0.05)	ND (0.05)/ND (0.05)
Antimony (Dissolved)

Chemical Name	Commercial and Industrial, 9 & V Drinking Water A	Groundwater Volatilization to Indoor Air B	Groundwater Contact C	Groundwater Surface Water Interface D
Metals				
Aluminum	4.1		64000	
Aluminum (Dissolved)	4.1		64000	
Antimony	0.006		68	0.13
Antimony (Dissolved)	0.006		68	0.13
Arsenic	0.05		4.3	0.15
Arsenic (Dissolved)	0.05		4.3	0.15
Beryllium	0.004		290	1.2
Beryllium (Dissolved)	0.004		290	1.2
Cadmium	0.005		190	0.13
Cadmium (Dissolved)	0.005		190	0.13
Chromium	0.1		460	0.011
Chromium (Dissolved)	0.1		460	0.011
Chromium, Hexavalent	0.1		460	0.011
Chromium, Hexavalent (Dissolved)	0.1		460	0.011
Cobalt	0.1		2400	0.1
Cobalt (Dissolved)	0.1		2400	0.1
Cyanide (total)	0.2		57	0.0052
Iron	5.6		58000	
Iron (Dissolved)	5.6		58000	
Lead	0.004			0.19
Lead (Dissolved)	0.004			0.19
Mercury	0.002	0.056	0.056	0.0000013
Mercury (Dissolved)	0.002	0.056	0.056	0.0000013
Nickel	0.1		74000	210
Nickel (Dissolved)	0.1		74000	210
Selenium	0.05		970	0.005
Selenium (Dissolved)	0.05		970	0.005
Vanadium	0.062		970	0.012
Vanadium (Dissolved)	0.062		970	0.012
Zinc	5		110000	22
Zinc (Dissolved)	5		110000	22
Polychlorinated Biphenyls				
Total PCBs	0.0005	0.045	0.0033	0.0002
Semi-Volatile Organic Compounds				
2,4-Dimethylphenol	1		520	0.38
Benzo(a)pyrene	0.005		0.002	
Benzo(b)fluoranthene	0.002		0.002	
Benzo(k)fluoranthene	0.005		0.005	
bis(2-Ethylhexyl)phthalate	0.006		0.32	0.032
Carbazole	0.35		7.4	0.01
Chrysene	0.005		0.005	
Dibenz(a,h)anthracene	0.002		0.002	
Fluoranthene	0.21	0.21	0.21	0.005
Indeno(1,2,3-cd)pyrene	0.002		0.002	
Methylphenol (Cresol)	1		810	0.071
Naphthalene	1.5	31	31	0.013
Pentachlorophenol	0.001		0.2	0.0028
Phenanthrene	0.15	1	1	0.005
Phenol	13		29000	0.21
Volatile Organic Compounds				
1,1-Dichloroethene	0.007	1.3	11	0.065
1,2-Dichloropropane	0.005	36	16	0.29
2-Butanone	38	240000	240000	2.2
Benzene	0.005	35	11	0.2
cis-1,2-Dichloroethene	0.07	210	200	0.62
Ethylbenzene	0.7	170	170	0.018
Trichloroethene	0.005	97	22	0.2
Vinyl chloride	0.002	13	1	0.015
Xylene (total)	10	190	190	0.035
General Chemistry				
Formaldehyde	3.8	360	30000	0.12
Ammonia	10	7100		0.736
pH Field	8.5			9

MW-01827	12/08/1998	7/18/2000	12/13/2001
Metals			
Aluminum	18.3	27.3	-
Aluminum (Dissolved)	ND (0.05)	ND (0.05)	-
Antimony	ND (0.05)	0.02 J	-
Antimony (Dissolved)	ND (0.05)	ND (0.05)	-
Arsenic	0.029	0.052	-
Arsenic (Dissolved)	0.011	0.029	-
Beryllium	ND (0.004)	0.002 J	-
Beryllium (Dissolved)	ND (0.004)	ND (0.005)	-
Cadmium	ND (0.004)	ND (0.005)	-
Cadmium (Dissolved)	ND (0.004)	ND (0.005)	-
Chromium	0.67 (D)	-	-
Chromium (Dissolved)	ND (0.008)	ND (0.01)	-
Chromium, Hexavalent	-	ND (0.01)	-
Cobalt	0.022	-	-
Cobalt (Dissolved)	ND (0.01)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)	-
Iron	89.2 J	58.4	0.2 J/0.4 J
Iron (Dissolved)	5.15	2400	-
Lead	0.038	0.079 J	-
Lead (Dissolved)	ND (0.002)	ND (0.004) J	-
Mercury	0.0003 (D)	-	-
Mercury (Dissolved)	ND (0.0002)	-	-
Nickel	0.078	0.081	-
Nickel (Dissolved)	ND (0.02)	ND (0.02)	-
Selenium	ND (0.005) J	-	-
Selenium (Dissolved)	ND (0.005) J	-	-
Vanadium	0.04 (D)	0.068 (D)	-
Vanadium (Dissolved)	ND (0.01)	ND (0.01)	-
Zinc	0.165	0.279 J	-
Zinc (Dissolved)	ND (0.01)	0.059 J	-
OTHER			
Formaldehyde	-	ND (0.05)	-
PCBs			
Total PCBs	ND (0.0002)	ND (0.0002)	-
SVOAs			
2,4-Dimethylphenol	ND (0.01)	ND (0.01)	-
Benzo(a)pyrene	ND (0.01)	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	-
Carbazole	-	ND (0.01)	-
Chrysene	ND (0.01)	ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	-
Fluoranthene	ND (0.01)	ND (0.01)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	-
Methylphenol (Cresol)	ND (0.01)	ND (0.01)	-
Naphthalene	ND (0.002)ND (0.01)	ND (0.01)	-
Pentachlorophenol	ND (0.028)	ND (0.028)	-
Phenanthrene	ND (0.01)	ND (0.01)	-
Phenol	ND (0.01)	ND (0.01)	-
VOAs			
1,1-Dichloroethene	ND (0.001)	ND (0.001)	-
1,2-Dichloropropane	ND (0.001)	ND (0.001)	-
2-Butanone	R	R	-
Benzene	ND (0.001)	ND (0.001)	-
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)	-
Ethylbenzene	ND (0.001)	ND (0.001)	-
Trichloroethene	ND (0.001)	ND (0.001)	-
Vinyl chloride	ND (0.001)	ND (0.001)	-
Xylene (total)	ND (0.001)	ND (0.001)	-
WQ			
pH Field	-	7.02	6.17/6.17

MW-02432	12/08/1998	7/18/2000	12/13/2001
Metals			
Aluminum	41.6	0.833	-
Aluminum (Dissolved)	ND (0.05)	ND (0.05)	-
Antimony	ND (0.05)	ND (0.05)	-
Antimony (Dissolved)	ND (0.05)	ND (0.05)	-
Arsenic	0.027	0.02 J	-
Arsenic (Dissolved)	0.008	0.012 J	-
Beryllium	ND (0.004)	ND (0.005)	-
Beryllium (Dissolved)	ND (0.004)	ND (0.005)	-
Cadmium	ND (0.004)	ND (0.005)	-
Cadmium (Dissolved)	ND (0.004)	ND (0.005)	-
Chromium	0.198 (D)	-	-
Chromium (Dissolved)	ND (0.008)	ND (0.01)	-
Chromium, Hexavalent	-	ND (0.01)	-
Cobalt	0.009	-	-
Cobalt (Dissolved)	ND (0.01)	-	-
Cyanide (total)	ND (0.01)	ND (0.01)	-
Fluoride	-	-	0.3 J
Iron	89.8 J	-	-
Iron (Dissolved)	0.197	-	-
Lead	0.11	0.004 J	-
Lead (Dissolved)	ND (0.002)	0.005 J	-
Mercury	0.001 (D)	-	-
Mercury (Dissolved)	ND (0.0002)	-	-
Nickel	0.105	ND (0.02)	-
Nickel (Dissolved)	ND (0.02)	ND (0.02)	-
Selenium	ND (0.005) J	-	-
Selenium (Dissolved)	ND (0.005) J	-	-
Vanadium	0.083 (D)	0.006 J	-
Vanadium (Dissolved)	ND (0.01)	ND (0.01)	-
Zinc	0.276	0.009 J	-
Zinc (Dissolved)	ND (0.01)	0.009 J	-
OTHER			
Formaldehyde	-	ND (0.05)	-
PCBs			
Total PCBs	ND (0.0002)	ND (0.0002)	-
SVOAs			
2,4-Dimethylphenol	ND (0.01)	ND (0.01)	-
Benzo(a)pyrene	ND (0.01)	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	-
Carbazole	-	ND (0.01)	-
Chrysene	ND (0.01)	ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	-
Fluoranthene	ND (0.01)	ND (0.01)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	-
Methylphenol (Cresol)	ND (0.01)	ND (0.01)	-
Naphthalene	ND (0.002) JND (0.01)	ND (0.01)	-
Pentachlorophenol	ND (0.028)	ND (0.028)	-
Phenanthrene	ND (0.01)	ND (0.01)	-
Phenol	ND (0.01)	ND (0.01)	-
VOAs			
1,1-Dichloroethene	ND (0.001)	ND (0.001)	-
1,2-Dichloropropane	ND (0.001)	ND (0.001)	-
2-Butanone	R	R	-
Benzene	ND (0.001)	ND (0.001)	-
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)	-
Ethylbenzene	ND (0.001)	ND (0.001)	-
Trichloroethene	ND (0.001)	ND (0.001)	-
Vinyl chloride	ND (0.001)	ND (0.001)	-
Xylene (total)	ND (0.001)	ND (0.001)	-
WQ			
pH Field	-	7.19	6.31

MW-03240	11/18/1998	7/19/2000	12/13/2001
Metals			
Aluminum	1291161	122	-
Aluminum (Dissolved)	0.72 J/0.389 J	2.91	-
Antimony	0.074/0.07	ND (0.05)	-
Antimony (Dissolved)	ND (0.05)/ND (0.05)	0.028 J	-
Arsenic	0.045/0.054	0.103	-
Arsenic (Dissolved)	ND (0.005)/ND (0.005)	ND (0.025)	-
Beryllium	0.025/0.026	0.02 J	-
Beryllium (Dissolved)	ND (0.002)/ND (0.005)	ND (0.005)	-
Cadmium	ND (0.004)/0.005	ND (0.025)	-
Cadmium (Dissolved)	ND (0.004)/ND (0.004)	0.004 J	-
Chromium	0.349 (D)/0.296 (D)	-	-
Chromium (Dissolved)	ND (0.005)/ND (0.008)	ND (0.01)	-
Chromium, Hexavalent	-	ND (0.01)	-
Cobalt	0.274 (D)/0.369 (D)	-	-
Cobalt (Dissolved)	ND (0.01)/ND (0.01)	-	-
Cyanide (total)	ND (0.01)/ND (0.01)	0.008	-
Fluoride	-	-	0.3 J
Iron	414/474	-	-
Iron (Dissolved)	103/92.8	-	-
Lead	0.102/0.13	0.16 J (D)	-
Lead (Dissolved)	ND (0.002)/ND (0.002)	0.008 J	-
Mercury	0.001 (D)/0.001 (D)	-	-
Mercury (Dissolved)	ND (0.0002)/ND (0.0002)	-	-
Nickel	0.082/0.107	ND (0.1)	-
Nickel (Dissolved)	0.021/0.023	0.048	-
Selenium	ND (0.005) JND (0.005) J	-	-
Selenium (Dissolved)	ND (0.005) JND (0.005) J	-	-
Vanadium	0.088 (D)/0.117 (D)	0.048 J (D)	-
Vanadium (Dissolved)	ND (0.01)/ND (0.01)	ND (0.01)	-
Zinc	2.72/3.14	0.366 J	-
Zinc (Dissolved)	0.104/0.087	0.189 J	-
OTHER			
Formaldehyde	-	ND (0.05)	-
PCBs			
Total PCBs	ND (0.0002)/ND (0.0002)	ND (0.0002)	-
SVOAs			
2,4-Dimethylphenol	ND (0.01)/ND (0.01)	ND (0.01)	-
Benzo(a)pyrene	ND (0.01)/ND (0.01)	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)/ND (0.01)	ND (0.01)	-
Carbazole	-	ND (0.01)	-
Chrysene	ND (0.01)/ND (0.01)	ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)/ND (0.01)	ND (0.01)	-
Fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)/ND (0.01)	ND (0.01)	-
Methylphenol (Cresol)	ND (0.002) JND (0.01)/ND (0.01) JND (0.01)	ND (0.01)	-
Naphthalene	ND (0.002) JND (0.01)/ND (0.01) JND (0.01)	ND (0.01)	-
Pentachlorophenol	ND (0.028)/ND (0.028)	ND (0.028)	-
Phenanthrene	ND (0.01)/ND (0.01)	ND (0.01)	-
Phenol	ND (0.01)/ND (0.01)	0.002	-
VOAs			
1,1-Dichloroethene	ND (0.001) JND (0.001) J	ND (0.001)	-
1,2-Dichloropropane	ND (0.001) JND (0.001) J	ND (0.001)	-
2-Butanone	R/R	R	-
Benzene	ND (0.001) JND (0.001) J	ND (0.001)	-
cis-1,2-Dichloroethene	ND (0.001) JND (0.001) J	ND (0.001)	-
Ethylbenzene	ND (0.001) JND (0.001) J	ND (0.001)	-
Trichloroethene	ND (0.001) JND (0.001) J	0.002	-
Vinyl chloride	ND (0.001) JND (0.001) J	ND (0.001)	-
Xylene (total)	ND (0.001)/ND (0.001)	ND (0.001)	-
WQ			
pH Field	-	4.34	3.92

MW-03746	12/07/1998	8/08/2000	12/13/2001
Metals			
Aluminum	18.8	17.8 J	-
Aluminum (Dissolved)	ND (0.05)	ND (0.05)	-
Antimony	ND (0.05)	0.02 J	-
Antimony (Dissolved)	ND (0.05)	ND (0.05) J	-
Arsenic	0.028	0.023	-
Arsenic (Dissolved)	0.028	0.012 J	-
Beryllium	ND (0.002)	0.001 J	-
Beryllium (Dissolved)	ND (0.005)	ND (0.005)	-
Cadmium	ND (0.004)	ND (0.005)	-
Cadmium (Dissolved)	ND (0.004)	ND (0.005)	-
Chromium	0.042 (D)	-	-
Chromium (Dissolved)	ND (0.008)	ND (0.01)	-
Chromium, Hexavalent	-	ND (0.01)	-
Cobalt	0.017	-	-
Cobalt (Dissolved)	ND (0.01)	-	-
Cyanide (total)	ND (0.01)	0.008 J	-
Fluoride	-	-	0.6 J
Iron	97.1 J	-	-
Iron (Dissolved)	37.2	-	-
Lead	0.053	0.042	-
Lead (Dissolved)	ND (0.002)	ND (0.004)	-
Mercury	ND (0.0002)	-	-
Mercury (Dissolved)	ND (0.0002)	-	-
Nickel	0.054	0.033	-
Nickel (Dissolved)	ND (0.02)	ND (0.02)	-
Selenium	ND (0.005) J	-	-
Selenium (Dissolved)	ND (0.005) J	-	-
Vanadium	0.044 (D)	0.038 (D)	-
Vanadium (Dissolved)	ND (0.01)	ND (0.01)	-
Zinc	0.126	0.116	-
Zinc (Dissolved)	ND (0.01)	ND (0.01)	-
OTHER			
Formaldehyde	-	ND (0.05)	-
PCBs			
Total PCBs	ND (0.0002)	ND (0.0002)	-
SVOAs			
2,4-Dimethylphenol	ND (0.01)	ND (0.01)	-
Benzo(a)pyrene	ND (0.01)	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	-
Carbazole	-	ND (0.01)	-
Chrysene	ND (0.01)	ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	-
Fluoranthene	ND (0.01)	ND (0.01)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	-
Methylphenol (Cresol)	ND (0.01)	ND (0.01)	-
Naphthalene	ND (0.002) JND (0.01)	ND (0.01)	-
Pentachlorophenol	ND (0.028)	ND (0.028)	-
Phenanthrene	ND (0.01)	ND (0.01)	-
Phenol	ND (0.01)	0.004	-
VOAs			
1,1-Dichloroethene	ND (0.001)	ND (0.001)	-
1,2-Dichloropropane	ND (0.001)	ND (0.001)	-
2-Butanone	R	R	-
Benzene	ND (0.001)	ND (0.001)	-
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)	-
Ethylbenzene	ND (0.001)	ND (0.001)	-
Trichloroethene	ND (0.001)	ND (0.001)	-
Vinyl chloride	ND (0.001)	ND (0.001)	-
Xylene (total)	ND (0.001)	ND (0.001)	-
WQ			
pH Field	-	7.76	6.43

MW-01119	12/04/1998	7/28/2000
Metals		
Aluminum	24.5	29/23.5
Aluminum (Dissolved)	ND (0.05)	0.067/ND (0.05)
Antimony	ND (0.05)	0.029 J/0.02 J
Antimony (Dissolved)	ND (0.05)	ND (0.05)/ND (0.05)
Arsenic	0.012	0.014/0.012
Arsenic (Dissolved)	ND (0.005)	0.002 J/0.002 J
Beryllium	ND (0.005)	0.001 J/0.001 J
Beryllium (Dissolved)	ND (0.005)	ND (0.005)/ND (0.005)
Cadmium	ND (0.004)	ND (0.005)/ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)/ND (0.005)
Chromium	0.185	-
Chromium (Dissolved)	ND (0.005)	ND (0.01)/ND (0.01)
Chromium, Hexavalent	-	ND (0.01)/ND (0.01)
Cobalt	0.011	-
Cobalt (Dissolved)	ND (0.01)	ND (0.01)/ND (0.01)
Cyanide (total)	ND (0.01)	ND (0.01)/ND (0.01)
Iron	79.9 J	-
Iron (Dissolved)	7.39	-
Lead	2.88	3.4/3.15
Lead (Dissolved)	0.002	0.013/0.008
Mercury	0.0003	-
Mercury (Dissolved)	ND (0.0002)	-
Nickel	0.15	0.17/0.157
Nickel (Dissolved)	ND (0.02)	ND (0.02)/ND (0.02)
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	0.032	0.034/0.03
Vanadium (Dissolved)	ND (0.01)	ND (0.01)/ND (0.01)
Zinc	0.311	0.398/0.36
Zinc (Dissolved)	ND (0.01)	ND (0.01)/ND (0.01)
OTHER		
Formaldehyde	-	0.088/0.089
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)/ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)/ND (0.01)
Benzo(a)pyrene	ND (0.01)	0.007 (J)/0.006 (J)
Benzo(b)fluoranthene	ND (0.01)	0.008 (J)/0.006 (J)
Benzo(k)fluoranthene	ND (0.01)	0.008 (J)/0.006 (J)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)/ND (0.01)
Carbazole	-	ND (0.01)/ND (0.01)
Chrysene	ND (0.01)	0.008 (J)/0.005 (J)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)/ND (0.01)
Fluoranthene	ND (0.01)	0.014 J/0.011 J
Indeno(1,2,3-cd)pyrene	ND (0.01)	0.007 (J)/0.006 (J)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)/ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)/ND (0.002)/ND (0.01)
Pentachlorophenol	ND (0.028)	ND (0.028)/ND (0.028)
Phenanthrene	ND (0.01)	ND (0.01)/ND (0.01)
Phenol	ND (0.01)	ND (0.01)/ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)/ND (0.001)
2-Butanone	R/R	R/R
Benzene	ND (0.001)	ND (0.001)/ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)/ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)/ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)/ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)/ND (0.001)
WQ		
pH Field	-	8.99

MW-01223	7/31/2000
Metals	
Aluminum	12.9 J
Aluminum (Dissolved)	ND (0.05)
Antimony	0.024 J
Antimony (Dissolved)	ND (0.05)
Arsenic	0.023 J
Arsenic (Dissolved)	0.004 J
Beryllium	0.001 J
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Chromium, Hexavalent	ND (0.01)
Cobalt	0.022
Cobalt (Dissolved)	ND (0.01)
Cyanide (total)	ND (0.01)
Iron	162 J
Iron (Dissolved)	5.57
Lead	1.4
Lead (Dissolved)	ND (0.002)
Mercury	0.001
Mercury (Dissolved)	ND (0.0002)
Nickel	0.388 J
Nickel (Dissolved)	ND (0.02)
Selenium	ND (0.005) J
Selenium (Dissolved)	ND (0.005) J
Vanadium	0.08
Vanadium (Dissolved)	ND (0.01)
Zinc	0.36
Zinc (Dissolved)	ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.002) JND (0.01)
Pentachlorophenol	ND (0.028)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WQ	
pH Field	6.67

MW-02320	12/08/1998	7/19/2000
Metals		
Aluminum	37.7 J	4.57/4.53
Aluminum (Dissolved)	ND (0.05)	ND (0.05)/ND (0.05)
Antimony	ND (0.05)	ND (0.05)/ND (0.05)
Antimony (Dissolved)	ND (0.05)	ND (0.05)/ND (0.05)
Arsenic	0.034	0.011 J/0.011 J
Arsenic (Dissolved)	ND (0.005)	ND (0.025)/ND (0.025)
Beryllium	ND (0.005)	ND (0.005)/ND (0.005)
Beryllium (Dissolved)	ND (0.005)	ND (0.005)/ND (0.005)
Cadmium	ND (0.004)	ND (0.005)/ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)/ND (0.005)
Chromium	0.421 J	-
Chromium (Dissolved)	ND (0.008)	ND (0.01)/ND (0.01)
Chromium, Hexavalent	-	ND (0.01)/ND (0.01)
Cobalt	0.022	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)/ND (0.01)
Iron	162 J	-
Iron (Dissolved)	5.57	-
Lead	1.4	0.228 J/0.225 J
Lead (Dissolved)	ND (0.002)	ND (0.004) JND (0.004) J
Mercury	0.001	-
Mercury (Dissolved)	ND (0.0002)	-
Nickel	0.388 J	0.028/0.034
Nickel (Dissolved)	ND (0.02)	ND (0.02)/ND (0.02)
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	0.08	0.01 J/0.01 J
Vanadium (Dissolved)	ND (0.01)	ND (0.01)/ND (0.01)
Zinc	0.36	0.037 J/0.037 J
Zinc (Dissolved)	ND (0.01)	ND (0.01)/0.002 J
OTHER		
Formaldehyde	-	ND (0.05)/ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)/ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)/ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)/ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)/ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)/ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)/ND (0.01)
Carbazole	-	0.014/0.001
Chrysene	ND (0.01)	ND (0.01)/ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)/ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)/ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)/ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)/ND (0.01)
Naphthalene	0.004 J/0.018	0.018/0.011
Pentachlorophenol	ND (0.028)	ND (0.028)/ND (0.028)
Phenanthrene	ND (0.01)	0.004/0.003
Phenol	ND (0.01)	0.003/0.002
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)/ND (0.001)
2-Butanone	R	R/R
Benzene	ND (0.001)	ND (0.001)/ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)/ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)/ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)/ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)/ND (0.001)
WQ		
pH Field	-	7.34/7.34

MW-02228	12/08/1998	7/18/2000	12/13/2001
Metals			
Aluminum	68.9 J	28.2	-
Aluminum (Dissolved)	ND (0.05)	ND (0.05)	-
Antimony	ND (0.05)	0.029 J	-
Antimony (Dissolved)	ND (0.05)	0.022 J	-
Arsenic	0.038	0.025 J	-
Arsenic (Dissolved)	ND (0.005)	ND (0.025)	-
Beryllium	ND (0.005)	0.001 J	-
Beryllium (Dissolved)	ND (0.005)	ND (0.005)	-
Cadmium	ND (0.004)	ND (0.005)	-
Cadmium (Dissolved)	ND (0.004)	ND (0.005)	-
Chromium	0.24 J	-	-
Chromium (Dissolved)	ND (0.009)	ND (0.01)	-
Chromium, Hexavalent	-	ND (0.01)	-
Cobalt	0.031	-	-
Cobalt (Dissolved)	ND (0.01)	-	-
Cyanide (total)	ND (0.01)	ND (0.01)	-
Fluoride	-	-	0.7 J
Iron	222 J	-	-
Iron (Dissolved)	3.38	-	-
Lead	2.1	1.28 J	-
Lead (Dissolved)	ND (0.002)	ND (0.004) J	-
Mercury	0.001	-	-
Mercury (Dissolved)	ND (0.0002)	-	-
Nickel	0.339 J	0.167	-
Nickel (Dissolved)	ND (0.02)	ND (0.02)	-
Selenium	ND (0.005) J	-	-
Selenium (Dissolved)	ND (0.005) J	-	-
Vanadium	0.096	0.063	-
Vanadium (Dissolved)	ND (0.01)	ND (0.01)	-
Zinc	0.595	0.365 J	-
Zinc (Dissolved)	ND (0.01)	ND (0.01)	-
OTHER			
Formaldehyde	-	ND (0.05)	-
PCBs			
Total PCBs	ND (0.0002)	ND (0.0002)	-
SVOAs			
2,4-Dimethylphenol	ND (0.01)	ND (0.01)	-
Benzo(a)pyrene	ND (0.01)	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	-
Carbazole	ND (0.01)	ND (0.01)	-
Chrysene	ND (0.01)	ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	-
Fluoranthene	ND (0.01)	ND (0.01)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	-
Methylphenol (Cresol)	ND (0.01)	0.003	-
Naphthalene	ND (0.002)ND (0.01)	0.002	-
Pentachlorophenol	ND (0.028)	ND (0.028)	-
Phenanthrene	ND (0.01)	0.001	-
Phenol	ND (0.01)	0.001	-
VOAs			
1,1-Dichloroethene	ND (0.001)	ND (0.001)	-
1,2-Dichloropropane	ND (0.001)	ND (0.001)	-
2-Butanone	R	R	-
Benzene	ND (0.001)	ND (0.001)	-
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)	-
Ethylbenzene	ND (0.001)	ND (0.001)	-
Trichloroethene	ND (0.001)	ND (0.001)	-
Vinyl chloride	ND (0.001)	ND (0.001)	-
Xylene (total)	ND (0.001)	ND (0.001)	-
WQ			
pH Field	-	7.34	7.04

MW-03423	7/20/2000
Metals	
Aluminum	104
Aluminum (Dissolved)	0.049 J
Antimony	0.023 J
Antimony (Dissolved)	ND (0.05)
Arsenic	0.036
Arsenic (Dissolved)	0.013 J
Beryllium	0.005 J
Beryllium (Dissolved)	ND (0.005)
Cadmium	0.009
Cadmium (Dissolved)	ND (0.005)
Chromium (Dissolved)	ND (0.01)
Chromium, Hexavalent	ND (0.01)
C

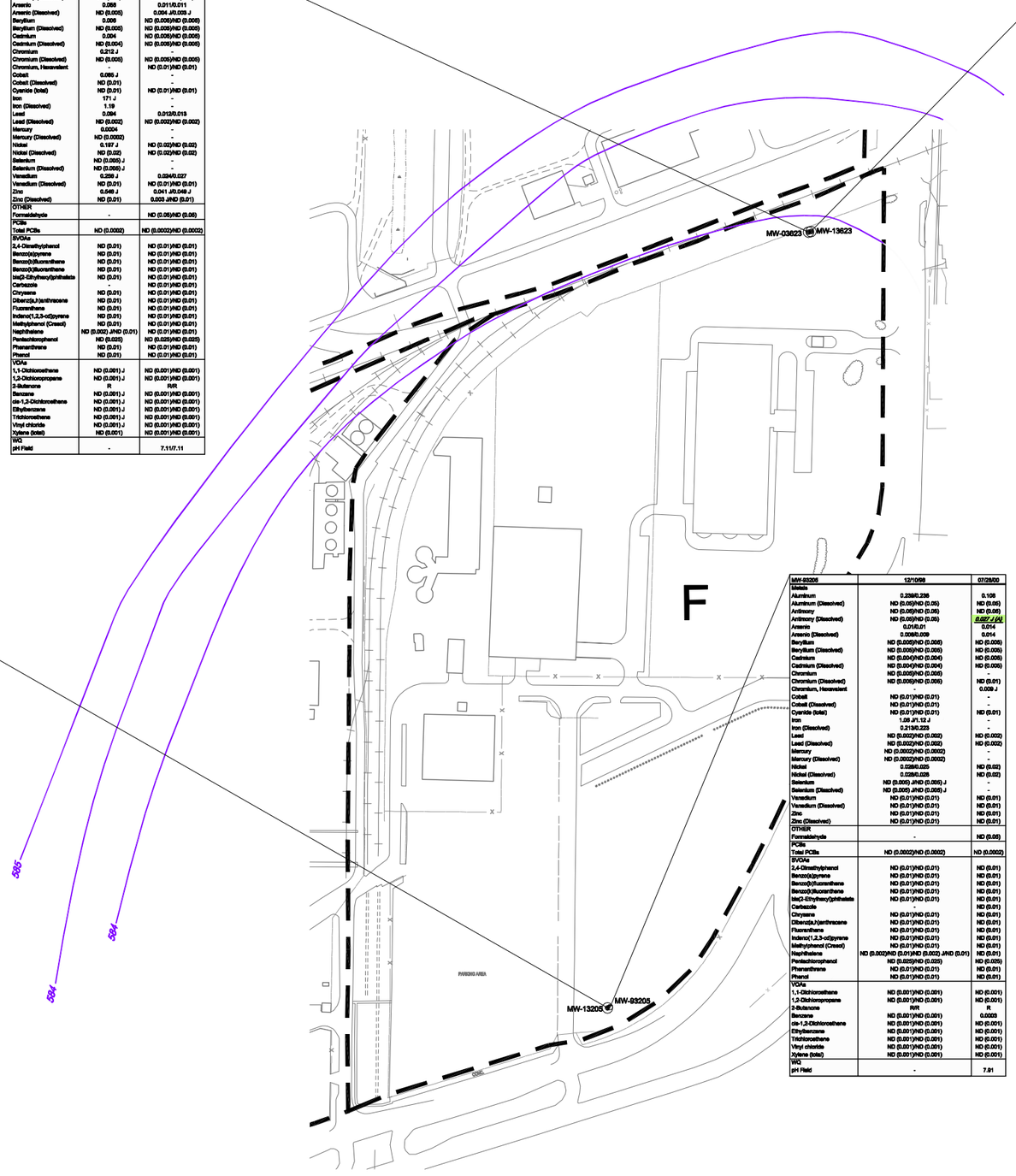
Chemical Name	Commercial and Industrial, tt & IV Drinking Water A	Groundwater Volatilization to Indoor Air B	Groundwater Contact C	Groundwater Surface Water Interface D
Metals				
Aluminum	4.1		64000	
Aluminum (Dissolved)	4.1		64000	
Antimony	0.006		68	0.13
Antimony (Dissolved)	0.006		68	0.13
Arsenic	0.05		4.3	0.15
Arsenic (Dissolved)	0.05		4.3	0.15
Beryllium	0.004		290	1.2
Beryllium (Dissolved)	0.004		290	1.2
Cadmium	0.005		190	0.13
Cadmium (Dissolved)	0.005		190	0.13
Chromium	0.1		460	0.011
Chromium (Dissolved)	0.1		460	0.011
Chromium, Hexavalent	0.1		460	0.011
Chromium, Hexavalent (Dissolved)	0.1		460	0.011
Cobalt	0.1		2400	0.1
Cobalt (Dissolved)	0.1		2400	0.1
Cyanide (total)	0.2		57	0.0052
Iron	5.6		58000	
Iron (Dissolved)	5.6		58000	
Lead	0.004			0.19
Lead (Dissolved)	0.004			0.19
Mercury	0.002	0.056	0.056	0.0000013
Mercury (Dissolved)	0.002	0.056	0.056	0.0000013
Nickel	0.1		74000	210
Nickel (Dissolved)	0.1		74000	210
Selenium	0.05		970	0.005
Selenium (Dissolved)	0.05		970	0.005
Vanadium	0.062		970	0.012
Vanadium (Dissolved)	0.062		970	0.012
Zinc	5		110000	22
Zinc (Dissolved)	5		110000	22
Polychlorinated Biphenyls				
Total PCBs	0.0005	0.045	0.0033	0.0002
Semi-Volatile Organic Compounds				
2,4-Dimethylphenol	1		520	0.38
Benzo(a)pyrene	0.005		0.002	
Benzo(b)fluoranthene	0.002		0.002	
Benzo(k)fluoranthene	0.005		0.005	
bis(2-Ethylhexyl)phthalate	0.006		0.32	0.032
Carbazole	0.35		7.4	0.01
Chrysene	0.005		0.005	
Dibenz(a,h)anthracene	0.002		0.002	
Fluoranthene	0.21	0.21	0.21	0.005
Indeno(1,2,3-cd)pyrene	0.002		0.002	
Methylphenol (Cresol)	1		810	0.071
Naphthalene	1.5	31	31	0.013
Pentachlorophenol	0.001		0.2	0.0028
Phenanthrene	0.15	1	1	0.005
Phenol	13		29000	0.21
Volatile Organic Compounds				
1,1-Dichloroethene	0.007	1.3	11	0.065
1,2-Dichloropropane	0.005	36	16	0.29
2-Butanone	38	240000	240000	2.2
Benzene	0.005	35	11	0.2
cis-1,2-Dichloroethene	0.07	210	200	0.62
Ethylbenzene	0.7	170	170	0.018
Trichloroethene	0.005	97	22	0.2
Vinyl chloride	0.002	13	1	0.015
Xylene (total)	10	190	190	0.035
General Chemistry				
Formaldehyde	3.8	360	30000	0.12
Ammonia	10	7100		0.736
pH Field	8.5			9

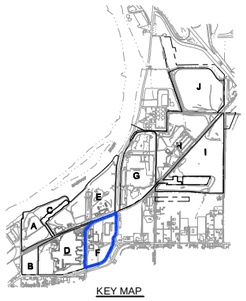
MW-03623	11/19/96	07/11/00
Metals		
Aluminum	119 J	0.03/0.13
Aluminum (Dissolved)	ND (0.06)	ND (0.05)/ND (0.06)
Antimony	ND (0.06)	ND (0.06)/0.021 J
Antimony (Dissolved)	ND (0.06)	0.025 J/ND (0.06)
Arsenic	0.059	0.011/0.011
Arsenic (Dissolved)	ND (0.005)	0.004 J/0.009 J
Beryllium	0.009	ND (0.005)/ND (0.005)
Beryllium (Dissolved)	ND (0.005)	ND (0.005)/ND (0.005)
Cadmium	0.004	ND (0.005)/ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)/ND (0.005)
Chromium	0.212 J	-
Chromium (Dissolved)	ND (0.005)	ND (0.005)/ND (0.005)
Chromium, Hexavalent	-	ND (0.01)/ND (0.01)
Cobalt	0.085 J	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)/ND (0.01)
Iron	171 J	-
Iron (Dissolved)	1.19	-
Lead	0.094	0.12/0.018
Lead (Dissolved)	ND (0.002)	ND (0.002)/ND (0.002)
Mercury	0.0004	-
Mercury (Dissolved)	ND (0.0002)	-
Nickel	0.197 J	ND (0.02)/ND (0.02)
Nickel (Dissolved)	ND (0.02)	ND (0.02)/ND (0.02)
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	0.259 J	0.28/0.027
Vanadium (Dissolved)	ND (0.01)	ND (0.01)/ND (0.01)
Zinc	0.549 J	0.041 J/0.049 J
Zinc (Dissolved)	ND (0.01)	0.003 J/ND (0.01)
OTHER		
Formaldehyde	-	ND (0.05)/ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)/ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)/ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)/ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)/ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)/ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)/ND (0.01)
Carbazole	-	ND (0.01)/ND (0.01)
Chrysene	ND (0.01)	ND (0.01)/ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)/ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)/ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)/ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)/ND (0.01)
Naphthalene	ND (0.002) JND (0.01)	ND (0.01)/ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)/ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)/ND (0.01)
Phenol	ND (0.01)	ND (0.01)/ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001) J	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001) J	ND (0.001)/ND (0.001)
2-Butanone	R	R/R
Benzene	ND (0.001) J	ND (0.001)/ND (0.001)
cis-1,2-Dichloroethene	ND (0.001) J	ND (0.001)/ND (0.001)
Ethylbenzene	ND (0.001) J	ND (0.001)/ND (0.001)
Trichloroethene	ND (0.001) J	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001) J	ND (0.001)/ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)/ND (0.001)
WQ		
pH Field	-	7.11/7.11

MW-13623	11/19/96	07/11/00
Metals		
Aluminum	33.7 J/17.3 J	0.912
Aluminum (Dissolved)	ND (0.06)/ND (0.06)	ND (0.06)
Antimony	ND (0.06)/ND (0.06)	ND (0.06)
Antimony (Dissolved)	ND (0.06)/ND (0.06)	ND (0.06)
Arsenic	0.013/0.011	0.01
Arsenic (Dissolved)	ND (0.005)/ND (0.005)	0.008
Beryllium	ND (0.005)/ND (0.005)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)/ND (0.005)	ND (0.005)
Cadmium	ND (0.004)/ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)/ND (0.004)	ND (0.005)
Chromium	0.059 J/0.054 J	-
Chromium (Dissolved)	ND (0.005)/ND (0.005)	ND (0.005)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	0.016 J/0.01 J	-
Cobalt (Dissolved)	ND (0.01)/ND (0.01)	-
Cyanide (total)	ND (0.01)/ND (0.01)	ND (0.01)
Iron	62.4 J/55 J	-
Iron (Dissolved)	4.64/4.41	-
Lead	0.028/0.022	0.022 J
Lead (Dissolved)	ND (0.002)/ND (0.002)	ND (0.002)
Mercury	ND (0.0002)/ND (0.0002)	-
Mercury (Dissolved)	ND (0.0002)/ND (0.0002)	-
Nickel	0.065 J/0.044 J	ND (0.02)
Nickel (Dissolved)	ND (0.02)/ND (0.02)	ND (0.02)
Selenium	ND (0.005) J/ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J/ND (0.005) J	-
Vanadium	0.075 J/0.041 J	0.005 J
Vanadium (Dissolved)	ND (0.01)/ND (0.01)	ND (0.01)
Zinc	0.117 J/0.061 J	0.008 J
Zinc (Dissolved)	ND (0.01)/ND (0.01)	ND (0.01)
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)/ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)/ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)/ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)/ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)/ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)/ND (0.01)	ND (0.01)
Naphthalene	ND (0.002) JND (0.01)/ND (0.002) JND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)/ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)/ND (0.01)	ND (0.01)
Phenol	ND (0.01)/ND (0.01)	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001) JND (0.001) J	ND (0.001)
1,2-Dichloropropane	ND (0.001) JND (0.001) J	ND (0.001)
2-Butanone	R/R	R
Benzene	ND (0.001) JND (0.001) J	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001) JND (0.001) J	ND (0.001)
Ethylbenzene	ND (0.001) JND (0.001) J	ND (0.001)
Trichloroethene	ND (0.001) JND (0.001) J	ND (0.001)
Vinyl chloride	ND (0.001) JND (0.001) J	ND (0.001)
Xylene (total)	ND (0.001) JND (0.001)	ND (0.001)
WQ		
pH Field	-	6.74

MW-13326	11/18/98	07/28/00
Metals		
Aluminum	2.17	28.2
Aluminum (Dissolved)	ND (0.05)	0.03 J
Antimony	ND (0.06)	0.026 J
Antimony (Dissolved)	ND (0.06)	ND (0.06)
Arsenic	0.006	0.02
Arsenic (Dissolved)	ND (0.005)	0.005 J
Beryllium	ND (0.005)	0.001 J
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	ND (0.005)	-
Chromium (Dissolved)	ND (0.005)	ND (0.01)
Chromium, Hexavalent	-	0.008 J
Cobalt	ND (0.01)	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)
Iron	4.07	-
Iron (Dissolved)	0.163	-
Lead	0.024	0.024
Lead (Dissolved)	ND (0.002)	ND (0.002)
Mercury	ND (0.00002)	-
Mercury (Dissolved)	ND (0.00002)	-
Nickel	ND (0.02)	0.064
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	ND (0.01)	0.067
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Zinc	0.016	0.125 J
Zinc (Dissolved)	ND (0.01)	0.025 J
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002) JND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001) J	ND (0.001)
1,2-Dichloropropane	ND (0.001) J	ND (0.001)
2-Butanone	R	R
Benzene	ND (0.001) J	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001) J	ND (0.001)
Ethylbenzene	ND (0.001) J	ND (0.001)
Trichloroethene	ND (0.001) J	ND (0.001)
Vinyl chloride	ND (0.001) J	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	7.7

MW-93205	12/10/98	07/28/00
Metals		
Aluminum	0.258/0.236	0.108
Aluminum (Dissolved)	ND (0.05)/ND (0.05)	ND (0.05)
Antimony	ND (0.06)/ND (0.06)	ND (0.06)
Antimony (Dissolved)	ND (0.06)/ND (0.06)	0.077 J (A)
Arsenic	0.015/0.01	0.014
Arsenic (Dissolved)	0.008/0.009	0.014
Beryllium	ND (0.005)/ND (0.005)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)/ND (0.005)	ND (0.005)
Cadmium	ND (0.004)/ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)/ND (0.004)	ND (0.005)
Chromium	ND (0.005)/ND (0.005)	-
Chromium (Dissolved)	ND (0.005)/ND (0.005)	ND (0.01)
Chromium, Hexavalent	-	0.009 J
Cobalt	ND (0.01)/ND (0.01)	-
Cobalt (Dissolved)	ND (0.01)/ND (0.01)	-
Cyanide (total)	ND (0.01)/ND (0.01)	ND (0.01)
Iron	1.08 J/1.12 J	-
Iron (Dissolved)	0.213/0.223	-
Lead	ND (0.002)/ND (0.002)	ND (0.002)
Lead (Dissolved)	ND (0.002)/ND (0.002)	ND (0.002)
Mercury	ND (0.0002)/ND (0.0002)	-
Mercury (Dissolved)	ND (0.0002)/ND (0.0002)	-
Nickel	0.038/0.035	ND (0.02)
Nickel (Dissolved)	0.028/0.035	ND (0.02)
Selenium	ND (0.005) JND (0.005) J	-
Selenium (Dissolved)	ND (0.005) JND (0.005) J	-
Vanadium	ND (0.01)/ND (0.01)	ND (0.01)
Vanadium (Dissolved)	ND (0.01)/ND (0.01)	ND (0.01)
Zinc	ND (0.01)/ND (0.01)	ND (0.01)
Zinc (Dissolved)	ND (0.01)/ND (0.01)	ND (0.01)
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)/ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)/ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)/ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)/ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)/ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)/ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)/ND (0.002) JND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)/ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)/ND (0.01)	ND (0.01)
Phenol	ND (0.01)/ND (0.01)	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001)/ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)/ND (0.001)	ND (0.001)
2-Butanone	R/R	R
Benzene	ND (0.001)/ND (0.001)	0.0003
cis-1,2-Dichloroethene	ND (0.001)/ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)/ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)/ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)/ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)/ND (0.001)	ND (0.001)
WQ		
pH Field	-	7.91





KEY MAP

LEGEND

- A — — INVESTIGATIVE UNIT BOUNDARY AND IDENTIFIER
- SD-10A Δ NON-RFI SURFACE WATER/SEDIMENT SAMPLE LOCATION
- MWPHB-6 ● NON-RFI MONITORING WELL LOCATION
- MWPHB-6 ■ NON-RFI SOIL BORING LOCATION
- SD-10A ▲ RFI TEMPORARY MONITORING WELL LOCATION
- MW-01223 ◉ RFI MONITORING WELL LOCATION
- SB-01419 ▣ RFI BORING LOCATION
- MW-90124 ◐ RFI BEDROCK WELL LOCATION
- 579 UPPER WATER BEARING ZONE GROUNDWATER CONTOUR

NOTES:

1. TOTAL PCBs WERE SUMMED BY ADDING THE POSITIVE DETECTIONS PLUS HALF THE QUANTITATION LIMITS FOR NON-DETECT RESULTS OF AROCLORS DETECTED ELSEWHERE AT THE SITE. IF QUANTITATION LIMITS ARE NOT AVAILABLE, HALF THE REPORTING LIMITS ARE USED FOR NON-DETECTED VALUES.
2. SCREENING CRITERIA AND SAMPLE RESULTS ARE COMPARED TO TWO SIGNIFICANT DIGITS. RESULTS EQUAL TO SCREENING CRITERIA ARE NOT HIGHLIGHTED AS EXCEEDANCES.
3. PARAMETER LISTS ARE AREA SPECIFIC BASED ON EXCEEDANCES.
4. GROUNDWATER CONTOURS REPRESENT THE UPPER SATURATED ZONE.

SCALE VERIFICATION

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

GENERAL MOTORS CORPORATION
SAGINAW METAL CASTING OPERATIONS

SAGINAW, MICHIGAN

INVESTIGATIVE UNIT F - GROUNDWATER

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
MICHIGAN STATE PLANE SOUTH, NAD 83 USING INTERNATIONAL FEET, NGVD 88
TOPO - SANBORN, 1996

Project Manager:	Reviewed By:	Date:	
I.R.	M.T.	AUGUST 2003	
Scale: 1" = 150'	Project N°: 17075-16	Report N°: PRES015	Drawing N°: figure 7

17075-16(PRES015)GN-WA007 SEP 17/2003

Chemical Name	Commercial and Industrial/I.R.& I.V. Drinking Water A	Groundwater Volatilization to Indoor Air B	Groundwater Contact C	Groundwater Surface Water Interface D
Metals				
Aluminum	4.1		64000	
Aluminum (Dissolved)	4.1		64000	
Antimony	0.006		68	0.13
Antimony (Dissolved)	0.006		68	0.13
Arsenic	0.05		4.3	0.15
Arsenic (Dissolved)	0.05		4.3	0.15
Beryllium	0.004		290	1.2
Beryllium (Dissolved)	0.004		290	1.2
Cadmium	0.005		190	0.13
Cadmium (Dissolved)	0.005		190	0.13
Chromium	0.1		460	0.011
Chromium (Dissolved)	0.1		460	0.011
Chromium, Hexavalent	0.1		460	0.011
Chromium, Hexavalent (Dissolved)	0.1		460	0.011
Cobalt	0.1		2400	0.1
Cobalt (Dissolved)	0.1		2400	0.1
Cyanide (total)	0.2		57	0.0052
Iron	5.6		58000	
Iron (Dissolved)	5.6		58000	
Lead	0.004			0.19
Lead (Dissolved)	0.004			0.19
Mercury	0.002	0.056	0.056	0.0000013
Mercury (Dissolved)	0.002	0.056	0.056	0.0000013
Nickel	0.1		74000	210
Nickel (Dissolved)	0.1		74000	210
Selenium	0.05		970	0.005
Selenium (Dissolved)	0.05		970	0.005
Vanadium	0.062		970	0.012
Vanadium (Dissolved)	0.062		970	0.012
Zinc	5		110000	22
Zinc (Dissolved)	5		110000	22
Polychlorinated Biphenyls				
Total PCBs	0.0005	0.045	0.0033	0.0002
Semi-Volatile Organic Compounds				
2,4-Dimethylphenol	1		520	0.38
Benzo(a)pyrene	0.005		0.002	
Benzo(b)fluoranthene	0.002		0.002	
Benzo(k)fluoranthene	0.005		0.005	
bis(2-Ethylhexyl)phthalate	0.006		0.32	0.032
Carbazole	0.35		7.4	0.01
Chrysene	0.005		0.005	
Dibenz(a,h)anthracene	0.002		0.002	
Fluoranthene	0.21	0.21	0.21	0.005
Indeno(1,2,3-cd)pyrene	0.002		0.002	
Methylphenol (Cresol)	1		810	0.071
Naphthalene	1.5	31	31	0.013
Pentachlorophenol	0.001		0.2	0.0028
Phenanthrene	0.15	1	1	0.005
Phenol	13		29000	0.21
Volatile Organic Compounds				
1,1-Dichloroethene	0.007	1.3	11	0.065
1,2-Dichloropropane	0.005	36	16	0.29
2-Butanone	38	240000	240000	2.2
Benzene	0.005	35	11	0.2
cis-1,2-Dichloroethene	0.07	210	200	0.62
Ethylbenzene	0.7	170	170	0.018
Trichloroethene	0.005	97	22	0.2
Vinyl chloride	0.002	13	1	0.015
Xylene (total)	10	190	190	0.035
General Chemistry				
Formaldehyde	3.8	360	30000	0.12
Ammonia	10	7100		0.736
pH Field	8.5			9

MW-2	05/03/99	06/05/00
Metals		
Arsenic	0.006	-
Arsenic (Dissolved)	ND (0.006)	-
Cadmium	ND (0.004)	-
Cadmium (Dissolved)	ND (0.004)	-
Chromium	0.044	-
Chromium (Dissolved)	ND (0.008)	-
Cyanide (total)	ND (0.01)	-
Fluoride	-	15.3
Lead	0.032 J	-
Lead (Dissolved)	ND (0.002)	-
Mercury	ND (0.001)	-
Mercury (Dissolved)	ND (0.001)	-
Nickel	0.035	-
Nickel (Dissolved)	ND (0.02)	-
Selenium	ND (0.008)	-
Selenium (Dissolved)	ND (0.008)	-
PCBs		
Total PCBs	ND (0.0002)	-
SVOAs		
2,4-Dimethylphenol	ND (0.01)	-
Benzo(a)pyrene	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	-
Chrysene	ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)	-
Fluoranthene	ND (0.01)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	-
Methylphenol (Cresol)	ND (0.01)	-
Naphthalene	ND (0.002)ND (0.01)	-
Phenanthrene	ND (0.01)	-
Phenol	ND (0.01)	-
VOAs		
1,1-Dichloroethene	ND (0.001)	-
1,2-Dichloropropane	ND (0.001)	-
2-Butanone	R	-
Benzene	ND (0.001)	-
cis-1,2-Dichloroethene	ND (0.001)	-
Ethylbenzene	ND (0.001)	-
Trichloroethene	ND (0.001)	-
Vinyl chloride	ND (0.001)	-
Xylene (total)	ND (0.001)	-
WQ		
pH Field	-	7.36

SG7	02/06/98
Metals	
Aluminum (Dissolved)	ND (0.06)
Antimony (Dissolved)	ND (0.06)
Arsenic (Dissolved)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)
Chromium (Dissolved)	ND (0.008)
Cobalt (Dissolved)	ND (0.01)
Iron (Dissolved)	0.265
Lead (Dissolved)	ND (0.002)
Mercury (Dissolved)	ND (0.001)
Nickel (Dissolved)	ND (0.02)
Selenium (Dissolved)	ND (0.008)
Vanadium (Dissolved)	ND (0.01)
Zinc (Dissolved)	ND (0.01)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	0.011
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.002)ND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	ND (0.02)
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WQ	
Ammonia	2.11/2.06
pH Field	8.35/8.35

SG8	02/06/98
Metals	
Aluminum (Dissolved)	ND (0.06)
Antimony (Dissolved)	ND (0.06)
Arsenic (Dissolved)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)
Chromium (Dissolved)	ND (0.008)
Cobalt (Dissolved)	ND (0.01)
Iron (Dissolved)	5.5
Lead (Dissolved)	ND (0.002)
Mercury (Dissolved)	ND (0.001)
Nickel (Dissolved)	ND (0.02)
Selenium (Dissolved)	ND (0.008)
Vanadium (Dissolved)	ND (0.01)
Zinc (Dissolved)	ND (0.01)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.002)ND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	ND (0.02)
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WQ	
Ammonia	-
pH Field	7.36

SG9	02/06/98
Metals	
Aluminum (Dissolved)	ND (0.06)
Antimony (Dissolved)	ND (0.06)
Arsenic (Dissolved)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)
Chromium (Dissolved)	ND (0.008)
Cobalt (Dissolved)	ND (0.01)
Iron (Dissolved)	0.027
Lead (Dissolved)	ND (0.002)
Mercury (Dissolved)	ND (0.001)
Nickel (Dissolved)	ND (0.02)
Selenium (Dissolved)	ND (0.008) J
Vanadium (Dissolved)	ND (0.01)
Zinc (Dissolved)	ND (0.01)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.002)ND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	ND (0.02)
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WQ	
Ammonia	-
pH Field	8.97

SG10	02/06/98
Metals	
Aluminum (Dissolved)	0.214
Antimony (Dissolved)	ND (0.06)
Arsenic (Dissolved)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)
Chromium (Dissolved)	ND (0.008)
Cobalt (Dissolved)	ND (0.01)
Iron (Dissolved)	0.027
Lead (Dissolved)	ND (0.002)
Mercury (Dissolved)	ND (0.001)
Nickel (Dissolved)	ND (0.02)
Selenium (Dissolved)	ND (0.008) J
Vanadium (Dissolved)	ND (0.01)
Zinc (Dissolved)	ND (0.01)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.002)ND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WQ	
pH Field	8.97

SB1	02/06/98
Metals	
Aluminum (Dissolved)	ND (0.06)
Antimony (Dissolved)	ND (0.06)
Arsenic (Dissolved)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)
Chromium (Dissolved)	ND (0.008)
Cobalt (Dissolved)	ND (0.01)
Iron (Dissolved)	0.200
Lead (Dissolved)	ND (0.002)
Mercury (Dissolved)	ND (0.001)
Nickel (Dissolved)	ND (0.02)
Selenium (Dissolved)	ND (0.008) J
Vanadium (Dissolved)	ND (0.01)
Zinc (Dissolved)	ND (0.01)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01) J
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.002)ND (0.01)
Pentachlorophenol	ND (0.025) J
Phenanthrene	ND (0.01)
Phenol	ND (0.01) J
VOAs	
1,1-Dichloroethene	ND (0.001) J
1,2-Dichloropropane	ND (0.001) J
2-Butanone	R
Benzene	0.002 J
cis-1,2-Dichloroethene	ND (0.001) J
Ethylbenzene	ND (0.001) J
Trichloroethene	ND (0.001) J
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001) J
WQ	
Ammonia	-
pH (lab)	-
pH Field	11.2 (2)

MW-04864	11/18/88	07/19/00	01/08/03
Metals			
Aluminum	4.13 J	2.88	-
Aluminum (Dissolved)	0.285	1.4	-
Antimony	ND (0.06)	ND (0.06)	-
Antimony (Dissolved)	ND (0.06)	ND (0.06)	-
Arsenic	0.002 J	0.003	-
Arsenic (Dissolved)	0.048	0.02	-
Beryllium	ND (0.005)	ND (0.005)	-
Beryllium (Dissolved)	ND (0.005)	ND (0.005)	-
Cadmium	ND (0.004)	ND (0.005)	-
Cadmium (Dissolved)	ND (0.004)	ND (0.005)	-
Chromium	0.015 J (2)	-	-
Chromium (Dissolved)	ND (0.008)	ND (0.008)	-
Chromium, Hexavalent	-	ND (0.01)	-
Cobalt	ND (0.01) J	-	-
Cobalt (Dissolved)	ND (0.01)	-	-
Cyanide (total)	ND (0.01)	ND (0.01)	-
Fluoride	-	-	0.2
Iron	8.9	-	-
Iron (Dissolved)	0.325	-	-
Lead	0.008 J	0.008	-
Lead (Dissolved)	ND (0.002)	ND (0.002)	-
Mercury	ND (0.0002) J	-	-
Mercury (Dissolved)	ND (0.0002) J	-	-
Nickel	0.061 J	0.037	-
Nickel (Dissolved)	0.04	0.032	-
Selenium	ND (0.008) J	-	-
Selenium (Dissolved)	ND (0.008) J	-	-
Vanadium	0.024 J (2)	0.036 (2)	-
Vanadium (Dissolved)	0.016 (2)	0.033 (2)	-
Zinc	0.034 J	0.016	-
Zinc (Dissolved)	ND (0.01)	0.003 J	-
OTHER			
Formaldehyde	-	ND (0.05)	-
PCBs			
Total PCBs	ND (0.0002)	ND (0.0002)	-
SVOAs			
2,4-Dimethylphenol	ND (0.01)	0.005	-
Benzo(a)pyrene	ND (0.01)	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	-
Carbazole	-	ND (0.01)	-
Chrysene	ND (0.01)	ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	-
Fluoranthene	ND (0.01)	ND (0.01)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	-
Methylphenol (Cresol)	ND (0.01)	0.007 J	-
Naphthalene	ND (0.002)ND (0.01)	ND (0.01)	-
Pentachlorophenol	ND (0.025)	ND (0.025)	-
Phenanthrene	ND (0.01)	ND (0.01)	-
Phenol	ND (0.01)	ND (0.01)	-
VOAs			
1,1-Dichloroethene	ND (0.001) J	ND (0.001)	-
1,2-Dichloropropane	ND (0.001) J	ND (0.001)	-
2-Butanone	R	R	-
Benzene	0.002 J	0.001	-
cis-1,2-Dichloroethene	ND (0.001) J	ND (0.001)	-
Ethylbenzene	ND (0.001) J	ND (0.001)	-
Trichloroethene	ND (0.001) J	ND (0.001)	-
Vinyl chloride	ND (0.001) J	ND (0.001)	-
Xylene (total)	ND (0.001)	0.0005 J	-
WQ			
Ammonia	-	-	0.6 (2)
pH (lab)	-	-	10.3 (2)/10.4 (2)
pH Field	-	11.2 (2)	11.1 (2)/11.1 (2)

SB-3	05/03/99
Metals	
Aluminum	11.8 J
Aluminum (Dissolved)	0.374
Antimony	ND (0.06)
Antimony (Dissolved)	ND (0.06)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.004)
Cadmium (Dissolved)	ND (0.004)
Chromium	0.009
Chromium (Dissolved)	ND (0.008)
Cobalt	ND (0.01)
Cobalt (Dissolved)	ND (0.01)
Iron	13.4
Iron (Dissolved)	0.027
Lead	0.032 J
Lead (Dissolved)	ND (0.002)
Mercury	ND (0.0002)
Mercury (Dissolved)	ND (0.0001)
Nickel	0.043
Nickel (Dissolved)	ND (0.02)
Selenium	ND (0.008)
Selenium (Dissolved)	ND (0.008)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.064 J
Zinc (Dissolved)	ND (0.01)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)

TMW-05667	12/18/02
Metals	
Fluoride	5.8
WQ	
Ammonia	1.39
pH (lab)	7.83
pH Field	7.82

TMW-05056	12/20/01
Metals	
Fluoride	27.2
WQ	
Ammonia	33.8 J
pH Field	9.86

TMW-04751	12/18/01
WQ	
Ammonia	0.1
pH Field	7.91

MW-1	05/07/00
Metals	
Fluoride	12.8
WQ	
pH Field	10.8

MW-10	05/06/00
Metals	
Fluoride	1.3
WQ	
pH Field	7.87

MW-15	05/07/00
Metals	
Fluoride	1.3
WQ	
pH Field	7.41

TMW-04938	01/08/03
Metals	
Fluoride	19
WQ	
Ammonia	2.44
pH Field	12.2

TMW-04837	12/20/02
Metals	
Fluoride	1.8
WQ	
Ammonia	0.94
pH Field	12.6

TMW-04857	12/19/01
Metals	
Arsenic	0.024
Arsenic (Dissolved)	0.025
VOAs	
Benzene	0.001
Ethylbenzene	0.0003
Xylene (total)	0.001
WQ	
Ammonia	68.7
pH Field	10.6

TMW-05057	12/20/01
Metals	
Arsenic	0.007
Arsenic (Dissolved)	0.006
VOAs	
Benzene	ND (0.001)
Ethylbenzene	0.0001
Xylene (total)	0.001
WQ	
Ammonia	0.85 J
pH Field	8.47

SS-1	06/03/99
Metals	
Aluminum	1.26 J
Aluminum (Dissolved)	0.141
Antimony	ND (0.06)
Antimony (Dissolved)	ND (0.06)
Arsenic	0.007
Arsenic (Dissolved)	0.006
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.004)
Cadmium (Dissolved)	ND (0.004)
Chromium	ND (0.008)
Chromium (Dissolved)	ND (0.008)
Cobalt	ND (0.01)
Cobalt (Dissolved)	ND (0.01)
Iron	14.4
Iron (Dissolved)	12.8
Lead	ND (0.002) J
Lead (Dissolved)	ND (0.002)
Mercury	ND (0.001)
Mercury (Dissolved)	ND (0.001)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Selenium	ND (0.008)
Selenium (Dissolved)	ND (0.008)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.01) J
Zinc (Dissolved)	ND (0.01)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	0.01
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.002)ND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	ND (0.02) J
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)

MW-3	09/07/00	12/14/01	01/08/03
Metals			
Aluminum	ND (0.05)ND (0.05)	-	-
Aluminum (Dissolved)	ND (0.05)ND (0.05)	-	-
Antimony	ND (0.05)ND (0.05)	-	-
Antimony (Dissolved)	ND (0.05)ND (0.05)	-	-
Arsenic	0.003 J/0.003 J	-	-
Arsenic (Dissolved)	0.003 J/0.003 J	0.004 J/0.003 J	-
Beryllium	ND (0.005)ND (0.005)	-	-
Beryllium (Dissolved)	ND (0.005)ND (0.005)	-	-
Cadmium	ND (0.005)ND (0.005)	-	-
Cadmium (Dissolved)	ND (0.005)ND (0.005)	-	-
Chromium (Dissolved)	ND (0.01)ND (0.01)	-	-
Chromium, Hexavalent	ND (0.01)ND (0.01)	-	-
Fluoride	0.75/0.8	-	0.8
Lead	ND (0.002)ND (0.002)	-	-
Lead (Dissolved)	ND (0.002)ND (0.002)	-	-
Nickel	ND (0.02)ND (0.02)	-	-
Nickel (Dissolved)	ND (0.02)ND (0.02)	-	-
Vanadium	ND (0.01)ND (0.01)	-	-
Vanadium (Dissolved)	ND (0.01)ND (0.01)	-	-
Zinc	ND (0.01)/0.002 J	-	-
Zinc (Dissolved)	ND (0.01)ND (0.01)	-	-
VOAs			
1,1-Dichloroethene	ND (0.001)ND (0.001)	-	-
1,2-Dichloropropane	ND (0.001)ND (0.001)	-	-
2-Butanone	ND (0.02)ND (0.02)	-	-
Benzene	ND (0.001)ND (0.001)	ND (0.001)ND (0.001)	-
cis-1,2-Dichloroethene	ND (0.001)ND (0.001)	-	-
Ethylbenzene	ND (0.001)ND (0.001)	ND (0.001)ND (0.001)	-
Trichloroethene	ND (0.001)ND (0.001)	-	-
Vinyl chloride	ND (0.001)ND (0.001)	-	-
Xylene (total)	ND (0.001)ND (0.001)	ND (0.001)ND (0.001)	-
WQ			
Ammonia	2.11/2.06	1.59/1.45	-
pH Field	8.35/8.35	7.59/7.59	8.33

TMW-05245	12/20/02
Metals	
Fluoride	9
WQ	
Ammonia	3.3
pH Field	8.82

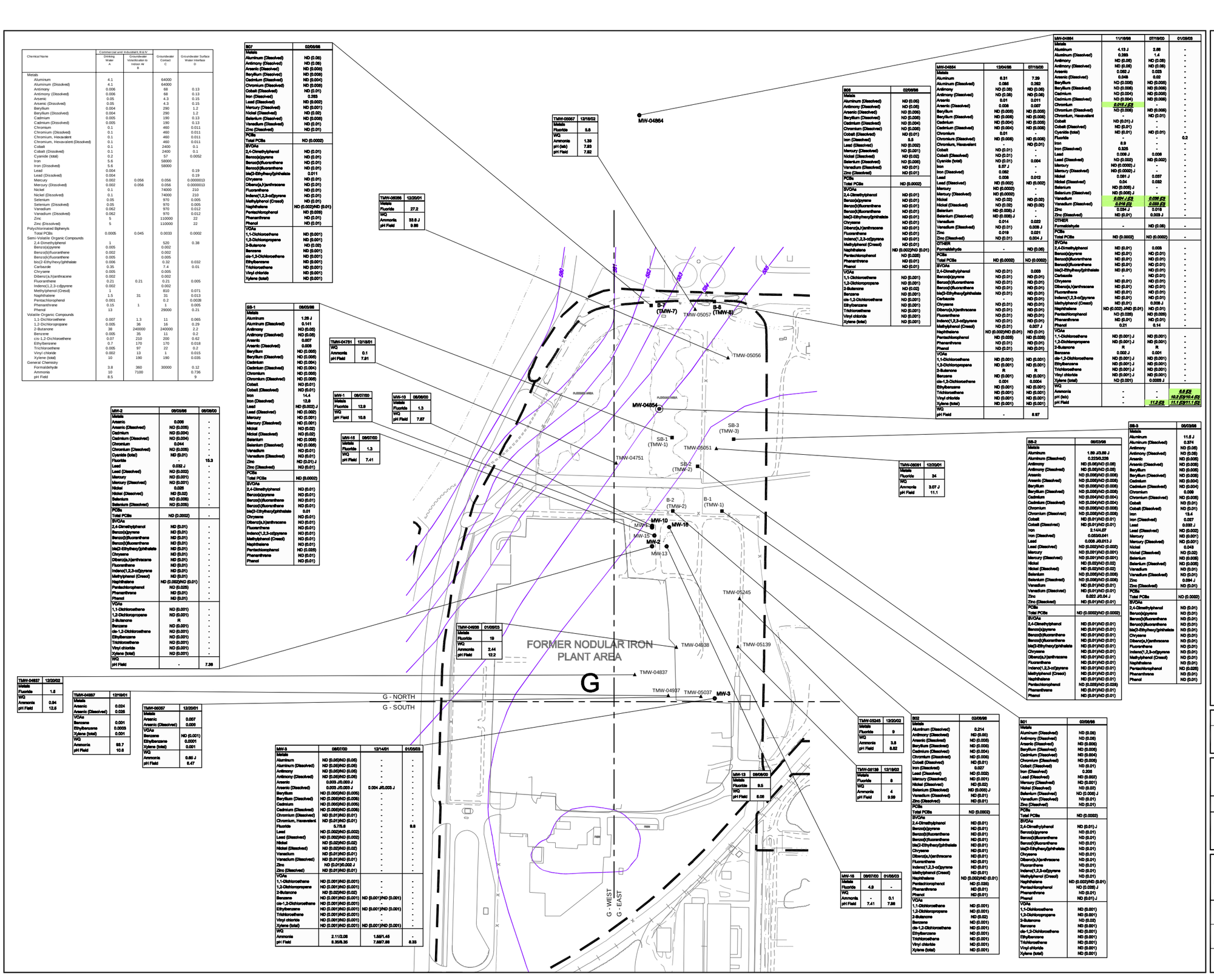
TMW-05139	12/19/02
Metals	
Fluoride	8
WQ	
Ammonia	4
pH Field	9.59

MW-13	09/06/00
Metals	
Fluoride	9.5
WQ	
pH Field	8.08

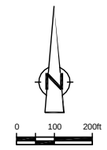
MW-16	09/07/00	01/08/03
Metals		
Fluoride	4.9	-
WQ		
Ammonia	-	0.1
pH Field	7.41	7.99

TMW-05051	12/20/01
Metals	
Fluoride	34
WQ	
Ammonia	3.07 J
pH Field	11.1

SB-2	06/03/99
Metals	
Aluminum	1.89 J/5.89 J
Aluminum (Dissolved)	0.323/0.228
Antimony	ND (0.06)ND (0.06)
Antimony (Dissolved)	ND (0.06)ND (0.06)
Arsenic	ND (0.005)ND (0.005)
Arsenic (Dissolved)	ND (0.005)ND (0.005)
Beryllium	ND (0.005)ND (0.005)
Beryllium (Dissolved)	ND (0.005)ND (0.005)
Cadmium	ND (0.004)ND (0.004)
Cadmium (Dissolved)	ND (0.004)ND (0.004)
Chromium	ND (0.008)ND (0.008)
Chromium (Dissolved)	ND (0.008)ND (0.008)
Cobalt	ND (0.01)ND (0.01)
Cobalt (Dissolved)	ND (0.01)ND (0.01)
Iron	2.14/4.07
Iron (Dissolved)	0.023/0.041
Lead	0.008 J/0.013 J
Lead (Dissolved)	ND (0.002)ND (0.002)
Mercury	ND (0.001)ND (0.001)
Mercury (Dissolved)	ND (0.001)ND (0.001)
Nickel	ND (0.02)ND (0.02)
Nickel (Dissolved)	ND (0.02)ND (0.02)
Selenium	ND (0.008)ND (0.008)
Selenium (Dissolved)	ND (0.008)ND (0.008)
Vanadium	ND (0.01)ND (0.01)
Vanadium (Dissolved)	ND (0.01)ND (0.01)
Zinc	0.022 J/0.04 J
Zinc (Dissolved)	ND (0.01)ND (0.01)
PCBs	
Total PCBs	ND (0.0002)ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)ND (0.01)
Benzo(a)pyrene	ND (0.01)ND (0.01)
Benzo(b)fluoranthene	ND (0.01)ND (0.01)
Benzo(k)fluoranthene	ND (0.01)ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)ND (0.01)
Chrysene	ND (0.01)ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)ND (0.01)
Fluoranthene	ND (0.01)ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)ND (0.01)
Methylphenol (Cresol)	ND (0.01)ND (0.01)
Naphthalene	ND (0.002)ND (0.01)
Pentachlorophenol	ND (0.025)ND (0.025)
Phenanthrene	ND (0.01)ND (0.01)
Phenol	ND (0.01)ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	ND (0.02)
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)

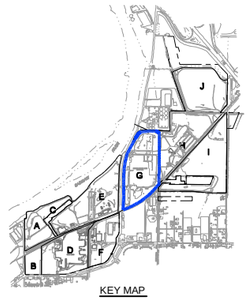


NOTES:
1. TOTAL PCBs WERE SUMMED BY ADDING THE POSITIVE DETECTIONS PLUS HALF THE QUANTITATION LIMITS FOR NON-DETECT RESULTS OF AROCLORS DETECTED ELSEWHERE AT THE SITE. IF QUANTITATION LIMITS ARE NOT AVAILABLE, HALF THE REPORTING LIMITS ARE USED FOR NON-DETECTED VALUES.
2. SCREENING CRITERIA AND SAMPLE RESULTS ARE COMPARED TO TWO SIGNIFICANT DIGITS. RESULTS EQUAL TO SCREENING CRITERIA ARE NOT HIGHLIGHTED AS EXCEEDANCES.
3. PARAMETER LISTS ARE AREA SPECIFIC BASED ON EXCEEDANCES.
4. GROUNDWATER CONTOURS REPRESENT THE UPPER SATURATED ZONE.



LEGEND

- A—— INVESTIGATIVE UNIT BOUNDARY AND IDENTIFIER
- SD-10A △ NON-RFI SURFACE WATER/SEDIMENT SAMPLE LOCATION
- MWPHB-6 ● NON-RFI MONITORING WELL LOCATION
- MWPHB-6 ■ NON-RFI SOIL BORING LOCATION
- SD-10A ▲ RFI TEMPORARY MONITORING WELL LOCATION
- MW-01223 ◉ RFI MONITORING WELL LOCATION
- SB-01419 ▣ RFI BORING LOCATION
- MW-90124 ◐ RFI BEDROCK WELL LOCATION
- 579 UPPER WATER BEARING ZONE GROUNDWATER CONTOUR



KEY MAP

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST S

Chemical Name	Commercial and Industrial/I, II & IV			
	Drinking Water A	Groundwater Volatilization to Indoor Air B	Groundwater Contact C	Groundwater Surface Water Interface D
Metals				
Aluminum	4.1		64000	
Aluminum (Dissolved)	4.1		64000	
Antimony	0.006		68	0.13
Antimony (Dissolved)	0.006		68	0.13
Arsenic	0.05		4.3	0.15
Arsenic (Dissolved)	0.05		4.3	0.15
Beryllium	0.004		290	1.2
Beryllium (Dissolved)	0.004		290	1.2
Cadmium	0.005		190	0.13
Cadmium (Dissolved)	0.005		190	0.13
Chromium	0.1		460	0.011
Chromium (Dissolved)	0.1		460	0.011
Chromium, Hexavalent	0.1		460	0.011
Chromium, Hexavalent (Dissolved)	0.1		460	0.011
Cobalt	0.1		2400	0.1
Cobalt (Dissolved)	0.1		2400	0.1
Cyanide (total)	0.2		57	0.0052
Iron	5.6		58000	
Iron (Dissolved)	5.6		58000	
Lead	0.004			0.19
Lead (Dissolved)	0.004			0.19
Mercury	0.002	0.056	0.056	0.0000013
Mercury (Dissolved)	0.002	0.056	0.056	0.0000013
Nickel	0.1		74000	210
Nickel (Dissolved)	0.1		74000	210
Selenium	0.05		970	0.005
Selenium (Dissolved)	0.05		970	0.005
Vanadium	0.062		970	0.012
Vanadium (Dissolved)	0.062		970	0.012
Zinc	5		110000	22
Zinc (Dissolved)	5		110000	22
Polychlorinated Biphenyls				
Total PCBs	0.0005	0.045	0.0033	0.0002
Semi-Volatile Organic Compounds				
2,4-Dimethylphenol	1		520	0.38
Benzo(a)pyrene	0.005		0.002	
Benzo(b)fluoranthene	0.002		0.002	
Benzo(k)fluoranthene	0.005		0.005	
bis(2-Ethylhexyl)phthalate	0.006		0.32	0.032
Carbazole	0.35		7.4	0.01
Chrysene	0.005		0.005	
Dibenz(a,h)anthracene	0.002		0.002	
Fluoranthene	0.21	0.21	0.21	0.005
Indeno(1,2,3-cd)pyrene	0.002		0.002	
Methylphenol (Cresol)	1		810	0.071
Naphthalene	1.5	31	31	0.013
Pentachlorophenol	0.001		0.2	0.0028
Phenanthrene	0.15	1	1	0.005
Phenol	13		29000	0.21
Volatile Organic Compounds				
1,1-Dichloroethene	0.007	1.3	11	0.065
1,2-Dichloropropane	0.005	36	16	0.29
2-Butanone	38	240000	240000	2.2
Benzene	0.005	35	11	0.2
cis-1,2-Dichloroethene	0.07	210	200	0.62
Ethylbenzene	0.7	170	170	0.018
Trichloroethene	0.005	97	22	0.2
Vinyl chloride	0.002	13	1	0.015
Xylene (total)	10	190	190	0.035
General Chemistry				
Formaldehyde	3.8	360	30000	0.12
Ammonia	10	7100		0.736
pH Field	8.5			9

B05	02/08/98
Metals	
Aluminum (Dissolved)	0.668
Antimony (Dissolved)	ND (0.06)
Arsenic (Dissolved)	0.009
Beryllium (Dissolved)	ND (0.008)
Cadmium (Dissolved)	ND (0.004)
Chromium (Dissolved)	ND (0.005)
Cobalt (Dissolved)	ND (0.01)
Iron (Dissolved)	ND (0.02)
Lead (Dissolved)	ND (0.002)
Mercury (Dissolved)	ND (0.001)
Nickel (Dissolved)	ND (0.02)
Selenium (Dissolved)	ND (0.005) J
Vanadium (Dissolved)	ND (0.01)
Zinc (Dissolved)	ND (0.01)
PCBs	
Total PCBs	0.001 J
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	ND (0.02)
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)

TMW-04398	12/20/02
WQ	
Ammonia	8.14
pH Field	12.1

MW-04757	11/18/98	07/18/00	12/16/01	01/06/03
Metals				
Aluminum	33.7 J	23.3	-	-
Aluminum (Dissolved)	ND (0.05)	ND (0.05)	-	-
Antimony	ND (0.05)	ND (0.05)	-	-
Antimony (Dissolved)	ND (0.05)	ND (0.05)	-	-
Arsenic	0.021 J	0.012	-	-
Arsenic (Dissolved)	ND (0.005)	0.003 J	-	-
Beryllium	ND (0.008)	0.001 J	-	-
Beryllium (Dissolved)	ND (0.008)	ND (0.008)	-	-
Cadmium	ND (0.004)	0.006 J	-	-
Cadmium (Dissolved)	ND (0.004)	ND (0.005)	-	-
Chromium	0.128 J (C)	-	-	-
Chromium (Dissolved)	ND (0.005)	ND (0.005)	-	-
Chromium, Hexavalent	-	ND (0.01)	-	-
Cobalt	0.02 J	-	-	-
Cobalt (Dissolved)	ND (0.01)	-	-	-
Cyanide (total)	ND (0.01)	0.007 (C)	-	-
Fluoride	-	-	-	0.1
Iron	201	-	-	-
Iron (Dissolved)	0.718	-	-	-
Lead	0.179 J	0.126	-	-
Lead (Dissolved)	ND (0.002)	ND (0.002)	-	-
Mercury	ND (0.0002) J	-	-	-
Mercury (Dissolved)	ND (0.0002) J	-	-	-
Nickel	0.095 J	0.106	-	-
Nickel (Dissolved)	ND (0.02)	ND (0.02)	-	-
Selenium	ND (0.005) J	-	-	-
Selenium (Dissolved)	ND (0.005) J	-	-	-
Vanadium	0.054 J (C)	0.028 (C)	-	-
Vanadium (Dissolved)	ND (0.01)	ND (0.01)	-	-
Zinc	0.241 J	0.174	-	-
Zinc (Dissolved)	ND (0.01)	ND (0.01)	-	-
OTHER				
Formaldehyde	-	ND (0.05)	-	-
PCBs				
Total PCBs	ND (0.0002)	0.001 J (C)	ND (0.0002)	-
SVOAs				
2,4-Dimethylphenol	0.012	ND (0.01)	-	-
Benzo(a)pyrene	ND (0.01)	ND (0.01)	-	-
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	-	-
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	-	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	-	-
Carbazole	-	ND (0.01)	-	-
Chrysene	ND (0.01)	ND (0.01)	-	-
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	-	-
Fluoranthene	ND (0.01)	ND (0.01)	-	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	-	-
Methylphenol (Cresol)	ND (0.01)	ND (0.01)	-	-
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)	-	-
Pentachlorophenol	ND (0.025)	ND (0.025)	-	-
Phenanthrene	ND (0.01)	ND (0.01)	-	-
Phenol	ND (0.01)	ND (0.01)	-	-
VOAs				
1,1-Dichloroethene	ND (0.001) J	ND (0.001)	-	-
1,2-Dichloropropane	ND (0.001) J	ND (0.001)	-	-
2-Butanone	R	R	-	-
Benzene	ND (0.001) J	0.0002	-	-
cis-1,2-Dichloroethene	ND (0.001) J	ND (0.001)	-	-
Ethylbenzene	ND (0.001) J	ND (0.001)	-	-
Trichloroethene	ND (0.001) J	ND (0.001)	-	-
Vinyl chloride	ND (0.001) J	ND (0.001)	-	-
Xylene (total)	ND (0.001)	ND (0.001)	-	-
WQ				
Ammonia	-	-	-	0.7
pH (lab)	-	-	-	7.58
pH Field	-	7.5	8.9	7.17

TMW-04468	12/19/01
Metals	
Fluoride	0.9
WQ	
Ammonia	0.1
pH Field	7.89

MW-04280	12/04/98	07/18/00
Metals		
Aluminum	49.3/83	0.09
Aluminum (Dissolved)	0.885/0.883	1.87
Antimony	ND (0.05)/ND (0.05)	ND (0.05)
Antimony (Dissolved)	ND (0.05)/ND (0.05)	ND (0.05)
Arsenic	0.024/0.024	0.008
Arsenic (Dissolved)	0.007/0.007	0.008 J
Beryllium	ND (0.008)/ND (0.008)	ND (0.008)
Beryllium (Dissolved)	ND (0.008)/ND (0.008)	ND (0.008)
Cadmium	ND (0.004)/ND (0.004)	ND (0.008)
Cadmium (Dissolved)	ND (0.004)/ND (0.004)	ND (0.008)
Chromium	0.173 (C)/0.166 (C)	-
Chromium (Dissolved)	ND (0.006)/ND (0.006)	ND (0.008)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	0.018/0.018	-
Cobalt (Dissolved)	ND (0.01)/ND (0.01)	-
Cyanide (total)	ND (0.01)/ND (0.01)	0.007 (C)
Fluoride	-	12
Iron	93.1 J/93.7 J	-
Iron (Dissolved)	0.038/0.027	-
Lead	0.19/0.194	0.023
Lead (Dissolved)	ND (0.002)/ND (0.002)	ND (0.002)
Mercury	ND (0.0002)/0.0002 (C)	-
Mercury (Dissolved)	ND (0.0002)/ND (0.0002)	-
Nickel	0.083/0.077	ND (0.02)
Nickel (Dissolved)	ND (0.02)/ND (0.02)	ND (0.02)
Selenium	ND (0.005) J/ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J/ND (0.005) J	-
Vanadium	0.084 (C)/0.089 (C)	0.053 (C)
Vanadium (Dissolved)	0.01/ND (0.01)	0.014 (C)
Zinc	0.165/0.181	0.022
Zinc (Dissolved)	ND (0.01)/ND (0.01)	0.003 J
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)/ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)/ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)/ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)/ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)/ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)/ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)/ND (0.002)/ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)/ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)/ND (0.01)	ND (0.01)
Phenol	ND (0.01)/ND (0.01)	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001)/ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)/ND (0.001)	ND (0.001)
2-Butanone	R/R	R
Benzene	ND (0.001)/ND (0.001)	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)/ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)/ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)/ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)/ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)/ND (0.001)	ND (0.001)
WQ		
pH Field	-	11.7 (D)

B03	02/08/98
Metals	
Aluminum (Dissolved)	ND (0.05)
Antimony (Dissolved)	ND (0.06)
Arsenic (Dissolved)	ND (0.003)
Beryllium (Dissolved)	ND (0.008)
Cadmium (Dissolved)	ND (0.004)
Chromium (Dissolved)	ND (0.005)
Cobalt (Dissolved)	ND (0.01)
Iron (Dissolved)	7.55
Lead (Dissolved)	ND (0.002)
Mercury (Dissolved)	ND (0.001)
Nickel (Dissolved)	ND (0.02)
Selenium (Dissolved)	ND (0.005) J
Vanadium (Dissolved)	ND (0.01)
Zinc (Dissolved)	ND (0.01)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	-
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	ND (0.02)
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)

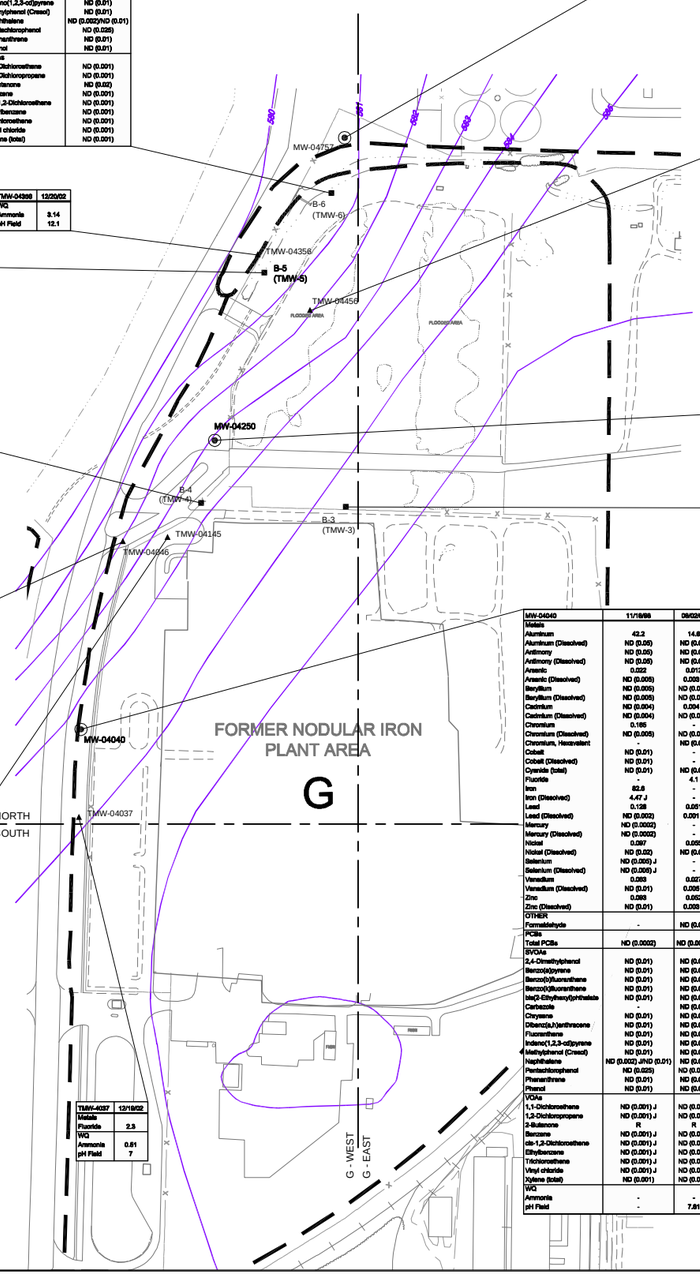
B04	02/08/98
Metals	
Aluminum (Dissolved)	0.179
Antimony (Dissolved)	ND (0.06)
Arsenic (Dissolved)	ND (0.008)
Beryllium (Dissolved)	ND (0.008)
Cadmium (Dissolved)	ND (0.004)
Chromium (Dissolved)	ND (0.005)
Cobalt (Dissolved)	ND (0.01)
Iron (Dissolved)	0.181
Lead (Dissolved)	ND (0.002)
Mercury (Dissolved)	ND (0.001)
Nickel (Dissolved)	ND (0.02)
Selenium (Dissolved)	ND (0.005) J
Vanadium (Dissolved)	ND (0.01)
Zinc (Dissolved)	ND (0.01)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	ND (0.02)
Benzene	0.015
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	0.083
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	0.287
WQ	
Ammonia	2.17/0.41
pH Field	11/11

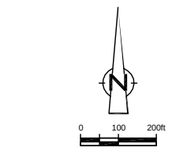
MW-04040	11/18/98	09/02/00	12/19/02
Metals			
Aluminum	42.2	14.8	-
Aluminum (Dissolved)	ND (0.05)	ND (0.05)	-
Antimony	ND (0.06)	ND (0.05)	-
Antimony (Dissolved)	ND (0.06)	ND (0.05)	-
Arsenic	0.022	0.012	-
Arsenic (Dissolved)	ND (0.005)	0.003 J	-
Beryllium	ND (0.008)	ND (0.008)	-
Beryllium (Dissolved)	ND (0.008)	ND (0.008)	-
Cadmium	ND (0.004)	0.004 J	-
Cadmium (Dissolved)	ND (0.004)	ND (0.005)	-
Chromium	0.165	-	-
Chromium (Dissolved)	ND (0.005)	ND (0.008)	-
Chromium, Hexavalent	-	ND (0.01)	-
Cobalt	ND (0.01)	-	-
Cobalt (Dissolved)	ND (0.01)	-	-
Cyanide (total)	ND (0.01)	ND (0.01)	-
Fluoride	-	4.1	3.9
Iron	82.6	-	-
Iron (Dissolved)	4.47 J	-	-
Lead	0.128	0.051	-
Lead (Dissolved)	ND (0.002)	0.001 J	-
Mercury	ND (0.0002)	-	-
Mercury (Dissolved)	ND (0.0002)	-	-
Nickel	0.087	0.035	-
Nickel (Dissolved)	ND (0.02)	ND (0.02)	-
Selenium	ND (0.005) J	-	-
Selenium (Dissolved)	ND (0.005) J	-	-
Vanadium	0.093	0.027	-
Vanadium (Dissolved)	ND (0.01)	0.006 J	-
Zinc	0.088	0.052	-
Zinc (Dissolved)	ND (0.01)	0.009 J	-
OTHER			
Formaldehyde	-	ND (0.05)	-
PCBs			
Total PCBs	ND (0.0002)	ND (0.0002)	-
SVOAs			
2,4-Dimethylphenol	ND (0.01)	ND (0.01)	-
Benzo(a)pyrene	ND (0.01)	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	-
Carbazole	-	ND (0.01)	-
Chrysene	ND (0.01)	ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	-
Fluoranthene	ND (0.01)	ND (0.01)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	-
Methylphenol (Cresol)	ND (0.01)	ND (0.01)	-
Naphthalene	ND (0.002) JND (0.01)	ND (0.01)	-
Pentachlorophenol	ND (0.025)	ND (0.025)	-
Phenanthrene	ND (0.01)	ND (0.01)	-
Phenol	ND (0.01)	ND (0.01)	-
VOAs			
1,1-Dichloroethene	ND (0.01) J	ND (0.001)	-
1,2-Dichloropropane	ND (0.01) J	ND (0.001)	-
2-Butanone	R	R	-
Benzene	ND (0.01) J	ND (0.001)	-
cis-1,2-Dichloroethene	ND (0.01) J	ND (0.001)	-
Ethylbenzene	ND (0.01) J	ND (0.001)	-
Trichloroethene	ND (0.01) J	ND (0.001)	-
Vinyl chloride	ND (0.01) J	ND (0.001)	-
Xylene (total)	ND (0.01)	ND (0.001)	-
WQ			
Ammonia	-	-	0.49
pH Field	-	7.91	7.22

TMW-04037	12/19/02
Metals	
Fluoride	2.3
WQ	
Ammonia	0.81
pH Field	7

TMW-04046	12/19/02
Metals	
Fluoride	8/8.1
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	0.004
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	0.061 J
Pentachlorophenol	ND (0.024)
Phenanthrene	0.008 J
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	ND (0.02)
Benzene	0.015
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	0.083
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	0.287
WQ	
Ammonia	2.17/0.41
pH Field	11/11

TMW-04148	12/20/01
Metals	
Fluoride	6.6
WQ	
Ammonia	0.1 J
pH Field	8.18



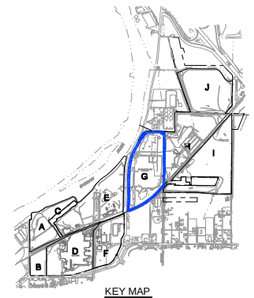


LEGEND

- A— — INVESTIGATIVE UNIT BOUNDARY AND IDENTIFIER
- SD-10A △ NON-RFI SURFACE WATER/SEDIMENT SAMPLE LOCATION
- MWPHB-6 ● NON-RFI MONITORING WELL LOCATION
- MWPHB-6 ■ NON-RFI SOIL BORING LOCATION
- SD-10A ▲ RFI TEMPORARY MONITORING WELL LOCATION
- MW-01223 ⊕ RFI MONITORING WELL LOCATION
- SB-01419 ⊕ RFI BORING LOCATION
- MW-90124 ◐ RFI BEDROCK WELL LOCATION
- 579 UPPER WATER BEARING ZONE GROUNDWATER CONTOUR

NOTES:

1. TOTAL PCBs WERE SUMMED BY ADDING THE POSITIVE DETECTIONS PLUS HALF THE QUANTITATION LIMITS FOR NON-DETECT RESULTS OF AROCLORS DETECTED ELSEWHERE AT THE SITE. IF QUANTITATION LIMITS ARE NOT AVAILABLE, HALF THE REPORTING LIMITS ARE USED FOR NON-DETECTED VALUES.
2. SCREENING CRITERIA AND SAMPLE RESULTS ARE COMPARED TO TWO SIGNIFICANT DIGITS. RESULTS EQUAL TO SCREENING CRITERIA ARE NOT HIGHLIGHTED AS EXCEEDANCES.
3. PARAMETER LISTS ARE AREA SPECIFIC BASED ON EXCEEDANCES.
4. GROUNDWATER CONTOURS REPRESENT THE UPPER SATURATED ZONE.



KEY MAP

SCALE VERIFICATION

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

GENERAL MOTORS CORPORATION
SAGINAW METAL CASTING OPERATIONS

SAGINAW, MICHIGAN

INVESTIGATIVE UNIT G - NORTHWEST - GROUNDWATER

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
MICHIGAN STATE PLANE SOUTH, NAD 83 USING INTERNATIONAL FEET, NGVD 88
TOPO - SANBORN, 1996

Project Manager:	Reviewed By:	Date:	
I.R.	M.T.	AUGUST 2003	
Scale: 1" = 200'	Project No.: 17075-16	Report No.: PRES015	Drawing No.: figure 8B

17075-16(PRES015)GN-WA014 SEP 17/2003

Chemical Name	Commercial and Industrial/I, S & V Drinking Water A	Groundwater Volatilization to Indoor Air B	Groundwater Contact C	Groundwater Surface Water Interface D
Metals				
Aluminum	4.1		64000	
Aluminum (Dissolved)	4.1		64000	
Antimony	0.006		68	0.13
Antimony (Dissolved)	0.006		68	0.13
Arsenic	0.05		4.3	0.15
Arsenic (Dissolved)	0.05		4.3	0.15
Beryllium	0.004		290	1.2
Beryllium (Dissolved)	0.004		290	1.2
Cadmium	0.005		190	0.13
Cadmium (Dissolved)	0.005		190	0.13
Chromium	0.1		460	0.011
Chromium (Dissolved)	0.1		460	0.011
Chromium, Hexavalent	0.1		460	0.011
Chromium, Hexavalent (Dissolved)	0.1		460	0.011
Cobalt	0.1		2400	0.1
Cobalt (Dissolved)	0.1		2400	0.1
Cyanide (total)	0.2		57	0.0052
Iron	5.6		58000	
Iron (Dissolved)	5.6		58000	
Lead	0.004			0.19
Lead (Dissolved)	0.004			0.19
Mercury	0.002	0.056	0.056	0.0000013
Mercury (Dissolved)	0.002	0.056	0.056	0.0000013
Nickel	0.1		74000	210
Nickel (Dissolved)	0.1		74000	210
Selenium	0.05		970	0.005
Selenium (Dissolved)	0.05		970	0.005
Vanadium	0.062		970	0.012
Vanadium (Dissolved)	0.062		970	0.012
Zinc	5		110000	22
Zinc (Dissolved)	5		110000	22
Polychlorinated Biphenyls				
Total PCBs	0.0005	0.045	0.0033	0.0002
Semi-Volatile Organic Compounds				
2,4-Dimethylphenol	1		520	0.38
Benzo(a)pyrene	0.005		0.002	
Benzo(b)fluoranthene	0.002		0.002	
Benzo(k)fluoranthene	0.005		0.005	
bis(2-Ethylhexyl)phthalate	0.006		0.32	0.032
Carbazole	0.35		7.4	0.01
Chrysene	0.005		0.005	
Dibenz(a,h)anthracene	0.002		0.002	
Fluoranthene	0.21	0.21	0.21	0.005
Indeno(1,2,3-cd)pyrene	0.002		0.002	
Methylphenol (Cresol)	1		810	0.071
Naphthalene	1.5	31	31	0.013
Pentachlorophenol	0.001		0.2	0.0028
Phenanthrene	0.15	1	1	0.005
Phenol	13		29000	0.21
Volatile Organic Compounds				
1,1-Dichloroethene	0.007	1.3	11	0.065
1,2-Dichloropropane	0.005	36	16	0.29
2-Butanone	38	240000	240000	2.2
Benzene	0.005	35	11	0.2
cis-1,2-Dichloroethene	0.07	210	290	0.62
Ethylbenzene	0.7	170	170	0.018
Trichloroethene	0.005	97	22	0.2
Vinyl chloride	0.002	13	1	0.015
Xylene (total)	10	190	190	0.035
General Chemistry				
Formaldehyde	3.8	360	30000	0.12
Ammonia	10	7100		0.736
pH Field	8.5			9

TMW-04836	03/07/03
Metals	
Aluminum (Dissolved)	1.4/1.5
Antimony (Dissolved)	0.003/0.002 J
Arsenic (Dissolved)	0.016/0.016
Beryllium (Dissolved)	ND (0.001)/ND (0.001)
Cadmium (Dissolved)	ND (0.001)/ND (0.001)
Chromium Total (Dissolved)	ND (0.005)/ND (0.005)
Cobalt (Dissolved)	ND (0.007)/ND (0.007)
Iron (Dissolved)	0.21/0.2
Lead (Dissolved)	ND (0.003)/ND (0.003)
Mercury (Dissolved)	ND (0.00002)/ND (0.00002)
Nickel (Dissolved)	0.004 J/0.004 J
Selenium (Dissolved)	0.002/0.002
Vanadium (Dissolved)	0.006 J/0.004 J
Zinc (Dissolved)	ND (0.01)/0.002 J
PCBs	
Total PCBs	ND (0.0002)/ND (0.0002)
SVOAs	
2,4-Dimethylphenol	0.008/0.005
Benzo(a)pyrene	ND (0.004)/ND (0.004)
Benzo(b)fluoranthene	ND (0.004)/ND (0.004)
Benzo(k)fluoranthene	ND (0.005)/ND (0.005)
bis(2-Ethylhexyl)phthalate	ND (0.005)/0.012
Carbazole	ND (0.01)/ND (0.01)
Chrysene	ND (0.005)/ND (0.005)
Dibenz(a,h)anthracene	ND (0.004)/ND (0.004)
Fluoranthene	ND (0.005)/ND (0.005)
Indeno(1,2,3-cd)pyrene	ND (0.004)/ND (0.004)
Methylphenol (Cresol)	0.024 J/0.028 J
Naphthalene	ND (0.005)/ND (0.005)
Pentachlorophenol	ND (0.02)/ND (0.02)
Phenanthrene	ND (0.005)/ND (0.005)
Phenol	0.007/0.006
VOAs	
1,1-Dichloroethene	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)/ND (0.001)
2-Butanone (Methyl Ethyl Ketone)	ND (0.025)/ND (0.001)
Benzene	ND (0.001)/ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)/ND (0.001)
Ethylbenzene	ND (0.001)/ND (0.001)
Trichloroethene	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001)/ND (0.001)
Xylene (total)	ND (0.002)/ND (0.002)
WQ	
Ammonia	18 J/19 J

MW-04836	08/02/00	12/14/01
Metals		
Aluminum	109 J	-
Aluminum (Dissolved)	ND (0.05)	-
Antimony	ND (0.05)	-
Antimony (Dissolved)	ND (0.05)	-
Arsenic	0.097	-
Arsenic (Dissolved)	0.002 J	0.004 J
Beryllium	0.008 J	-
Beryllium (Dissolved)	ND (0.005)	-
Cadmium	ND (0.005)	-
Cadmium (Dissolved)	ND (0.005)	-
Chromium	0.21	-
Chromium (Dissolved)	ND (0.01)	-
Chromium, Hexavalent	ND (0.01)	-
Cobalt	0.101	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)
Iron	311	-
Iron (Dissolved)	3.31 J	-
Lead	0.358	0.032
Lead (Dissolved)	ND (0.002)	0.003
Mercury	0.001	-
Mercury (Dissolved)	ND (0.001)	-
Nickel	0.37	0.037
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	0.283	0.035
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Zinc	0.808	0.052
Zinc (Dissolved)	0.01	0.002 J
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.00002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
Carbazole	ND (0.01)	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)/ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)/ND (0.01)
Phenol	ND (0.01)	ND (0.01)/0.001 J
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)/ND (0.001)
2-Butanone	R	R/R
Benzene	ND (0.001)	ND (0.001)/ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)/ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)/ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)/ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)/ND (0.001)
WQ		
pH Field	-	6.97/6.97

MW-18	08/07/00	12/14/01
Metals		
Aluminum	7.59	-
Aluminum (Dissolved)	0.364	-
Antimony	ND (0.05)	-
Antimony (Dissolved)	0.031 J	-
Arsenic	0.039	-
Arsenic (Dissolved)	0.038	0.038
Beryllium	ND (0.005)	-
Beryllium (Dissolved)	ND (0.005)	-
Cadmium	ND (0.005)	-
Cadmium (Dissolved)	ND (0.005)	-
Chromium (Dissolved)	ND (0.01)	-
Chromium, Hexavalent	ND (0.01)	-
Fluoride	15.9	-
Lead	0.041	-
Lead (Dissolved)	ND (0.002)	-
Nickel	0.039	-
Nickel (Dissolved)	ND (0.02)	-
Vanadium	0.034	-
Vanadium (Dissolved)	0.024	-
Zinc	0.442 J	-
Zinc (Dissolved)	ND (0.01)	-
VOAs		
1,1-Dichloroethane	ND (0.001)	-
1,2-Dichloropropane	ND (0.001)	-
2-Butanone	0.022	-
Benzene	0.008	0.003
cis-1,2-Dichloroethene	ND (0.001)	-
Ethylbenzene	ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)	-
Vinyl chloride	ND (0.001)	-
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
Ammonia	29.1	25.3
pH Field	10.7	7.87

MW-17	08/04/99	08/07/00	12/14/01	12/19/02
Metals				
Aluminum	-	ND (0.05)	-	-
Aluminum (Dissolved)	-	ND (0.05)	-	-
Antimony	-	ND (0.05)	-	-
Antimony (Dissolved)	-	ND (0.05)	-	-
Arsenic	0.022	0.029	-	-
Arsenic (Dissolved)	0.022	0.028	0.02	-
Beryllium	-	ND (0.005)	-	-
Beryllium (Dissolved)	-	ND (0.005)	-	-
Cadmium	ND (0.004)	ND (0.005)	-	-
Cadmium (Dissolved)	ND (0.004)	ND (0.005)	-	-
Chromium	ND (0.005)	-	-	-
Chromium (Dissolved)	ND (0.005)	ND (0.01)	-	-
Chromium, Hexavalent	-	ND (0.01)	-	-
Cyanide (total)	0.01	-	-	-
Fluoride	-	17	-	-
Lead	ND (0.002)	ND (0.002)	-	-
Lead (Dissolved)	ND (0.002)	ND (0.002)	-	-
Mercury	ND (0.001)	-	-	-
Mercury (Dissolved)	ND (0.001)	-	-	-
Nickel	ND (0.02)	ND (0.02)	-	-
Nickel (Dissolved)	ND (0.02)	ND (0.02)	-	-
Selenium	ND (0.005)	-	-	-
Selenium (Dissolved)	ND (0.005)	-	-	-
Vanadium	-	ND (0.01)	-	-
Vanadium (Dissolved)	-	ND (0.01)	-	-
Zinc	-	ND (0.01)	-	-
Zinc (Dissolved)	-	ND (0.01)	-	-
PCBs				
Total PCBs	ND (0.0002)	-	-	-
SVOAs				
2,4-Dimethylphenol	0.01	-	-	-
Benzo(a)pyrene	ND (0.01)	-	-	-
Benzo(b)fluoranthene	ND (0.01)	-	-	-
Benzo(k)fluoranthene	ND (0.01)	-	-	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	-	-	-
Chrysene	ND (0.01)	-	-	-
Dibenz(a,h)anthracene	ND (0.01)	-	-	-
Fluoranthene	ND (0.01)	-	-	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	-	-	-
Methylphenol (Cresol)	ND (0.01)	-	-	-
Naphthalene	0.008 JND (0.01)	-	-	-
Pentachlorophenol	ND (0.025)	-	-	-
Phenanthrene	ND (0.01)	-	-	-
Phenol	0.017	-	-	-
VOAs				
1,1-Dichloroethene	ND (0.001)	ND (0.001)	-	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)	-	ND (0.001)/ND (0.001)
2-Butanone	R	ND (0.02)	-	ND (0.02)/ND (0.02)
Benzene	0.089 J	0.045 J	0.004	0.022/0.022
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)	-	ND (0.001)/ND (0.001)
Ethylbenzene	0.018	0.008	0.0005	0.0004/0.0004
Trichloroethene	ND (0.001)	ND (0.001)	-	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)	-	ND (0.001)/ND (0.001)
Xylene (total)	0.033	0.015	0.002	0.002/0.001
WQ				
Ammonia	-	25.5	24.4	-
pH Field	-	9.09	7.94	8.66/8.6

MW-5	08/07/00	12/14/01	12/19/02
Metals			
Aluminum	0.803	-	-
Aluminum (Dissolved)	0.891	-	-
Antimony	ND (0.05)	-	-
Antimony (Dissolved)	ND (0.05)	-	-
Arsenic	0.029	-	-
Arsenic (Dissolved)	0.028	0.088	-
Beryllium	ND (0.005)	-	-
Beryllium (Dissolved)	ND (0.005)	-	-
Cadmium	ND (0.005)	-	-
Cadmium (Dissolved)	ND (0.005)	-	-
Chromium	0.01	-	-
Chromium (Dissolved)	ND (0.01)	-	-
Chromium, Hexavalent	ND (0.01)	-	-
Cobalt	0.018	-	-
Cobalt (Dissolved)	ND (0.01)	-	-
Cyanide (total)	ND (0.01)	0.006 J	-
Fluoride	-	9.1	-
Iron	48.3	-	-
Iron (Dissolved)	11.4 J	-	-
Lead	0.096	ND (0.002)	-
Lead (Dissolved)	ND (0.002)	ND (0.002)	-
Mercury	ND (0.0002)	-	-
Mercury (Dissolved)	ND (0.001)	-	-
Nickel	0.046	ND (0.02)	-
Nickel (Dissolved)	ND (0.02)	ND (0.02)	-
Selenium	ND (0.005) J	-	-
Selenium (Dissolved)	ND (0.005)	-	-
Vanadium	0.092	0.009 J	-
Vanadium (Dissolved)	ND (0.01)	0.008 J	-
Zinc	0.316	0.011	-
Zinc (Dissolved)	ND (0.01)	0.002 J	-
OTHER			
Formaldehyde	-	ND (0.05)	-
PCBs			
Total PCBs	ND (0.0002)	ND (0.0002)	-
SVOAs			
2,4-Dimethylphenol	ND (0.01)	ND (0.01)	-
Benzo(a)pyrene	ND (0.01)	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	-
Carbazole	-	ND (0.01)	-
Chrysene	ND (0.01)	ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	-
Fluoranthene	ND (0.01)	ND (0.01)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	-
Methylphenol (Cresol)	ND (0.01)	0.008 J	-
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)	-
Pentachlorophenol	ND (0.025)	ND (0.025)	-
Phenanthrene	ND (0.01)	ND (0.01)	-
Phenol	ND (0.01)	0.01	-
VOAs			
1,1-Dichloroethene	ND (0.001)	ND (0.001)	-
1,2-Dichloropropane	ND (0.001)	ND (0.001)	-
2-Butanone	R	ND (0.02)	-
Benzene	ND (0.001)	ND (0.001)	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)	-
Ethylbenzene	ND (0.001)	ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)	-
Vinyl chloride	ND (0.001)	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)	ND (0.001)
WQ			
Ammonia	-	-	2.4
pH Field	-	10.5	9.36

TMW-04834	12/19/02
Metals	
Fluoride	0.9
WQ	
pH Field	7.53

TMW-04835	12/19/01
Metals	
Arsenic	0.004 J
Arsenic (Dissolved)	0.003 J
VOAs	
Benzene	0.0002
Ethylbenzene	0.0001
Xylene (total)	0.001
WQ	
Ammonia	0.07
pH Field	8.21

TMW-04839	12/20/01
Metals	
Arsenic	0.009
Arsenic (Dissolved)	0.009
VOAs	
Benzene	ND (0.001)
Ethylbenzene	0.0001
Xylene (total)	0.001
WQ	
Ammonia	1.67 J
pH Field	10.9

TMW-05337	12/19/02
Metals	
Fluoride	6.2
WQ	
Ammonia	5.5
pH Field	8.97

TMW-05137	12/19/01
Metals	
Arsenic	0.02
Arsenic (Dissolved)	0.02
VOAs	
Benzene	ND (0.001)
Ethylbenzene	0.0001
Xylene (total)	0.001 J
WQ	
Ammonia	4.26
pH Field	9.5

TMW-05138	12/19/01
Metals	
Arsenic	0.003 J/0.003 J
Arsenic (Dissolved)	0.003 J/0.002 J
VOAs	
Benzene	ND (0.001)/ND (0.001)
Ethylbenzene	ND (0.001)/ND (0.001)
Xylene (total)	0.001 J/0.0004
WQ	
Ammonia	1.65/1.49
pH Field	8.37/8.27

TMW-05036	12/20/01
Metals	
Arsenic	0.015
Arsenic (Dissolved)	0.015
VOAs	
Benzene	0.0002
Ethylbenzene	ND (0.001)
Xylene (total)	0.0005 J
WQ	
Ammonia	17.7 J
pH Field	10.3

TMW-05135	12/19/02
Metals	
Fluoride	19/18
WQ	
Ammonia	7.5/8.2
pH Field	10.1/10.1

MW-04831	12/03/98	07/28/00
Metals		
Aluminum	189	18
Aluminum (Dissolved)	ND (0.05)	ND (0.05)
Antimony	0.079	ND (0.05)
Antimony (Dissolved)	ND (0.05)	ND (0.05)
Arsenic	0.041	0.009
Arsenic (Dissolved)	ND (0.005)	0.004 J
Beryllium	0.008	0.001 J
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.48	-
Chromium (Dissolved)	ND (0.005)	ND (0.01)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	0.101	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)
Iron	311	-
Iron (Dissolved)	3.31 J	-
Lead	0.358	0.032
Lead (Dissolved)	ND (0.002)	0.003
Mercury	0.001	-
Mercury (Dissolved)	ND (0.001)	-
Nickel	0.37	0.037
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	0.283	0.035
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Zinc	0.808	0.052
Zinc (Dissolved)	0.01	0.002 J
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.00002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
Carbazole	ND (0.01)	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)
2-Butanone	R	R
Benzene	ND (0.001)	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	7.7

CTPHB-5	08/04/98
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	0.003 JND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)

CTPHB-1	08/04/98
SVOAs	
2,4-Dimethylphenol	ND (0.01)/ND (0.01)
Benzo(a)pyrene	ND (0.01)/ND (0.01)
Benzo(b)fluoranthene	ND (0.01)/ND (0.01)
Benzo(k)fluoranthene	ND (0.01)/ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)/ND (0.01)
Chrysene	ND (0.01)/ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)/ND (0.01)
Fluoranthene	ND (0.01)/ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)/ND (0.01)
Methylphenol (Cresol)	ND (0.01)/ND (0.01)
Naphthalene	ND (0.002) JND (0.01)/ND (0.002) JND (0.01)
Pentachlorophenol	ND (0.025)/ND (0.025)
Phenanthrene	ND (0.01)/ND (0.01)
Phenol	ND (0.01)/ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)/ND (0.001)
2-Butanone	0.094 JR/-
Benzene	ND (0.001) J/ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)/ND (0.001)
Ethylbenzene	ND (0.001) J/ND (0.001)
Trichloroethene	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001)/ND (0.001)
Xylene (total)	ND (0.001)/ND (0.001)

CTPHB-3	08/04/98
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.002) JND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001) J
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001) J
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	0.001 J

CTPHB-2	08/04/98
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.002) JND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	6.2 J
Benzene	ND (0.001) J
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001) J
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	0.001 J

CTPHB-4	08/04/98
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	0.002 JND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)

TMW-05137	12/19/01
Metals	
Arsenic	0.02
Arsenic (Dissolved)	0.02
VOAs	
Benzene	ND (0.001)
Ethylbenzene	0.0001
Xylene (total)	0.001 J
WQ	
Ammonia	4.26
pH Field	9.5

TMW-05138	12/19/01
Metals	
Arsenic	0.003 J/0.003 J
Arsenic (Dissolved)	0.003 J/0.002 J
VOAs	
Benzene	ND (0.001)/ND (0.001)
Ethylbenzene	ND (0.001)/ND (0.001)
Xylene (total)	0.001 J/0.0004
WQ	
Ammonia	1.65/1.49
pH Field	8.37/8.27

MW-05036	12/03/98	08/02/00	12/14/01
Metals			
Aluminum	13.1	0.813	-
Aluminum (Dissolved)	ND (0.05)	0.138	-
Antimony	ND (0.05)	ND (0.05)	-
Antimony (Dissolved)	ND (0.05)	ND (0.05)	-
Arsenic	0.021	0.01	-
Arsenic (Dissolved)	ND (0.005)	0.006	0.008
Beryllium	ND (0.005)	ND (0.005)	-
Beryllium (Dissolved)	ND (0.005)	ND (0.005)	-
Cadmium	ND (0.004)	ND (0.005)	-
Cadmium (Dissolved)	ND (0.004)	ND (0.005)	-
Chromium	0.097	-	-
Chromium (Dissolved)	ND (0.005)	ND (0.009)	-
Chromium, Hexavalent	-	ND (0.01)	-
Cobalt	0.018	-	-
Cobalt (Dissolved)	ND (0.01)	-	-
Cyanide (total)	ND (0.01)	0.006 J	-
Fluoride	-	9.1	-
Iron	48.3	-	-
Iron (Dissolved)	11.4 J	-	-
Lead	0.096	ND (0.002)	-
Lead (Dissolved)	ND (0.002)	ND (0.002)	-
Mercury	ND (0.0002)	-	-
Mercury (Dissolved)	ND (0.001)	-	-
Nickel	0.046	ND (0.02)	-
Nickel (Dissolved)	ND (0.02)	ND (0.02)	-
Selenium	ND (0.005) J	-	-
Selenium (Dissolved)	ND (0.005)	-	-
Vanadium	0.092	0.009 J	-
Vanadium (Dissolved)	ND (0.01)	0.008 J	-
Zinc	0.316	0.011	-
Zinc (Dissolved)	ND (0.01)	0.002 J	-
OTHER			
Formaldehyde	-	ND (0.05)	-
PCBs			
Total PCBs	ND (0.0002)	ND (0.0002)	-
SVOAs			
2,4-Dimethylphenol	ND (0.01)	ND (0.01)	-
Benzo(a)pyrene	ND (0.01)	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	-
Carbazole	-	ND (0.01)	-
Chrysene	ND (0.01)	ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	-
Fluoranthene	ND (0.01)	ND (0.01)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	-
Methylphenol (Cresol)	ND (0.01)	0.008 J	-
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)	-
Pentachlorophenol	ND (0.025)	ND (0.025)	-
Phenanthrene	ND (0.01)	ND (0.01)	-
Phenol	ND (0.01)	0.01	-
VOAs			
1,1-Dichloroethene	ND (0.001)	ND (0.001)	-
1,2-Dichloropropane	ND (0.001)	ND (0.001)	-
2-Butanone	R	ND (0.02)	-
Benzene	ND (0.001)	ND (0.001)	ND (0.001)
cis-1,2-Dichloroethene

Chemical Name	Commercial and Industrial/I.R.&V. Drinking Water A	Groundwater Volatilization to Indoor Air B	Groundwater Contact C	Groundwater Surface Water Interface D
Metals				
Aluminum	4.1		64000	
Aluminum (Dissolved)	4.1		64000	
Antimony	0.006		68	0.13
Antimony (Dissolved)	0.006		68	0.13
Arsenic	0.05		4.3	0.15
Arsenic (Dissolved)	0.05		4.3	0.15
Beryllium	0.004		290	1.2
Beryllium (Dissolved)	0.004		290	1.2
Cadmium	0.005		190	0.13
Cadmium (Dissolved)	0.005		190	0.13
Chromium	0.1		460	0.011
Chromium (Dissolved)	0.1		460	0.011
Chromium, Hexavalent	0.1		460	0.011
Chromium, Hexavalent (Dissolved)	0.1		460	0.011
Cobalt	0.1		2400	0.1
Cobalt (Dissolved)	0.1		2400	0.1
Cyanide (total)	0.2		57	0.0052
Iron	5.6		58000	
Iron (Dissolved)	5.6		58000	
Lead	0.004			0.19
Lead (Dissolved)	0.004			0.19
Mercury	0.002	0.056	0.056	0.0000013
Mercury (Dissolved)	0.002	0.056	0.056	0.0000013
Nickel	0.1		740000	210
Nickel (Dissolved)	0.1		740000	210
Selenium	0.05		970	0.005
Selenium (Dissolved)	0.05		970	0.005
Vanadium	0.062		970	0.012
Vanadium (Dissolved)	0.062		970	0.012
Zinc	5		110000	22
Zinc (Dissolved)	5		110000	22
Polychlorinated Biphenyls				
Total PCBs	0.0005	0.045	0.0033	0.0002
Semi-Volatile Organic Compounds				
2,4-Dimethylphenol	1		520	0.38
Benzo(a)pyrene	0.005		0.002	
Benzo(b)fluoranthene	0.002		0.002	
Benzo(k)fluoranthene	0.005		0.005	
bis(2-Ethylhexyl)phthalate	0.006		0.32	0.032
Carbazole	0.35		7.4	0.01
Chrysene	0.005		0.005	
Dibenz(a,h)anthracene	0.002		0.002	
Fluoranthene	0.21	0.21	0.21	0.005
Indeno(1,2,3-cd)pyrene	0.002		0.002	
Methylphenol (Cresol)	1		810	0.071
Naphthalene	1.5	31	31	0.013
Pentachlorophenol	0.001		0.2	0.0028
Phenanthrene	0.15	1	1	0.005
Phenol	13		29000	0.21
Volatile Organic Compounds				
1,1-Dichloroethene	0.007	1.3	11	0.065
1,2-Dichloropropane	0.005	36	16	0.29
2-Butanone	38	240000	240000	2.2
Benzene	0.005	35	11	0.2
cis-1,2-Dichloroethene	0.07	210	290	0.62
Ethylbenzene	0.7	170	170	0.018
Trichloroethene	0.005	97	22	0.2
Vinyl chloride	0.002	13	1	0.015
Xylene (total)	10	190	190	0.035
General Chemistry				
Formaldehyde	3.8	360	30000	0.12
Ammonia	10	7100		0.736
pH Field	8.5			9

TMW-04436	12/7/01	12/20/02
Metals		
Fluoride	4/4.1	0.9
PCBs		
Total PCBs	ND (0.0002)/ND (0.0002)	-
VOAs		
1,1-Dichloroethene	ND (0.001)/ND (0.001)	-
1,2-Dichloropropane	ND (0.001)/ND (0.001)	-
2-Butanone	R/R	-
Benzene	ND (0.001)/ND (0.001)	-
cis-1,2-Dichloroethene	ND (0.001)/ND (0.001)	-
Ethylbenzene	ND (0.001)/ND (0.001)	-
Trichloroethene	ND (0.001)/ND (0.001)	-
Vinyl chloride	ND (0.001)/ND (0.001)	-
Xylene (total)	ND (0.001)/ND (0.001)	-
WG		
Ammonia	5.2	
pH Field	7.51/7.51	11

MW-04434	12/07/98	07/24/00	01/15/02
Metals			
Aluminum	33.3	19.1	-
Aluminum (Dissolved)	ND (0.06)	0.032 J	-
Antimony	ND (0.06)	ND (0.05)	-
Antimony (Dissolved)	ND (0.06)	ND (0.05)	-
Arsenic	0.016	0.012	-
Arsenic (Dissolved)	ND (0.005)	0.009 J	-
Beryllium	ND (0.005)	0.001 J	-
Beryllium (Dissolved)	ND (0.005)	ND (0.005)	-
Cadmium	ND (0.004)	ND (0.005)	-
Cadmium (Dissolved)	ND (0.004)	ND (0.005)	-
Chromium	0.148	ND (0.01)	-
Chromium (Dissolved)	ND (0.006)	ND (0.01)	-
Chromium, Hexavalent	-	0.009 J	-
Cobalt	0.016	-	-
Cobalt (Dissolved)	ND (0.01)	-	-
Cyanide (total)	ND (0.01)	ND (0.01)	-
Fluoride	-	-	0
Iron	56 J	-	-
Iron (Dissolved)	0.043	-	-
Lead	0.069	0.047	-
Lead (Dissolved)	ND (0.002)	ND (0.002)	-
Mercury	ND (0.0002)	-	-
Mercury (Dissolved)	ND (0.0002)	-	-
Nickel	0.079	0.037	-
Nickel (Dissolved)	ND (0.02)	ND (0.02)	-
Selenium	ND (0.005) J	-	-
Selenium (Dissolved)	ND (0.005) J	-	-
Vanadium	0.052	0.034	-
Vanadium (Dissolved)	ND (0.01)	ND (0.01)	-
Zinc	0.133	0.076	-
Zinc (Dissolved)	ND (0.01)	ND (0.01)	-
OTHER			
Formaldehyde	-	ND (0.05)	-
PCBs			
Total PCBs	0.001 J	0.0004 J	ND (0.0022)
SVOAs			
2,4-Dimethylphenol	0.02	0.03	0.014
Benzo(a)pyrene	ND (0.01)	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.01)	ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.026)	ND (0.026)	ND (0.026)
Phenanthrene	ND (0.01)	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	ND (0.01)	ND (0.01)
VOAs			
1,1-Dichloroethene	ND (0.001)	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)	ND (0.001)
2-Butanone	R	R	R
Benzene	0.001	0.002	0.002
cis-1,2-Dichloroethene	0.006	0.004	0.002
Ethylbenzene	0.001	0.001	0.0068
Trichloroethene	ND (0.001)	ND (0.001)	ND (0.001)
Vinyl chloride	0.006	0.005	0.008 J
Xylene (total)	0.003	0.002	0.001
WG			
pH Field	-	8.11	-

MW-04435	07/31/00
Metals	
Aluminum	22.8 J
Aluminum (Dissolved)	ND (0.06)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.017 J
Arsenic (Dissolved)	0.032 J
Beryllium	0.001 J
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium (Dissolved)	ND (0.01)
Chromium, Hexavalent	ND (0.01)
Cyanide (total)	ND (0.01)
Lead	0.079
Lead (Dissolved)	ND (0.002)
Nickel	0.059
Nickel (Dissolved)	ND (0.02)
Vanadium	0.03
Vanadium (Dissolved)	ND (0.01)
Zinc	0.239
Zinc (Dissolved)	0.008 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	0.007 J
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.01)
Phenol	0.002
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	0.0033
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WG	
pH Field	7.7

SB-04434	09/21/00
PCBs	
Total PCBs	0.0004 J
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WG	
pH Field	7.58

TMW-04635	03/07/03
Metals	
Aluminum (Dissolved)	ND (0.05)
Antimony (Dissolved)	0.001 J
Arsenic (Dissolved)	0.003 J
Beryllium (Dissolved)	ND (0.001)
Cadmium (Dissolved)	ND (0.005)
Chromium (Dissolved)	ND (0.01)
Chromium, Hexavalent	ND (0.01)
Cyanide (total)	ND (0.01)
Lead (Dissolved)	ND (0.003)
Mercury (Dissolved)	ND (0.0002)
Nickel (Dissolved)	0.003 J
Selenium (Dissolved)	0.004
Vanadium (Dissolved)	ND (0.007)
Zinc (Dissolved)	0.008 J
PCBs	
Total PCBs	ND (0.0022)
SVOAs	
2,4-Dimethylphenol	ND (0.006)
Benzo(a)pyrene	ND (0.004)
Benzo(b)fluoranthene	ND (0.004)
Benzo(k)fluoranthene	ND (0.006)
bis(2-Ethylhexyl)phthalate	ND (0.006)
Carbazole	ND (0.01)
Chrysene	ND (0.006)
Dibenz(a,h)anthracene	ND (0.004)
Fluoranthene	ND (0.006)
Indeno(1,2,3-cd)pyrene	ND (0.004)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.006)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.006)
Phenol	ND (0.006)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone (Methyl Ethyl Ketone)	ND (0.05)
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.002)
WG	
Ammonia	4.2 J

MW-04434	07/31/00
Metals	
Aluminum	8.14 J
Aluminum (Dissolved)	ND (0.06)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.008 J
Arsenic (Dissolved)	0.003 J
Beryllium	0.0004 J
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium (Dissolved)	ND (0.01)
Chromium, Hexavalent	ND (0.01)
Cyanide (total)	ND (0.01)
Lead	0.006
Lead (Dissolved)	ND (0.002)
Nickel	0.031
Nickel (Dissolved)	ND (0.02)
Vanadium	0.011
Vanadium (Dissolved)	ND (0.01)
Zinc	0.035
Zinc (Dissolved)	0.002 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.01)
Phenol	0.001
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.002)
WG	
pH Field	7.58

MW-04433	08/01/00	12/18/02
Metals		
Aluminum	8.59 J	-
Aluminum (Dissolved)	ND (0.06)	-
Antimony	ND (0.05)	-
Antimony (Dissolved)	ND (0.05)	-
Arsenic	0.018 J	-
Arsenic (Dissolved)	0.01	-
Beryllium	0.0003 J	-
Beryllium (Dissolved)	ND (0.005)	-
Cadmium	ND (0.005)	-
Cadmium (Dissolved)	ND (0.005)	-
Chromium (Dissolved)	ND (0.01)	-
Chromium, Hexavalent	ND (0.01)	-
Cyanide (total)	ND (0.01)	-
Fluoride	-	2.7
Lead	0.006	-
Lead (Dissolved)	0.001 J	-
Nickel	0.017 J	-
Nickel (Dissolved)	ND (0.02)	-
Vanadium	0.018	-
Vanadium (Dissolved)	ND (0.01)	-
Zinc	0.038	-
Zinc (Dissolved)	0.004 J	-
OTHER		
Formaldehyde	ND (0.05)	-
PCBs		
Total PCBs	ND (0.0002)	-
SVOAs		
2,4-Dimethylphenol	ND (0.01)	-
2,4-Dimethylphenol	ND (0.01)	-
Benzo(a)pyrene	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	-
Carbazole	ND (0.01)	-
Chrysene	ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)	-
Fluoranthene	ND (0.01)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	-
Methylphenol (Cresol)	ND (0.01)	-
Naphthalene	ND (0.01)	-
Pentachlorophenol	ND (0.026)	-
Phenanthrene	ND (0.01)	-
Phenol	ND (0.01)	-
VOAs		
1,1-Dichloroethene	-	ND (0.001)
1,2-Dichloropropane	-	ND (0.001)
2-Butanone	-	0.005
Benzene	-	0.0091
cis-1,2-Dichloroethene	-	ND (0.001)
Ethylbenzene	-	ND (0.001)
Trichloroethene	-	ND (0.001)
Vinyl chloride	-	ND (0.001)
Xylene (total)	-	ND (0.001)
WG		
pH Field	8.05	6.91

MW-04433	09/07/03
Metals	
Aluminum (Dissolved)	ND (0.05)
Antimony (Dissolved)	0.002 J
Arsenic (Dissolved)	0.006 J
Beryllium (Dissolved)	ND (0.001)
Cadmium (Dissolved)	ND (0.005)
Chromium Total (Dissolved)	ND (0.006)
Cobalt (Dissolved)	ND (0.007)
Iron (Dissolved)	3.3 J
Lead (Dissolved)	ND (0.003)
Mercury (Dissolved)	ND (0.0002)
Nickel (Dissolved)	ND (0.035)
Selenium (Dissolved)	0.001 J
Vanadium (Dissolved)	0.009 J
Zinc (Dissolved)	0.009 J
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.006)
Benzo(a)pyrene	ND (0.004)
Benzo(b)fluoranthene	ND (0.004)
Benzo(k)fluoranthene	ND (0.006)
bis(2-Ethylhexyl)phthalate	ND (0.006)
Carbazole	ND (0.01)
Chrysene	ND (0.006)
Dibenz(a,h)anthracene	ND (0.004)
Fluoranthene	ND (0.006)
Indeno(1,2,3-cd)pyrene	ND (0.004)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.006)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.006)
Phenol	ND (0.006)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone (Methyl Ethyl Ketone)	ND (0.05)
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.002)
WG	
Ammonia	2.1 J

TMW-04632	12/17/01
Metals	
Fluoride	8.6
PCBs	
Total PCBs	ND (0.0002)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WG	
pH Field	8.05

TMW-04631	09/08/03
Metals	
Aluminum	0.118
Aluminum (Dissolved)	0.058 J
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.002 J
Arsenic (Dissolved)	0.002 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	0.002 J
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.005)
Chromium (Dissolved)	ND (0.005)
Cyanide (total)	ND (0.01)
Lead	0.001 J
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.013 -
Zinc (Dissolved)	0.004 J -
OTHER	
Formaldehyde	ND (0.05) -
PCBs	
Total PCBs	ND (0.0002) -
SVOAs	
2,4-Dimethylphenol	ND (0.01) -
Benzo(a)pyrene	ND (0.01) -
Benzo(b)fluoranthene	ND (0.01) -
Benzo(k)fluoranthene	ND (0.01) -
bis(2-Ethylhexyl)phthalate	ND (0.01) -
Carbazole	ND (0.01) -
Chrysene	ND (0.01) -
Dibenz(a,h)anthracene	ND (0.01) -
Fluoranthene	ND (0.01) -
Indeno(1,2,3-cd)pyrene	ND (0.01) -
Methylphenol (Cresol)	ND (0.01) -
Naphthalene	ND (0.01) -
Pentachlorophenol	ND (0.026) -
Phenanthrene	ND (0.01) -
Phenol	ND (0.01) -
VOAs	
1,1-Dichloroethene	ND (0.001) -
1,2-Dichloropropane	ND (0.001) -
2-Butanone (Methyl Ethyl Ketone)	ND (0.05) -
Benzene	ND (0.001) -
cis-1,2-Dichloroethene	ND (0.001) -
Ethylbenzene	ND (0.001) -
Trichloroethene	ND (0.001) -
Vinyl chloride	ND (0.001) -
Xylene (total)	ND (0.002) -
WG	
Ammonia	2.1 J

TMW-04128	09/08/03
Metals	
Aluminum (Dissolved)	ND (0.05)
Antimony (Dissolved)	0.001 J
Arsenic (Dissolved)	ND (0.01)
Beryllium (Dissolved)	ND (0.001)
Cadmium (Dissolved)	ND (0.001)
Chromium Total (Dissolved)	ND (0.006)
Cobalt (Dissolved)	ND (0.002)
Iron (Dissolved)	2.7
Lead (Dissolved)	ND (0.003)
Mercury (Dissolved)	ND (0.0002)
Nickel (Dissolved)	0.004 J
Selenium (Dissolved)	0.008
Vanadium (Dissolved)	ND (0.007)
Zinc (Dissolved)	ND (0.005)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.006)
Benzo(a)pyrene	ND (0.004)
Benzo(b)fluoranthene	ND (0.004)
Benzo(k)fluoranthene	ND (0.006)
bis(2-Ethylhexyl)phthalate	ND (0.006)
Carbazole	ND (0.01)
Chrysene	ND (0.006)
Dibenz(a,h)anthracene	ND (0.004)
Fluoranthene	ND (0.006)
Indeno(1,2,3-cd)pyrene	ND (0.004)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.006)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.006)
Phenol	ND (0.006)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone (Methyl Ethyl Ketone)	ND (0.05)
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.002)
WG	
Ammonia	5.2 J

TMW-04127	03/07/03
Metals	
Aluminum (Dissolved)	ND (0.05)
Antimony (Dissolved)	0.002
Arsenic (Dissolved)	0.002 J
Beryllium (Dissolved)	ND (0.001)
Cadmium (Dissolved)	ND (0.005)
Chromium Total (Dissolved)	ND (0.006)
Cobalt (Dissolved)	ND (0.007)
Iron (Dissolved)	7.3
Lead (Dissolved)	ND (0.003)
Mercury (Dissolved)	ND (0.0002)
Nickel (Dissolved)	ND (0.035)
Selenium (Dissolved)	0.0004 J
Vanadium (Dissolved)	ND (0.007)
Zinc (Dissolved)	0.009 J
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.006)
Benzo(a)pyrene	ND (0.004)
Benzo(b)fluoranthene	ND (0.004)
Benzo(k)fluoranthene	ND (0.006)
bis(2-Ethylhexyl)phthalate	ND (0.006)
Carbazole	ND (0.01)
Chrysene	ND (0.006)
Dibenz(a,h)anthracene	ND (0.004)
Fluoranthene	ND (0.006)
Indeno(1,2,3-cd)pyrene	ND (0.004)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.006)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.006)
Phenol	ND (0.006)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone (Methyl Ethyl Ketone)	ND (0.05)
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.002)
WG	
Ammonia	5.2 J

TMW-04630	12/19/02
Metals	
Fluoride	2.5
WG	
pH Field	7.78

SB-04433a	08/21/00
PCBs	
Total PCBs	0.0004 J
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	0.007 J
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.01)
Phenol	0.002
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	0.0033
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WG	
pH Field	7.7

SB-04435a	08/21/00
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	0.038
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	0.007 J
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.01)
Phenol	0.003
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	0.002
cis-1,2-Dichloroethene	0.003
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	0.009 J
Xylene (total)	ND (0.001)
WG	
Ammonia	1.8 J

TMW-04135	12/14/01
Metals	
Fluoride	2.7
PCBs	
Total PCBs	ND (0.0002)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WG	
pH Field	7.36

TMW-04136	03/07/03
Metals	
Aluminum (Dissolved)	ND (0.05)
Antimony (Dissolved)	0.002 J
Arsenic (Dissolved)	0.008 J
Beryllium (Dissolved)	ND (0.001)
Cadmium (Dissolved)	ND (0.005)
Chromium Total (Dissolved)	ND (0.006)
Cobalt (Dissolved)	0.001 J
Iron (Dissolved)	4.9
Lead (Dissolved)	ND (0.003)
Mercury (Dissolved)	ND (0.0002)
Nickel (Dissolved)	ND (0.035)
Selenium (Dissolved)	0.001 J
Vanadium (Dissolved)	ND (0.007)
Zinc (Dissolved)	0.004 J
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.006)
Benzo(a)pyrene	ND (0.004)
Benzo(b)fluoranthene	ND (0.004)
Benzo(k)fluoranthene	ND (0.006)
bis(2-Ethylhexyl)phthalate	ND (0.006)
Carbazole	ND (0.01)
Chrysene	ND (0.006)
Dibenz(a,h)anthracene	ND (0.004)
Fluoranthene	ND (0.006)
Indeno(1,2,3-cd)pyrene	ND (0.004)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.006)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.006)
Phenol	ND (0.006)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone (Methyl Ethyl Ketone)	ND (0.05)
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.002)
WG	
Ammonia	4.8 J

TMW-04352	12/19/02
PCBs	
Total PCBs	ND (0.0002)
WG	
pH Field	8.2

TMW-04233	12/18/01
Metals	
Fluoride	2
PCBs	
Total PCBs	ND (0.0002)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	0.0005 J
WG	
pH Field	7.7

FORMER NODULAR IRON PLANT AREA

G

G - NORTH

G - SOUTH

G - WEST

G - EAST

TMW-04436

TMW-04135

MW-04435

TMW-04635

TMW-04235A

SB-04435A

SB-04434A

MW-04434

MW-04634

SB-04433A

MW-04633

TMW-04233

MW-04433

TMW-04632

TMW-04531

TMW-04932

TMW-04630

TMW-04528

TMW-04130

TMW-04127

LEGEND

- A— — INVESTIGATIVE UNIT BOUNDARY AND IDENTIFIER
- SD-10A △ NON-RFI SURFACE WATER/SEDIMENT SAMPLE LOCATION
- MWPHB-6 ● NON-RFI MONITORING WELL LOCATION
- MWPHB-6 ■ NON-RFI SOIL BORING LOCATION
- SD-10A ▲ RFI TEMPORARY MONITORING WELL LOCATION
- MW-01223 ◉ RFI MONITORING WELL LOCATION
- SB-01419

Chemical Name	Commercial and Industrial S. 9.6.IV Drinking Water A	Groundwater Volatilization to Indoor Air B	Groundwater Contact C	Groundwater Surface Water Interface D
Metals				
Aluminum	4.1		64000	
Aluminum (Dissolved)	4.1		64000	
Antimony	0.006		68	0.13
Antimony (Dissolved)	0.006		68	0.13
Arsenic	0.05		4.3	0.15
Arsenic (Dissolved)	0.05		4.3	0.15
Beryllium	0.004		290	1.2
Beryllium (Dissolved)	0.004		290	1.2
Cadmium	0.005		190	0.13
Cadmium (Dissolved)	0.005		190	0.13
Chromium	0.1		460	0.011
Chromium (Dissolved)	0.1		460	0.011
Chromium, Hexavalent	0.1		460	0.011
Chromium, Hexavalent (Dissolved)	0.1		460	0.011
Cobalt	0.1		2400	0.1
Cobalt (Dissolved)	0.1		2400	0.1
Cyanide (total)	0.2		57	0.0052
Iron	5.6		58000	
Iron (Dissolved)	5.6		58000	
Lead	0.004			0.19
Lead (Dissolved)	0.004			0.19
Mercury	0.002	0.056	0.056	0.0000013
Mercury (Dissolved)	0.002	0.056	0.056	0.0000013
Nickel	0.1		74000	210
Nickel (Dissolved)	0.1		74000	210
Selenium	0.05		970	0.005
Selenium (Dissolved)	0.05		970	0.005
Vanadium	0.062		970	0.012
Vanadium (Dissolved)	0.062		970	0.012
Zinc	5		110000	22
Zinc (Dissolved)	5		110000	22
Polychlorinated Biphenyls				
Total PCBs	0.0005	0.045	0.0033	0.0002
Semi-Volatile Organic Compounds				
2,4-Dimethylphenol	1		520	0.38
Benzo(a)pyrene	0.005		0.002	
Benzo(b)fluoranthene	0.002		0.002	
Benzo(k)fluoranthene	0.005		0.005	
bis(2-Ethylhexyl)phthalate	0.006		0.32	0.032
Carbazole	0.35		7.4	0.01
Chrysene	0.005		0.005	
Dibenz(a,h)anthracene	0.002		0.002	
Fluoranthene	0.21	0.21	0.21	0.005
Indeno(1,2,3-cd)pyrene	0.002		0.002	
Methylphenol (Cresol)	1		810	0.071
Naphthalene	1.5	31	31	0.013
Pentachlorophenol	0.001	13	0.2	0.0038
Phenanthrene	0.15	1	1	0.005
Phenol	13		29000	0.21
Volatile Organic Compounds				
1,1-Dichloroethene	0.007	1.3	11	0.065
1,2-Dichloropropane	0.005	36	16	0.29
2-Butanone	38	240000	240000	2.2
Benzene	0.005	35	11	0.2
cis-1,2-Dichloroethene	0.07	210	200	0.62
Ethylbenzene	0.7	170	170	0.018
Trichloroethene	0.005	97	22	0.2
Vinyl chloride	0.002	13	1	0.015
Xylene (total)	10	190	190	0.035
General Chemistry				
Formaldehyde	3.8	360	30000	0.12
Ammonia	10	7100		0.736
pH Field	8.5			9

MW-15984	11/20/98	07/28/00
Metals		
Aluminum	38.5	0.87
Aluminum (Dissolved)	ND (0.05)	ND (0.05)
Antimony	ND (0.05)	ND (0.05)
Antimony (Dissolved)	ND (0.05)	ND (0.05)
Arsenic	0.013	0.007
Arsenic (Dissolved)	ND (0.005)	0.002 J
Beryllium	ND (0.005)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.052	-
Chromium (Dissolved)	ND (0.005)	ND (0.01)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	0.028	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)
Iron	49.8	-
Iron (Dissolved)	0.022	-
Lead	0.014	0.009
Lead (Dissolved)	ND (0.002)	0.002 J
Mercury	ND (0.0002)	-
Mercury (Dissolved)	ND (0.001)	-
Nickel	0.05	0.043
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	ND (0.008)	-
Selenium (Dissolved)	ND (0.008)	-
Vanadium	0.079	0.025
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Zinc	0.113	0.039
Zinc (Dissolved)	ND (0.01)	ND (0.01)
OTHER		
Formaldehyde	-	0.068
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	0.035	ND (0.01)
Naphthalene	ND (0.002) JND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	0.1	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001) J	ND (0.001)
1,2-Dichloropropane	ND (0.001) J	ND (0.001)
2-Butanone	R	ND (0.02)
Benzene	0.001 J	0.0003
cis-1,2-Dichloroethene	ND (0.001) J	ND (0.001)
Ethylbenzene	ND (0.001) J	ND (0.001)
Trichloroethene	ND (0.001) J	ND (0.001)
Vinyl chloride	ND (0.001) J	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	6.77

TMW-05457	12/17/02
Metals	
Fluoride	0.5
WQ	
Ammonia	1.68
pH Field	6.72

H2	11/17/98
Metals	
Aluminum	0.301
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.008
Arsenic (Dissolved)	0.005
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.004)
Cadmium (Dissolved)	ND (0.004)
Chromium	ND (0.005)
Chromium (Dissolved)	ND (0.005)
Cobalt	ND (0.01)
Cobalt (Dissolved)	ND (0.01)
Iron	0.883
Iron (Dissolved)	0.091
Lead	0.005
Lead (Dissolved)	ND (0.002)
Mercury	ND (0.00002) J
Mercury (Dissolved)	ND (0.00002) J
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Selenium	0.006 J
Selenium (Dissolved)	ND (0.006) J
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.678
Zinc (Dissolved)	0.388
PCBs	
Total PCBs	ND (0.0002)

H3	11/18/98
Metals	
Aluminum	0.099/0.099
Aluminum (Dissolved)	ND (0.05)/ND (0.05)
Antimony	ND (0.05)/ND (0.05)
Antimony (Dissolved)	ND (0.05)/ND (0.05)
Arsenic	ND (0.005)/ND (0.005)
Arsenic (Dissolved)	ND (0.005)/ND (0.005)
Beryllium	ND (0.005)/ND (0.005)
Beryllium (Dissolved)	ND (0.005)/ND (0.005)
Cadmium	ND (0.004)/ND (0.004)
Cadmium (Dissolved)	ND (0.004)/ND (0.004)
Chromium	ND (0.005)/ND (0.005)
Chromium (Dissolved)	ND (0.005)/ND (0.005)
Cobalt	ND (0.01)/ND (0.01)
Cobalt (Dissolved)	ND (0.01)/ND (0.01)
Iron	0.158/0.18
Iron (Dissolved)	0.044/0.043
Lead	0.005/ND (0.002)
Lead (Dissolved)	ND (0.002)/ND (0.002)
Mercury	ND (0.00002) JND (0.00002) J
Mercury (Dissolved)	ND (0.00002) JND (0.00002) J
Nickel	ND (0.02)/ND (0.02)
Nickel (Dissolved)	ND (0.02)/ND (0.02)
Selenium	ND (0.005) JND (0.005) J
Selenium (Dissolved)	ND (0.005) JND (0.005) J
Vanadium	ND (0.01)/ND (0.01)
Vanadium (Dissolved)	ND (0.01)/ND (0.01)
Zinc	ND (0.01)/ND (0.01)
Zinc (Dissolved)	0.014/ND (0.01)
PCBs	
Total PCBs	ND (0.0002)/ND (0.0002)

MW-17681	12/01/98	12/28/98	07/14/00	12/17/02
Metals				
Aluminum	-	29.9	2.04	-
Aluminum (Dissolved)	-	ND (0.05)	ND (0.05)	-
Antimony	-	ND (0.05)	ND (0.05)	-
Antimony (Dissolved)	-	ND (0.05)	ND (0.05)	-
Arsenic	-	0.014	0.002 J	-
Arsenic (Dissolved)	-	ND (0.005)	ND (0.005)	-
Beryllium	-	ND (0.005)	ND (0.005)	-
Beryllium (Dissolved)	-	ND (0.005)	ND (0.005)	-
Cadmium	-	ND (0.004)	ND (0.005)	-
Cadmium (Dissolved)	-	ND (0.004)	ND (0.005)	-
Chromium	-	0.747	-	-
Chromium (Dissolved)	-	ND (0.005)	ND (0.005)	-
Chromium, Hexavalent	-	-	ND (0.01)	-
Cobalt	-	0.022	-	-
Cobalt (Dissolved)	-	ND (0.01)	-	-
Cyanide (total)	ND (0.01)	ND (0.01)	ND (0.01)	-
Iron	-	44.4	-	-
Iron (Dissolved)	-	0.095	-	-
Lead	-	0.022	0.002	-
Lead (Dissolved)	-	ND (0.002)	0.001 J	-
Mercury	-	ND (0.0002)	-	-
Mercury (Dissolved)	-	ND (0.0002)	-	-
Nickel	-	0.201	0.063	-
Nickel (Dissolved)	-	0.111	0.054	-
Selenium	-	ND (0.008) J	-	-
Selenium (Dissolved)	-	ND (0.008) J	-	-
Vanadium	-	0.092	0.007 J	-
Vanadium (Dissolved)	-	ND (0.01)	ND (0.01)	-
Zinc	-	0.194	0.058	-
Zinc (Dissolved)	-	ND (0.01)	ND (0.01)	-
OTHER				
Formaldehyde	-	-	ND (0.05)	-
PCBs				
Total PCBs	-	ND (0.0002)	ND (0.0002)	-
SVOAs				
2,4-Dimethylphenol	-	ND (0.01)	ND (0.01)	-
Benzo(a)pyrene	-	ND (0.01)	ND (0.01)	-
Benzo(b)fluoranthene	-	ND (0.01)	ND (0.01)	-
Benzo(k)fluoranthene	-	ND (0.01)	ND (0.01)	-
bis(2-Ethylhexyl)phthalate	-	ND (0.01)	ND (0.01)	-
Carbazole	-	-	ND (0.01)	-
Chrysene	-	ND (0.01)	ND (0.01)	-
Dibenz(a,h)anthracene	-	ND (0.01)	ND (0.01)	-
Fluoranthene	-	ND (0.01)	ND (0.01)	-
Indeno(1,2,3-cd)pyrene	-	ND (0.01)	ND (0.01)	-
Methylphenol (Cresol)	-	ND (0.01)	ND (0.01)	-
Naphthalene	-	ND (0.005)/ND (0.01)	ND (0.01)	-
Pentachlorophenol	-	ND (0.025)	ND (0.025)	-
Phenanthrene	-	ND (0.01)	ND (0.01)	-
Phenol	-	ND (0.01)	ND (0.01)	-
VOAs				
1,1-Dichloroethene	-	ND (0.001)	ND (0.001)	-
1,2-Dichloropropane	-	ND (0.001)	ND (0.001)	-
2-Butanone	-	R	ND (0.02)	-
Benzene	-	ND (0.001)	ND (0.001)	-
cis-1,2-Dichloroethene	-	ND (0.001)	ND (0.001)	-
Ethylbenzene	-	ND (0.001)	ND (0.001)	-
Trichloroethene	-	ND (0.001)	ND (0.001)	-
Vinyl chloride	-	ND (0.001)	ND (0.001)	-
Xylene (total)	-	ND (0.001)	ND (0.001)	-
WQ				
pH Field	-	-	7.28	7.3

MW-07861	12/17/02
Metals	
Fluoride	1
WQ	
Ammonia	ND (0.08)

H1	11/17/98
Metals	
Aluminum	0.333/0.29
Aluminum (Dissolved)	0.057/0.067
Antimony	ND (0.05)/ND (0.05)
Antimony (Dissolved)	ND (0.05)/ND (0.05)
Arsenic	0.008/0.007
Arsenic (Dissolved)	0.007/0.009
Beryllium	ND (0.005)/ND (0.005)
Beryllium (Dissolved)	ND (0.005)/ND (0.005)
Cadmium	ND (0.004)/ND (0.004)
Cadmium (Dissolved)	ND (0.004)/ND (0.004)
Chromium	ND (0.005)/ND (0.005)
Chromium (Dissolved)	ND (0.005)/ND (0.005)
Cobalt	ND (0.01)/ND (0.01)
Cobalt (Dissolved)	ND (0.01)/ND (0.01)
Iron	0.859/0.889
Iron (Dissolved)	0.041/0.069
Lead	0.005/0.005
Lead (Dissolved)	ND (0.002)/0.002
Mercury	ND (0.0002) JND (0.0002) J
Mercury (Dissolved)	ND (0.0002) JND (0.0002) J
Nickel	ND (0.02)/ND (0.02)
Nickel (Dissolved)	ND (0.02)/ND (0.02)
Selenium	0.026 JND (0.006) J
Selenium (Dissolved)	ND (0.006) JND (0.006) J
Vanadium	ND (0.01)/ND (0.01)
Vanadium (Dissolved)	ND (0.01)/ND (0.01)
Zinc	0.783/0.781
Zinc (Dissolved)	0.648/0.511
PCBs	
Total PCBs	ND (0.0002)/ND (0.0002)

H5	11/18/98
Metals	
Aluminum	0.133 J
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.004)
Chromium (Dissolved)	ND (0.004)
Chromium	ND (0.005)
Chromium (Dissolved)	ND (0.005)
Cobalt	ND (0.01)
Cobalt (Dissolved)	ND (0.01)
Iron	0.883 J
Iron (Dissolved)	0.084 J
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Mercury	ND (0.0002)
Mercury (Dissolved)	ND (0.0002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Selenium	ND (0.008) J
Selenium (Dissolved)	ND (0.008) J
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.018) J
Zinc (Dissolved)	ND (0.01)
PCBs	
Total PCBs	ND (0.0002)

MW-15457	11/18/98	07/13/00
Metals		
Aluminum	169 J	17.3
Aluminum (Dissolved)	0.078	ND (0.05)
Antimony	ND (0.05)	ND (0.05)
Antimony (Dissolved)	ND (0.05)	ND (0.05)
Arsenic	0.006	0.01
Arsenic (Dissolved)	ND (0.005)	0.002 J
Beryllium	0.005	ND (0.005)
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.264 J	-
Chromium (Dissolved)	ND (0.005)	ND (0.005)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	0.062 J	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)
Iron	155	-
Iron (Dissolved)	0.822	-
Lead	0.116 J	0.021
Lead (Dissolved)	ND (0.002)	ND (0.002)
Mercury	ND (0.00002) J	-
Mercury (Dissolved)	ND (0.00002) J	-
Nickel	0.31 J	0.077
Nickel (Dissolved)	ND (0.02)	0.036
Selenium	ND (0.008) J	-
Selenium (Dissolved)	ND (0.008) J	-
Vanadium	0.218 J	0.038
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Zinc	0.858 J	0.091 J
Zinc (Dissolved)	ND (0.01)	ND (0.01)
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002) JND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	0.009
VOAs		
1,1-Dichloroethene	ND (0.001) J	ND (0.001)
1,2-Dichloropropane	ND (0.001) J	ND (0.001)
2-Butanone	R	R
Benzene	ND (0.001) J	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001) J	ND (0.001)
Ethylbenzene	ND (0.001) J	ND (0.001)
Trichloroethene	ND (0.001) J	ND (0.001)
Vinyl chloride	ND (0.001) J	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	7.09

H4	11/17/98
Metals	
Aluminum	0.329
Aluminum (Dissolved)	0.052
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.008
Arsenic (Dissolved)	0.008
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.004)
Cadmium (Dissolved)	ND (0.004)
Chromium	ND (0.005)
Chromium (Dissolved)	ND (0.005)
Cobalt	ND (0.01)
Cobalt (Dissolved)	ND (0.01)
Iron	0.957
Iron (Dissolved)	0.049
Lead	0.009
Lead (Dissolved)	ND (0.002)
Mercury	ND (0.00002) J
Mercury (Dissolved)	ND (0.00002) J
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Selenium	0.009 J
Selenium (Dissolved)	ND (0.008) J
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.59
Zinc (Dissolved)	0.381
PCBs	
Total PCBs	ND (0.0002)

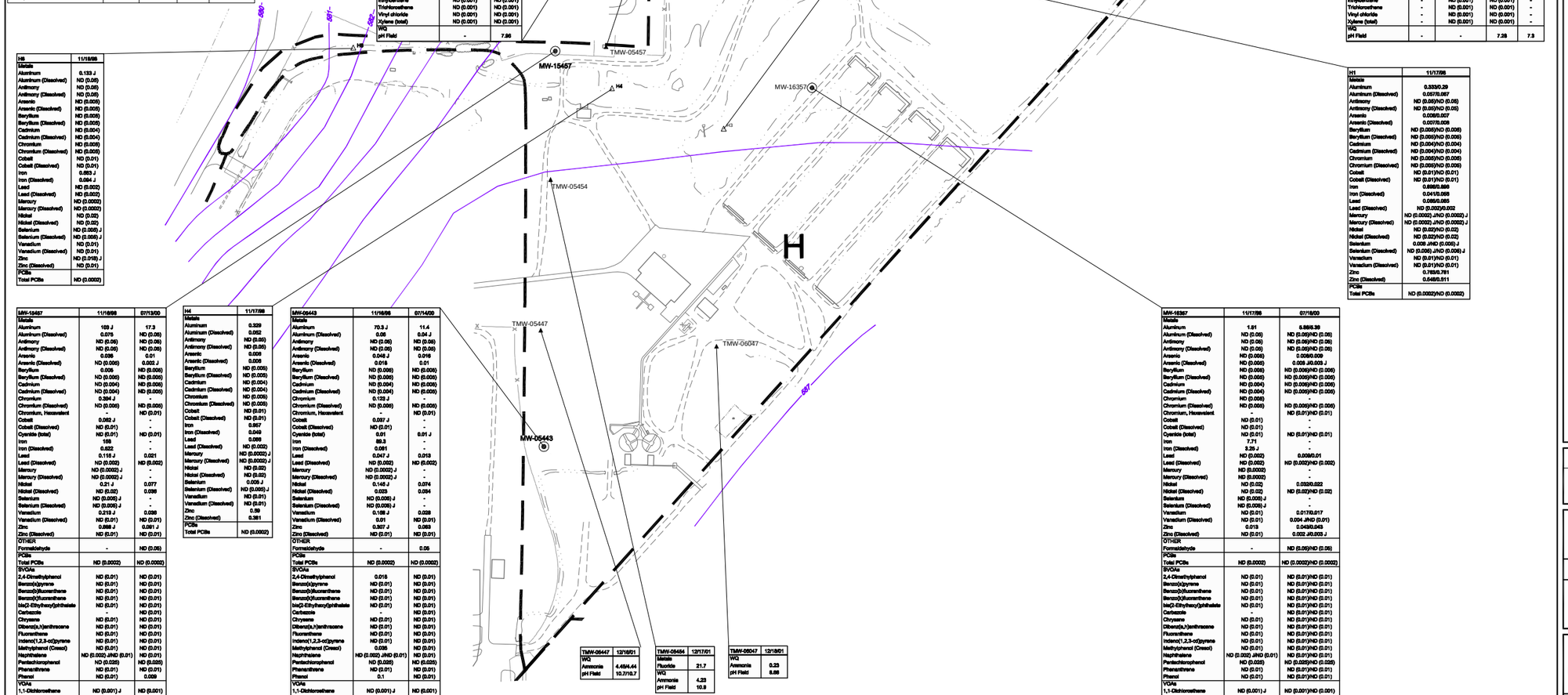
MW-05443	11/18/98	07/14/00
Metals		
Aluminum	70.3 J	11.4
Aluminum (Dissolved)	0.08	0.04 J
Antimony	ND (0.05)	ND (0.05)
Antimony (Dissolved)	ND (0.05)	ND (0.05)
Arsenic	0.018	0.016
Arsenic (Dissolved)	0.018	0.01
Beryllium	ND (0.005)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.133 J	-
Chromium (Dissolved)	ND (0.005)	ND (0.005)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	0.097 J	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	0.01	0.01 J
Iron	89.3	-
Iron (Dissolved)	0.061	-
Lead	0.047 J	0.013
Lead (Dissolved)	ND (0.002)	ND (0.002)
Mercury	ND (0.00002) J	-
Mercury (Dissolved)	ND (0.00002) J	-
Nickel	0.145 J	0.074
Nickel (Dissolved)	0.023	0.054
Selenium	ND (0.008) J	-
Selenium (Dissolved)	ND (0.008) J	-
Vanadium	0.188 J	0.038
Vanadium (Dissolved)	0.01	ND (0.01)
Zinc	0.307 J	0.063
Zinc (Dissolved)	ND (0.01)	ND (0.01)
OTHER		
Formaldehyde	-	0.05
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	0.018	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	0.035	ND (0.01)
Naphthalene	ND (0.002) JND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	0.1	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001) J	ND (0.001)
1,2-Dichloropropane	ND (0.001) J	ND (0.001)
2-Butanone	R	ND (0.02)
Benzene	0.001 J	0.0003
cis-1,2-Dichloroethene	ND (0.001) J	ND (0.001)
Ethylbenzene	ND (0.001) J	ND (0.001)
Trichloroethene	ND (0.001) J	ND (0.001)
Vinyl chloride	ND (0.001) J	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	6.77

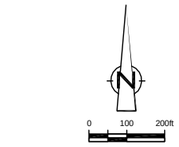
TMW-05447	12/18/01
WQ	
Ammonia	4.48/4.44
pH Field	10.77/6.7

TMW-05454	12/17/01
Metals	
Fluoride	21.7
WQ	
Ammonia	4.23
pH Field	10.8

TMW-06047	12/18/01
WQ	
Ammonia	0.33
pH Field	8.66

MW-15357	11/17/98	07/18/00
Metals		
Aluminum	1.91	0.869/0.99
Aluminum (Dissolved)	ND (0.05)	ND (0.05)/ND (0.05)
Antimony	ND (0.05)	ND (0.05)/ND (0.05)
Antimony (Dissolved)	ND (0.05)	ND (0.05)/ND (0.05)
Arsenic	ND (0.005)	0.003/0.009
Arsenic (Dissolved)	ND (0.005)	0.008 J/0.003 J
Beryllium	ND (0.005)	ND (0.005)/ND (0.005)
Beryllium (Dissolved)	ND (0.005)	ND (0.005)/ND (0.005)
Cadmium	ND (0.004)	ND (0.005)/ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)/ND (0.005)
Chromium	ND (0.005)	-/-
Chromium (Dissolved)	ND (0.005)	ND (0.005)/ND (0.005)
Chromium, Hexavalent	-	ND (0.01)/ND (0.01)
Cobalt	ND (0.01)	-/-
Cobalt (Dissolved)	ND (0.01)	-/-
Cyanide (total)	ND (0.01)	ND (0.01)/ND (0.01)
Iron	7.71	-/-
Iron (Dissolved)	3.29 J	-/-
Lead	ND (0.002)	0.006/0.01
Lead (Dissolved)	ND (0.002)	ND (0.002)/ND (0.002)
Mercury	ND (0.0002)	-/-
Mercury (Dissolved)	ND (0.0002)	-/-
Nickel	ND (0.02)	0.032/0.022
Nickel (Dissolved)	ND (0.02)	ND (0.02)/ND (0.02)
Selenium	ND (0.008) J	-/-
Selenium (Dissolved)	ND (0.008) J	-/-
Vanadium	ND (0.01)	0.017/0.017
Vanadium (Dissolved)	ND (0.01)	0.004 JND (0.01)
Zinc	0.013	0.043/0.043
Zinc (Dissolved)	ND (0.01)	0.002 J/0.003 J
OTHER		
Formaldehyde	-	ND (0.05)/ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)/ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)/ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)/ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)/ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)/ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)/ND (0.01)
Carbazole	-	ND (0.01)/ND (0.01)
Chrysene	ND (0.01)	ND (0.01)/ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)/ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)/ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)/ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)/ND (0.01)
Naphthalene	ND (0.002) JND (0.01)	ND (0.01)/ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)/ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)/ND (0.01)
Phenol	ND (0.01)	ND (0.01)/ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001) J	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001) J	ND (0.001)/ND (0.001)
2-Butanone	R	R/R
Benzene	ND (0.001) J	ND (0.001)/ND (0.001)
cis-1,2-Dichloroethene	ND (0.001) J	ND (0.001)/ND (0.001)
Ethylbenzene	ND (0.001) J	ND (0.001)/ND (0.001)
Trichloroethene	ND (0.001) J	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001) J	ND (0.001)/ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)/ND (0.001)
WQ		
pH Field	-	7.08/7.08



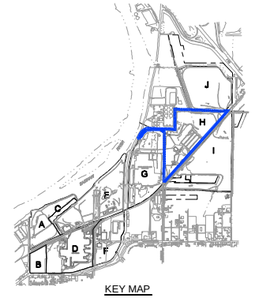


LEGEND

- A — INVESTIGATIVE UNIT BOUNDARY AND IDENTIFIER
- SD-10A △ NON-RFI SURFACE WATER/SEDIMENT SAMPLE LOCATION
- MWPHB-6 ● NON-RFI MONITORING WELL LOCATION
- MWPHB-6 ■ NON-RFI SOIL BORING LOCATION
- SD-10A ▲ RFI TEMPORARY MONITORING WELL LOCATION
- MW-01223 ◉ RFI MONITORING WELL LOCATION
- SB-01419 ▣ RFI BORING LOCATION
- MW-90124 ◐ RFI BEDROCK WELL LOCATION
- 579 UPPER WATER BEARING ZONE GROUNDWATER CONTOUR

NOTES:

1. TOTAL PCBs WERE SUMMED BY ADDING THE POSITIVE DETECTIONS PLUS HALF THE QUANTITATION LIMITS FOR NON-DETECT RESULTS OF AROCLORS DETECTED ELSEWHERE AT THE SITE. IF QUANTITATION LIMITS ARE NOT AVAILABLE, HALF THE REPORTING LIMITS ARE USED FOR NON-DETECTED VALUES.
2. SCREENING CRITERIA AND SAMPLE RESULTS ARE COMPARED TO TWO SIGNIFICANT DIGITS. RESULTS EQUAL TO SCREENING CRITERIA ARE NOT HIGHLIGHTED AS EXCEEDANCES.
3. PARAMETER LISTS ARE AREA SPECIFIC BASED ON EXCEEDANCES.
4. GROUNDWATER CONTOURS REPRESENT THE UPPER SATURATED ZONE.



KEY MAP

SCALE VERIFICATION

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

GENERAL MOTORS CORPORATION
SAGINAW METAL CASTING OPERATIONS

SAGINAW, MICHIGAN

INVESTIGATIVE UNIT H - GROUNDWATER

CONESTOGA-ROVERS & ASSOCIATES

Source Reference: MICHIGAN STATE PLANE SOUTH, NAD 83 USING INTERNATIONAL FEET, NGVD 88 TOPO - SANBORN, 1996

Project Manager:	Reviewed By:	Date:
I.R.	M.T.	AUGUST 2003
Scale: 1" = 200'	Project N°: 17075-16	Report N°: PRES015
		Drawing N°: figure 9

17075-16(PRES015)GN-WA010 SEP 17/2003

Chemical Name	Commercial and Industrial/I, S & IV				
	Drinking Water A	Groundwater Volatilization to Indoor Air B		Groundwater Contact C	Groundwater Surface Water Interface D
Metals					
Aluminum	4.1			64000	
Aluminum (Dissolved)	4.1			64000	
Antimony	0.006			68	0.13
Antimony (Dissolved)	0.006			68	0.13
Arsenic	0.05			4.3	0.15
Arsenic (Dissolved)	0.05			4.3	0.15
Beryllium	0.004			290	1.2
Beryllium (Dissolved)	0.004			290	1.2
Cadmium	0.005			190	0.13
Cadmium (Dissolved)	0.005			190	0.13
Chromium	0.1			460	0.011
Chromium (Dissolved)	0.1			460	0.011
Chromium, Hexavalent	0.1			460	0.011
Chromium, Hexavalent (Dissolved)	0.1			460	0.011
Cobalt	0.1			2400	0.1
Cobalt (Dissolved)	0.1			2400	0.1
Cyanide (total)	0.2			57	0.0052
Iron	5.6			58000	
Iron (Dissolved)	5.6			58000	
Lead	0.004				0.19
Lead (Dissolved)	0.004				0.19
Mercury	0.002	0.056		0.056	0.0000013
Mercury (Dissolved)	0.002	0.056		0.056	0.0000013
Nickel	0.1			74000	210
Nickel (Dissolved)	0.1			74000	210
Selenium	0.05			970	0.005
Selenium (Dissolved)	0.05			970	0.005
Vanadium	0.062			970	0.012
Vanadium (Dissolved)	0.062			970	0.012
Zinc	5			110000	22
Zinc (Dissolved)	5			110000	22
Polychlorinated Biphenyls					
Total PCBs	0.0005	0.045		0.0033	0.0002
Semi-Volatile Organic Compounds					
2,4-Dimethylphenol	1			520	0.38
Benzo(a)pyrene	0.005			0.002	
Benzo(b)fluoranthene	0.002			0.002	
Benzo(k)fluoranthene	0.005			0.005	
bis(2-Ethylhexyl)phthalate	0.006			0.32	0.032
Carbazole	0.35			7.4	0.01
Chrysene	0.005			0.005	
Dibenz(a,h)anthracene	0.002			0.002	
Fluoranthene	0.21	0.21		0.21	0.005
Indeno(1,2,3-cd)pyrene	0.002			0.002	
Methylphenol (Cresol)	1			810	0.071
Naphthalene	1.5	31		31	0.013
Pentachlorophenol	0.001			0.2	0.0028
Phenanthrene	0.15	1		1	0.005
Phenol	13			29000	0.21
Volatile Organic Compounds					
1,1-Dichloroethene	0.007	1.3		11	0.065
1,2-Dichloropropane	0.005	36		16	0.29
2-Butanone	38	240000		240000	2.2
Benzene	0.005	35		11	0.2
cis-1,2-Dichloroethene	0.07	210		200	0.62
Ethylbenzene	0.7	170		170	0.018
Trichloroethene	0.005	97		22	0.2
Vinyl chloride	0.002	13		1	0.015
Xylene (total)	10	190		190	0.035
General Chemistry					
Formaldehyde	3.8	360		30000	0.12
Ammonia	10	7100			0.736
pH Field	8.5				9

MW-06445	12/03/98	07/12/00
Metals		
Aluminum	17.1	2.34
Aluminum (Dissolved)	0.171	0.125
Antimony	ND (0.06)	ND (0.06)
Antimony (Dissolved)	ND (0.05)	ND (0.05)
Arsenic	0.01	0.004 J
Arsenic (Dissolved)	ND (0.005)	0.003 J
Beryllium	ND (0.005)	ND (0.005)
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.088	-
Chromium (Dissolved)	ND (0.005)	ND (0.005)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	ND (0.01)	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)
Iron	41.8	-
Iron (Dissolved)	0.059 J	-
Lead	0.035	0.004
Lead (Dissolved)	ND (0.002)	ND (0.002)
Mercury	ND (0.00022)	-
Mercury (Dissolved)	ND (0.001)	-
Nickel	0.039	ND (0.02)
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	ND (0.005)	-
Selenium (Dissolved)	ND (0.005)	-
Vanadium	0.038	0.007 J
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Zinc	0.01	0.065 J
Zinc (Dissolved)	ND (0.01)	0.002 J
OTHER		
Formaldehyde	0.083	ND (0.05)
PCBs		
Total PCBs	ND (0.00022)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	ND (0.01)	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	0.02 J	0.007 J
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	0.025	0.008 J
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)
2-Butanone	R	R
Benzene	ND (0.001)	0.001
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	9.77

MW-06939	12/04/98	07/27/00
Metals		
Aluminum	39.1	25.7
Aluminum (Dissolved)	1.88	0.224
Antimony	ND (0.06)	ND (0.06)
Antimony (Dissolved)	ND (0.05)	ND (0.05)
Arsenic	0.017	0.013
Arsenic (Dissolved)	0.013	0.01
Beryllium	ND (0.005)	0.001 J
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.077	-
Chromium (Dissolved)	ND (0.005)	ND (0.01)
Chromium, Hexavalent	-	ND (0.01)
Cobalt	0.015	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	0.01
Iron	82.2 J	-
Iron (Dissolved)	0.305	-
Lead	0.041	0.031
Lead (Dissolved)	ND (0.002)	ND (0.002)
Mercury	ND (0.00022)	-
Mercury (Dissolved)	ND (0.00022)	-
Nickel	0.054	0.282
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	ND (0.005) J	-
Selenium (Dissolved)	ND (0.005) J	-
Vanadium	0.063	0.038
Vanadium (Dissolved)	0.012	0.02
Zinc	0.174	0.275 J
Zinc (Dissolved)	ND (0.01)	0.009 J
OTHER		
Formaldehyde	0.088	0.03
PCBs		
Total PCBs	ND (0.00022)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	0.027	0.026
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole		ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	0.02 J	0.007 J
Naphthalene	ND (0.002)/ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	0.025	0.008 J
VOAs		
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)
2-Butanone	R	R
Benzene	ND (0.001)	0.001
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)
Ethylbenzene	ND (0.001)	ND (0.001)
Trichloroethene	ND (0.001)	ND (0.001)
Vinyl chloride	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	9.77

MW-08939	08/04/00	12/19/01
Metals		
Aluminum	2.87/3.13	-
Aluminum (Dissolved)	ND (0.06)/ND (0.06)	-
Antimony	ND (0.06)/0.027 J (A)	-
Antimony (Dissolved)	ND (0.05)/ND (0.05)	-
Arsenic	0.008 J/ND (0.005)	-
Arsenic (Dissolved)	ND (0.005)/ND (0.005)	-
Beryllium	ND (0.005)/ND (0.005)	-
Beryllium (Dissolved)	ND (0.005)/ND (0.005)	-
Cadmium	ND (0.004)/ND (0.005)	-
Cadmium (Dissolved)	ND (0.004)/ND (0.005)	-
Chromium	0.077/0.081	-
Chromium (Dissolved)	ND (0.005)/ND (0.005)	-
Chromium, Hexavalent	ND (0.01)/ND (0.01)	-
Cobalt	ND (0.01)/0.006 J	-
Cyanide (total)	ND (0.01)/0.006 J	-
Fluoride	1	-
Lead	0.003/0.002	-
Lead (Dissolved)	ND (0.002)/ND (0.002)	-
Nickel	ND (0.02)/ND (0.02)	-
Nickel (Dissolved)	ND (0.02)/ND (0.02)	-
Vanadium	0.009 J/0.008 J	-
Vanadium (Dissolved)	ND (0.01)/ND (0.01)	-
Zinc	0.013 J/0.018 J	-
Zinc (Dissolved)	0.022 J/ND (0.01)	-
OTHER		
Formaldehyde	ND (0.05)/ND (0.05)	-
PCBs		
Total PCBs	ND (0.0002)/ND (0.0002)	-
SVOAs		
2,4-Dimethylphenol	ND (0.01)/ND (0.01)	-
Benzo(a)pyrene	ND (0.01)/ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)/ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)/ND (0.01)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)/ND (0.01)	-
Carbazole	ND (0.01)/ND (0.01)	-
Chrysene	ND (0.01)/ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)/ND (0.01)	-
Fluoranthene	ND (0.01)/ND (0.01)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)/ND (0.01)	-
Methylphenol (Cresol)	ND (0.01)/ND (0.01)	-
Naphthalene	ND (0.002)/ND (0.01)	-
Pentachlorophenol	ND (0.025)/ND (0.025)	-
Phenanthrene	ND (0.01)/ND (0.01)	-
Phenol	ND (0.01)/ND (0.01)	-
VOAs		
1,1-Dichloroethene	ND (0.001)/ND (0.001)	-
1,2-Dichloropropane	ND (0.001)/ND (0.001)	-
2-Butanone	R/R	-
Benzene	ND (0.001)/ND (0.001)	-
cis-1,2-Dichloroethene	ND (0.001)/ND (0.001)	-
Ethylbenzene	ND (0.001)/ND (0.001)	-
Trichloroethene	ND (0.001)/ND (0.001)	-
Vinyl chloride	ND (0.001)/ND (0.001)	-
Xylene (total)	ND (0.001)/ND (0.001)	-
WQ		
pH Field	8.72 (A)/8.72 (A)	8.18

TMW-06848	12/20/01
Metals	
Fluoride	1.1
WQ	
Ammonia	40.2 J
pH Field	10.3

TMW-07045	12/17/02
WQ	
Ammonia	25
pH Field	9.67

TMW-06842	12/17/02
WQ	
Ammonia	15.8
pH Field	10.9

TMW-06561	12/17/02
WQ	
Ammonia	1.68/1.81
pH Field	7.45/7.45

TMW-06243	12/20/01
Metals	
Fluoride	4.6
WQ	
Ammonia	0.19 J
pH Field	11.3

TMW-06037	12/20/01
Metals	
Fluoride	1
WQ	
Ammonia	2.65
pH Field	8.07

MW-1S	12/15/01
WQ	
Ammonia	ND (0.05) J
pH Field	8.98

MW-2S	12/15/01
WQ	
Ammonia	ND (0.05) J/ND (0.05) J
pH Field	8.73

MW-34	12/19/01
Metals	
Fluoride	1.2
WQ	
Ammonia	0.04
pH Field	9.42

TMW-5	12/18/01
Metals	
Fluoride	3.1
WQ	
Ammonia	1.82
pH Field	10.2

MW-4S	12/18/01
WQ	
Ammonia	ND (0.05) J
pH Field	8.36

MW-08951	12/03/98	07/13/00
Metals		
Aluminum	1.18	0.22
Aluminum (Dissolved)	ND (0.06)	ND (0.06)
Antimony	ND (0.06)/ND (0.06)	ND (0.06)
Antimony (Dissolved)	ND (0.05)/ND (0.05)	ND (0.05)/ND (0.05)
Arsenic	0.021/0.02	0.04/0.03
Arsenic (Dissolved)	0.011/0.01	0.015/0.008
Beryllium	ND (0.005)/ND (0.005)	0.004 J/0.005 J
Beryllium (Dissolved)	ND (0.005)/ND (0.005)	ND (0.005)/ND (0.005)
Cadmium	ND (0.004)/ND (0.004)	0.005 J/0.005 J
Cadmium (Dissolved)	ND (0.004)/ND (0.004)	ND (0.005)/ND (0.005)
Chromium	0.05/0.078	-/-
Chromium (Dissolved)	ND (0.005)/ND (0.005)	ND (0.005)/ND (0.005)
Chromium, Hexavalent	-	ND (0.01)/ND (0.01)
Cobalt	ND (0.01)/ND (0.01)	-/-
Cobalt (Dissolved)	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Cyanide (total)	0.01/ND (0.01)	0.02/0.03
Iron	25.6/28.4	-/-
Iron (Dissolved)	0.054 J/0.123 J	-/-
Lead	0.029/0.032	0.054/0.056
Lead (Dissolved)	ND (0.002)/ND (0.002)	ND (0.002)/ND (0.002)
Mercury	ND (0.00022)/ND (0.00022)	-/-
Mercury (Dissolved)	ND (0.00022)/ND (0.00022)	-/-
Nickel	0.04/0.039	0.073/0.068
Nickel (Dissolved)	ND (0.02)/ND (0.02)	ND (0.02)/ND (0.02)
Selenium	ND (0.005) J/ND (0.005) J	-/-
Selenium (Dissolved)	ND (0.005) J/ND (0.005) J	-/-
Vanadium	0.017/0.018	0.054/0.031
Vanadium (Dissolved)	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Zinc	0.82/0.89 J	0.14 J/1.26
Zinc (Dissolved)	ND (0.01)/ND (0.01)	0.008 J/ND (0.01)
OTHER		
Formaldehyde	ND (0.05) J/ND (0.05) J	0.084/0.06
PCBs		
Total PCBs	ND (0.0002)/ND (0.0002)	ND (0.0002)/ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)/ND (0.01)	R/0.004
Benzo(a)pyrene	ND (0.01)/ND (0.01)	R/ND (0.01)
Benzo(b)fluoranthene	ND (0.01)/ND (0.01)	R/ND (0.01)
Benzo(k)fluoranthene	ND (0.01)/ND (0.01)	R/ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)/ND (0.01)	R/ND (0.01)
Carbazole		R/ND (0.01)
Chrysene	ND (0.01)/ND (0.01)	R/ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)/ND (0.01)	R/ND (0.01)
Fluoranthene	ND (0.01)/ND (0.01)	R/ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)/ND (0.01)	R/ND (0.01)
Methylphenol (Cresol)	ND (0.01)/0.016 J	0.004 J/0.018
Naphthalene	ND (0.002) J/ND (0.01)/ND (0.002) J/ND (0.01)	0.008 J/0.008
Pentachlorophenol	ND (0.025)/ND (0.025)	R/ND (0.025)
Phenanthrene	ND (0.01)/ND (0.01)	R/ND (0.01)
Phenol	0.089 J/0.23 J	0.034 J/0.15 J
VOAs		
1,1-Dichloroethene	ND (0.001) J/ND (0.001) J	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001) J/ND (0.001) J	ND (0.001)/ND (0.001)
2-Butanone	R/R/R	R/R
Benzene	0.001 J/0.001 J	ND (0.001)/0.001
cis-1,2-Dichloroethene	ND (0.001) J/ND (0.001) J	ND (0.001)/ND (0.001)
Ethylbenzene	ND (0.001) J/ND (0.001) J	ND (0.001)/ND (0.001)
Trichloroethene	ND (0.001) J/ND (0.001) J	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001) J/ND (0.001) J	ND (0.001)/ND (0.001)
Xylene (total)	ND (0.001)/ND (0.001)	0.0004 J/0.0004 J
WQ		
pH Field	-	7.54/7.51

MW-07245	11/18/98	07/12/00
Metals		
Aluminum	23.1/25.5	74.4/40.4
Aluminum (Dissolved)	ND (0.06)/0.064	3.3/ND (0.06)
Antimony	ND (0.06)/ND (0.06)	0.054 J/ND (0.06)
Antimony (Dissolved)	ND (0.05)/ND (0.05)	ND (0.05)/ND (0.05)
Arsenic	0.021/0.02	0.045/0.03
Arsenic (Dissolved)	0.011/0.01	0.015/0.008
Beryllium	ND (0.005)/ND (0.005)	0.004 J/0.005 J
Beryllium (Dissolved)	ND (0.005)/ND (0.005)	ND (0.005)/ND (0.005)
Cadmium	ND (0.004)/ND (0.004)	0.005 J/0.005 J
Cadmium (Dissolved)	ND (0.004)/ND (0.004)	ND (0.005)/ND (0.005)
Chromium	0.05/0.078	-/-
Chromium (Dissolved)	ND (0.005)/ND (0.005)	ND (0.005)/ND (0.005)
Chromium, Hexavalent	-	ND (0.01)/ND (0.01)
Cobalt	ND (0.01)/ND (0.01)	-/-
Cobalt (Dissolved)	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Cyanide (total)	0.01/ND (0.01)	0.02/0.03
Iron	25.6/28.4	-/-
Iron (Dissolved)	0.054 J/0.123 J	-/-
Lead	0.029/0.032	0.054/0.056
Lead (Dissolved)	ND (0.002)/ND (0.002)	ND (0.002)/ND (0.002)
Mercury	ND (0.00022)/ND (0.00022)	-/-
Mercury (Dissolved)	ND (0.00022)/ND (0.00022)	-/-
Nickel	0.04/0.039	0.073/0.068
Nickel (Dissolved)	ND (0.02)/ND (0.02)	ND (0.02)/ND (0.02)
Selenium	ND (0.005) J/ND (0.005) J	-/-
Selenium (Dissolved)	ND (0.005) J/ND (0.005) J	-/-
Vanadium	0.017/0.018	0.054/0.031
Vanadium (Dissolved)	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Zinc	0.82/0.89 J	0.14 J/1.26
Zinc (Dissolved)	ND (0.01)/ND (0.01)	0.008 J/ND (0.01)
OTHER		
Formaldehyde	ND (0.05) J/ND (0.05) J	0.084/0.06
PCBs		
Total PCBs	ND (0.0002)/ND (0.0002)	ND (0.0002)/ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)/ND (0.01)	R/0.004
Benzo(a)pyrene	ND (0.01)/ND (0.01)	R/ND (0.01)
Benzo(b)fluoranthene	ND (0.01)/ND (0.01)	R/ND (0.01)
Benzo(k)fluoranthene	ND (0.01)/ND (0.01)	R/ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)/ND (0.01)	R/ND (0.01)
Carbazole		R/ND (0.01)
Chrysene	ND (0.01)/ND (0.01)	R/ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)/ND (0.01)	R/ND (0.01)
Fluoranthene	ND (0.01)/ND (0.01)	R/ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)/ND (0.01)	R/ND (0.01)
Methylphenol (Cresol)	ND (0.01)/0.016 J	0.004 J/0.018
Naphthalene	ND (0.002) J/ND (0.01)/ND (0.002) J/ND (0.01)	0.008 J/0.008
Pentachlorophenol	ND (0.025)/ND (0.025)	R/ND (0.025)
Phenanthrene	ND (0.01)/ND (0.01)	R/ND (0.01)
Phenol	0.089 J/0.23 J	0.034 J/0.15 J
VOAs		
1,1-Dichloroethene	ND (0.001) J/ND (0.001) J	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001) J/ND (0.001) J	ND (0.001)/ND (0.001)
2-Butanone	R/R/R	R/R
Benzene	0.001 J/0.001 J	ND (0.001)/0.001
cis-1,2-Dichloroethene	ND (0.001) J/ND (0.001) J	ND (0.001)/ND (0.001)
Ethylbenzene	ND (0.001) J/ND (0.001) J	ND (0.001)/ND (0.001)
Trichloroethene	ND (0.001) J/ND (0.001) J	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001) J/ND (0.001) J	ND (0.001)/ND (0.001)
Xylene (total)	ND (0.001)/ND (0.001)	0.0004 J/0.0004 J
WQ		
pH Field	-	7.54/7.51

TMW-07062	12/20/01
Metals	
Cyanide (total)	0.48
Fluoride	13.2
SVOAs	
2,4-Dimethylphenol	0.39
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	0.39
Naphthalene	ND (0.01)
Pentachlorophenol	0.001
Phenanthrene	ND (0.01)
Phenol	2.8
WQ	
Ammonia	34.8
pH Field	11.7

TMW-07459	12/20/01
Metals	
Cyanide (total)	0.28
Fluoride	10.9
SVOAs	
2,4-Dimethylphenol	0.31
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	0.34
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	2.8
WQ	
Ammonia	30.5
pH Field	11

TMW-07257	12/20/01
Metals	
Cyanide (total)	0.01
Fluoride	20.2
SVOAs	
2,4-Dimethylphenol	0.01
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	0.014
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
WQ	
Ammonia	11
pH Field	11.9

MW-07699	12/04/98	07/13/00	12/20/01
Metals			
Aluminum	81.3	6.66	-
Aluminum (Dissolved)	0.058	0.043 J	-
Antimony	ND (0.06)	ND (0.06)	-
Antimony (Dissolved)	ND (0.05)	ND (0.05)	-
Arsenic	0.072	0.022	-
Arsenic (Dissolved)	0.04	0.018	-
Beryllium	0.009	ND (0.005)	-
Beryllium (Dissolved)	ND (0.005)	ND (0.005)	-
Cadmium	0.013	ND (0.005)	-
Cadmium (Dissolved)	ND (0.004)	ND (0.005)	-
Chromium	0.288	-	-
Chromium (Dissolved)	ND (0.005)	ND (0.005)	-
Chromium, Hexavalent	-	ND (0.01)	-
Cobalt	0.015	-	-
Cobalt (Dissolved)	ND (0.01)	-	-
Cyanide (total)	0.42	0.25	0.21
Fluoride	-	-	18.1
Iron	141 J	-	-
Iron (Dissolved)	0.187	-	-
Lead	2.14	0.135	-
Lead (Dissolved)	ND (0.002)	ND (0.002)	-
Mercury	0.0003	-	-
Mercury (Dissolved)	ND (0.00022)	-	-
Nickel	0.088	ND (0.02)	-
Nickel (Dissolved)	ND (0.02)	ND (0.02)	-
Selenium	ND (0.005) J	-	-
Selenium (Dissolved)	ND (0.005) J	-	-
Vanadium	0.092	0.018	-
Vanadium (Dissolved)	ND (0.01)	0.012	-
Zinc	37.1	2.28 J	-
Zinc (Dissolved)	ND (0.01)	ND (0.01)	-
OTHER			
Formaldehyde	1800 R	0.27	-
PCBs			
Total PCBs	ND (0.00033)	ND (0.0002)	-
SVOAs			
2,4-Dimethylphenol	0.89	0.43	0.83
Benzo(a)pyrene	ND (0.01)	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	ND (0.01)
Carbazole		0.091	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	0.75	0.35	0.32
Naphthalene	ND (0.002)/ND (0.01)	0.001	ND (0.01)
Pentachlorophenol	ND (0.025)	ND (0.025)	0.008
Phenanthrene	ND (0.01)	ND (0.01)	ND (0.01)
Phenol	0.2	1.8	1.9
VOAs			
1,1-Dichloroethene	ND (0.001)	ND (0.001)	-
1,2-Dichloropropane	ND (0.001)	ND (0.001)	-
2-Butanone	R	R	-
Benzene	0.003	0.002	-
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)	-
Ethylbenzene	ND (0.001)	ND (0.001)	-
Trichloroethene	ND (0.001)	ND (0.001)	-
Vinyl chloride	ND (0.001)	ND (0.001)	-
Xylene (total)	ND (0.001)	0.001	-
WQ			
Ammonia	-	-	20.3
pH Field	-	10.3	9.49

TMW-07987	12/20/01
Metals	
Cyanide (total)	ND (0.01)
Fluoride	2.8
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
WQ	
Ammonia	0.05
pH Field	7.99

TMW-07457	12/20/01
Metals	
Cyanide (total)	0.03
Fluoride	20
SVOAs	
2,4-Dimethylphenol	0.004
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	0.007 J
Naphthalene	0.001
Pentachlorophenol	ND (0.025)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
WQ	
Ammonia	8.12
pH Field	9.91

DSWB-5	08/05/98
SVOAs	
2,4-Dimethylphenol	ND (0.01)/ND (0.01)
Benzo(a)pyrene	ND (0.01)/ND (0.01)
Benzo(b)fluoranthene	ND (0.01)/ND (0.01)
Benzo(k)fluoranthene	ND (0.01)/ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)/ND (0.01)
Chrysene	ND (0.01)/ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)/ND (0.01)
Fluoranthene	ND (0.01)/ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)/ND (0.01)
Methylphenol (Cresol)	ND (0.01)/ND (0.01)
Naphthalene	ND (0.002) J/ND (0.01)/

Chemical Name	Commercial and Industrial/I.R.& I.V. Drinking Water A	Groundwater Volatilization to Indoor Air B	Groundwater Contact C	Groundwater Surface Water Interface D
Metals				
Aluminum	4.1		64000	
Aluminum (Dissolved)	4.1		64000	
Antimony	0.006		68	0.13
Antimony (Dissolved)	0.006		68	0.13
Arsenic	0.05		4.3	0.15
Arsenic (Dissolved)	0.05		4.3	0.15
Beryllium	0.004		290	1.2
Beryllium (Dissolved)	0.004		290	1.2
Cadmium	0.005		190	0.13
Cadmium (Dissolved)	0.005		190	0.13
Chromium	0.1		460	0.011
Chromium (Dissolved)	0.1		460	0.011
Chromium, Hexavalent	0.1		460	0.011
Chromium, Hexavalent (Dissolved)	0.1		460	0.011
Cobalt	0.1		2400	0.1
Cobalt (Dissolved)	0.1		2400	0.1
Cyanide (total)	0.2		57	0.0052
Iron	5.6		58000	
Iron (Dissolved)	5.6		58000	
Lead	0.004			0.19
Lead (Dissolved)	0.004			0.19
Mercury	0.002	0.056	0.056	0.0000013
Mercury (Dissolved)	0.002	0.056	0.056	0.0000013
Nickel	0.1		74000	210
Nickel (Dissolved)	0.1		74000	210
Selenium	0.05		970	0.005
Selenium (Dissolved)	0.05		970	0.005
Vanadium	0.062		970	0.012
Vanadium (Dissolved)	0.062		970	0.012
Zinc	5		110000	22
Zinc (Dissolved)	5		110000	22
Polychlorinated Biphenyls				
Total PCBs	0.0005	0.045	0.0033	0.0002
Semi-Volatile Organic Compounds				
2,4-Dimethylphenol	1		520	0.38
Benzo(a)pyrene	0.005		0.002	
Benzo(b)fluoranthene	0.002		0.002	
Benzo(k)fluoranthene	0.005		0.005	
bis(2-Ethylhexyl)phthalate	0.006		0.32	0.032
Carbazole	0.35		7.4	0.01
Chrysene	0.005		0.005	
Dibenz(a,h)anthracene	0.002		0.002	
Fluoranthene	0.21	0.21	0.21	0.005
Indeno(1,2,3-cd)pyrene	0.002		0.002	
Methylphenol (Cresol)	1		810	0.071
Naphthalene	1.5	31	31	0.013
Pentachlorophenol	0.001		0.2	0.0028
Phenanthrene	0.15	1	1	0.005
Phenol	13		29000	0.21
Volatile Organic Compounds				
1,1-Dichloroethene	0.007	1.3	11	0.065
1,2-Dichloropropane	0.005	36	16	0.29
2-Butanone	38	240000	240000	2.2
Benzene	0.005	35	11	0.2
cis-1,2-Dichloroethene	0.07	210	290	0.62
Ethylbenzene	0.7	170	170	0.018
Trichloroethene	0.005	97	22	0.2
Vinyl chloride	0.002	13	1	0.015
Xylene (total)	10	190	190	0.035
General Chemistry				
Formaldehyde	3.8	360	30000	0.12
Ammonia	10	7100		0.736
pH Field	8.5			9

J5	11/17/98
Metals	
Aluminum	0.237
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.004)
Cadmium (Dissolved)	ND (0.004)
Chromium	ND (0.005)
Chromium (Dissolved)	ND (0.005)
Cobalt	ND (0.01)
Cobalt (Dissolved)	ND (0.01)
Iron	0.476
Iron (Dissolved)	ND (0.02)
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Mercury	ND (0.0002) J
Mercury (Dissolved)	ND (0.0002) J
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Selenium	ND (0.006) J
Selenium (Dissolved)	ND (0.006) J
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.014
Zinc (Dissolved)	ND (0.01)
PCBs	
Total PCBs	ND (0.0002)

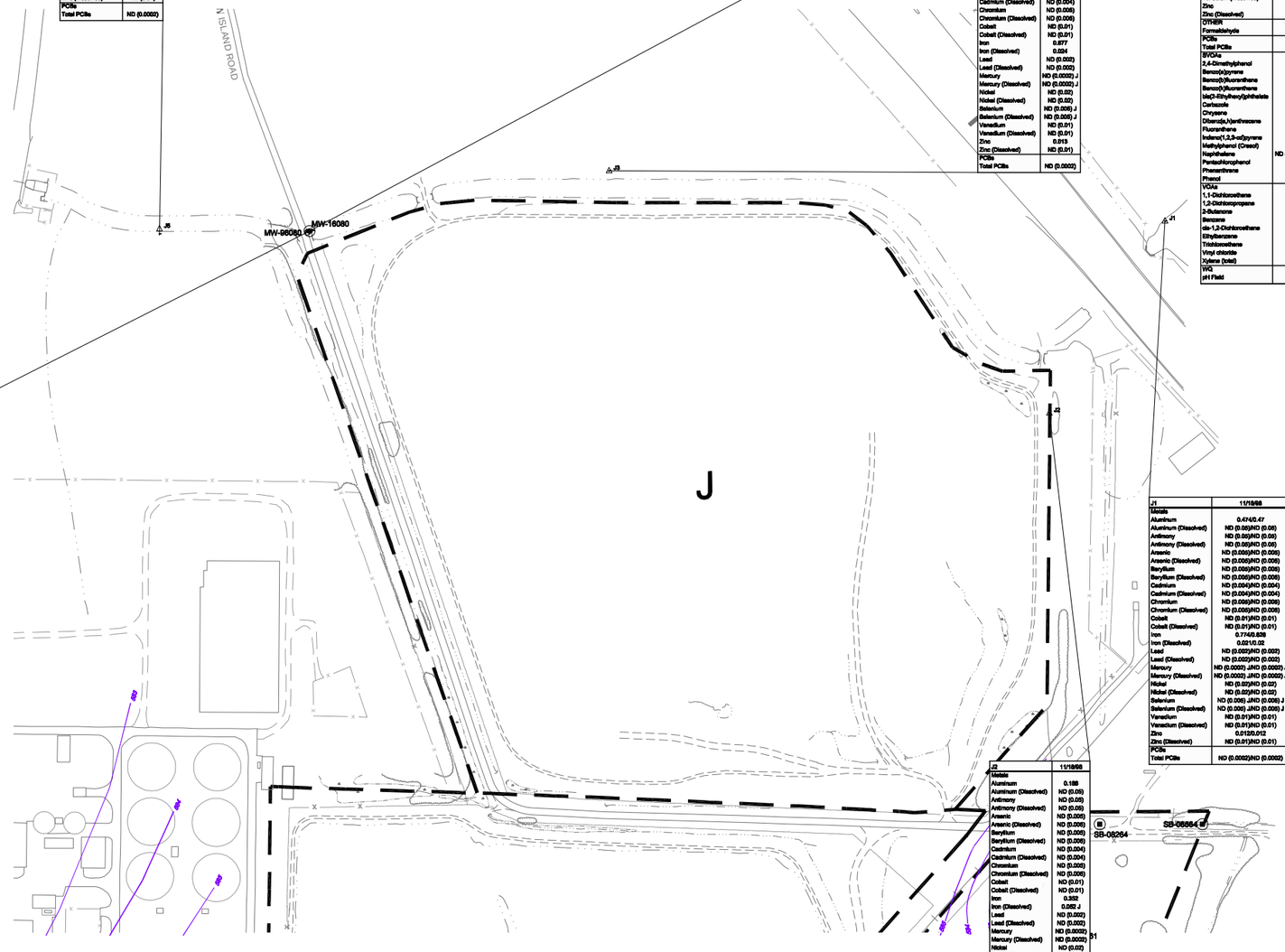
J3	11/17/98
Metals	
Aluminum	0.393
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.004)
Cadmium (Dissolved)	ND (0.004)
Chromium	ND (0.005)
Chromium (Dissolved)	ND (0.005)
Cobalt	ND (0.01)
Cobalt (Dissolved)	ND (0.01)
Iron	0.877
Iron (Dissolved)	0.024
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Mercury	ND (0.0002) J
Mercury (Dissolved)	ND (0.0002) J
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Selenium	ND (0.006) J
Selenium (Dissolved)	ND (0.006) J
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.015
Zinc (Dissolved)	ND (0.01)
PCBs	
Total PCBs	ND (0.0002)

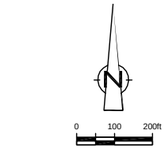
MW-16080	11/17/98	07/25/00
Metals		
Aluminum	8.89 J	28.6
Aluminum (Dissolved)	ND (0.05)	ND (0.05)
Antimony	ND (0.05)	ND (0.05)
Antimony (Dissolved)	ND (0.05)	ND (0.05)
Arsenic	0.01 J	0.024
Arsenic (Dissolved)	ND (0.005)	0.002 J
Beryllium	ND (0.005)	0.002 J
Beryllium (Dissolved)	ND (0.005)	ND (0.005)
Cadmium	ND (0.004)	ND (0.005)
Cadmium (Dissolved)	ND (0.004)	ND (0.005)
Chromium	0.027 J	-
Chromium (Dissolved)	ND (0.005)	ND (0.01)
Chromium, Hexavalent	-	0.008 J
Cobalt	ND (0.01)	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)
Iron	17.7	-
Iron (Dissolved)	0.028	-
Lead	0.007 J	0.027
Lead (Dissolved)	ND (0.002)	ND (0.002)
Mercury	ND (0.0002) J	-
Mercury (Dissolved)	ND (0.0002) J	-
Nickel	ND (0.02)	0.098
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Selenium	0.006 J	-
Selenium (Dissolved)	ND (0.006) J	-
Vanadium	0.031 J	0.098
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Zinc	0.042 J	0.119
Zinc (Dissolved)	ND (0.01)	ND (0.01)
OTHER		
Formaldehyde	-	ND (0.05)
PCBs		
Total PCBs	ND (0.0002)	ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002) JND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.026)	ND (0.026)
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001) J	ND (0.001)
1,2-Dichloropropane	ND (0.001) J	ND (0.001)
2-Butanone	R	R
Benzene	ND (0.001) J	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001) J	ND (0.001)
Ethylbenzene	ND (0.001) J	ND (0.001)
Trichloroethene	ND (0.001) J	ND (0.001)
Vinyl chloride	ND (0.001) J	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
WQ		
pH Field	-	7.82

MW-99080	11/30/98	08/02/00
Metals		
Aluminum	1.2/1.25	4.94 J (U)/5.5 J (U)
Aluminum (Dissolved)	ND (0.05)/ND (0.05)	ND (0.05)/ND (0.05)
Antimony	ND (0.05)/ND (0.05)	ND (0.05)/ND (0.05)
Antimony (Dissolved)	ND (0.05)/ND (0.05)	ND (0.05)/ND (0.05)
Arsenic	0.005/0.005	0.01 J/0.009 J
Arsenic (Dissolved)	ND (0.005)/ND (0.005)	0.004 J/0.004 J
Beryllium	ND (0.005)/ND (0.005)	0.0003 J/0.0003 J
Beryllium (Dissolved)	ND (0.005)/ND (0.005)	ND (0.005)/ND (0.005)
Cadmium	ND (0.004)/ND (0.004)	ND (0.005)/ND (0.005)
Cadmium (Dissolved)	ND (0.004)/ND (0.004)	ND (0.005)/ND (0.005)
Chromium	ND (0.005)/ND (0.005)	-
Chromium (Dissolved)	ND (0.005)/ND (0.005)	ND (0.01)/ND (0.01)
Chromium, Hexavalent	-	ND (0.01)/ND (0.01)
Cobalt	ND (0.01)/ND (0.01)	-
Cobalt (Dissolved)	ND (0.01)/ND (0.01)	-
Cyanide (total)	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Iron	2.1/2.35	-
Iron (Dissolved)	0.187/0.187	-
Lead	ND (0.002)/ND (0.002)	ND (0.01)/0.008 (A)
Lead (Dissolved)	ND (0.002)/ND (0.002)	0.001 J/ND (0.002)
Mercury	ND (0.0002)/ND (0.0002)	-
Mercury (Dissolved)	ND (0.001)/ND (0.001)	-
Nickel	ND (0.02)/ND (0.02)	0.012 J/0.013 J
Nickel (Dissolved)	ND (0.02)/ND (0.02)	ND (0.02)/ND (0.02)
Selenium	ND (0.005)/ND (0.005)	-
Selenium (Dissolved)	ND (0.005)/ND (0.005)	-
Vanadium	ND (0.01)/ND (0.01)	0.007 J/0.012
Vanadium (Dissolved)	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Zinc	ND (0.01)/ND (0.01)	0.023/0.026
Zinc (Dissolved)	ND (0.01)/ND (0.01)	0.004 J/0.009 J
OTHER		
Formaldehyde	-	ND (0.05)/ND (0.05)
PCBs		
Total PCBs	ND (0.0002)/ND (0.0002)	ND (0.0002)/ND (0.0002)
SVOAs		
2,4-Dimethylphenol	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Benzo(a)pyrene	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Benzo(b)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Benzo(k)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Carbazole		ND (0.01)/ND (0.01)
Chrysene	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Methylphenol (Cresol)	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Naphthalene	ND (0.002)/ND (0.01)/ND (0.002)/ND (0.01)	ND (0.01)/ND (0.01)
Pentachlorophenol	ND (0.025)/ND (0.025)	ND (0.025)/ND (0.025)
Phenanthrene	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
Phenol	ND (0.01)/ND (0.01)	ND (0.01)/ND (0.01)
VOAs		
1,1-Dichloroethene	ND (0.001)/ND (0.001)	ND (0.001)/ND (0.001)
1,2-Dichloropropane	0.002/0.002	0.001/0.001
2-Butanone	R/R	R/R
Benzene	ND (0.001)/ND (0.001)	ND (0.001)/ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)/ND (0.001)	ND (0.001)/ND (0.001)
Ethylbenzene	ND (0.001)/ND (0.001)	ND (0.001)/ND (0.001)
Trichloroethene	ND (0.001)/ND (0.001)	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001)/ND (0.001)	ND (0.001)/ND (0.001)
Xylene (total)	ND (0.001)/ND (0.001)	ND (0.001)/ND (0.001)
WQ		
pH Field	-	7.5/7.5

J1	11/18/98
Metals	
Aluminum	0.474/0.47
Aluminum (Dissolved)	ND (0.05)/ND (0.05)
Antimony	ND (0.05)/ND (0.05)
Antimony (Dissolved)	ND (0.05)/ND (0.05)
Arsenic	ND (0.005)/ND (0.005)
Arsenic (Dissolved)	ND (0.005)/ND (0.005)
Beryllium	ND (0.005)/ND (0.005)
Beryllium (Dissolved)	ND (0.005)/ND (0.005)
Cadmium	ND (0.004)/ND (0.004)
Cadmium (Dissolved)	ND (0.004)/ND (0.004)
Chromium	ND (0.005)/ND (0.005)
Chromium (Dissolved)	ND (0.005)/ND (0.005)
Cobalt	ND (0.01)/ND (0.01)
Cobalt (Dissolved)	ND (0.01)/ND (0.01)
Iron	0.774/0.828
Iron (Dissolved)	0.021/0.02
Lead	ND (0.002)/ND (0.002)
Lead (Dissolved)	ND (0.002)/ND (0.002)
Mercury	ND (0.0002) JND (0.0002) J
Mercury (Dissolved)	ND (0.0002) JND (0.0002) J
Nickel	ND (0.02)/ND (0.02)
Nickel (Dissolved)	ND (0.02)/ND (0.02)
Selenium	ND (0.006) JND (0.006) J
Selenium (Dissolved)	ND (0.006) JND (0.006) J
Vanadium	ND (0.01)/ND (0.01)
Vanadium (Dissolved)	ND (0.01)/ND (0.01)
Zinc	0.012/0.012
Zinc (Dissolved)	ND (0.01)/ND (0.01)
PCBs	
Total PCBs	ND (0.0002)/ND (0.0002)

J2	11/18/98
Metals	
Aluminum	0.188
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.004)
Cadmium (Dissolved)	ND (0.004)
Chromium	ND (0.005)
Chromium (Dissolved)	ND (0.005)
Cobalt	ND (0.01)
Cobalt (Dissolved)	ND (0.01)
Iron	0.302
Iron (Dissolved)	0.052 J
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Mercury	ND (0.0002)
Mercury (Dissolved)	ND (0.0002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Selenium	ND (0.006) J
Selenium (Dissolved)	ND (0.006) J
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.043) J
Zinc (Dissolved)	ND (0.037) J
PCBs	
Total PCBs	ND (0.0002)



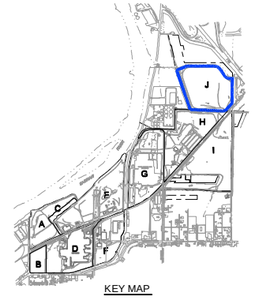


LEGEND

- A — — INVESTIGATIVE UNIT BOUNDARY AND IDENTIFIER
- SD-10A △ NON-RFI SURFACE WATER/SEDIMENT SAMPLE LOCATION
- MWPHB-6 ● NON-RFI MONITORING WELL LOCATION
- MWPHB-6 ■ NON-RFI SOIL BORING LOCATION
- SD-10A ▲ RFI TEMPORARY MONITORING WELL LOCATION
- MW-01223 ◉ RFI MONITORING WELL LOCATION
- SB-01419 ▣ RFI BORING LOCATION
- MW-90124 ◐ RFI BEDROCK WELL LOCATION
- 579 UPPER WATER BEARING ZONE GROUNDWATER CONTOUR

NOTES:

1. TOTAL PCBs WERE SUMMED BY ADDING THE POSITIVE DETECTIONS PLUS HALF THE QUANTITATION LIMITS FOR NON-DETECT RESULTS OF AROCLORS DETECTED ELSEWHERE AT THE SITE. IF QUANTITATION LIMITS ARE NOT AVAILABLE, HALF THE REPORTING LIMITS ARE USED FOR NON-DETECTED VALUES.
2. SCREENING CRITERIA AND SAMPLE RESULTS ARE COMPARED TO TWO SIGNIFICANT DIGITS. RESULTS EQUAL TO SCREENING CRITERIA ARE NOT HIGHLIGHTED AS EXCEEDANCES.
3. PARAMETER LISTS ARE AREA SPECIFIC BASED ON EXCEEDANCES.
4. GROUNDWATER CONTOURS REPRESENT THE UPPER SATURATED ZONE.



KEY MAP

SCALE VERIFICATION

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

GENERAL MOTORS CORPORATION SAGINAW METAL CASTING OPERATIONS

SAGINAW, MICHIGAN

INVESTIGATIVE UNIT J - GROUNDWATER

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
MICHIGAN STATE PLANE SOUTH, NAD 83 USING INTERNATIONAL FEET, NGVD 88
TOPO - SANBORN, 1996

Project Manager:	Reviewed By:	Date:	
I.R.	M.T.	AUGUST 2003	
Scale: 1" = 200'	Project N°: 17075-16	Report N°: PRES015	Drawing N°: figure 11

17075-16(PRES015)GN-WA012 SEP 17/2003

SW-9A	09/05/00
Metals	
Aluminum	0.391/0.449
Aluminum (Dissolved)	ND (0.05)/ND (0.05)
Antimony	ND (0.05)/ND (0.05)
Antimony (Dissolved)	ND (0.05)/ND (0.05)
Arsenic	ND (0.005)/ND (0.005)
Arsenic (Dissolved)	ND (0.005)/ND (0.005)
Beryllium	ND (0.005)/ND (0.005)
Beryllium (Dissolved)	ND (0.005)/ND (0.005)
Cadmium	ND (0.005)/ND (0.005)
Cadmium (Dissolved)	ND (0.005)/ND (0.005)
Chromium	ND (0.01)/ND (0.01)
Chromium (Dissolved)	ND (0.01)/ND (0.01)
Lead	ND (0.002)/0.001 J
Lead (Dissolved)	ND (0.002)/ND (0.002)
Nickel	ND (0.02)/0.003 J
Nickel (Dissolved)	ND (0.02)/ND (0.02)
Vanadium	ND (0.01)/ND (0.01)
Vanadium (Dissolved)	ND (0.01)/ND (0.01)
Zinc	ND (0.01)/ND (0.01)
Zinc (Dissolved)	ND (0.01)/ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0004)/ND (0.0004)
SVOAs	
Benzo(a)pyrene	ND (0.02)
VOAs	
1,1-Dichloroethene	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001)/ND (0.001)
WQ	
pH Field	8.21/8.21

SW-8A	09/06/00
Metals	
Aluminum	0.719
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	0.002 J
Chromium (Dissolved)	ND (0.01)
Lead	0.002 J
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.01)
Zinc (Dissolved)	ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.16

SW-7A	09/06/00
Metals	
Aluminum	0.373
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	0.001 J
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	0.001 J
Lead (Dissolved)	ND (0.002)
Nickel	0.003 J
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.01)
Zinc (Dissolved)	ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.17

SW-6A	09/06/00
Metals	
Aluminum	0.652
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	0.001 J
Cadmium (Dissolved)	ND (0.005)
Chromium	0.003 J
Chromium (Dissolved)	ND (0.01)
Lead	0.001 J
Lead (Dissolved)	ND (0.002)
Nickel	0.003 J
Nickel (Dissolved)	ND (0.02)
Vanadium	0.004 J
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.01)
Zinc (Dissolved)	ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.12

SW-5A	09/05/00
Metals	
Aluminum	0.533
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.01)
Zinc (Dissolved)	0.009 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.19

SW-4A	09/05/00
Metals	
Aluminum	0.53
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	0.001 J
Lead (Dissolved)	ND (0.002)
Nickel	0.002 J
Nickel (Dissolved)	0.002 J
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.01)
Zinc (Dissolved)	ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.21

SW-1A	09/05/00
Metals	
Aluminum	0.449
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Nickel	0.002 J
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.01)
Zinc (Dissolved)	ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	7.77

SW-2A	09/05/00
Metals	
Aluminum	0.455
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Nickel	0.002 J
Nickel (Dissolved)	ND (0.02)
Vanadium	0.004 J
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.01)
Zinc (Dissolved)	ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.28

SW-3A	09/05/00
Metals	
Aluminum	0.858
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	0.002 J
Chromium (Dissolved)	ND (0.01)
Lead	0.002 J
Lead (Dissolved)	ND (0.002)
Nickel	0.003 J
Nickel (Dissolved)	ND (0.02)
Vanadium	0.005 J
Vanadium (Dissolved)	ND (0.01)
Zinc	0.011
Zinc (Dissolved)	ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.25

SW-16A	09/06/00
Metals	
Aluminum	0.329
Aluminum (Dissolved)	0.032 J
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.003 J
Arsenic (Dissolved)	0.002 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	0.001 J
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.004 J
Zinc (Dissolved)	0.004 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.3

SW-14A	09/06/00
Metals	
Aluminum	0.484
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	0.001 J
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	0.003 J
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.01)
Zinc (Dissolved)	ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.28

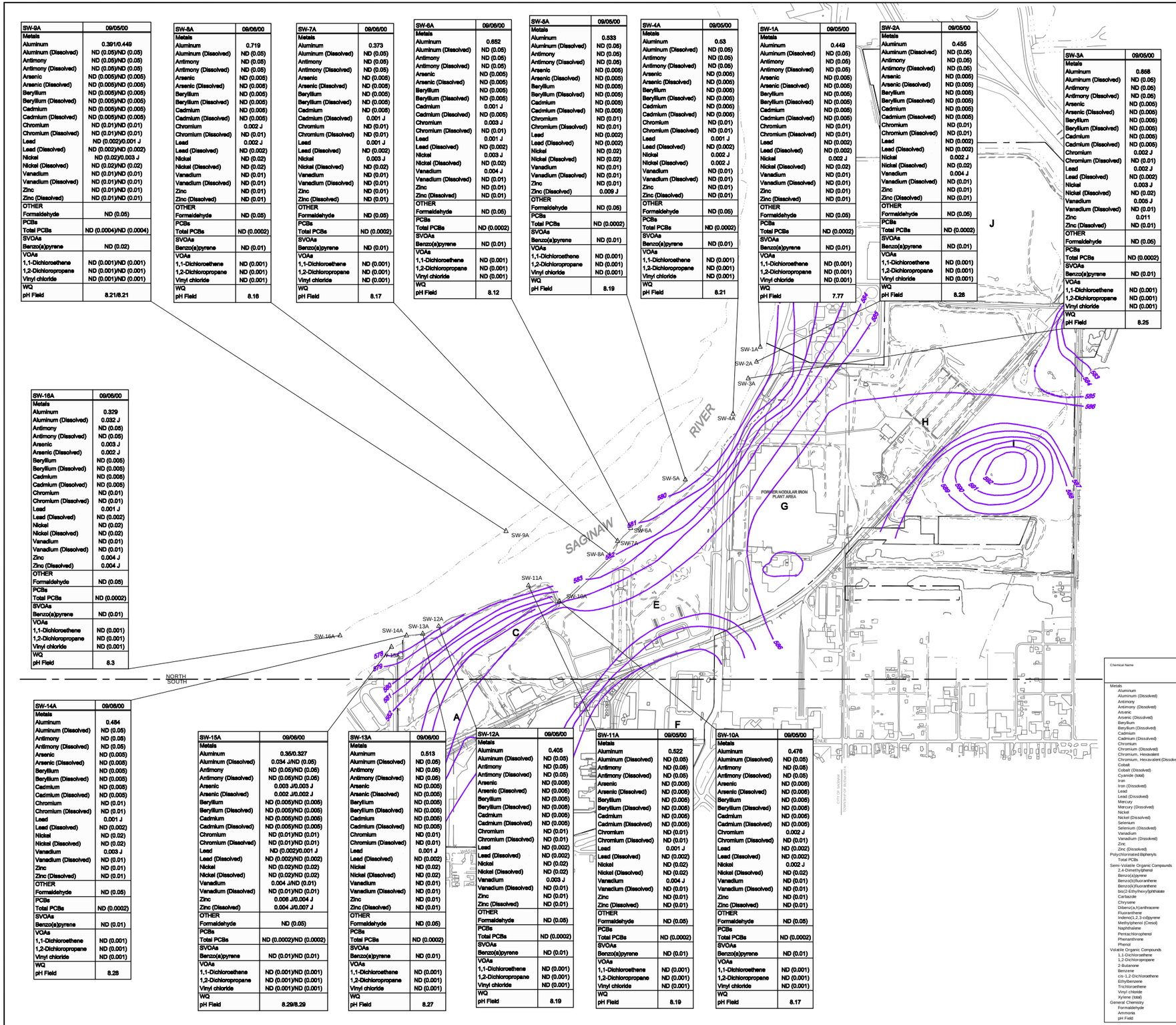
SW-15A	09/06/00
Metals	
Aluminum	0.35/0.327
Aluminum (Dissolved)	0.034 J/ND (0.05)
Antimony	ND (0.05)/ND (0.05)
Antimony (Dissolved)	ND (0.05)/ND (0.05)
Arsenic	0.003 J/0.003 J
Arsenic (Dissolved)	0.002 J/0.002 J
Beryllium	ND (0.005)/ND (0.005)
Beryllium (Dissolved)	ND (0.005)/ND (0.005)
Cadmium	ND (0.005)/ND (0.005)
Cadmium (Dissolved)	ND (0.005)/ND (0.005)
Chromium	ND (0.01)/ND (0.01)
Chromium (Dissolved)	ND (0.01)/ND (0.01)
Lead	ND (0.002)/0.001 J
Lead (Dissolved)	ND (0.002)/ND (0.002)
Nickel	ND (0.02)/ND (0.02)
Nickel (Dissolved)	ND (0.02)/ND (0.02)
Vanadium	0.004 J/ND (0.01)
Vanadium (Dissolved)	ND (0.01)/ND (0.01)
Zinc	0.008 J/0.004 J
Zinc (Dissolved)	0.004 J/0.007 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)/ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)/ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001)/ND (0.001)
WQ	
pH Field	8.29/8.29

SW-13A	09/06/00
Metals	
Aluminum	0.513
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	0.001 J
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.01)
Zinc (Dissolved)	ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.27

SW-12A	09/06/00
Metals	
Aluminum	0.405
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	0.003 J
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.01)
Zinc (Dissolved)	ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.19

SW-11A	09/05/00
Metals	
Aluminum	0.522
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	0.001 J
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	0.004 J
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.01)
Zinc (Dissolved)	ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.19

SW-10A	09/05/00
Metals	
Aluminum	0.476
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	0.002 J
Chromium (Dissolved)	ND (0.01)
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Nickel	0.002 J
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.01)
Zinc (Dissolved)	ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.17



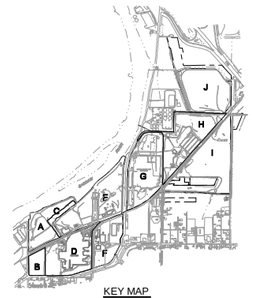
Chemical Name	Commercial and Industrial I, R & V: Drinking Water A	Groundwater Volatilization to Indoor Air B	Groundwater Contact C	Groundwater Surface Water Interface D
Metals				
Aluminum	4.1		64000	
Aluminum (Dissolved)	4.1		64000	
Antimony	0.006		68	0.13
Antimony (Dissolved)	0.006		68	0.13
Arsenic	0.05		4.3	0.15
Arsenic (Dissolved)	0.05		4.3	0.15
Beryllium	0.004		290	1.2
Beryllium (Dissolved)	0.004		290	1.2
Cadmium	0.005		190	0.13
Cadmium (Dissolved)	0.005		190	0.13
Chromium	0.1		460	0.011
Chromium (Dissolved)	0.1		460	0.011
Chromium, Hexavalent	0.1		460	0.011
Chromium, Hexavalent (Dissolved)	0.1		460	0.011
Cobalt	0.1		2400	0.1
Cobalt (Dissolved)	0.1		2400	0.1
Cyanide (total)	0.2		57	0.0052
Iron	5.6		58000	
Iron (Dissolved)	5.6		58000	
Lead	0.004			0.19
Lead (Dissolved)	0.004			0.19
Mercury	0.002	0.056	0.056	0.0000013
Mercury (Dissolved)	0.002	0.056	0.056	0.0000013
Nickel	0.1		74000	210
Nickel (Dissolved)	0.1		74000	210
Selenium	0.05		970	0.005
Selenium (Dissolved)	0.05		970	0.005
Vanadium	0.062		970	0.012
Vanadium (Dissolved)	0.062		970	0.012
Zinc	5		110000	22
Zinc (Dissolved)	5		110000	22
Polychlorinated Biphenyls				
Total PCBs	0.0005	0.045	0.0033	0.0002
Semi-Volatile Organic Compounds				
2,4-Dimethylphenol	1		520	0.38
Benzo(a)pyrene	0.005		0.002	
Benzo(b)fluoranthene	0.002		0.002	
Benzo(k)fluoranthene	0.005		0.005	
bis(2-Ethylhexyl)phthalate	0.006		0.32	0.032
Carbazole	0.35		7.4	0.01
Chrysene	0.005		0.005	
Dibenz(a,h)anthracene	0.002		0.002	
Fluoranthene	0.21	0.21	0.21	0.005
Indeno(1,2,3-c,d)pyrene	0.002		0.002	
Methylphenol (Cresol)	1		810	0.071
Naphthalene	1.5	31	31	0.013
Pentachlorophenol	0.001		0.2	0.0028
Phenanthrene	0.15	1	1	0.005
Phenol	13		29000	0.21
Volatile Organic Compounds				
1,1-Dichloroethene	0.007	1.3	11	0.065
1,2-Dichloropropane	0.005	36	16	0.29
2-Butanone	38	240000	240000	2.2
Benzene	0.005	35	11	0.2
cis-1,2-Dichloroethene	0.07	210	200	0.62
Ethylbenzene	0.7	170	170	0.018
Trichloroethene	0.005	97	22	0.2
Vinyl chloride	0.002	13	1	0.015
Xylene (total)	10	190	190	0.035
General Chemistry				
Formaldehyde	3.8	360	30000	0.12
Ammonia	10	7100		0.736
pH Field	8.5			9

LEGEND

- A — — INVESTIGATIVE UNIT BOUNDARY AND IDENTIFIER
- SD-10A △ NON-RFI SURFACE WATER/SEDIMENT SAMPLE LOCATION
- SB-01419 ▣ RFI BORING LOCATION
- 579 UPPER WATER BEARING ZONE GROUNDWATER CONTOUR

NOTES:

1. TOTAL PCBs WERE SUMMED BY ADDING THE POSITIVE DETECTIONS PLUS HALF THE QUANTITATION LIMITS FOR NON-DETECT RESULTS OF AROCLORS DETECTED ELSEWHERE AT THE SITE. IF QUANTITATION LIMITS ARE NOT AVAILABLE, HALF THE REPORTING LIMITS ARE USED FOR NON-DETECTED VALUES.
2. SCREENING CRITERIA AND SAMPLE RESULTS ARE COMPARED TO TWO SIGNIFICANT DIGITS. RESULTS EQUAL TO SCREENING CRITERIA ARE NOT HIGHLIGHTED AS EXCEEDANCES.
3. PARAMETER LISTS ARE AREA SPECIFIC BASED ON EXCEEDANCES.
4. GROUNDWATER CONTOURS REPRESENT THE UPPER SATURATED ZONE.



KEY MAP

SCALE VERIFICATION

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

GENERAL MOTORS CORPORATION SAGINAW METAL CASTING OPERATIONS

SAGINAW MICHIGAN

SURFACE WATER SAMPLE LOCATION - NORTH

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:

Project Manager:	Reviewed By:	Date:	
I.R.	M.T.	AUGUST 2003	
Scale: 1"=600'	Project N#: 17075-16	Report N#: PRES015	Drawing N#: 12A

17075-16(PRES015)GN-WA013 SEP 17/2003

SW-24A	09/07/00
Metals	
Aluminum	0.298
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.003 J
Arsenic (Dissolved)	0.003 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.006 J
Zinc (Dissolved)	0.003 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.17

SW-22A	09/07/00
Metals	
Aluminum	0.45
Aluminum (Dissolved)	0.031 J
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.003 J
Arsenic (Dissolved)	0.003 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	0.001 J
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.006 J
Zinc (Dissolved)	0.003 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.25

SW-20A	09/06/00
Metals	
Aluminum	0.338/0.334
Aluminum (Dissolved)	0.039 J/0.032 J
Antimony	ND (0.05)/ND (0.05)
Antimony (Dissolved)	ND (0.05)/ND (0.05)
Arsenic	0.003 J/0.003 J
Arsenic (Dissolved)	0.002 J/0.002 J
Beryllium	ND (0.005)/ND (0.005)
Beryllium (Dissolved)	ND (0.005)/ND (0.005)
Cadmium	ND (0.005)/ND (0.005)
Cadmium (Dissolved)	ND (0.005)/ND (0.005)
Chromium	ND (0.01)/ND (0.01)
Chromium (Dissolved)	ND (0.01)/ND (0.01)
Lead	ND (0.002)/ND (0.002)
Lead (Dissolved)	ND (0.002)/ND (0.002)
Nickel	ND (0.02)/ND (0.02)
Nickel (Dissolved)	ND (0.02)/ND (0.02)
Vanadium	ND (0.01)/ND (0.01)
Vanadium (Dissolved)	ND (0.01)/ND (0.01)
Zinc	0.005 J/0.007 J
Zinc (Dissolved)	0.004 J/0.004 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)/ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001)/ND (0.001)
WQ	
pH Field	8.42/8.42

SW-18A	09/06/00
Metals	
Aluminum	0.852
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.003 J
Arsenic (Dissolved)	0.002 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	0.002 J
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.011
Zinc (Dissolved)	0.004 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.33

SW-19A	09/06/00
Metals	
Aluminum	0.343
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.003 J
Arsenic (Dissolved)	0.003 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.004 J
Zinc (Dissolved)	0.004 J
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(e)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.61

SW-17A	09/06/00
Metals	
Aluminum	0.534
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	ND (0.005)
Arsenic (Dissolved)	ND (0.005)
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	0.001 J
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	0.001 J
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	0.003 J
Vanadium (Dissolved)	ND (0.01)
Zinc	ND (0.01)
Zinc (Dissolved)	ND (0.01)
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(e)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.27

SW-21A	09/07/00
Metals	
Aluminum	0.416
Aluminum (Dissolved)	0.033 J
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.003 J
Arsenic (Dissolved)	0.003 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	0.001 J
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.006 J
Zinc (Dissolved)	0.006 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.16

SW-23A	09/07/00
Metals	
Aluminum	0.34
Aluminum (Dissolved)	ND (0.05)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.003 J
Arsenic (Dissolved)	0.003 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	0.001 J
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.008 J
Zinc (Dissolved)	0.004 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.26

SW-25A	09/07/00
Metals	
Aluminum	0.193
Aluminum (Dissolved)	0.037 J
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.003 J
Arsenic (Dissolved)	0.003 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.008 J
Zinc (Dissolved)	0.004 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.3

SW-27A	09/07/00
Metals	
Aluminum	0.353
Aluminum (Dissolved)	0.045 J
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.003 J
Arsenic (Dissolved)	0.002 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	0.001 J
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.008 J
Zinc (Dissolved)	0.003 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.3

SW-29	09/07/00
Metals	
Aluminum	0.433
Aluminum (Dissolved)	0.044 J
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.003 J
Arsenic (Dissolved)	0.002 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	0.001 J
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	0.004 J
Zinc	0.006 J
Zinc (Dissolved)	0.004 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.34

SW-26A	09/07/00
Metals	
Aluminum	0.57
Aluminum (Dissolved)	0.04 J
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.003 J
Arsenic (Dissolved)	0.002 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	0.001 J
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	0.004 J
Vanadium (Dissolved)	ND (0.01)
Zinc	0.007 J
Zinc (Dissolved)	0.004 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.26

SW-30A	09/08/00
Metals	
Aluminum	0.517
Aluminum (Dissolved)	ND (0.05)
Antimony	0.022 J
Antimony (Dissolved)	ND (0.05)
Arsenic	0.002 J
Arsenic (Dissolved)	0.003 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.018
Zinc (Dissolved)	0.003 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	7.67

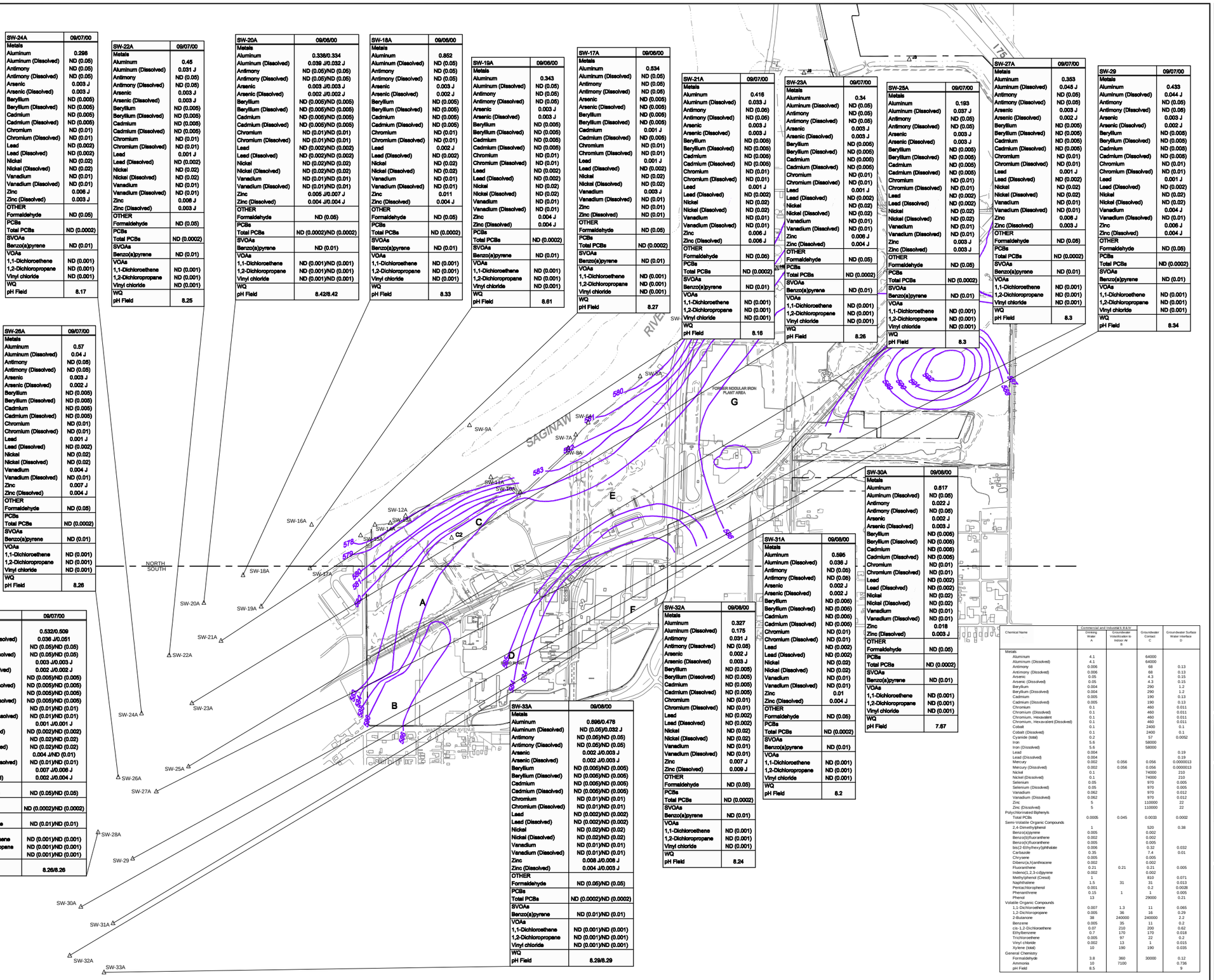
SW-31A	09/08/00
Metals	
Aluminum	0.595
Aluminum (Dissolved)	0.036 J
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.002 J
Arsenic (Dissolved)	0.002 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.01
Zinc (Dissolved)	0.004 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.2

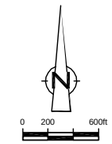
SW-32A	09/08/00
Metals	
Aluminum	0.327
Aluminum (Dissolved)	0.175
Antimony	0.031 J
Antimony (Dissolved)	ND (0.05)
Arsenic	0.002 J
Arsenic (Dissolved)	0.003 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.01)
Chromium (Dissolved)	ND (0.01)
Lead	ND (0.002)
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.007 J
Zinc (Dissolved)	0.009 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
Vinyl chloride	ND (0.001)
WQ	
pH Field	8.24

SW-33A	09/08/00
Metals	
Aluminum	0.696/0.478
Aluminum (Dissolved)	ND (0.05)/0.032 J
Antimony	ND (0.05)/ND (0.05)
Antimony (Dissolved)	ND (0.05)/ND (0.05)
Arsenic	0.002 J/0.003 J
Arsenic (Dissolved)	0.002 J/0.003 J
Beryllium	ND (0.005)/ND (0.005)
Beryllium (Dissolved)	ND (0.005)/ND (0.005)
Cadmium	ND (0.005)/ND (0.005)
Cadmium (Dissolved)	ND (0.005)/ND (0.005)
Chromium	ND (0.01)/ND (0.01)
Chromium (Dissolved)	ND (0.01)/ND (0.01)
Lead	ND (0.002)/ND (0.002)
Lead (Dissolved)	ND (0.002)/ND (0.002)
Nickel	ND (0.02)/ND (0.02)
Nickel (Dissolved)	ND (0.02)/ND (0.02)
Vanadium	ND (0.01)/ND (0.01)
Vanadium (Dissolved)	ND (0.01)/ND (0.01)
Zinc	0.008 J/0.008 J
Zinc (Dissolved)	0.004 J/0.003 J
OTHER	
Formaldehyde	ND (0.05)/ND (0.05)
PCBs	
Total PCBs	ND (0.0002)/ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)/ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001)/ND (0.001)
WQ	
pH Field	8.28/8.29

SW-28A	09/07/00
Metals	
Aluminum	0.532/0.509
Aluminum (Dissolved)	0.036 J/0.051
Antimony	ND (0.05)/ND (0.05)
Antimony (Dissolved)	ND (0.05)/ND (0.05)
Arsenic	0.003 J/0.003 J
Arsenic (Dissolved)	0.002 J/0.002 J
Beryllium	ND (0.005)/ND (0.005)
Beryllium (Dissolved)	ND (0.005)/ND (0.005)
Cadmium	ND (0.005)/ND (0.005)
Cadmium (Dissolved)	ND (0.005)/ND (0.005)
Chromium	ND (0.01)/ND (0.01)
Chromium (Dissolved)	ND (0.01)/ND (0.01)
Lead	0.001 J/0.001 J
Lead (Dissolved)	ND (0.002)/ND (0.002)
Nickel	ND (0.02)/ND (0.02)
Nickel (Dissolved)	ND (0.02)/ND (0.02)
Vanadium	0.004 J/ND (0.01)
Vanadium (Dissolved)	ND (0.01)/ND (0.01)
Zinc	0.007 J/0.006 J
Zinc (Dissolved)	0.002 J/0.004 J
OTHER	
Formaldehyde	ND (0.05)/ND (0.05)
PCBs	
Total PCBs	ND (0.0002)/ND (0.0002)
SVOAs	
Benzo(a)pyrene	ND (0.01)/ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)/ND (0.001)
1,2-Dichloropropane	ND (0.001)/ND (0.001)
Vinyl chloride	ND (0.001)/ND (0.001)
WQ	
pH Field	8.26/8.26

Chemical Name	Commercial and Industrial IL 8-6 IV			
	Drinking Water A	Groundwater Volatilization to Indoor Air B	Groundwater Contact C	Groundwater Surface Water Interface D
Metals				
Aluminum	4.1		64000	
Aluminum (Dissolved)	4.1		64000	
Antimony	0.006		68	0.13
Antimony (Dissolved)	0.006		68	0.13
Arsenic	0.05		4.3	0.15
Arsenic (Dissolved)	0.05		4.3	0.15
Beryllium	0.004		290	1.2
Beryllium (Dissolved)	0.004		290	1.2
Cadmium	0.005		190	0.13
Cadmium (Dissolved)	0.005		190	0.13
Chromium	0.1		460	0.011
Chromium (Dissolved)	0.1		460	0.011
Chromium, Hexavalent	0.1		460	0.011
Chromium, Hexavalent (Dissolved)	0.1		460	0.011
Cobalt	0.1		2400	0.1
Cobalt (Dissolved)	0.1		2400	0.1
Cyanide (total)	0.2		57	0.0052
Iron	5.6		58000	
Iron (Dissolved)	5.6		58000	
Lead	0.004			0.19
Lead (Dissolved)	0.004			0.19
Mercury	0.002	0.056	0.056	0.0000013
Mercury (Dissolved)	0.002	0.056	0.056	0.0000013
Nickel	0.1		74000	210
Nickel (Dissolved)	0.1		74000	210
Selenium	0.05		970	0.005
Selenium (Dissolved)	0.05		970	0.005
Vanadium	0.062		970	0.012
Vanadium (Dissolved)	0.062		970	0.012
Zinc	5		110000	22
Zinc (Dissolved)	5		110000	22
Polychlorinated Biphenyls				
Total PCBs	0.0005	0.045	0.0033	0.0002
Semi-Volatile Organic Compounds				
2,4-Dimethylphenol	1		520	0.38
Benzo(a)pyrene	0.005		0.002	
Benzo(b)fluoranthene	0.002		0.002	
Benzo(k)fluoranthene	0.005		0.005	
bis(2-Ethylhexy)phthalate	0.006		0.32	0.032
Carbazole	0.35		7.4	0.01
Chrysene	0.005		0.005	
Dibenz(a,h)anthracene	0.002		0.002	
Fluoranthene	0.21	0.21	0.21	0.005
Indeno(1,2,3-cd)pyrene	0.002		0.002	
Methylphenol (Cresol)	1		810	0.071
Naphthalene	1.5	31	31	0.013
Pentachlorophenol	0.001		0.2	0.0038
Phenanthrene	0.15	1	1	0.005
Phenol	13		29000	0.21
Volatile Organic Compounds				
1,1-Dichloroethene	0.007	1.3	11	0.065
1,2-Dichloropropane	0.005	36	16	0.29
2-Butanone	38	240000	240000	2.2
Benzene	0.005	35	11	0.2
cis-1,2-Dichloroethene	0.07	210	200	0.62
Ethylbenzene	0.7	170	170	0.018
Trichloroethene	0.005	97	22	0.2
Vinyl chloride	0.002	13	1	0.015
Xylene (total)	10	190	190	0.035
General Chemistry				
Formaldehyde	3.8	360	30000	0.12
Ammonia	10	7100		0.736
pH Field	8.5			9





LEGEND

A— — INVESTIGATIVE UNIT BOUNDARY AND IDENTIFIER

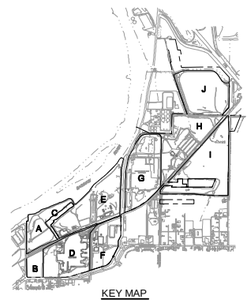
SD-10A △ NON-RFI SURFACE WATER/SEDIMENT SAMPLE LOCATION

SB-01419 ▣ RFI BORING LOCATION

579 UPPER WATER BEARING ZONE GROUNDWATER CONTOUR

NOTES:

1. TOTAL PCBs WERE SUMMED BY ADDING THE POSITIVE DETECTIONS PLUS HALF THE QUANTITATION LIMITS FOR NON-DETECT RESULTS OF AROCLORS DETECTED ELSEWHERE AT THE SITE. IF QUANTITATION LIMITS ARE NOT AVAILABLE, HALF THE REPORTING LIMITS ARE USED FOR NON-DETECTED VALUES.
2. SCREENING CRITERIA AND SAMPLE RESULTS ARE COMPARED TO TWO SIGNIFICANT DIGITS. RESULTS EQUAL TO SCREENING CRITERIA ARE NOT HIGHLIGHTED AS EXCEEDANCES.
3. PARAMETER LISTS ARE AREA SPECIFIC BASED ON EXCEEDANCES.
4. GROUNDWATER CONTOURS REPRESENT THE UPPER SATURATED ZONE.



KEY MAP

SCALE VERIFICATION

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

GENERAL MOTORS CORPORATION
SAGINAW METAL CASTING OPERATIONS

SAGINAW, MICHIGAN

SURFACE WATER SAMPLE LOCATIONS - SOUTH

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:

Project Manager:	Reviewed By:	Date:	
I.R.	M.T.	AUGUST 2003	
Scale: 1"=600'	Project №: 17075-16	Report №: PRES015	Drawing №: 12B

17075-16(PRES015)GN-WA016 SEP 17/2003

MW-00526	13/04/98	07/14/00
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
2-Butanone	R	ND (0.02)
Aluminum	25.3	9.57
Aluminum (Dissolved)	ND (0.06)	ND (0.06)
Antimony	ND (0.06)	0.033 J
Antimony (Dissolved)	ND (0.06)	ND (0.06)
Arsenic	0.051	0.011
Arsenic (Dissolved)	0.007	0.001 J
Benzene	ND (0.001)	ND (0.001)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
Beryllium	ND (0.003)	ND (0.003)
Beryllium (Dissolved)	ND (0.003)	ND (0.003)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Cadmium	ND (0.004)	ND (0.003)
Cadmium (Dissolved)	ND (0.004)	ND (0.003)
Carbazole	-	ND (0.01)
Chromium	0.048 (D)	-
Chromium (Dissolved)	ND (0.009)	ND (0.009)
Chromium, Hexavalent	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)
Cobalt	0.004	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	0.01 J (D)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Ethylbenzene	ND (0.001)	ND (0.001)
Fluoranthene	ND (0.01)	ND (0.01)
Formaldehyde	-	ND (0.05)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Iron	59.3 J	-
Iron (Dissolved)	4.85	-
Lead	0.149	0.004
Lead (Dissolved)	ND (0.002)	ND (0.002)
Manganese	3.42 J	2.27
Manganese (Dissolved)	1.64	1.96
Mercury	0.0001 (D)	-
Mercury (Dissolved)	ND (0.0002)	-
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)ND (0.01)	ND (0.01)
Nickel	0.068	0.025
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Pentachlorophenol	ND (0.039)	ND (0.039)
pH Field	-	8.52
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	0.008	ND (0.01)
Selenium	ND (0.006) J	-
Selenium (Dissolved)	ND (0.006) J	-
Total PCBs	ND (0.0002)	ND (0.0002)
Trichloroethene	ND (0.001)	ND (0.001)
Vanadium	0.067 (D)	0.021 (D)
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Vinyl chloride	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
Zinc	0.33	0.069
Zinc (Dissolved)	0.01	0.009 J

MW-01830	12/07/98	07/24/00
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
2-Butanone	R	R
Aluminum	2.33	1.72
Aluminum (Dissolved)	ND (0.06)	0.034 J
Antimony	ND (0.06)	ND (0.06)
Antimony (Dissolved)	ND (0.06)	ND (0.06)
Arsenic	0.002	0.005
Arsenic (Dissolved)	0.013	0.013
Benzene	ND (0.001)	ND (0.001)
Benzo(a)pyrene	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)
Beryllium	ND (0.003)	ND (0.003)
Beryllium (Dissolved)	ND (0.003)	ND (0.003)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)
Cadmium	ND (0.004)	ND (0.003)
Cadmium (Dissolved)	ND (0.004)	ND (0.003)
Carbazole	-	ND (0.01)
Chromium	0.005	-
Chromium (Dissolved)	ND (0.009)	ND (0.01)
Chromium, Hexavalent	-	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)
Cobalt	ND (0.01)	-
Cobalt (Dissolved)	ND (0.01)	-
Cyanide (total)	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)
Ethylbenzene	ND (0.001)	ND (0.001)
Fluoranthene	ND (0.01)	ND (0.01)
Formaldehyde	-	ND (0.05)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)
Iron	39.8 J	-
Iron (Dissolved)	4.87	-
Lead	0.005	0.003
Lead (Dissolved)	2.05 J	2.16
Manganese	1.79	2.13
Manganese (Dissolved)	ND (0.0002)	-
Mercury	ND (0.0002)	-
Methylphenol (Cresol)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)ND (0.01)	ND (0.01)
Nickel	ND (0.02)	ND (0.02)
Nickel (Dissolved)	ND (0.02)	ND (0.02)
Pentachlorophenol	ND (0.039)	ND (0.039)
pH Field	-	7.81
Phenanthrene	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	ND (0.01)
Selenium	ND (0.006) J	-
Selenium (Dissolved)	ND (0.006) J	-
Total PCBs	ND (0.0002)	ND (0.0002)
Trichloroethene	ND (0.001)	ND (0.001)
Vanadium	ND (0.01)	0.007 J
Vanadium (Dissolved)	ND (0.01)	ND (0.01)
Vinyl chloride	ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)	ND (0.001)
Zinc	0.018	0.011
Zinc (Dissolved)	0.012	ND (0.01)

MW-02432	13/08/98	07/19/00	12/13/01
1,1-Dichloroethene	ND (0.001)	ND (0.001)	-
1,2-Dichloropropane	ND (0.001)	ND (0.001)	-
2,4-Dimethylphenol	ND (0.01)	ND (0.01)	-
2-Butanone	R	R	-
Aluminum	41.6	0.693	-
Aluminum (Dissolved)	ND (0.06)	ND (0.06)	-
Antimony	ND (0.06)	ND (0.06)	-
Antimony (Dissolved)	ND (0.06)	ND (0.06)	-
Arsenic	0.027	0.02 J	-
Arsenic (Dissolved)	0.009	0.012 J	-
Benzene	ND (0.001)	ND (0.001)	-
Benzo(a)pyrene	ND (0.01)	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	-
Beryllium	ND (0.003)	ND (0.003)	-
Beryllium (Dissolved)	ND (0.003)	ND (0.003)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	-
Cadmium	ND (0.004)	ND (0.003)	-
Cadmium (Dissolved)	ND (0.004)	ND (0.003)	-
Carbazole	-	ND (0.01)	-
Chromium	0.138 (D)	-	-
Chromium (Dissolved)	ND (0.009)	ND (0.01)	-
Chromium, Hexavalent	-	ND (0.01)	-
Chrysene	ND (0.01)	ND (0.01)	-
cis-1,2-Dichloroethene	NR (0.001)	ND (0.001)	-
Cobalt	0.029	-	-
Cobalt (Dissolved)	ND (0.01)	-	-
Cyanide (total)	ND (0.01)	ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	-
Ethylbenzene	ND (0.001)	ND (0.001)	-
Fluoranthene	ND (0.01)	ND (0.01)	-
Fluoride	-	-	0.3 J
Formaldehyde	-	ND (0.05)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	-
Iron	99.8 J	-	-
Iron (Dissolved)	0.197	-	-
Lead	0.11	0.004 J	-
Lead (Dissolved)	ND (0.002)	0.003 J	-
Manganese	2.76	0.8 J	-
Manganese (Dissolved)	0.227	0.781 J	-
Mercury	0.001 (D)	-	-
Mercury (Dissolved)	ND (0.0002)	-	-
Methylphenol (Cresol)	ND (0.01)	ND (0.01)	-
Naphthalene	ND (0.002) JND (0.01)	ND (0.01)	-
Nickel	0.105	ND (0.02)	-
Nickel (Dissolved)	ND (0.02)	ND (0.02)	-
Pentachlorophenol	ND (0.039)	ND (0.039)	-
pH Field	-	7.19	6.31
Phenanthrene	ND (0.01)	ND (0.01)	-
Phenol	ND (0.01)	ND (0.01)	-
Selenium	ND (0.006) J	-	-
Selenium (Dissolved)	ND (0.006) J	-	-
Total PCBs	ND (0.0002)	ND (0.0002)	-
Trichloroethene	ND (0.001)	ND (0.001)	-
Vanadium	0.083 (D)	0.006 J	-
Vanadium (Dissolved)	ND (0.01)	ND (0.01)	-
Vinyl chloride	ND (0.001)	ND (0.001)	-
Xylene (total)	ND (0.001)	ND (0.001)	-
Zinc	0.278	0.008 J	-
Zinc (Dissolved)	ND (0.01)	0.009 J	-

MW-02340	11/18/98	07/19/00	12/13/01
1,1-Dichloroethene	ND (0.001) J/ND (0.001) J	ND (0.001)	-
1,2-Dichloropropane	ND (0.001) J/ND (0.001) J	ND (0.001)	-
2,4-Dimethylphenol	ND (0.01)/ND (0.01)	ND (0.01)	-
2-Butanone	R/R	R	-
Aluminum	139/191	122	-
Aluminum (Dissolved)	0.72 J/0.382 J	2.91	-
Antimony	0.074/0.07	ND (0.06)	-
Antimony (Dissolved)	ND (0.06)/ND (0.06)	0.038 J	-
Arsenic	0.045/0.064	0.103	-
Arsenic (Dissolved)	ND (0.005)/ND (0.005)	ND (0.005)	-
Benzene	ND (0.001) J/ND (0.001) J	ND (0.001)	-
Benzo(a)pyrene	ND (0.01)/ND (0.01)	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)	-
Beryllium	0.035/0.035	0.02 J	-
Beryllium (Dissolved)	ND (0.003)/ND (0.003)	ND (0.003)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)/ND (0.01)	ND (0.01)	-
Cadmium	ND (0.004)/ND (0.004)	ND (0.003)	-
Cadmium (Dissolved)	ND (0.004)/ND (0.004)	0.004 J	-
Carbazole	-	ND (0.01)	-
Chromium	0.348 (D)/0.438 (D)	-	-
Chromium (Dissolved)	ND (0.009)/ND (0.009)	ND (0.01)	-
Chromium, Hexavalent	-	ND (0.01)	-
Chrysene	ND (0.01)/ND (0.01)	ND (0.01)	-
cis-1,2-Dichloroethene	ND (0.001) J/ND (0.001) J	ND (0.001)	-
Cobalt	0.274 (D)/0.369 (D)	-	-
Cobalt (Dissolved)	ND (0.01)/ND (0.01)	-	-
Cyanide (total)	ND (0.01)/ND (0.01)	0.005	-
Dibenz(a,h)anthracene	ND (0.01)/ND (0.01)	ND (0.01)	-
Ethylbenzene	ND (0.001) J/ND (0.001) J	ND (0.001)	-
Fluoranthene	ND (0.01)/ND (0.01)	ND (0.01)	-
Fluoride	-	-	0.3 J
Formaldehyde	-	ND (0.05)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)/ND (0.01)	ND (0.01)	-
Iron	414/474	-	-
Iron (Dissolved)	102/92.6	-	-
Lead	0.11/0.14	0.004 J	-
Lead (Dissolved)	ND (0.002)/ND (0.002)	0.008 J	-
Manganese	2.76/3.47	3.74 J	-
Manganese (Dissolved)	0.565/0.67	0.84 J	-
Mercury	0.001 (D)/0.001 (D)	-	-
Mercury (Dissolved)	ND (0.0002)/ND (0.0002)	ND (0.01)	-
Methylphenol (Cresol)	ND (0.01)/ND (0.01)	ND (0.01)	-
Naphthalene	ND (0.002) JND (0.01)/ND (0.002) JND (0.01)	ND (0.01)	-
Nickel	0.258/1.07	ND (0.1)	-
Nickel (Dissolved)	0.04/0.046	0.032	-
Pentachlorophenol	ND (0.039)/ND (0.039)	ND (0.039)	-
pH Field	-	7.18	6.34
Phenanthrene	ND (0.01)/ND (0.01)	ND (0.01)	-
Phenol	ND (0.01)/ND (0.01)	ND (0.01)	-
Selenium	ND (0.006) J/ND (0.006) J	-	-
Selenium (Dissolved)	ND (0.006) J/ND (0.006) J	-	-
Total PCBs	ND (0.0002)/ND (0.0002)	ND (0.0002)	-
Trichloroethene	ND (0.001) J/ND (0.001) J	0.002	-
Vanadium	0.288 (D)/0.117 (D)	0.049 J (D)	-
Vanadium (Dissolved)	ND (0.01)/ND (0.01)	ND (0.01)	-
Vinyl chloride	0.018 (D)/ND (0.001) J	ND (0.001)	-
Xylene (total)	ND (0.001) J/ND (0.001) J	ND (0.001)	-
Zinc	2.72/3.14	0.388 J	-
Zinc (Dissolved)	0.104/0.087	0.189 J	-

MW-04884	11/18/98	07/19/00	01/05/03
1,1-Dichloroethene	ND (0.001) J	ND (0.001)	-
1,2-Dichloropropane	ND (0.001) J	ND (0.001)	-
2,4-Dimethylphenol	ND (0.01)	0.003	-
2-Butanone	R	R	-
Aluminum	4.13 J	2.88	-
Aluminum (Dissolved)	0.283	1.4	-
Ammonia	-	-	8.6 (D)
Antimony	ND (0.06)	ND (0.06)	-
Antimony (Dissolved)	ND (0.06)	ND (0.06)	-
Arsenic	0.021 J	0.012	-
Arsenic (Dissolved)	ND (0.005)	ND (0.005)	-
Benzene	ND (0.001) J	0.0003	-
Benzo(a)pyrene	ND (0.01)	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	-
Beryllium	ND (0.003)	0.001 J	-
Beryllium (Dissolved)	ND (0.003)	ND (0.003)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	-
Cadmium	ND (0.004)	0.0005 J	-
Cadmium (Dissolved)	ND (0.004)	ND (0.003)	-
Carbazole	-	ND (0.01)	-
Chromium	0.018 J (D)	-	-
Chromium (Dissolved)	ND (0.009)	ND (0.005)	-
Chromium, Hexavalent	-	ND (0.01)	-
Chrysene	ND (0.01)	ND (0.01)	-
cis-1,2-Dichloroethene	ND (0.001) J	ND (0.001)	-
Cobalt	ND (0.01) J	-	-
Cobalt (Dissolved)	ND (0.01)	-	-
Cyanide (total)	ND (0.01)	ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	-
Ethylbenzene	ND (0.001) J	ND (0.001)	-
Fluoranthene	ND (0.01)	ND (0.01)	-
Fluoride	-	-	0.2
Formaldehyde	-	ND (0.05)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	-
Iron	8.9	-	-
Iron (Dissolved)	0.325	-	-
Lead	0.009 J	0.008	-
Lead (Dissolved)	ND (0.002)	ND (0.002)	-
Manganese	0.196	0.045	-
Manganese (Dissolved)	0.023	ND (0.008)	-
Mercury	ND (0.0002) J	-	-
Mercury (Dissolved)	ND (0.0002) J	-	-
Methylphenol (Cresol)	ND (0.01)	0.008 J	-
Naphthalene	ND (0.002) JND (0.01)	ND (0.01)	-
Nickel	0.051 J	0.037	-
Nickel (Dissolved)	0.04	0.032	-
Pentachlorophenol	ND (0.025)	ND (0.025)	-
pH (lab)	-	-	10.2 (D)/10.4 (D)
pH Field	-	11.2 (J)	11.1 (D)/11.1 (D)
Phenanthrene	ND (0.01)	ND (0.01)	-
Phenol	0.01	0.14	-
Selenium	ND (0.005) J	-	-
Selenium (Dissolved)	ND (0.005) J	-	-
Total PCBs	ND (0.0002)	ND (0.0002)	-
Trichloroethene	ND (0.001) J	ND (0.001)	-
Vanadium	0.024 J (D)	0.026 (D)	-
Vanadium (Dissolved)	0.018 (D)	0.003 (D)	-
Vinyl chloride	ND (0.001) J	ND (0.001)	-
Xylene (total)	ND (0.001) J	ND (0.001)	-
Zinc	0.241 J	0.174	-
Zinc (Dissolved)	ND (0.01)	ND (0.01)	-

MW-04757	11/18/98	07/18/00	12/15/01	01/05/03
1,1-Dichloroethene	ND (0.001) J	ND (0.001)	-	-
1,2-Dichloropropane	ND (0.001) J	ND (0.001)	-	-
2,4-Dimethylphenol	0.012	ND (0.01)	-	-
2-Butanone	R	R	-	-
Aluminum	33.7 J	22.3	-	-
Aluminum (Dissolved)	ND (0.06)	ND (0.06)	-	0.7
Ammonia	-	-	-	-
Antimony	ND (0.06)	ND (0.06)	-	-
Antimony (Dissolved)	ND (0.06)	ND (0.06)	-	-
Arsenic	0.021 J	0.012	-	-
Arsenic (Dissolved)	ND (0.005)	0.003 J	-	-
Benzene	ND (0.001) J	0.0003	-	-
Benzo(a)pyrene	ND (0.01)	ND (0.01)	-	-
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	-	-
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	-	-
Beryllium	ND (0.003)	0.001 J	-	-
Beryllium (Dissolved)	ND (0.003)	ND (0.003)	-	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	-	-
Cadmium	ND (0.004)	0.0005 J	-	-
Cadmium (Dissolved)	ND (0.004)	ND (0.003)	-	-
Carbazole	-	ND (0.01)	-	-
Chromium	0.139 J (D)	-	-	-
Chromium (Dissolved)	ND (0.009)	ND (0.005)	-	-
Chromium, Hexavalent	-	ND (0.01)	-	-
Chrysene	ND (0.01)	ND (0.01)	-	-
cis-1,2-Dichloroethene	ND (0.001) J	ND (0.001)	-	-
Cobalt	ND (0.01) J	-	-	-
Cobalt (Dissolved)	ND (0.01)	-	-	-
Cyanide (total)	ND (0.01)	ND (0.01)	-	-
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	-	-
Ethylbenzene	ND (0.001) J	ND (0.001)	-	-
Fluoranthene	ND (0.01)	ND (0.01)	-	-
Fluoride	-	-	-	0.1
Formaldehyde	-	ND (0.05)	-	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	-	-
Iron	301	-	-	-
Iron (Dissolved)	0.718	-	-	-
Lead	0.178 J	0.128	-	-
Lead (Dissolved)	ND (0.002)	ND (0.002)	-	-
Manganese	3.3	1.83	-	-
Manganese (Dissolved)	0.337	0.349	-	-
Mercury	ND (0.0002) J	-	-	-
Mercury (Dissolved)	ND (0.0002) J	-	-	-
Methylphenol (Cresol)	0.015 J	ND (0.01)	-	-
Naphthalene	ND (0.002) JND (0.01)	ND (0.01)	-	-
Nickel	0.098	0.061	-	-
Nickel (Dissolved)	ND (0.02)	ND (0.02)	-	-
Pentachlorophenol	ND (0.025)	ND (0.025)	-	-
pH (lab)	-	-	7.59	-
pH Field	-	7.5	7.17	-
Phenanthrene	ND (0.01)	ND (0.01)	-	-
Phenol	ND (0.01)	ND (0.01)	-	-
Selenium	ND (0.006) J	-	-	-
Selenium (Dissolved)	ND (0.006) J	-	-	-
Total PCBs	ND (0.0002)	0.001 J (D)	ND (0.0002)	-
Trichloroethene	ND (0.001) J	ND (0.001)	-	-
Vanadium	0.054 J (D)	0.036 (D)	-	-
Vanadium (Dissolved)	ND (0.01)	ND (0.01)	-	-
Vinyl chloride	ND (0.001) J	ND (0.001)	-	-
Xylene (total)	ND (0.001) J	ND (0.001)	-	-
Zinc	0.241 J	0.174	-	-
Zinc (Dissolved)	ND (0.01)	ND (0.01)	-	-

MW-04280	12/04/98	07/19/00
1,1-Dichloroethene	ND (0.001)ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)ND (0.001)	ND (0.001)
2,4-Dimethylphenol	ND (0.01)ND (0.01)	ND (0.01)
2-Butanone	R/R	R
Aluminum	0.588/0.883	1.57
Antimony	ND (0.06)ND (0.06)	ND (0.06)
Antimony (Dissolved)	ND (0.06)ND (0.06)	ND (0.06)
Arsenic	0.024/0.024	0.008
Arsenic (Dissolved)	0.007/0.007	0.008 J
Benzene	ND (0.001)ND (0.001)	ND (0.001)
Benzo(a)pyrene	ND (0.01)ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)ND (0.01)	ND (0.01)
Beryllium	ND (0.003)ND (0.003)	ND (0.003)
Beryllium (Dissolved)	ND (0.003)ND (0.003)	ND (0.003)
bis(2-Ethylhexyl)phthalate	ND (0.01)ND (0.01)	ND (0.01)
Cadmium	ND (0.004)ND (0.004)	ND (0.003)
Cadmium (Dissolved)	ND (0.004)ND (0.004)	ND (0.003)
Carbazole	-	ND (0.01)
Chromium	0.179 (D)/0.186 (D)	-
Chromium (Dissolved)	ND (0.009)ND (0.009)	ND (0.005)
Chromium, Hexavalent	-	ND (0.01)
Chrysene	ND (0.01)ND (0.01)	ND (0.01)
cis-1,2-Dichloroethene	ND (0.001)ND (0.001)	ND (0.001)
Cobalt	0.016/0.018	-
Cobalt (Dissolved)	ND (0.01)ND (0.01)	-
Cyanide (total)	ND (0.01)ND (0.01)	0.007 (D)
Dibenz(a,h)anthracene	ND (0.01)ND (0.01)	ND (0.01)
Ethylbenzene	ND (0.001)ND (0.001)	ND (0.001)
Fluoranthene	ND (0.01)ND (0.01)	ND (0.01)
Fluoride	-	12
Formaldehyde	-	ND (0.05)
Indeno(1,2,3-cd)pyrene	ND (0.01)ND (0.01)	ND (0.01)
Iron	90.1 J/98.7 J	-
Iron (Dissolved)	0.036/0.027	-
Lead	0.150/0.194	0.023
Lead (Dissolved)	ND (0.002)ND (0.002)	ND (0.002)
Manganese	2.61 J/2.78 J	0.337
Manganese (Dissolved)	ND (0.008)ND (0.008)	ND (0.008)
Mercury	ND (0.0002)/0.0003 (D)	-
Mercury (Dissolved)	ND (0.0002)ND (0.0002)	-
Methylphenol (Cresol)	ND (0.01)ND (0.01)	ND (0.01)
Naphthalene	ND (0.002)ND (0.01)	ND (0.01)
Nickel	0.094/0.098	0.033
Nickel (Dissolved)	ND (0.02)ND (0.02)	ND (0.02)
Pentachlorophenol	ND (0.039)ND (0.039)	ND (0.039)
pH Field	-	7.75
Phenanthrene	ND (0.01)ND (0.01)	ND (0.01)
Phenol	ND (0.01)ND (0.01)	0.006 J
Selenium	ND (0.006) J/ND (0.006) J	-
Selenium (Dissolved)	ND (0.006) J/ND (0.006) J	-
Total PCBs	ND (0.0002)ND (0.0002)	ND (0.0002)
Trichloroethene	ND (0.001)ND (0.001)	ND (0.001)
Vanadium	0.044 (D)/0.046 (D)	0.036 (D)
Vanadium (Dissolved)	ND (0.01)ND (0.01)	ND (0.01)
Vinyl chloride	ND (0.001)ND (0.001)	ND (0.001)
Xylene (total)	ND (0.001)ND (0.001)	ND (0.001)
Zinc	0.125/0.118	-
Zinc (Dissolved)	ND (0.01)ND (0.01)	ND (0.01)

MW-01827	13/08/98	07/19/00	12/13/01
1,1-Dichloroethene	ND (0.001)	ND (0.001)	-
1,2-Dichloropropane	ND (0.001)	ND (0.001)	-
2,4-Dimethylphenol	ND (0.01)	ND (0.01)	-
2-Butanone	R	R	-
Aluminum	18.3	27.3	-
Aluminum (Dissolved)	ND (0.05)	ND (0.05)	-
Antimony	ND (0.06)	0.02 J	-
Antimony (Dissolved)	ND (0.05)	ND (0.05)	-
Arsenic	0.029	0.062	-
Arsenic (Dissolved)	0.011	0.029	-
Benzene	ND (0.001)	ND (0.001)	-
Benzo(a)pyrene	ND (0.01)	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	-
Beryllium	ND (0.005)	0.002 J	-
Beryllium (Dissolved)	ND (0.005)	ND (0.005)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	-
Cadmium	ND (0.004)	ND (0.005)	-
Cadmium (Dissolved)	ND (0.004)	ND (0.005)	-
Carbazole	-	ND (0.01)	-
Chromium	0.07 (D)	-	-
Chromium (Dissolved)	ND (0.005)	ND (0.01)	-
Chromium, Hexavalent	-	ND (0.01)	-
Chrysene	ND (0.01)	ND (0.01)	-
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)	-
Cobalt	0.022	-	-
Cobalt (Dissolved)	ND (0.01)	-	-
Cyanide (total)	ND (0.01)	ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	-
Ethylbenzene	ND (0.001)	ND (0.001)	-
Fluoranthene	ND (0.01)	ND (0.01)	-
Fluoride	-	-	0.2 J/0.4 J
Formaldehyde	-	ND (0.05)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	-
Iron	58.2 J	-	-
Iron (Dissolved)	8.15	-	-
Lead	0.038	0.073 J	-
Lead (Dissolved)	ND (0.002)	ND (0.004) J	-
Manganese	1.9	2.31 J	-
Manganese (Dissolved)	0.783	0.722 J	-
Mercury	0.0003 (D)	-	-
Mercury (Dissolved)	ND (0.0002)	-	-
Methylphenol (Cresol)	ND (0.01)	ND (0.01)	-
Naphthalene	ND (0.002)ND (0.01)	ND (0.01)	-
Nickel	0.078	0.081	-
Nickel (Dissolved)	ND (0.02)	ND (0.02)	-
Pentachlorophenol	ND (0.025)	ND (0.025)	-
pH Field	-	7.02	6.17/6.17
Phenanthrene	ND (0.01)	ND (0.01)	-
Phenol	ND (0.01)	ND (0.01)	-
Selenium	ND (0.005) J	-	-
Selenium (Dissolved)	ND (0.005) J	-	-
Total PCBs	ND (0.0002)	ND (0.0002)	-
Trichloroethene	ND (0.001)	ND (0.001)	-
Vanadium	0.04 (D)	0.068 (D)	-
Vanadium (Dissolved)	ND (0.01)	ND (0.01)	-
Vinyl chloride	ND (0.001)	ND (0.001)	-
Xylene (total)	ND (0.001)	ND (0.001)	-
Zinc	0.166	0.275 J	-
Zinc (Dissolved)	ND (0.01)	0.009 J	-

MW-03746	12/07/98	09/09/00	12/13/01
1,1-Dichloroethene	ND (0.001)	ND (0.001)	-
1,2-Dichloropropane	ND (0.001)	ND (0.001)	-
2,4-Dimethylphenol	ND (0.01)	ND (0.01)	-
2-Butanone	R	R	-
Aluminum	18.8	17.8 J	-
Aluminum (Dissolved)	ND (0.05)	ND (0.05)	-
Antimony	ND (0.06)	0.02 J	-
Antimony (Dissolved)	ND (0.05)	ND (0.05) J	-
Arsenic	0.009	0.033	-
Arsenic (Dissolved)	0.008	0.012 J	-
Benzene	ND (0.001)	ND (0.001) J	-
Benzo(a)pyrene	ND (0.01)	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	-
Beryllium	ND (0.008)	0.001 J	-
Beryllium (Dissolved)	ND (0.008)	ND (0.008)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	-
Cadmium	ND (0.004)	ND (0.008)	-
Cadmium (Dissolved)	ND (0.004)	ND (0.008)	-
Carbazole	-	ND (0.01)	-
Chromium	0.042 (D)	-	-
Chromium (Dissolved)	ND (0.009)	ND (0.01)	-
Chromium, Hexavalent	-	ND (0.01)	-
Chrysene	ND (0.01)	ND (0.01)	-
cis-1,2-Dichloroethene	ND (0.001)	ND (0.001)	-
Cobalt	0.017	-	-
Cobalt (Dissolved)	ND (0.01)	-	-
Cyanide (total)	ND (0.01)	0.008 J	-
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	-
Ethylbenzene	ND (0.001)	ND (0.001)	-
Fluoranthene	ND (0.01)	ND (0.01)	-
Fluoride	-	-	0.6 J
Formaldehyde	-	ND (0.05)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	-
Iron	87.1 J	-	-
Iron (Dissolved)	37.2	-	-
Lead	0.063	0.042	-
Lead (Dissolved)	ND (0.002)	ND (0.004)	-
Manganese	4.27 J	1.69	-
Manganese (Dissolved)	3.26	1.06	-
Mercury	ND (0.0002)	-	-
Mercury (Dissolved)	ND (0.0002)	-	-
Methylphenol (Cresol)	ND (0.01)	ND (0.01)	-
Naphthalene	ND (0.002)ND (0.01)	ND (0.01)	-
Nickel	0.094	0.033	-
Nickel (Dissolved)	ND (0.02)	ND (0.02)	-
Pentachlorophenol	ND (0.025)	ND (0.025)	-
pH Field	-	7.75	6.43
Phenanthrene	ND (0.01)	ND (0.01)	-
Phenol	ND (0.01)	0.006 J	-
Selenium	ND (0.005) J	-	-
Selenium (Dissolved)	ND (0.005) J	-	-
Total PCBs	ND (0.0002)	ND (0.0002)	-
Trichloroethene	ND (0.001)	ND (0.001)	-
Vanadium	0.044 (D)	0.036 (D)	-
Vanadium (Dissolved)	ND (0.01)	ND (0.01)	-
Vinyl chloride	ND (0.001)	ND (0.001)	-
Xylene (total)	ND (0.001)	ND (0.001)	-
Zinc	0.123	0.118	-
Zinc (Dissolved)	ND (0.01)	ND (0.01)	-

MW-00124	12/03/98	07/27/00
1,1-Dichloroethene	ND (0.001)	ND (0.001)
1,2-Dichloropropane	0.001 J	ND (0.001)
2,4-Dimethylphenol	ND (0.01)	ND (0.01)
2-Butanone	R	R
Aluminum	0.382	13.2
Aluminum (Dissolved)	ND (0.06)	0.057 J
Antimony	ND (0.06)	ND (0.06)

TABLES

Chemical Name	Commercial and Industrial/I.R.&V. Drinking Water A	Groundwater Volatilization to Indoor Air B	Groundwater Contact C	Groundwater Surface Water Interface D
Metals				
Aluminum	4.1		64000	
Aluminum (Dissolved)	4.1		64000	
Antimony	0.006		68	0.13
Antimony (Dissolved)	0.006		68	0.13
Arsenic	0.05		4.3	0.15
Arsenic (Dissolved)	0.05		4.3	0.15
Beryllium	0.004		290	1.2
Beryllium (Dissolved)	0.004		290	1.2
Cadmium	0.005		190	0.13
Cadmium (Dissolved)	0.005		190	0.13
Chromium	0.1		460	0.011
Chromium (Dissolved)	0.1		460	0.011
Chromium, Hexavalent	0.1		460	0.011
Chromium, Hexavalent (Dissolved)	0.1		460	0.011
Cobalt	0.1		2400	0.1
Cobalt (Dissolved)	0.1		2400	0.1
Cyanide (total)	0.2		57	0.0052
Iron	5.6		58000	
Iron (Dissolved)	5.6		58000	
Lead	0.004			0.19
Lead (Dissolved)	0.004			0.19
Mercury	0.002	0.056	0.056	0.0000013
Mercury (Dissolved)	0.002	0.056	0.056	0.0000013
Nickel	0.1		740000	210
Nickel (Dissolved)	0.1		740000	210
Selenium	0.05		970	0.005
Selenium (Dissolved)	0.05		970	0.005
Vanadium	0.062		970	0.012
Vanadium (Dissolved)	0.062		970	0.012
Zinc	5		110000	22
Zinc (Dissolved)	5		110000	22
Polychlorinated Biphenyls				
Total PCBs	0.0005	0.045	0.0033	0.0002
Semi-Volatile Organic Compounds				
2,4-Dimethylphenol	1		520	0.38
Benzo(a)pyrene	0.005		0.002	
Benzo(b)fluoranthene	0.002		0.002	
Benzo(k)fluoranthene	0.005		0.005	
bis(2-Ethylhexyl)phthalate	0.006		0.32	0.032
Carbazole	0.35		7.4	0.01
Chrysene	0.005		0.005	
Dibenz(a,h)anthracene	0.002		0.002	
Fluoranthene	0.21	0.21	0.21	0.005
Indeno(1,2,3-cd)pyrene	0.002		0.002	
Methylphenol (Cresol)	1		810	0.071
Naphthalene	1.5	31	31	0.013
Pentachlorophenol	0.001		0.2	0.0028
Phenanthrene	0.15	1	1	0.005
Phenol	13		29000	0.21
Volatile Organic Compounds				
1,1-Dichloroethene	0.007	1.3	11	0.065
1,2-Dichloropropane	0.005	36	16	0.29
2-Butanone	38	240000	240000	2.2
Benzene	0.005	35	11	0.2
cis-1,2-Dichloroethene	0.07	210	290	0.62
Ethylbenzene	0.7	170	170	0.018
Trichloroethene	0.005	97	22	0.2
Vinyl chloride	0.002	13	1	0.015
Xylene (total)	10	190	190	0.035
General Chemistry				
Formaldehyde	3.8	360	30000	0.12
Ammonia	10	7100		0.736
pH Field	8.5			9

TMW-04436	12/7/01	12/20/02
Metals		
Fluoride	4/4.1	0.9
PCBs		
Total PCBs	ND (0.0002)/ND (0.0002)	-
VOAs		
1,1-Dichloroethene	ND (0.001)/ND (0.001)	-
1,2-Dichloropropane	ND (0.001)/ND (0.001)	-
2-Butanone	R/R	-
Benzene	ND (0.001)/ND (0.001)	-
cis-1,2-Dichloroethene	ND (0.001)/ND (0.001)	-
Ethylbenzene	ND (0.001)/ND (0.001)	-
Trichloroethene	ND (0.001)/ND (0.001)	-
Vinyl chloride	ND (0.001)/ND (0.001)	-
Xylene (total)	ND (0.001)/ND (0.001)	-
WG		
Ammonia	5.2	
pH Field	7.51/7.51	11

MW-04434	12/07/98	07/24/00	01/15/02
Metals			
Aluminum	33.3	19.1	-
Aluminum (Dissolved)	ND (0.06)	0.032 J	-
Antimony	ND (0.06)	ND (0.05)	-
Antimony (Dissolved)	ND (0.06)	ND (0.05)	-
Arsenic	0.016	0.012	-
Arsenic (Dissolved)	ND (0.005)	0.009 J	-
Beryllium	ND (0.005)	0.001 J	-
Beryllium (Dissolved)	ND (0.005)	ND (0.005)	-
Cadmium	ND (0.004)	ND (0.005)	-
Cadmium (Dissolved)	ND (0.004)	ND (0.005)	-
Chromium	0.148	ND (0.01)	-
Chromium (Dissolved)	ND (0.006)	ND (0.01)	-
Chromium, Hexavalent	-	0.009 J	-
Cobalt	0.016	-	-
Cobalt (Dissolved)	ND (0.01)	-	-
Cyanide (total)	ND (0.01)	ND (0.01)	-
Fluoride	-	-	0
Iron	56 J	-	-
Iron (Dissolved)	0.043	-	-
Lead	0.069	0.047	-
Lead (Dissolved)	ND (0.002)	ND (0.002)	-
Mercury	ND (0.0002)	-	-
Mercury (Dissolved)	ND (0.0002)	-	-
Nickel	0.079	0.037	-
Nickel (Dissolved)	ND (0.02)	ND (0.02)	-
Selenium	ND (0.005) J	-	-
Selenium (Dissolved)	ND (0.005) J	-	-
Vanadium	0.052	0.034	-
Vanadium (Dissolved)	ND (0.01)	ND (0.01)	-
Zinc	0.133	0.076	-
Zinc (Dissolved)	ND (0.01)	ND (0.01)	-
OTHER			
Formaldehyde	-	ND (0.05)	-
PCBs			
Total PCBs	0.001 J	0.0004 J	ND (0.0022)
SVOAs			
2,4-Dimethylphenol	0.02	0.03	0.014
Benzo(a)pyrene	ND (0.01)	ND (0.01)	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)	ND (0.01)	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)	ND (0.01)	ND (0.01)
Carbazole	-	ND (0.01)	ND (0.01)
Chrysene	ND (0.01)	ND (0.01)	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)	ND (0.01)	ND (0.01)
Fluoranthene	ND (0.01)	ND (0.01)	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)	ND (0.01)	ND (0.01)
Methylphenol (Cresol)	ND (0.01)	ND (0.01)	ND (0.01)
Naphthalene	ND (0.01)	ND (0.01)	ND (0.01)
Pentachlorophenol	ND (0.026)	ND (0.026)	ND (0.026)
Phenanthrene	ND (0.01)	ND (0.01)	ND (0.01)
Phenol	ND (0.01)	ND (0.01)	ND (0.01)
VOAs			
1,1-Dichloroethene	ND (0.001)	ND (0.001)	ND (0.001)
1,2-Dichloropropane	ND (0.001)	ND (0.001)	ND (0.001)
2-Butanone	R	R	R
Benzene	0.001	0.002	0.002
cis-1,2-Dichloroethene	0.006	0.004	0.002
Ethylbenzene	0.001	0.001	0.0068
Trichloroethene	ND (0.001)	ND (0.001)	ND (0.001)
Vinyl chloride	0.006	0.005	0.008 J
Xylene (total)	0.003	0.002	0.001
WG			
pH Field	-	8.11	-

MW-04435	07/31/00
Metals	
Aluminum	22.8 J
Aluminum (Dissolved)	ND (0.06)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.017 J
Arsenic (Dissolved)	0.032 J
Beryllium	0.001 J
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium (Dissolved)	ND (0.01)
Chromium, Hexavalent	ND (0.01)
Cyanide (total)	ND (0.01)
Lead	0.079
Lead (Dissolved)	ND (0.002)
Nickel	0.059
Nickel (Dissolved)	ND (0.02)
Vanadium	0.03
Vanadium (Dissolved)	ND (0.01)
Zinc	0.239
Zinc (Dissolved)	0.008 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	0.007 J
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.01)
Phenol	0.002
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	0.0033
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WG	
pH Field	7.7

SB-04434	09/21/00
PCBs	
Total PCBs	0.0004 J
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.01)
Phenol	ND (0.01)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WG	
pH Field	7.58

TMW-04635	03/07/03
Metals	
Aluminum (Dissolved)	ND (0.05)
Antimony (Dissolved)	0.001 J
Arsenic (Dissolved)	0.003 J
Beryllium (Dissolved)	ND (0.001)
Cadmium (Dissolved)	ND (0.005)
Chromium (Dissolved)	ND (0.01)
Chromium, Hexavalent	ND (0.01)
Cyanide (total)	ND (0.01)
Lead (Dissolved)	ND (0.003)
Mercury (Dissolved)	ND (0.0002)
Nickel (Dissolved)	0.003 J
Selenium (Dissolved)	0.004
Vanadium (Dissolved)	ND (0.007)
Zinc (Dissolved)	0.008 J
PCBs	
Total PCBs	ND (0.0022)
SVOAs	
2,4-Dimethylphenol	ND (0.006)
Benzo(a)pyrene	ND (0.004)
Benzo(b)fluoranthene	ND (0.004)
Benzo(k)fluoranthene	ND (0.006)
bis(2-Ethylhexyl)phthalate	ND (0.006)
Carbazole	ND (0.01)
Chrysene	ND (0.006)
Dibenz(a,h)anthracene	ND (0.004)
Fluoranthene	ND (0.006)
Indeno(1,2,3-cd)pyrene	ND (0.004)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.006)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.006)
Phenol	ND (0.006)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone (Methyl Ethyl Ketone)	ND (0.05)
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.002)
WG	
Ammonia	4.2 J

MW-04434	07/31/00
Metals	
Aluminum	8.14 J
Aluminum (Dissolved)	ND (0.06)
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.008 J
Arsenic (Dissolved)	0.003 J
Beryllium	0.0004 J
Beryllium (Dissolved)	ND (0.005)
Cadmium	ND (0.005)
Cadmium (Dissolved)	ND (0.005)
Chromium (Dissolved)	ND (0.01)
Chromium, Hexavalent	ND (0.01)
Cyanide (total)	ND (0.01)
Lead	0.006
Lead (Dissolved)	ND (0.002)
Nickel	0.031
Nickel (Dissolved)	ND (0.02)
Vanadium	0.011
Vanadium (Dissolved)	ND (0.01)
Zinc	0.035
Zinc (Dissolved)	0.002 J
OTHER	
Formaldehyde	ND (0.05)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.01)
Phenol	0.001
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.002)
WG	
pH Field	7.58

MW-04433	08/01/00	12/18/02
Metals		
Aluminum	8.59 J	-
Aluminum (Dissolved)	ND (0.06)	-
Antimony	ND (0.05)	-
Antimony (Dissolved)	ND (0.05)	-
Arsenic	0.018 J	-
Arsenic (Dissolved)	0.01	-
Beryllium	0.0003 J	-
Beryllium (Dissolved)	ND (0.005)	-
Cadmium	ND (0.005)	-
Cadmium (Dissolved)	ND (0.005)	-
Chromium (Dissolved)	ND (0.01)	-
Chromium, Hexavalent	ND (0.01)	-
Cyanide (total)	ND (0.01)	-
Fluoride	-	2.7
Lead	0.006	-
Lead (Dissolved)	0.001 J	-
Nickel	0.017 J	-
Nickel (Dissolved)	ND (0.02)	-
Vanadium	0.018	-
Vanadium (Dissolved)	ND (0.01)	-
Zinc	0.038	-
Zinc (Dissolved)	0.004 J	-
OTHER		
Formaldehyde	ND (0.05)	-
PCBs		
Total PCBs	ND (0.0002)	-
SVOAs		
2,4-Dimethylphenol	ND (0.01)	-
2,4-Dimethylphenol	ND (0.01)	-
Benzo(a)pyrene	ND (0.01)	-
Benzo(b)fluoranthene	ND (0.01)	-
Benzo(k)fluoranthene	ND (0.01)	-
bis(2-Ethylhexyl)phthalate	ND (0.01)	-
Carbazole	ND (0.01)	-
Chrysene	ND (0.01)	-
Dibenz(a,h)anthracene	ND (0.01)	-
Fluoranthene	ND (0.01)	-
Indeno(1,2,3-cd)pyrene	ND (0.01)	-
Methylphenol (Cresol)	ND (0.01)	-
Naphthalene	ND (0.01)	-
Pentachlorophenol	ND (0.026)	-
Phenanthrene	ND (0.01)	-
Phenol	ND (0.01)	-
VOAs		
1,1-Dichloroethene	-	ND (0.001)
1,2-Dichloropropane	-	ND (0.001)
2-Butanone	-	0.005
Benzene	-	0.0091
cis-1,2-Dichloroethene	-	ND (0.001)
Ethylbenzene	-	ND (0.001)
Trichloroethene	-	ND (0.001)
Vinyl chloride	-	ND (0.001)
Xylene (total)	-	ND (0.001)
WG		
pH Field	8.05	6.91

MW-04433	09/07/03
Metals	
Aluminum (Dissolved)	ND (0.05)
Antimony (Dissolved)	0.002 J
Arsenic (Dissolved)	0.006 J
Beryllium (Dissolved)	ND (0.001)
Cadmium (Dissolved)	ND (0.005)
Chromium Total (Dissolved)	ND (0.006)
Cobalt (Dissolved)	ND (0.007)
Iron (Dissolved)	3.3 J
Lead (Dissolved)	ND (0.003)
Mercury (Dissolved)	ND (0.0002)
Nickel (Dissolved)	ND (0.035)
Selenium (Dissolved)	0.001 J
Vanadium (Dissolved)	0.009 J
Zinc (Dissolved)	0.009 J
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.006)
Benzo(a)pyrene	ND (0.004)
Benzo(b)fluoranthene	ND (0.004)
Benzo(k)fluoranthene	ND (0.006)
bis(2-Ethylhexyl)phthalate	ND (0.006)
Carbazole	ND (0.01)
Chrysene	ND (0.006)
Dibenz(a,h)anthracene	ND (0.004)
Fluoranthene	ND (0.006)
Indeno(1,2,3-cd)pyrene	ND (0.004)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.006)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.006)
Phenol	ND (0.006)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone (Methyl Ethyl Ketone)	ND (0.05)
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.002)
WG	
Ammonia	2.1 J

TMW-04632	12/17/01
Metals	
Fluoride	8.6
PCBs	
Total PCBs	ND (0.0002)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WG	
pH Field	8.05

TMW-04631	09/08/03
Metals	
Aluminum	0.118
Aluminum (Dissolved)	0.058 J
Antimony	ND (0.05)
Antimony (Dissolved)	ND (0.05)
Arsenic	0.002 J
Arsenic (Dissolved)	0.002 J
Beryllium	ND (0.005)
Beryllium (Dissolved)	ND (0.005)
Cadmium	0.002 J
Cadmium (Dissolved)	ND (0.005)
Chromium	ND (0.005)
Chromium (Dissolved)	ND (0.005)
Cyanide (total)	ND (0.01)
Lead	0.001 J
Lead (Dissolved)	ND (0.002)
Nickel	ND (0.02)
Nickel (Dissolved)	ND (0.02)
Vanadium	ND (0.01)
Vanadium (Dissolved)	ND (0.01)
Zinc	0.013 -
Zinc (Dissolved)	0.004 J -
OTHER	
Formaldehyde	ND (0.05) -
PCBs	
Total PCBs	ND (0.0002) -
SVOAs	
2,4-Dimethylphenol	ND (0.01) -
Benzo(a)pyrene	ND (0.01) -
Benzo(b)fluoranthene	ND (0.01) -
Benzo(k)fluoranthene	ND (0.01) -
bis(2-Ethylhexyl)phthalate	ND (0.01) -
Carbazole	ND (0.01) -
Chrysene	ND (0.01) -
Dibenz(a,h)anthracene	ND (0.01) -
Fluoranthene	ND (0.01) -
Indeno(1,2,3-cd)pyrene	ND (0.01) -
Methylphenol (Cresol)	ND (0.01) -
Naphthalene	ND (0.01) -
Pentachlorophenol	ND (0.026) -
Phenanthrene	ND (0.01) -
Phenol	ND (0.01) -
VOAs	
1,1-Dichloroethene	ND (0.001) -
1,2-Dichloropropane	ND (0.001) -
2-Butanone (Methyl Ethyl Ketone)	ND (0.05) -
Benzene	ND (0.001) -
cis-1,2-Dichloroethene	ND (0.001) -
Ethylbenzene	ND (0.001) -
Trichloroethene	ND (0.001) -
Vinyl chloride	ND (0.001) -
Xylene (total)	ND (0.002) -
WG	
Ammonia	2.1 J

TMW-04128	09/08/03
Metals	
Aluminum (Dissolved)	ND (0.05)
Antimony (Dissolved)	0.001 J
Arsenic (Dissolved)	ND (0.01)
Beryllium (Dissolved)	ND (0.001)
Cadmium (Dissolved)	ND (0.001)
Chromium Total (Dissolved)	ND (0.006)
Cobalt (Dissolved)	ND (0.002)
Iron (Dissolved)	2.7
Lead (Dissolved)	ND (0.003)
Mercury (Dissolved)	ND (0.0002)
Nickel (Dissolved)	0.004 J
Selenium (Dissolved)	0.008
Vanadium (Dissolved)	ND (0.007)
Zinc (Dissolved)	ND (0.005)
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.006)
Benzo(a)pyrene	ND (0.004)
Benzo(b)fluoranthene	ND (0.004)
Benzo(k)fluoranthene	ND (0.006)
bis(2-Ethylhexyl)phthalate	ND (0.006)
Carbazole	ND (0.01)
Chrysene	ND (0.006)
Dibenz(a,h)anthracene	ND (0.004)
Fluoranthene	ND (0.006)
Indeno(1,2,3-cd)pyrene	ND (0.004)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.006)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.006)
Phenol	ND (0.006)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone (Methyl Ethyl Ketone)	ND (0.05)
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.002)
WG	
Ammonia	5.2 J

TMW-04127	03/07/03
Metals	
Aluminum (Dissolved)	ND (0.05)
Antimony (Dissolved)	0.002
Arsenic (Dissolved)	0.002 J
Beryllium (Dissolved)	ND (0.001)
Cadmium (Dissolved)	ND (0.005)
Chromium Total (Dissolved)	ND (0.006)
Cobalt (Dissolved)	ND (0.007)
Iron (Dissolved)	7.3
Lead (Dissolved)	ND (0.003)
Mercury (Dissolved)	ND (0.0002)
Nickel (Dissolved)	ND (0.035)
Selenium (Dissolved)	0.0004 J
Vanadium (Dissolved)	ND (0.007)
Zinc (Dissolved)	0.009 J
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.006)
Benzo(a)pyrene	ND (0.004)
Benzo(b)fluoranthene	ND (0.004)
Benzo(k)fluoranthene	ND (0.006)
bis(2-Ethylhexyl)phthalate	ND (0.006)
Carbazole	ND (0.01)
Chrysene	ND (0.006)
Dibenz(a,h)anthracene	ND (0.004)
Fluoranthene	ND (0.006)
Indeno(1,2,3-cd)pyrene	ND (0.004)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.006)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.006)
Phenol	ND (0.006)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone (Methyl Ethyl Ketone)	ND (0.05)
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.002)
WG	
Ammonia	5.2 J

TMW-04630	12/19/02
Metals	
Fluoride	2.5
WG	
pH Field	7.78

SB-04433a	08/21/00
PCBs	
Total PCBs	0.0004 J
SVOAs	
2,4-Dimethylphenol	ND (0.01)
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	0.007 J
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.01)
Phenol	0.002
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	0.0033
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WG	
pH Field	7.7

SB-04435a	08/21/00
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	0.038
Benzo(a)pyrene	ND (0.01)
Benzo(b)fluoranthene	ND (0.01)
Benzo(k)fluoranthene	ND (0.01)
bis(2-Ethylhexyl)phthalate	ND (0.01)
Carbazole	ND (0.01)
Chrysene	ND (0.01)
Dibenz(a,h)anthracene	ND (0.01)
Fluoranthene	ND (0.01)
Indeno(1,2,3-cd)pyrene	ND (0.01)
Methylphenol (Cresol)	0.007 J
Naphthalene	ND (0.01)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.01)
Phenol	0.003
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	0.002
cis-1,2-Dichloroethene	0.003
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	0.009 J
Xylene (total)	ND (0.001)
WG	
Ammonia	1.8 J

TMW-04135	12/14/01
Metals	
Fluoride	2.7
PCBs	
Total PCBs	ND (0.0002)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.001)
WG	
pH Field	7.36

TMW-04136	03/07/03
Metals	
Aluminum (Dissolved)	ND (0.05)
Antimony (Dissolved)	0.002 J
Arsenic (Dissolved)	0.008 J
Beryllium (Dissolved)	ND (0.001)
Cadmium (Dissolved)	ND (0.005)
Chromium Total (Dissolved)	ND (0.006)
Cobalt (Dissolved)	0.001 J
Iron (Dissolved)	4.9
Lead (Dissolved)	ND (0.003)
Mercury (Dissolved)	ND (0.0002)
Nickel (Dissolved)	ND (0.035)
Selenium (Dissolved)	0.001 J
Vanadium (Dissolved)	ND (0.007)
Zinc (Dissolved)	0.004 J
PCBs	
Total PCBs	ND (0.0002)
SVOAs	
2,4-Dimethylphenol	ND (0.006)
Benzo(a)pyrene	ND (0.004)
Benzo(b)fluoranthene	ND (0.004)
Benzo(k)fluoranthene	ND (0.006)
bis(2-Ethylhexyl)phthalate	ND (0.006)
Carbazole	ND (0.01)
Chrysene	ND (0.006)
Dibenz(a,h)anthracene	ND (0.004)
Fluoranthene	ND (0.006)
Indeno(1,2,3-cd)pyrene	ND (0.004)
Methylphenol (Cresol)	ND (0.01)
Naphthalene	ND (0.006)
Pentachlorophenol	ND (0.026)
Phenanthrene	ND (0.006)
Phenol	ND (0.006)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone (Methyl Ethyl Ketone)	ND (0.05)
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	ND (0.002)
WG	
Ammonia	4.8 J

TMW-04352	12/19/02
PCBs	
Total PCBs	ND (0.0002)
WG	
pH Field	8.2

TMW-04233	12/18/01
Metals	
Fluoride	2
PCBs	
Total PCBs	ND (0.0002)
VOAs	
1,1-Dichloroethene	ND (0.001)
1,2-Dichloropropane	ND (0.001)
2-Butanone	R
Benzene	ND (0.001)
cis-1,2-Dichloroethene	ND (0.001)
Ethylbenzene	ND (0.001)
Trichloroethene	ND (0.001)
Vinyl chloride	ND (0.001)
Xylene (total)	0.0005 J
WG	
pH Field	7.7

FORMER NODULAR IRON PLANT AREA

G

G - NORTH

G - SOUTH

G - WEST

G - EAST

TMW-04436

TMW-04135

MW-04435

TMW-04635

TMW-04235A

SB-04435A

SB-04434A

MW-04434

MW-04634

SB-04433A

MW-04633

TMW-04233

MW-04433

TMW-04632

TMW-04531

TMW-04932

TMW-04630

TMW-04528

TMW-04130

TMW-04127

LEGEND

- A— — INVESTIGATIVE UNIT BOUNDARY AND IDENTIFIER
- SD-10A △ NON-RFI SURFACE WATER/SEDIMENT SAMPLE LOCATION
- MWPHB-6 ● NON-RFI MONITORING WELL LOCATION
- MWPHB-6 ■ NON-RFI SOIL BORING LOCATION
- SD-10A ▲ RFI TEMPORARY MONITORING WELL LOCATION
- MW-01223 ◉ RFI MONITORING WELL LOCATION
- SB-01419

Table 1: Summary of Soil Concentrations Exceeding Screening Criteria
GM: SMCO, Saginaw Michigan

IU	Location	Sample ID	RFI or Non-RFI Sample	Top Depth (ft)	Bottom Depth (ft)	Sample Date	Chem Group	Chemical	Conc (mg/kg)	Qual	MDEQ Statewide Default Background Levels (mg/kg)	Industrial Soil Volatiliza-tion to Indoor Air Criteria (mg/kg)	Ratio of Conc to Industrial Soil Volatiliza-tion to Indoor Air Criteria	Industrial Soil Volitaliza-tion to Ambient Air Criteria (mg/kg)	Ratio of Conc to Industrial Soil Volitaliza-tion to Ambient Air Criteria	Industrial Particulate Inhalation Criteria (mg/kg)	Ratio of Conc to Industrial Particulate Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Conc to Industrial Direct Contact Criteria
A	MW-00821	B10029^0^1^RFI	RFI	0	2	9/17/1998	INORG	Chromium (total)	2.92E+02	J						2.4E+02	1.2E+00	9.2E+03	3.2E-02
A	SB-00516	B50152-200301	RFI	10	12	1/6/2003	OTHER	Formaldehyde	7.90E+01			6.5E+01	1.2E+00	6.9E+01	1.1E+00	3.0E+05	2.6E-04	6.0E+04	1.3E-03
B	B-15~B	B-15-011800	non-RFI	0	1	1/18/2000	INORG	Lead	1.30E+03		2.10E+01					4.4E+04	2.9E-02	9.0E+02	1.4E+00
B	B-7~B	B-7-011800	non-RFI	0	1	1/18/2000	INORG	Lead	2.20E+03		2.10E+01					4.4E+04	5.0E-02	9.0E+02	2.4E+00
B	SB-00104B	B20276	RFI	2	4	7/5/2000	INORG	Lead	1.82E+03		2.10E+01					4.4E+04	4.1E-02	9.0E+02	2.0E+00
B	SB-00105	B00229	RFI	0	1	3/1/2000	INORG	Lead	2.78E+03		2.10E+01					4.4E+04	6.3E-02	9.0E+02	3.1E+00
B	SB-00106	B10382	RFI	2	4	6/30/2000	INORG	Lead	5.49E+03		2.10E+01					4.4E+04	1.2E-01	9.0E+02	6.1E+00
B	SB-00205	B00228	RFI	0	1	3/1/2000	INORG	Lead	1.34E+03		2.10E+01					4.4E+04	3.0E-02	9.0E+02	1.5E+00
B	SB-00308	B50031	RFI	2	4	12/11/2001	SVOC	Benzo(a)pyrene	4.40E+01							1.9E+03	2.3E-02	8.0E+00	5.5E+00
B	SB-00308	B50031	RFI	2	4	12/11/2001	SVOC	Dibenz(a,h)anthracene	1.10E+01	J								8.0E+00	1.4E+00
B	SB-00508	B20238	RFI	1	3	6/1/2000	SVOC	Benzo(a)pyrene	1.60E+01							1.9E+03	8.4E-03	8.0E+00	2.0E+00
B	SB-00508	B20238	RFI	1	3	6/1/2000	INORG	Lead	3.66E+03		2.10E+01					4.4E+04	8.3E-02	9.0E+02	4.0E+00
B	SB-00709	B40119	RFI	2	4	12/12/2002	P/PCB	PCBs (total)	4.35E+01	J		1.6E+04	2.7E-03	2.8E+04	1.6E-03	6.5E+03	6.7E-03	1.6E+01	2.7E+00
D	19~D.28	19~43089~57155725	non-RFI	571.5	572.5	4/30/1989	P/PCB	PCBs (total)	9.67E+01			1.6E+04	6.0E-03	2.8E+04	3.5E-03	6.5E+03	1.5E-02	1.6E+01	6.0E+00
D	19~D.28	19~43089~57255735	non-RFI	572.5	573.5	4/30/1989	P/PCB	PCBs (total)	9.70E+01			1.6E+04	6.1E-03	2.8E+04	3.5E-03	6.5E+03	1.5E-02	1.6E+01	6.1E+00
D	19~D.28	19~43089~57355745	non-RFI	573.5	574.5	4/30/1989	P/PCB	PCBs (total)	2.53E+02			1.6E+04	1.6E-02	2.8E+04	9.0E-03	6.5E+03	3.9E-02	1.6E+01	1.6E+01
D	19~D.28	19~43089~57455755	non-RFI	574.5	575.5	4/30/1989	P/PCB	PCBs (total)	8.50E+01			1.6E+04	5.3E-03	2.8E+04	3.0E-03	6.5E+03	1.3E-02	1.6E+01	5.3E+00
D	19~D.28	19~43089~57555765	non-RFI	575.5	576.5	4/30/1989	P/PCB	PCBs (total)	1.02E+02			1.6E+04	6.4E-03	2.8E+04	3.6E-03	6.5E+03	1.6E-02	1.6E+01	6.4E+00
D	19E~D.28	19E~43089~57255735	non-RFI	572.5	573.5	4/30/1989	P/PCB	PCBs (total)	5.30E+01			1.6E+04	3.3E-03	2.8E+04	1.9E-03	6.5E+03	8.2E-03	1.6E+01	3.3E+00
D	19E~D.28	19E~43089~57355745	non-RFI	573.5	574.5	4/30/1989	P/PCB	PCBs (total)	2.00E+02			1.6E+04	1.3E-02	2.8E+04	7.1E-03	6.5E+03	3.1E-02	1.6E+01	1.3E+01
D	19E~D.28	19E~43089~57455755	non-RFI	574.5	575.5	4/30/1989	P/PCB	PCBs (total)	1.10E+02			1.6E+04	6.9E-03	2.8E+04	3.9E-03	6.5E+03	1.7E-02	1.6E+01	6.9E+00
D	19E~D.28	19E~43089~57555765	non-RFI	575.5	576.5	4/30/1989	P/PCB	PCBs (total)	7.00E+01			1.6E+04	4.4E-03	2.8E+04	2.5E-03	6.5E+03	1.1E-02	1.6E+01	4.4E+00
D	19E~D.28	19E~43089~57655775	non-RFI	576.5	577.5	4/30/1989	P/PCB	PCBs (total)	4.70E+01			1.6E+04	2.9E-03	2.8E+04	1.7E-03	6.5E+03	7.2E-03	1.6E+01	2.9E+00
D	19EA~D.28	19EA~43089~57405750	non-RFI	574	575	4/30/1989	P/PCB	PCBs (total)	2.20E+01			1.6E+04	1.4E-03	2.8E+04	7.9E-04	6.5E+03	3.4E-03	1.6E+01	1.4E+00
D	19EA~D.28	19EA~43089~57605770	non-RFI	576	577	4/30/1989	P/PCB	PCBs (total)	7.25E+01			1.6E+04	4.5E-03	2.8E+04	2.6E-03	6.5E+03	1.1E-02	1.6E+01	4.5E+00
D	19W~D.28	19W~43089~57105720	non-RFI	571	572	4/30/1989	P/PCB	PCBs (total)	4.50E+01			1.6E+04	2.8E-03	2.8E+04	1.6E-03	6.5E+03	6.9E-03	1.6E+01	2.8E+00
D	19W~D.28	19W~43089~57205730	non-RFI	572	573	4/30/1989	P/PCB	PCBs (total)	1.40E+02			1.6E+04	8.8E-03	2.8E+04	5.0E-03	6.5E+03	2.2E-02	1.6E+01	8.8E+00
D	19W~D.28	19W~43089~57305740	non-RFI	573	574	4/30/1989	P/PCB	PCBs (total)	2.40E+02			1.6E+04	1.5E-02	2.8E+04	8.6E-03	6.5E+03	3.7E-02	1.6E+01	1.6E+01
D	19W~D.28	19W~43089~57405750	non-RFI	574	575	4/30/1989	P/PCB	PCBs (total)	1.90E+02			1.6E+04	1.2E-02	2.8E+04	6.8E-03	6.5E+03	2.9E-02	1.6E+01	1.2E+01
D	19W~D.28	19W~43089~57505760	non-RFI	575	576	4/30/1989	P/PCB	PCBs (total)	1.50E+02			1.6E+04	9.4E-03	2.8E+04	5.4E-03	6.5E+03	2.3E-02	1.6E+01	9.4E+00
D	19W~D.28	19W~43089~57605770	non-RFI	576	577	4/30/1989	P/PCB	PCBs (total)	1.40E+02			1.6E+04	8.8E-03	2.8E+04	5.0E-03	6.5E+03	2.2E-02	1.6E+01	8.8E+00
D	19WA~D.28	19WA~43089~57105720	non-RFI	571	572	4/30/1989	P/PCB	PCBs (total)	1.40E+02			1.6E+04	8.8E-03	2.8E+04	5.0E-03	6.5E+03	2.2E-02	1.6E+01	8.8E+00
D	19WA~D.28	19WA~43089~57205730	non-RFI	572	573	4/30/1989	P/PCB	PCBs (total)	1.76E+02			1.6E+04	1.1E-02	2.8E+04	6.3E-03	6.5E+03	2.7E-02	1.6E+01	1.1E+01
D	19WA~D.28	19WA~43089~57305740	non-RFI	573	574	4/30/1989	P/PCB	PCBs (total)	2.65E+02			1.6E+04	1.7E-02	2.8E+04	9.5E-03	6.5E+03	4.1E-02	1.6E+01	1.7E+01
D	19WA~D.28	19WA~43089~57405750	non-RFI	574	575	4/30/1989	P/PCB	PCBs (total)	1.83E+02			1.6E+04	1.1E-02	2.8E+04	6.5E-03	6.5E+03	2.8E-02	1.6E+01	1.1E+01
D	19WA~D.28	19WA~43089~57505760	non-RFI	575	576	4/30/1989	P/PCB	PCBs (total)	9.40E+01			1.6E+04	5.9E-03	2.8E+04	3.4E-03	6.5E+03	1.4E-02	1.6E+01	5.9E+00
D	19WA~D.28	19WA~43089~57605770	non-RFI	576	577	4/30/1989	P/PCB	PCBs (total)	1.61E+02			1.6E+04	1.0E-02	2.8E+04	5.8E-03	6.5E+03	2.5E-02	1.6E+01	1.0E+01
D	19WA~D.28	19WA~43089~57705780	non-RFI	577	578	4/30/1989	P/PCB	PCBs (total)	2.03E+02			1.6E+04	1.3E-02	2.8E+04	7.3E-03	6.5E+03	3.1E-02	1.6E+01	1.3E+01
D	19WB~D.28	19WB~43089~57005710	non-RFI	570	571	4/30/1989	P/PCB	PCBs (total)	3.80E+01			1.6E+04	2.4E-03	2.8E+04	1.4E-03	6.5E+03	5.8E-03	1.6E+01	2.4E+00
D	19WB~D.28	19WB~43089~57105720	non-RFI	571	572	4/30/1989	P/PCB	PCBs (total)	3.24E+02			1.6E+04	2.0E-02	2.8E+04	1.2E-02	6.5E+03	5.0E-02	1.6E+01	2.0E+01
D	19WB~D.28	19WB~43089~57205730	non-RFI	572	573	4/30/1989	P/PCB	PCBs (total)	3.98E+02			1.6E+04	2.5E-02	2.8E+04	1.4E-02	6.5E+03	6.1E-02	1.6E+01	2.5E+01
D	19WB~D.28	19WB~43089~57305740	non-RFI	573	574	4/30/1989	P/PCB	PCBs (total)	2.86E+02			1.6E+04	1.8E-02	2.8E+04	1.0E-02	6.5E+03	4.4E-02	1.6E+01	1.8E+01
D	19WB~D.28	19WB~43089~57405750	non-RFI	574	575	4/30/1989	P/PCB	PCBs (total)	3.84E+02			1.6E+04	2.4E-02	2.8E+04	1.4E-02	6.5E+03	5.9E-02	1.6E+01	2.4E+01
D	19WB~D.28	19WB~43089~57505760	non-RFI	575	576	4/30/1989	P/PCB	PCBs (total)	1.92E+02			1.6E+04	1.2E-02	2.8E+04	6.9E-03	6.5E+03	3.0E-02	1.6E+01	1.2E+01
D	19WB~D.28	19WB~43089~57605770	non-RFI	576	577	4/30/1989	P/PCB	PCBs (total)	2.61E+02			1.6E+04	1.6E-02	2.8E+04	9.3E-03	6.5E+03	4.0E-02	1.6E+01	1.6E+01
D	19WB~D.28	19WB~43089~57705780	non-RFI	577	578	4/30/1989	P/PCB	PCBs (total)	2.35E+02			1.6E+04	1.5E-02	2.8E+04	8.4E-03	6.5E+03	3.6E-02	1.6E+01	1.6E+01
D	19WC~D.28	19WC~43089~56905700	non-RFI	569	570	4/30/1989	P/PCB	PCBs (total)	5.22E+01			1.6E+04	3.3E-03	2.8E+04	1.9E-03	6.5E+03	8.0E-03	1.6E+01	3.3E+00
D	19WD~D.28	19WD~43089~56805690	non-RFI	568	569	4/30/1989	P/PCB	PCBs (total)	6.30E+01			1.6E+04	3.9E-03	2.8E+04	2.3E-03	6.5E+03	9.7E-03	1.6E+01	3.9E+00
D	19WD~D.28	19WD~43089~57005710	non-RFI	570	571	4/30/1989	P/PCB	PCBs (total)	7.12E+01			1.6E+04	4.5E-03	2.8E+04	2.5E-03	6.5E+03	1.1E-02	1.6E+01	4.5E+00
D	19WD~D.28	19WD~43089~57305740	non-RFI	573	574	4/30/1989	P/PCB	PCBs (total)	2.25E+02			1.6E+04	1.4E-02	2.8E+04	8.0E-03	6.5E+03	3.5E-02	1.6E+01	1.4E+01
D	19WE~D.28	19WE~43089~57105720	non-RFI	571	572	4/30/1989	P/PCB	PCBs (total)	1.80E+01			1.6E+04	1.1E-03	2.8E+04	6.4E-04	6.5E+03	2.8E-03	1.6E+01	1.1E+00
D	19WE~D.28	19WE~43089~57205730	non-RFI	572	573	4/30/1989	P/PCB	PCBs (total)	3.20E+01			1.6E+04	2.0E-03	2.8E+04	1.1E-03	6.5E+03	4.9E-03	1.6E+01	2.0E+00
D	19WE~D.28	19WE~43089~57305740	non-RFI	573	574	4/30/1989	P/PCB	PCBs (total)	3.10E+01			1.6E+04	1.9E-03	2.8E+04	1.1E-03	6.5E+03	4.8E-03	1.6E+01	1.9E+00
D	19WE~D.28	19WE~43089~57505760	non-RFI	575	576	4/30/1989	P/PCB	PCBs (total)	3.00E+02			1.6E+04	1.9E-02	2.8E+04	1.1E-02	6.5E+03	4.6E-02	1.6E+01	1.9E+01
D	19WE~D.28	19WE~43089~57605770	non-RFI	576	577	4/30/1989	P/PCB	PCBs (total)	8.10E+01			1.6E+04	5.1E-03	2.8E+04	2.9E-03	6.5E+03	1.2E-02	1.6E+01	5.1E+00
D	19WE~D.28	19WE~43089~57705780	non-RFI	577	578	4/30/1989	P/PCB	PCBs (total)	8.11E+01			1.6E+04	5.1E-03	2.8E+04	2.9E-03	6.5E+03	1.2E-02	1.6E+01	5.1E+00
D	8~D.28	8~43089~56605670	non-RFI	566	567	4/30/1989	P/PCB	PCBs (total)	1.84E+01			1.6E+04	1.2E-03	2.8E+04	6.6E-04	6.5E+03	2.8E-03	1.6E+01	1.2E+00
D	8~D.28	8~43089~56805690	non-RFI	568	569	4/30/1989	P/PCB	PCBs (total)	3.09E+02			1.6E+04	1.9E-02	2.8E+04	1.1E-02	6.5E+03	4.8E-02	1.6E+01	1.9E+01
D	8~D.28	8~43089~56905700	non-RFI	569	570	4/30/1989	P/PCB	PCBs (total)	5.15E+02			1.6E+04	3.2E-02	2.8E+04	1.8E-02	6.5E+03	7.9E-02	1.6E+01	3.2E+01
D	8~D.28	8~43089~57005710	non-RFI	570	571	4/30/1989	P/PCB	PCBs (total)	2.92E+02			1.6E+04	1.8E-02	2.8E+04	1.0E-02	6.5E+03	4.5E-02	1.6E+01	1.8E+01
D	8~D.28	8~43089~57305740	non-RFI	573	574	4/30/1989	P/PCB	PCBs (total)	3.52E+02			1.6E+04	2.2E-02	2.8E+04	1.3E-02	6.5E+03	5.4E-02	1.6E+01	2.2E+01
D	8E~D.28	8E~43089~57255735	non-RFI	572.5	573.5	4/30/1989	P/PCB	PCBs (total)	3.30E+01			1.6E+04	2.1E-03	2.8E+04	1.2E-03	6.5E+03	5.1E-03	1.6E+01	2.1E+00
D	8E~D.28	8E~43089~57355745	non-RFI	573.5	574.5	4/30/1989	P/PCB	PCBs (total)	4.60E+01			1.6E+04	2.9E-03	2.8E+04	1.6E-03	6.5E+03	7.1E-03	1.6E+01	2.9E+00
D	8N~D.28	8N~43089~57205730	non-RFI	572	573	4/30/1989	P/PCB	PCBs (total)	1.56E+02			1.6E+04	9.8E-03	2.8E+04	5.6E-03	6.5E+03	2.4E-02	1.6E+01	9.8E+00
D	8N~D.28	8N~43089~57305740	non-RFI	573	574	4/30/1989	P/PCB	PCBs (total)	1.13E+02			1.6E+04	7.1E-03	2.8E+04	4.0E-03	6.5E+03	1.7E-02	1.6E+01	7.1E+00

Table 1: Summary of Soil Concentrations Exceeding Screening Criteria
GM: SMCO, Saginaw Michigan

IU	Location	Sample ID	RFI or Non-RFI Sample	Top Depth (ft)	Bottom Depth (ft)	Sample Date	Chem Group	Chemical	Conc (mg/kg)	Qual	MDEQ Statewide Default Background Levels (mg/kg)	Industrial Soil Volatiliza-tion to Indoor Air Criteria (mg/kg)	Ratio of Conc to Industrial Soil Volatiliza-tion to Indoor Air Criteria	Industrial Soil Volatiliza-tion to Ambient Air Criteria (mg/kg)	Ratio of Conc to Industrial Soil Volatiliza-tion to Ambient Air Criteria	Industrial Particulate Inhalation Criteria (mg/kg)	Ratio of Conc to Industrial Particulate Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Conc to Industrial Direct Contact Criteria
D	8S~D.28	8S~43089~56605670	non-RFI	566	567	4/30/1989	P/PCB	PCBs (total)	5.00E+01			1.6E+04	3.1E-03	2.8E+04	1.8E-03	6.5E+03	7.7E-03	1.6E+01	3.1E+00
D	8S~D.28	8S~43089~56705680	non-RFI	567	568	4/30/1989	P/PCB	PCBs (total)	1.10E+02			1.6E+04	6.9E-03	2.8E+04	3.9E-03	6.5E+03	1.7E-02	1.6E+01	6.9E+00
D	8S~D.28	8S~43089~56805690	non-RFI	568	569	4/30/1989	P/PCB	PCBs (total)	1.40E+02			1.6E+04	8.8E-03	2.8E+04	5.0E-03	6.5E+03	2.2E-02	1.6E+01	8.8E+00
D	8S~D.28	8S~43089~56905700	non-RFI	569	570	4/30/1989	P/PCB	PCBs (total)	6.30E+01			1.6E+04	3.9E-03	2.8E+04	2.3E-03	6.5E+03	9.7E-03	1.6E+01	3.9E+00
D	8S~D.28	8S~43089~57005710	non-RFI	570	571	4/30/1989	P/PCB	PCBs (total)	1.20E+02			1.6E+04	7.5E-03	2.8E+04	4.3E-03	6.5E+03	1.8E-02	1.6E+01	7.5E+00
D	8S~D.28	8S~43089~57105720	non-RFI	571	572	4/30/1989	P/PCB	PCBs (total)	2.00E+02			1.6E+04	1.3E-02	2.8E+04	7.1E-03	6.5E+03	3.1E-02	1.6E+01	1.3E+01
D	8S~D.28	8S~43089~57205730	non-RFI	572	573	4/30/1989	P/PCB	PCBs (total)	9.80E+01			1.6E+04	6.1E-03	2.8E+04	3.5E-03	6.5E+03	1.5E-02	1.6E+01	6.1E+00
D	8S~D.28	8S~43089~57305740	non-RFI	573	574	4/30/1989	P/PCB	PCBs (total)	1.10E+02			1.6E+04	6.9E-03	2.8E+04	3.9E-03	6.5E+03	1.7E-02	1.6E+01	6.9E+00
D	8SA~D.28	8SA~43089~57155725	non-RFI	571.5	572.5	4/30/1989	P/PCB	PCBs (total)	8.47E+01			1.6E+04	5.3E-03	2.8E+04	3.0E-03	6.5E+03	1.3E-02	1.6E+01	5.3E+00
D	8SA~D.28	8SA~43089~57255735	non-RFI	572.5	573.5	4/30/1989	P/PCB	PCBs (total)	4.75E+01			1.6E+04	3.0E-03	2.8E+04	1.7E-03	6.5E+03	7.3E-03	1.6E+01	3.0E+00
D	8SA~D.28	8SA~43089~57355745	non-RFI	573.5	574.5	4/30/1989	P/PCB	PCBs (total)	2.80E+02			1.6E+04	1.8E-02	2.8E+04	1.0E-02	6.5E+03	4.3E-02	1.6E+01	1.8E+01
D	8SA~D.28	8SA~43089~57455755	non-RFI	574.5	575.5	4/30/1989	P/PCB	PCBs (total)	9.63E+01			1.6E+04	6.0E-03	2.8E+04	3.4E-03	6.5E+03	1.5E-02	1.6E+01	6.0E+00
D	8SA~D.28	8SA~43089~57555765	non-RFI	575.5	576.5	4/30/1989	P/PCB	PCBs (total)	1.18E+02			1.6E+04	7.4E-03	2.8E+04	4.2E-03	6.5E+03	1.8E-02	1.6E+01	7.4E+00
D	8SA~D.28	8SA~43089~57655775	non-RFI	576.5	577.5	4/30/1989	P/PCB	PCBs (total)	1.78E+02			1.6E+04	1.1E-02	2.8E+04	6.4E-03	6.5E+03	2.7E-02	1.6E+01	1.1E+01
D	8SA~D.28	8SA~43089~57755785	non-RFI	577.5	578.5	4/30/1989	P/PCB	PCBs (total)	8.51E+01			1.6E+04	5.3E-03	2.8E+04	3.0E-03	6.5E+03	1.3E-02	1.6E+01	5.3E+00
D	8SB~D.28	8SB~43089~57205730	non-RFI	572	573	4/30/1989	P/PCB	PCBs (total)	1.61E+02			1.6E+04	1.0E-02	2.8E+04	5.8E-03	6.5E+03	2.5E-02	1.6E+01	1.0E+01
D	8SB~D.28	8SB~43089~57805790	non-RFI	578	579	4/30/1989	P/PCB	PCBs (total)	1.97E+01			1.6E+04	1.2E-03	2.8E+04	7.0E-04	6.5E+03	3.0E-03	1.6E+01	1.2E+00
D	8W~D.28	8W~43089~56455655	non-RFI	564.5	565.5	4/30/1989	P/PCB	PCBs (total)	1.78E+02			1.6E+04	1.1E-02	2.8E+04	6.4E-03	6.5E+03	2.7E-02	1.6E+01	1.1E+01
D	8W~D.28	8W~43089~56555665	non-RFI	565.5	566.5	4/30/1989	P/PCB	PCBs (total)	1.86E+02			1.6E+04	1.2E-02	2.8E+04	6.6E-03	6.5E+03	2.9E-02	1.6E+01	1.2E+01
D	8W~D.28	8W~43089~56655675	non-RFI	566.5	567.5	4/30/1989	P/PCB	PCBs (total)	1.30E+02			1.6E+04	8.1E-03	2.8E+04	4.6E-03	6.5E+03	2.0E-02	1.6E+01	8.1E+00
D	8W~D.28	8W~43089~56755685	non-RFI	567.5	568.5	4/30/1989	P/PCB	PCBs (total)	2.75E+01			1.6E+04	1.7E-03	2.8E+04	9.8E-04	6.5E+03	4.2E-03	1.6E+01	1.7E+00
D	8W~D.28	8W~43089~56855695	non-RFI	568.5	569.5	4/30/1989	P/PCB	PCBs (total)	1.60E+02			1.6E+04	1.0E-02	2.8E+04	5.7E-03	6.5E+03	2.5E-02	1.6E+01	1.0E+01
D	8W~D.28	8W~43089~56955705	non-RFI	569.5	570.5	4/30/1989	P/PCB	PCBs (total)	7.30E+01			1.6E+04	4.6E-03	2.8E+04	2.6E-03	6.5E+03	1.1E-02	1.6E+01	4.6E+00
D	8W~D.28	8W~43089~57055715	non-RFI	570.5	571.5	4/30/1989	P/PCB	PCBs (total)	4.40E+01			1.6E+04	2.8E-03	2.8E+04	1.6E-03	6.5E+03	6.8E-03	1.6E+01	2.8E+00
D	8W~D.28	8W~43089~57155725	non-RFI	571.5	572.5	4/30/1989	P/PCB	PCBs (total)	2.40E+02			1.6E+04	1.5E-02	2.8E+04	8.6E-03	6.5E+03	3.7E-02	1.6E+01	1.5E+01
D	8W~D.28	8W~43089~57255735	non-RFI	572.5	573.5	4/30/1989	P/PCB	PCBs (total)	2.80E+02			1.6E+04	1.8E-02	2.8E+04	1.0E-02	6.5E+03	4.3E-02	1.6E+01	1.8E+01
D	8W~D.28	8W~43089~57355745	non-RFI	573.5	574.5	4/30/1989	P/PCB	PCBs (total)	4.20E+02			1.6E+04	2.6E-02	2.8E+04	1.5E-02	6.5E+03	6.5E-02	1.6E+01	2.6E+01
D	8WA~D.28	8WA~43089~56855695	non-RFI	568.5	569.5	4/30/1989	P/PCB	PCBs (total)	7.41E+01			1.6E+04	4.6E-03	2.8E+04	2.6E-03	6.5E+03	1.1E-02	1.6E+01	4.6E+00
D	8WA~D.28	8WA~43089~56955705	non-RFI	569.5	570.5	4/30/1989	P/PCB	PCBs (total)	2.10E+01			1.6E+04	1.3E-03	2.8E+04	7.5E-04	6.5E+03	3.2E-03	1.6E+01	1.3E+00
D	8WA~D.28	8WA~43089~57055715	non-RFI	570.5	571.5	4/30/1989	P/PCB	PCBs (total)	3.91E+02			1.6E+04	2.4E-02	2.8E+04	1.4E-02	6.5E+03	6.0E-02	1.6E+01	2.4E+01
D	8WA~D.28	8WA~43089~57155725	non-RFI	571.5	572.5	4/30/1989	P/PCB	PCBs (total)	2.07E+02			1.6E+04	1.3E-02	2.8E+04	7.4E-03	6.5E+03	3.2E-02	1.6E+01	1.3E+01
D	8WA~D.28	8WA~43089~57255735	non-RFI	572.5	573.5	4/30/1989	P/PCB	PCBs (total)	2.07E+02			1.6E+04	1.3E-02	2.8E+04	7.4E-03	6.5E+03	3.2E-02	1.6E+01	1.3E+01
D	8WA~D.28	8WA~43089~57355745	non-RFI	573.5	574.5	4/30/1989	P/PCB	PCBs (total)	2.75E+02			1.6E+04	1.7E-02	2.8E+04	9.8E-03	6.5E+03	4.2E-02	1.6E+01	1.7E+01
D	8WB~D.28	8WB~43089~56755685	non-RFI	567.5	568.5	4/30/1989	P/PCB	PCBs (total)	2.50E+01			1.6E+04	1.6E-03	2.8E+04	8.9E-04	6.5E+03	3.8E-03	1.6E+01	1.6E+00
D	8WC~D.28	8WC~43089~57805790	non-RFI	578	579	4/30/1989	P/PCB	PCBs (total)	5.25E+01			1.6E+04	3.3E-03	2.8E+04	1.9E-03	6.5E+03	8.1E-03	1.6E+01	3.3E+00
D	9~D.28	9~43089~57305740	non-RFI	573	574	4/30/1989	P/PCB	PCBs (total)	3.33E+02			1.6E+04	2.1E-02	2.8E+04	1.2E-02	6.5E+03	5.1E-02	1.6E+01	2.1E+01
D	9E~D.28	9E~43089~57555765	non-RFI	575.5	576.5	4/30/1989	P/PCB	PCBs (total)	1.64E+02			1.6E+04	1.0E-02	2.8E+04	5.9E-03	6.5E+03	2.5E-02	1.6E+01	1.0E+01
D	9E~D.28	9E~43089~57655775	non-RFI	576.5	577.5	4/30/1989	P/PCB	PCBs (total)	9.60E+01			1.6E+04	6.0E-03	2.8E+04	3.4E-03	6.5E+03	1.5E-02	1.6E+01	6.0E+00
D	9N~D.28	9N~43089~57305740	non-RFI	573	574	4/30/1989	P/PCB	PCBs (total)	3.74E+01			1.6E+04	2.3E-03	2.8E+04	1.3E-03	6.5E+03	5.8E-03	1.6E+01	2.3E+00
D	9N~D.28	9N~43089~57505760	non-RFI	575	576	4/30/1989	P/PCB	PCBs (total)	4.18E+02			1.6E+04	2.6E-02	2.8E+04	1.5E-02	6.5E+03	6.4E-02	1.6E+01	2.6E+01
D	9N~D.28	9N~43089~57605770	non-RFI	576	577	4/30/1989	P/PCB	PCBs (total)	2.18E+02			1.6E+04	1.4E-02	2.8E+04	7.8E-03	6.5E+03	3.4E-02	1.6E+01	1.4E+01
D	9S~D.28	9S~43089~56955705	non-RFI	569.5	570.5	4/30/1989	P/PCB	PCBs (total)	4.94E+01			1.6E+04	3.1E-03	2.8E+04	1.8E-03	6.5E+03	7.6E-03	1.6E+01	3.1E+00
D	9S~D.28	9S~43089~57155725	non-RFI	571.5	572.5	4/30/1989	P/PCB	PCBs (total)	6.70E+01			1.6E+04	4.2E-03	2.8E+04	2.4E-03	6.5E+03	1.0E-02	1.6E+01	4.2E+00
D	9S~D.28	9S~43089~57255735	non-RFI	572.5	573.5	4/30/1989	P/PCB	PCBs (total)	7.16E+01			1.6E+04	4.5E-03	2.8E+04	2.6E-03	6.5E+03	1.1E-02	1.6E+01	4.5E+00
D	9S~D.28	9S~43089~57355745	non-RFI	573.5	574.5	4/30/1989	P/PCB	PCBs (total)	1.15E+02			1.6E+04	7.2E-03	2.8E+04	4.1E-03	6.5E+03	1.8E-02	1.6E+01	7.2E+00
D	9S~D.28	9S~43089~57455755	non-RFI	574.5	575.5	4/30/1989	P/PCB	PCBs (total)	2.91E+02			1.6E+04	1.8E-02	2.8E+04	1.0E-02	6.5E+03	4.5E-02	1.6E+01	1.8E+01
D	9S~D.28	9S~43089~57555765	non-RFI	575.5	576.5	4/30/1989	P/PCB	PCBs (total)	7.36E+01			1.6E+04	4.6E-03	2.8E+04	2.6E-03	6.5E+03	1.1E-02	1.6E+01	4.6E+00
D	9S~D.28	9S~43089~57655775	non-RFI	576.5	577.5	4/30/1989	P/PCB	PCBs (total)	2.24E+01			1.6E+04	1.4E-03	2.8E+04	8.0E-04	6.5E+03	3.4E-03	1.6E+01	1.4E+00
D	9S~D.28	9S~43089~57755785	non-RFI	577.5	578.5	4/30/1989	P/PCB	PCBs (total)	5.46E+01			1.6E+04	3.4E-03	2.8E+04	2.0E-03	6.5E+03	8.4E-03	1.6E+01	3.4E+00
D	9SA~D.28	9SA~43089~56755685	non-RFI	567.5	568.5	4/30/1989	P/PCB	PCBs (total)	6.34E+01			1.6E+04	4.0E-03	2.8E+04	2.3E-03	6.5E+03	9.8E-03	1.6E+01	4.0E+00
D	9SA~D.28	9SA~43089~56855695	non-RFI	568.5	569.5	4/30/1989	P/PCB	PCBs (total)	2.85E+02			1.6E+04	1.8E-02	2.8E+04	1.0E-02	6.5E+03	4.4E-02	1.6E+01	1.8E+01
D	9SB~D.28	9SB~43089~57205730	non-RFI	572	573	4/30/1989	P/PCB	PCBs (total)	2.41E+01			1.6E+04	1.5E-03	2.8E+04	8.6E-04	6.5E+03	3.7E-03	1.6E+01	1.5E+00
D	9SB~D.28	9SB~43089~57805790	non-RFI	578	579	4/30/1989	P/PCB	PCBs (total)	1.13E+02			1.6E+04	7.0E-03	2.8E+04	4.0E-03	6.5E+03	1.7E-02	1.6E+01	7.0E+00
D	9SC~D.28	9SC~43089~57605770	non-RFI	576	577	4/30/1989	P/PCB	PCBs (total)	4.30E+01			1.6E+04	2.7E-03	2.8E+04	1.5E-03	6.5E+03	6.6E-03	1.6E+01	2.7E+00
D	9SC~D.28	9SC~43089~57705780	non-RFI	577	578	4/30/1989	P/PCB	PCBs (total)	2.35E+01			1.6E+04	1.5E-03	2.8E+04	8.4E-04	6.5E+03	3.6E-03	1.6E+01	1.5E+00
D	MW-00812	B00142^0^1^RFI	RFI	1	3	10/21/1998	INORG	Chromium (total)	3.62E+02							2.4E+02	1.5E+00	9.2E+03	3.9E-02
D	MW-02410	B00108^0^1^RFI	RFI	2	4	10/2/1998	INORG	Chromium (total)	2.99E+02							2.4E+02	1.2E+00	9.2E+03	3.3E-02
D	MW-02410	B00109^0^1^RFI	RFI	4	6	10/2/1998	INORG	Chromium (total)	2.71E+02							2.4E+02	1.1E+00	9.2E+03	2.9E-02
D	SB-00710	B10357	RFI	0	2	6/20/2000	INORG	Antimony	9.46E+02	J						5.9E+03	1.6E-01	6.7E+02	1.4E+00
D	SB-00911	B10318	RFI	0	2	6/19/2000	SVOC	Benzo(a)pyrene	3.00E+01							1.9E+03	1.6E-02	8.0E+00	3.8E+00
D	SB-02011	B10361	RFI	16	18	6/23/2000	P/PCB	PCBs (total)	2.08E+01	J		1.6E+04	1.3E-03	2.8E+04	7.4E-04	6.5E+03	3.2E-03	1.6E+01	1.3E+00
D	SB-02510	B10255	RFI	0.7	2.7	6/6/2000	INORG	Chromium (total)	6.83E+02							2.4E+02	2.8E+00	9.2E+03	7.4E-02
D	SB-02510	B10256	RFI	2	4	6/6/2000	OTHER	Formaldehyde	8.40E+01	J		6.5E+01	1.3E+00	6.9E+01	1.2E+00	3.0E+05	2.8E-04	6.0E+04	1.4E-03
D	SB-02510	B10256	RFI	2	4	6/6/2000	INORG	Chromium (total)	2.28E+03							2.4E+02	9.5E+00	9.2E+03	2.5E-01
D	SB-198	B00139^0^1^RFI	RFI	0	2	10/21/1998	INORG	Chromium (total)	3.81E+02							2.4E+02	1.6E+00	9.2E+03	4.1E-02

Table 1: Summary of Soil Concentrations Exceeding Screening Criteria
GM: SMCO, Saginaw Michigan

IU	Location	Sample ID	RFI or Non-RFI Sample	Top Depth (ft)	Bottom Depth (ft)	Sample Date	Chem Group	Chemical	Conc (mg/kg)	Qual	MDEQ Statewide Default Background Levels (mg/kg)	Industrial Soil Volatilization to Indoor Air Criteria (mg/kg)	Ratio of Conc to Industrial Soil Volatilization to Indoor Air Criteria	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Ratio of Conc to Industrial Soil Volatilization to Ambient Air Criteria	Industrial Particulate Inhalation Criteria (mg/kg)	Ratio of Conc to Industrial Particulate Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Conc to Industrial Direct Contact Criteria
D	SB-298	B00141^0^1^RFI	RFI	1	3	10/21/1998	P/PCB	PCBs (total)	3.22E+01	J		1.6E+04	2.0E-03	2.8E+04	1.1E-03	6.5E+03	4.9E-03	1.6E+01	**2.0E+00**
D	SB-298	B00141^0^1^RFI	RFI	1	3	10/21/1998	INORG	Chromium (total)	2.98E+02							2.4E+02	**1.2E+00**	9.2E+03	3.2E-02
E	MW-02228	B10022^1^1^RFI	RFI	4	6	9/16/1998	INORG	Chromium (total)	4.42E+02	J						2.4E+02	**1.8E+00**	9.2E+03	4.8E-02
E	MW-02320	B10013^0^1^RFI	RFI	0	2	9/14/1998	INORG	Chromium (total)	2.91E+02							2.4E+02	**1.2E+00**	9.2E+03	3.2E-02
E	MW-02320	B10014^1^1^RFI	RFI	2	6	9/14/1998	INORG	Chromium (total)	3.00E+02							2.4E+02	**1.2E+00**	9.2E+03	3.3E-02
E	MW-03235	B00081^0^1^RFI	RFI	0	2	9/23/1998	INORG	Lead	2.03E+03		2.10E+01					4.4E+04	4.6E-02	9.0E+02	**2.2E+00**
E	MW-03734	B00071^0^1^RFI	RFI	0	2	9/22/1998	P/PCB	PCBs (total)	5.22E+01	J		1.6E+04	3.3E-03	2.8E+04	1.9E-03	6.5E+03	8.0E-03	1.6E+01	**3.3E+00**
E	MW-03734	B00072^0^1^RFI	RFI	6	8	9/22/1998	INORG	Chromium (total)	2.74E+02							2.4E+02	**1.1E+00**	9.2E+03	3.0E-02
E	SB-03737A	B80117	RFI	0	2	12/12/2002	P/PCB	PCBs (total)	1.83E+01	J		1.6E+04	1.1E-03	2.8E+04	6.5E-04	6.5E+03	2.8E-03	1.6E+01	**1.1E+00**
G	B11	B11^0^1^NOR	RFI	3	4	2/6/1998	INORG	Chromium (total)	4.87E+02							2.4E+02	**2.0E+00**	9.2E+03	5.3E-02
G	B12	B12^0^1^NOR	RFI	3	4	2/6/1998	INORG	Chromium (total)	3.28E+02							2.4E+02	**1.4E+00**	9.2E+03	3.6E-02
G	EB-114~G.5	EB-114b-(4-5.5)9187	non-RFI	4	5.5	9/1/1987	INORG	Arsenic	8.10E+01		5.80E+00					9.1E+02	8.3E-02	3.7E+01	**2.0E+00**
G	MW-04250	B00023^0^1^RFI	RFI	4	6	9/15/1998	INORG	Chromium (total)	3.58E+02	J						2.4E+02	**1.3E+00**	9.2E+03	3.9E-02
G	TMW-04635	B80211	non-RFI	0	2	3/6/2003	INORG	Chromium (total)	3.09E+02							2.4E+02	**1.3E+00**	9.2E+03	3.4E-02
I	MW-06951	B00065^0^1^RFI	RFI	4	6	9/21/1998	OTHER	Formaldehyde	7.80E+01	J		6.5E+01	**1.2E+00**	6.9E+01	**1.1E+00**	3.0E+05	2.6E-04	6.0E+04	1.3E-03

Notes:

The Screening Criteria for Pyrene was used as a surrogate for Phenanthrene and Benzo(g,h,i)perylene.

The Screening Criteria for Phenol was used as a surrogate for Phenols (total).

The Screening Criteria for Naphthalene was used as a surrogate for 2-Methylnaphthalene.

The Screening Criteria for cis-1,2-Dichloroethene was used as a surrogate for 1,2-Dichloroethene (total).

The Screening Criteria for Chromium (total) is based on Cr VI.

The background concentrations are the MDEQ State Default Background Levels.

The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.

The concentrations for all PCB isomers were summed before comparing to Polychlorinated biphenyls (PCBs) for cancer effects and Aroclor 1254 for noncancer effects.

The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.

The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group

Table 2: Summary of Upper Groundwater Bearing Zone Groundwater Concentrations Exceeding Screening Criteria
GM SMCO Facility, Saginaw, Michigan

IU	Location	Sample ID	RFI or Non-RFI Sample	Bedrock GW Sample	GSI Location	Sample Type	Sample Date	Meas Basis	Chem Group	Chemical	Conc (mg/L)	Qual	Groundwater Surface water Interface Criteria (mg/L)	Ratio of Conc to Groundwater Surface water Interface Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Conc to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Conc to Groundwater Contact Criteria
A	MW-00124	M10038^0^1^RFI	RFI	No	Yes	N	12/3/1998	T	INORG	Mercury	5.00E-04		1.30E-06	3.8E+02	5.6E-02	8.9E-03	5.6E-02	8.9E-03
A	MW-00124	M20221	RFI	No	Yes	N	7/27/2000	T	INORG	Vanadium	4.05E-02		1.20E-02	3.4E+00			9.7E+02	4.2E-05
A	MW-00925	M10041^0^1^RFI	RFI	No	Yes	N	12/4/1998	T	INORG	Chromium (total)	4.80E-02		1.10E-02	4.4E+00			4.6E+02	1.0E-04
A	MW-00925	M10041^0^1^RFI	RFI	No	Yes	N	12/4/1998	T	INORG	Mercury	7.00E-04		1.30E-06	5.4E+02	5.6E-02	1.3E-02	5.6E-02	1.3E-02
A	MW-00925	M10041^0^1^RFI	RFI	No	Yes	N	12/4/1998	T	INORG	Vanadium	5.70E-02		1.20E-02	4.8E+00			9.7E+02	5.9E-05
A	MW-00925	M20208	RFI	No	Yes	N	7/14/2000	T	INORG	Cyanide (total)	1.00E-02	J	5.20E-03	1.9E+00			5.7E+01	1.8E-04
A	MW-00925	M20208	RFI	No	Yes	N	7/14/2000	T	INORG	Vanadium	2.05E-02		1.20E-02	1.7E+00			9.7E+02	2.1E-05
A	MW-01329	M10043^0^1^RFI	RFI	No	Yes	N	12/4/1998	T	INORG	Arsenic	4.46E-01		1.50E-01	3.0E+00			4.3E+00	1.0E-01
A	MW-01329	M20209	RFI	No	Yes	N	7/24/2000	T	INORG	Chromium VI	1.43E-02		1.10E-02	1.3E+00			4.6E+02	3.1E-05
B	MW-00306	M20252	RFI	No	No	N	8/9/2000	T	SVOC	Benzo(b)fluoranthene	3.00E-03						2.0E-03	1.6E+00
B	MW-00309	M20237	RFI	No	No	N	7/31/2000	T	SVOC	Benzo(a)pyrene	2.50E-03						2.0E-03	1.3E+00
B	MW-00309	M20237	RFI	No	No	N	7/31/2000	T	SVOC	Benzo(b)fluoranthene	2.50E-03						2.0E-03	1.3E+00
B	MW-00309	M20237	RFI	No	No	N	7/31/2000	T	SVOC	Indeno(1,2,3-cd)pyrene	3.50E-03	J					2.0E-03	1.8E+00
B	MW-00509	M10002^0^1^RFI	RFI	No	No	N	11/17/1998	T	VOC	Vinyl Chloride	3.00E+00	J	1.50E-02	NA	1.3E+01	2.3E-01	1.0E+00	3.0E+00
B	MW-00509	M10216	RFI	No	No	N	7/31/2000	T	VOC	Vinyl Chloride	2.40E+00	J	1.50E-02	NA	1.3E+01	1.8E-01	1.0E+00	2.4E+00
B	SB-00307c	H10019	RFI	No	No	N	6/22/2000	T	SVOC	Benzo(a)pyrene	3.00E-03						2.0E-03	1.5E+00
B	SB-00408a	H10022	RFI	No	No	N	6/22/2000	T	SVOC	Benzo(a)pyrene	3.00E-03						2.0E-03	1.5E+00
B	SB-00408a	H10022	RFI	No	No	N	6/22/2000	T	SVOC	Benzo(b)fluoranthene	3.00E-03						2.0E-03	1.5E+00
B	SB-00408a	H10022	RFI	No	No	N	6/22/2000	T	SVOC	Chrysene	1.00E-02						5.0E-03	2.0E+00
B	SB-00408a	H10022	RFI	No	No	N	6/22/2000	T	SVOC	Indeno(1,2,3-cd)pyrene	3.00E-03						2.0E-03	1.5E+00
B	VAP-00208 (30-35)	H70012	RFI	No	No	N	12/20/2001	T	VOC	Vinyl Chloride	1.30E+00		1.50E-02	NA	1.3E+01	1.0E-01	1.0E+00	1.3E+00
E	MW-01119	M20211	RFI	No	No	N	7/26/2000	T	SVOC	Benzo(a)pyrene	6.00E-03						2.0E-03	3.0E+00
E	MW-01119	M20211	RFI	No	No	N	7/26/2000	T	SVOC	Benzo(b)fluoranthene	5.00E-03						2.0E-03	2.5E+00
E	MW-01119	M20211	RFI	No	No	N	7/26/2000	T	SVOC	Benzo(k)fluoranthene	5.50E-03						5.0E-03	1.1E+00
E	MW-01119	M20211	RFI	No	No	N	7/26/2000	T	SVOC	Chrysene	5.50E-03						5.0E-03	1.1E+00
E	MW-01119	M20211	RFI	No	No	N	7/26/2000	T	SVOC	Indeno(1,2,3-cd)pyrene	3.50E-03						2.0E-03	1.8E+00
E	MW-01827	M10047^0^1^RFI	RFI	No	Yes	N	12/8/1998	T	INORG	Chromium (total)	7.00E-02		1.10E-02	6.4E+00			4.6E+02	1.5E-04
E	MW-01827	M10047^0^1^RFI	RFI	No	Yes	N	12/8/1998	T	INORG	Mercury	3.00E-04		1.30E-06	2.3E+02	5.6E-02	5.4E-03	5.6E-02	5.4E-03
E	MW-01827	M10047^0^1^RFI	RFI	No	Yes	N	12/8/1998	T	INORG	Vanadium	4.00E-02		1.20E-02	3.3E+00			9.7E+02	4.1E-05
E	MW-01827	M20218	RFI	No	Yes	N	7/19/2000	T	INORG	Vanadium	6.81E-02		1.20E-02	5.7E+00			9.7E+02	7.0E-05
E	MW-02432	M10050^0^1^RFI	RFI	No	Yes	N	12/9/1998	T	INORG	Chromium (total)	1.39E-01		1.10E-02	1.3E+01			4.6E+02	3.0E-04
E	MW-02432	M10050^0^1^RFI	RFI	No	Yes	N	12/9/1998	T	INORG	Mercury	5.00E-04		1.30E-06	3.8E+02	5.6E-02	8.9E-03	5.6E-02	8.9E-03
E	MW-02432	M10050^0^1^RFI	RFI	No	Yes	N	12/9/1998	T	INORG	Vanadium	8.30E-02		1.20E-02	6.9E+00			9.7E+02	8.6E-05
E	MW-03240	M00005^1^1^RFI	RFI	No	Yes	N	11/18/1998	T	INORG	Chromium (total)	3.94E-01		1.10E-02	3.6E+01			4.6E+02	8.6E-04
E	MW-03240	M00005^1^1^RFI	RFI	No	Yes	N	11/18/1998	T	INORG	Cobalt	3.15E-01		1.00E-01	3.1E+00			2.4E+03	1.3E-04
E	MW-03240	M00005^1^1^RFI	RFI	No	Yes	N	11/18/1998	T	INORG	Mercury	1.00E-03		1.30E-06	7.7E+02	5.6E-02	1.8E-02	5.6E-02	1.8E-02
E	MW-03240	M00005^1^1^RFI	RFI	No	Yes	N	11/18/1998	T	INORG	Vanadium	1.08E-01		1.20E-02	9.0E+00			9.7E+02	1.1E-04
E	MW-03240	M30210	RFI	No	Yes	N	7/19/2000	T	INORG	Lead	2.16E+00	J	1.90E-01	1.1E+01				
E	MW-03240	M30210	RFI	No	Yes	N	7/19/2000	T	INORG	Vanadium	4.76E-02	J	1.20E-02	4.0E+00			9.7E+02	4.9E-05
E	MW-03746	M30033^0^1^RFI	RFI	No	Yes	N	12/7/1998	T	INORG	Chromium (total)	4.20E-02		1.10E-02	3.8E+00			4.6E+02	9.1E-05
E	MW-03746	M30033^0^1^RFI	RFI	No	Yes	N	12/7/1998	T	INORG	Vanadium	4.40E-02		1.20E-02	3.7E+00			9.7E+02	4.5E-05
E	MW-03746	M30228	RFI	No	Yes	N	8/8/2000	T	INORG	Vanadium	3.57E-02		1.20E-02	3.0E+00			9.7E+02	3.7E-05
G	MW-04250	M30029^1^1^RFI	RFI	No	Yes	N	12/4/1998	T	INORG	Chromium (total)	1.80E-01		1.10E-02	1.6E+01			4.6E+02	3.9E-04
G	MW-04250	M30029^1^1^RFI	RFI	No	Yes	N	12/4/1998	T	INORG	Mercury	1.50E-04	J	1.30E-06	1.2E+02	5.6E-02	2.7E-03	5.6E-02	2.7E-03
G	MW-04250	M30029^1^1^RFI	RFI	No	Yes	N	12/4/1998	T	INORG	Vanadium	8.65E-02		1.20E-02	7.2E+00			9.7E+02	8.9E-05
G	MW-04250	M30205	RFI	No	Yes	N	7/18/2000	D	INORG	Vanadium	1.36E-02		1.20E-02	1.1E+00			9.7E+02	1.4E-05
G	MW-04250	M30205	RFI	No	Yes	N	7/18/2000	T	WQ	pH	1.17E+01		9.00E+00	1.3E+00				
G	MW-04250	M30205	RFI	No	Yes	N	7/18/2000	T	INORG	Cyanide (total)	7.00E-03		5.20E-03	1.3E+00			5.7E+01	1.2E-04
G	MW-04250	M30205	RFI	No	Yes	N	7/18/2000	T	INORG	Vanadium	3.30E-02		1.20E-02	2.8E+00			9.7E+02	3.4E-05
G	MW-04757	M20001^0^1^RFI	RFI	No	Yes	N	11/16/1998	T	INORG	Chromium (total)	1.26E-01	J	1.10E-02	1.1E+01			4.6E+02	2.7E-04
G	MW-04757	M20001^0^1^RFI	RFI	No	Yes	N	11/16/1998	T	INORG	Vanadium	5.40E-02	J	1.20E-02	4.5E+00			9.7E+02	5.6E-05
G	MW-04757	M20215	RFI	No	Yes	N	7/18/2000	T	P/PCB	PCBs (total)	6.00E-04	J	2.00E-04	3.0E+00	4.5E-02	1.3E-02	3.3E-03	1.8E-01
G	MW-04757	M20215	RFI	No	Yes	N	7/18/2000	T	INORG	Cyanide (total)	7.00E-03		5.20E-03	1.3E+00			5.7E+01	1.2E-04

Table 2: Summary of Upper Groundwater Bearing Zone Groundwater Concentrations Exceeding Screening Criteria
GM SMCO Facility, Saginaw, Michigan

IU	Location	Sample ID	RFI or Non-RFI Sample	Bedrock GW Sample	GSI Location	Sample Type	Sample Date	Meas Basis	Chem Group	Chemical	Conc (mg/L)	Qual	Groundwater Surface water Interface Criteria (mg/L)	Ratio of Conc to Groundwater Surface water Interface Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Conc to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Conc to Groundwater Contact Criteria
G	MW-04757	M20215	RFI	No	Yes	N	7/18/2000	T	INORG	Vanadium	3.63E-02		1.20E-02	3.0E+00			9.7E+02	3.7E-05
G	MW-04864	M20003^0^1^RFI	RFI	No	Yes	N	11/16/1998	D	INORG	Vanadium	1.60E-02		1.20E-02	1.3E+00			9.7E+02	1.6E-05
G	MW-04864	M20003^0^1^RFI	RFI	No	Yes	N	11/16/1998	T	INORG	Chromium (total)	1.50E-02	J	1.10E-02	1.4E+00			4.6E+02	3.3E-05
G	MW-04864	M20003^0^1^RFI	RFI	No	Yes	N	11/16/1998	T	INORG	Vanadium	2.40E-02	J	1.20E-02	2.0E+00			9.7E+02	2.5E-05
G	MW-04864	M30206	RFI	No	Yes	N	7/18/2000	D	INORG	Vanadium	3.28E-02		1.20E-02	2.7E+00			9.7E+02	3.4E-05
G	MW-04864	M30206	RFI	No	Yes	N	7/18/2000	T	WQ	pH	1.12E+01		9.00E+00	1.2E+00				
G	MW-04864	M30206	RFI	No	Yes	N	7/18/2000	T	INORG	Vanadium	3.60E-02		1.20E-02	3.0E+00			9.7E+02	3.7E-05
G	MW-04864	M80153~01/05/03	RFI	No	Yes	N	1/5/2003	T	WQ	pH	1.03E+01		9.00E+00	1.1E+00				
G	MW-04864	M80153-200301	RFI	No	Yes	N	1/5/2003	T	WQ	Ammonia	6.60E+00		7.36E-01	9.0E+00	7.1E+03	9.3E-04		
G	MW-04864	M80153-200301	RFI	No	Yes	N	1/5/2003	T	WQ	pH	1.03E+01		9.00E+00	1.1E+00				

Notes:

NA - GSI criteria not applicable based on location of monitoring well. Only groundwater samples from the GSI wells screened against the Groundwater Surface Water Interface Criteria.

The Screening Criteria for Pyrene was used as a surrogate for Phenanthrene and Benzo(g,h,i)perylene.

The Screening Criteria for Phenol was used as a surrogate for Phenols (total).

The Screening Criteria for Naphthalene was used as a surrogate for 2-Methylnaphthalene.

The Screening Criteria for cis-1,2-Dichloroethene was used as a surrogate for 1,2-Dichloroethene (total).

The Screening Criteria for Chromium (total) is based on Cr VI.

The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.

The concentrations for all PCB isomers were summed before comparing to Polychlorinated biphenyls (PCBs) for cancer effects and Aroclor 1254 for noncancer effects.

The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.

The concentrations for the Chlordane isomers (alpha and beta) were summed before comparing to the Screening Criteria.

The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group

Meas Basis - Measured Basis; T = Total, D = Dissolved

Table 3: Summary of Bedrock Groundwater Concentrations Exceeding Screening Criteria
GM SMCO Facility, Saginaw, Michigan

IU	Location	Sample ID	RFI or Non-RFI Sample	Bedrock GW Sample	GSI Location	Sample Type	Sample Date	Meas Basis	Chem Group	Chemical	Conc (mg/L)	Qual	MCL (mg/L)	Ratio of Conc to MCL	Industrial Drinking Water Criteria (mg/L)	Ratio of Conc to Industrial Drinking Water Criteria
A	MW-90124	M30211	RFI	Yes	No	N	7/20/2000	D	INORG	Antimony	3.46E-02	J	6.0E-03	**5.8E+00**	6.00E-03	**5.8E+00**
F	MW-93205	M30215	RFI	Yes	No	N	7/28/2000	D	INORG	Antimony	2.68E-02	J	6.0E-03	**4.5E+00**	6.00E-03	**4.5E+00**
I	MW-96939	M20246	RFI	Yes	No	N	8/4/2000	T	WQ	pH	9.72E+00				8.50E+00	**1.1E+00**
I	MW-96939	M20246	RFI	Yes	No	N	8/4/2000	T	INORG	Antimony	2.39E-02	J	6.0E-03	**4.0E+00**	6.00E-03	**4.0E+00**
I	MW-97948	M20244	RFI	Yes	No	N	8/3/2000	T	INORG	Aluminum	5.04E+00				4.10E+00	**1.2E+00**
I	MW-97948	M30038^0^1^RFI	RFI	Yes	No	N	12/9/1998	T	VOC	Benzene	1.60E-02		5.0E-03	**3.2E+00**	5.00E-03	**3.2E+00**
I	MW-97948	M30038^0^1^RFI	RFI	Yes	No	N	12/9/1998	T	VOC	1,2-Dichloropropane	6.30E-03		5.0E-03	**1.3E+00**	5.00E-03	**1.3E+00**
J	MW-96080	M20242	RFI	Yes	No	N	8/2/2000	T	INORG	Aluminum	5.02E+00	J			4.10E+00	**1.2E+00**
J	MW-96080	M20242	RFI	Yes	No	N	8/2/2000	T	INORG	Lead	5.60E-03	J	1.5E-02	3.7E-01	4.00E-03	**1.4E+00**

Notes:

Only Bedrock ground water samples were screened against the Industrial Drinking Water Screening Criteria.

The Screening Criteria for Pyrene was used as a surrogate for Phenanthrene and Benzo(g,h,i)perylene.

The Screening Criteria for Phenol was used as a surrogate for Phenols (total).

The Screening Criteria for Naphthalene was used as a surrogate for 2-Methylnaphthalene.

The Screening Criteria for cis-1,2-Dichloroethene was used as a surrogate for 1,2-Dichloroethene (total).

The Screening Criteria for Chromium (total) is based on Cr VI.

The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.

The concentrations for all PCB isomers were summed before comparing to Polychlorinated biphenyls (PCBs) for cancer effects and Aroclor 1254 for noncancer effects.

The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.

The concentrations for the Chlordane isomers (alpha and beta) were summed before comparing to the Screening Criteria.

The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group

Meas Basis - Measured Basis; T = Total, D = Dissolved

Table 4: Summary of Sediment Concentrations Exceeding Screening Criteria
GM: SMCO, Saginaw Michigan

IU	Location	Sample ID	RFI or Non-RFI Sample	Method	Sample Type	Sample Date	Chem Group	Chemical	Conc (mg/kg)	Qual	Industrial Direct Contact Criteria (mg/kg)	Ratio of Conc to Industrial Direct Contact Criteria
C	C1	S00014^0^1^RFI	RFI	SW7060	N	11/19/1998	INORG	Arsenic	6.50E+01		3.7E+01	1.6E+00
C	C1	S00014^0^1^RFI	RFI	SW7421	N	11/19/1998	INORG	Lead	1.55E+03	J	9.0E+02	1.7E+00
C	C1	S00014^0^1^RFI	RFI	SW6010M	N	11/19/1998	INORG	Lead	1.54E+03		9.0E+02	1.7E+00
C	C3	S00015^0^1^RFI	RFI	SW7421	N	11/19/1998	INORG	Lead	1.15E+03	J	9.0E+02	1.3E+00
C	C3	S00015^0^1^RFI	RFI	SW6010M	N	11/19/1998	INORG	Lead	1.33E+03	J	9.0E+02	1.5E+00
H	H1	S00003^1^1^RFI	RFI	SW6010M	N	11/17/1998	INORG	Lead	1.92E+03	J	9.0E+02	2.1E+00
H	H1	S00003^1^1^RFI	RFI	SW6010	N	11/17/1998	INORG	Lead	1.92E+03	J	9.0E+02	2.1E+00
H	H2	S00005^0^1^RFI	RFI	SW6010M	N	11/17/1998	INORG	Lead	2.49E+03	J	9.0E+02	2.7E+00
H	H2	S00005^0^1^RFI	RFI	SW6010	N	11/17/1998	INORG	Lead	1.80E+03		9.0E+02	2.0E+00
H	H4	S00006^0^1^RFI	RFI	SW7060	N	11/17/1998	INORG	Arsenic	4.70E+01		3.7E+01	1.1E+00
H	H4	S00006^0^1^RFI	RFI	SW6010M	N	11/17/1998	INORG	Lead	2.43E+03	J	9.0E+02	2.7E+00
H	H4	S00006^0^1^RFI	RFI	SW6010	N	11/17/1998	INORG	Lead	1.80E+03		9.0E+02	2.0E+00

Notes:

The Screening Criteria for Pyrene was used as a surrogate for Phenanthrene and Benzo(g,h,i)perylene.

The Screening Criteria for Phenol was used as a surrogate for Phenols (total).

The Screening Criteria for Naphthalene was used as a surrogate for 2-Methylnaphthalene.

The Screening Criteria for cis-1,2-Dichloroethene was used as a surrogate for 1,2-Dichloroethene (total).

The Screening Criteria for Chromium (total) is based on Cr VI.

The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.

The concentrations for all PCB isomers were summed before comparing to Polychlorinated biphenyls (PCBs) for cancer effects and Aroclor 1254 for noncancer effects.

The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.

The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group

Table 5a: Industrial Worker Cancer Risk and HQ Summary - Soil
GM: SMCO, Saginaw Michigan

IU	Chem Group	Chemical	CASRN	Analyzed	Detected	Max Detected (mg/kg)	95% Bootstrap UCL Shallow (mg/kg)	95% Bootstrap UCL All Depths (mg/kg)	EPC (mg/kg)	MDEQ Statewide Default Background Levels (mg/kg)	Ind Screening Criteria (mg/kg)		Ind Cancer Risk for Max Detected	Ind HQ for Max Detected	Ind Cancer Risk for EPC	Ind HQ for EPC
A	WQ	Sulfide (total)	18496-25-8	26	20	1.88E+03			1.88E+03							
A	VOC	Benzene	71-43-2	34	2	5.80E-02			5.80E-02		1.30E+01	c	4 E-08	2 E-03	4 E-08	2 E-03
A	VOC	Chlorobenzene	108-90-7	34	1	9.50E-02			9.50E-02		5.30E+02	nc		2 E-04		2 E-04
A	VOC	Ethyl Benzene	100-41-4	34	2	5.00E-02			5.00E-02		2.00E+02	c	3 E-09	7 E-06	3 E-09	7 E-06
A	VOC	Methylene Chloride	75-09-2	34	5	5.00E-02			5.00E-02		2.10E+02	c	2 E-09	5 E-06	2 E-09	5 E-06
A	VOC	Styrene	100-42-5	34	1	1.00E-02			1.00E-02		1.80E+04	nc		6 E-07		6 E-07
A	VOC	Tetrachloroethene	127-18-4	34	3	9.40E-02			9.40E-02		3.40E+01	c	3 E-08	5 E-05	3 E-08	5 E-05
A	VOC	Toluene	108-88-3	34	4	1.90E-01			1.90E-01		2.20E+03	nc		9 E-05		9 E-05
A	VOC	1,1,1-Trichloroethane	71-55-6	34	1	1.40E-01			1.40E-01		6.90E+03	nc		2 E-05		2 E-05
A	VOC	Trichloroethene	79-01-6	34	2	7.40E-02			7.40E-02		1.20E+00	c	6 E-07	7 E-04	6 E-07	7 E-04
A	VOC	Xylenes (total)	1330-20-7	34	4	4.20E-01			4.20E-01		9.00E+02	nc		5 E-04		5 E-04
A	SVOC	Benzo(a)anthracene	56-55-3	35	3	5.00E-01			5.00E-01		2.10E+01	c	2 E-07		2 E-07	
A	SVOC	Benzo(a)pyrene	50-32-8	35	3	4.00E-01		1.59E-01	1.59E-01		2.10E+00	c	2 E-06		8 E-07	
A	SVOC	Benzo(b)fluoranthene	205-99-2	35	1	4.00E-01			4.00E-01		2.10E+01	c	2 E-07		2 E-07	
A	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	35	3	5.00E-02			5.00E-02		1.20E+03	c	4 E-10	4 E-06	4 E-10	4 E-06
A	SVOC	Chrysene	218-01-9	35	5	8.00E-01			8.00E-01		2.10E+03	c	4 E-09		4 E-09	
A	SVOC	Dibenzofuran	132-64-9	35	4	3.00E-01			3.00E-01		3.10E+03	nc		1 E-04		1 E-04
A	SVOC	Diethylphthalate	84-66-2	35	1	5.20E+00			5.20E+00		4.90E+05	nc		1 E-05		1 E-05
A	SVOC	2,4-Dimethylphenol	105-67-9	35	1	4.00E-01			4.00E-01		1.20E+04	nc		3 E-05		3 E-05
A	SVOC	Fluoranthene	206-44-0	35	7	6.00E-01			6.00E-01		2.20E+04	nc		3 E-05		3 E-05
A	SVOC	Fluorene	86-73-7	35	1	3.00E-01			3.00E-01		2.60E+04	nc		1 E-05		1 E-05
A	SVOC	2-Methylnaphthalene	91-57-6	35	5	1.10E+00			1.10E+00		1.90E+02	nc		6 E-03		6 E-03
A	SVOC	Naphthalene	91-20-3	61	9	1.00E+00			1.00E+00		1.90E+02	nc		5 E-03		5 E-03
A	SVOC	Phenanthrene	85-01-8	35	11	1.60E+00			1.60E+00		2.90E+04	nc		6 E-05		6 E-05
A	SVOC	Phenol	108-95-2	35	1	4.00E-01			4.00E-01		3.70E+05	nc		1 E-06		1 E-06
A	SVOC	Pyrene	129-00-0	35	4	1.00E+00			1.00E+00		2.90E+04	nc		3 E-05		3 E-05
A	PHYS	Cation exchange capacity	CATEC	1	1	1.03E+01			1.03E+01							
A	PHYS	Organic Carbon (total)	C-012	1	1	7.90E+03			7.90E+03							
A	PHYS	Solids (total)	C-008	26	26	9.80E+05			9.80E+05							
A	P/PCB	PCBs (total)	1336-36-3	42	4	1.20E+00	5.81E-01	1.51E-01	5.81E-01		7.40E+00	c	2 E-06	1 E-01	8 E-07	5 E-02
A	OTHER	Formaldehyde	50-00-0	20	8	7.90E+01			7.90E+01		9.20E+04	nc	2 E-10	9 E-04	2 E-10	9 E-04
A	OTHER	Kjeldahl nitrogen (total)	C-021	26	25	2.55E+03			2.55E+03							
A	INORG	Aluminum	7429-90-5	35	35	1.62E+04			1.62E+04	6.90E+03	9.20E+05	nc		1 E-02		1 E-02
A	INORG	Arsenic	7440-38-2	35	35	1.50E+01		5.24E+00	5.24E+00	5.80E+00	1.60E+01	c	6 E-06	4 E-02		
A	INORG	Barium	7440-39-3	35	35	2.43E+02			2.43E+02	7.50E+01	6.70E+04	nc		3 E-03		3 E-03
A	INORG	Beryllium	7440-41-7	35	11	2.00E+00			2.00E+00		1.90E+03	nc	9 E-10	1 E-03	9 E-10	1 E-03
A	INORG	Cadmium	7440-43-9	35	2	2.00E+00			2.00E+00	1.20E+00	4.50E+02	nc	3 E-10	2 E-03	3 E-10	2 E-03
A	INORG	Calcium	7440-70-2	26	26	1.20E+05			1.20E+05							
A	INORG	Chromium (total)	7440-47-3	27	27	2.92E+02		5.77E+01	5.77E+01		2.50E+03	nc	6 E-07	1 E-01	1 E-07	2 E-02
A	INORG	Chromium III	16065-83-1	8	8	1.42E+02			1.42E+02	1.80E+01	1.50E+06	nc		8 E-05		8 E-05
A	INORG	Cobalt	7440-48-4	26	18	9.00E+00			9.00E+00	6.80E+00	1.30E+04	nc	1 E-09	2 E-04	1 E-09	2 E-04
A	INORG	Copper	7440-50-8	35	35	5.30E+01			5.30E+01	3.20E+01	4.10E+04	nc		5 E-04		5 E-04
A	INORG	Cyanide (total)	57-12-5	34	4	8.90E+00			8.90E+00	3.90E-01	1.20E+04	nc		7 E-04		7 E-04
A	INORG	Iron	7439-89-6	26	26	4.24E+04			4.24E+04	1.20E+04	3.10E+05	nc		1 E-01		1 E-01
A	INORG	Lead	7439-92-1	35	35	2.26E+02			4.50E+01	2.10E+01	7.50E+02	nc				
A	INORG	Mercury	7439-97-6	26	2	3.00E-01			3.00E-01	1.30E-01	1.36E+01	nc		1 E-02		1 E-02
A	INORG	Nickel	7440-02-0	35	26	5.30E+01			5.30E+01	2.00E+01	2.00E+04	nc		2 E-03		2 E-03
A	INORG	Selenium	7782-49-2	26	1	1.00E+00			1.00E+00	4.10E-01	5.10E+03	nc		1 E-04		1 E-04
A	INORG	Tin	7440-31-5	26	2	1.10E+01			1.10E+01		6.10E+05	nc		2 E-05		2 E-05
A	INORG	Vanadium	7440-62-2	35	35	2.80E+01			2.80E+01		7.20E+03	nc		4 E-03		4 E-03
A	INORG	Zinc	7440-66-6	35	35	2.70E+02			2.70E+02	4.70E+01	3.10E+05	nc		7 E-04		7 E-04
B	WQ	Sulfide (total)	18496-25-8	14	6	2.91E+01			2.91E+01							
B	VOC	Acetone	67-64-1	28	1	3.25E-01			3.25E-01		6.00E+03	nc		5 E-05		5 E-05
B	VOC	Benzene	71-43-2	61	1	6.00E-02			6.00E-02		1.30E+01	c	5 E-08	3 E-03	5 E-08	3 E-03
B	VOC	2-Butanone	78-93-3	27	27	5.20E+00			5.20E+00		2.70E+04	nc		2 E-04		2 E-04
B	VOC	Carbon Disulfide	75-15-0	61	1	2.70E-02			2.70E-02		1.20E+03	nc		2 E-05		2 E-05
B	VOC	Carbon Tetrachloride	56-23-5	61	1	1.50E-02			1.50E-02		5.50E+00	c	3 E-08	2 E-03	3 E-08	2 E-03
B	VOC	Chlorobenzene	108-90-7	61	2	2.30E-01			2.30E-01		5.30E+02	nc		4 E-04		4 E-04
B	VOC	Chloroethane	75-00-3	55	1	7.20E-01			7.20E-01		6.50E+01	c	1 E-07	4 E-05	1 E-07	4 E-05
B	VOC	1,2-Dichlorobenzene	95-50-1	97	2	5.20E+00			5.20E+00		4.10E+03	nc		1 E-03		1 E-03
B	VOC	1,1-Dichloroethane	75-34-3	61	4	4.20E+00	5.27E-01	5.17E-01	5.27E-01		1.70E+03	nc		2 E-03		3 E-04
B	VOC	1,1-Dichloroethene	75-35-4	61	1	8.40E-02			8.40E-02		4.10E+02	nc		2 E-04		2 E-04
B	VOC	cis-1,2-Dichloroethene	156-59-2	61	11	8.10E+00	3.75E-01	4.48E-01	4.48E-01		1.50E+02	nc		5 E-02		3 E-03
B	VOC	trans-1,2-Dichloroethene	156-60-5	61	2	1.20E-01	4.00E-02	3.95E-02	4.00E-02		2.30E+02	nc		5 E-04		2 E-04
B	VOC	Ethyl Benzene	100-41-4	61	4	9.10E-02			9.10E-02		2.00E+02	c	5 E-09	1 E-05	5 E-09	1 E-05
B	VOC	Methylene Chloride	75-09-2	61	9	2.80E-01			2.80E-01		2.10E+02	c	1 E-08	3 E-05	1 E-08	3 E-05
B	VOC	Styrene	100-42-5	61	1	2.30E-02			2.30E-02		1.80E+04	nc		1 E-06		1 E-06
B	VOC	Tetrachloroethene	127-18-4	61	6	2.10E-01			2.10E-01		3.40E+01	c	6 E-08	1 E-04	6 E-08	1 E-04
B	VOC	Toluene	108-88-3	61	27	2.80E-01			2.80E-01		2.20E+03	nc		1 E-04		1 E-04
B	VOC	1,1,1-Trichloroethane	71-55-6	61	5	1.50E-01			1.50E-01		6.90E+03	nc		2 E-05		2 E-05
B	VOC	Trichloroethene	79-01-6	61	27	3.50E+00	5.58E-01	5.53E-01	5.58E-01		1.20E+00	c	3 E-05	3 E-02	5 E-06	5 E-03
B	VOC	1,2,4-Trimethylbenzene	95-63-6	27	3	9.40E-01	1.91E-01	1.94E-01	1.94E-01		1.70E+02	nc		6 E-03		1 E-03
B	VOC	1,3,5-Trimethylbenzene	108-67-8	27	1	2.30E-01			2.30E-01		7.00E+01	nc		3 E-03		3 E-03
B	VOC	Vinyl Chloride	75-01-4	61	1	1.70E+00			1.70E+00		7.50E+00	c	2 E-06	1 E-02	2 E-06	1 E-02
B	VOC	Xylenes (total)	1330-20-7	61	8	3.20E-01			3.20E-01		9.00E+02	nc		4 E-04		4 E-04
B	SVOC	Acenaphthene	83-32-9	70	18	9.60E+00			9.60E+00		2.90E+04	nc		3 E-04		3 E-04
B	SVOC	Acenaphthylene	208-96-8	70	5	3.60E-01			3.60E-01		2.90E+04	nc		1 E-05		1 E-05

Table 5a: Industrial Worker Cancer Risk and HQ Summary - Soil
GM: SMCO, Saginaw Michigan

IU	Chem Group	Chemical	CASRN	Analyzed	Detected	Max Detected (mg/kg)	95% Bootstrap UCL Shallow (mg/kg)	95% Bootstrap UCL All Depths (mg/kg)	EPC (mg/kg)	MDEQ Statewide Default Background Levels (mg/kg)	Ind Screening Criteria (mg/kg)		Ind Cancer Risk for Max Detected	Ind HQ for Max Detected	Ind Cancer Risk for EPC	Ind HQ for EPC
B	SVOC	Anthracene	120-12-7	70	27	1.80E+01			1.80E+01		2.40E+05	nc		8.E-05		8.E-05
B	SVOC	Benzo(a)anthracene	56-55-3	70	42	4.90E+01	4.44E+00	4.31E+00	4.44E+00		2.10E+01	c	2.E-05		2.E-06	
B	SVOC	Benzo(a)pyrene	50-32-8	70	42	4.40E+01	4.28E+00	4.00E+00	4.28E+00		2.10E+00	c	2.E-04		2.E-05	
B	SVOC	Benzo(b)fluoranthene	205-99-2	70	42	4.20E+01	4.54E+00	4.42E+00	4.54E+00		2.10E+01	c	2.E-05		2.E-06	
B	SVOC	Benzo(g,h,i)perylene	191-24-2	70	40	2.50E+01	2.64E+00	2.62E+00	2.64E+00		2.90E+04	nc		9.E-04		9.E-05
B	SVOC	Benzo(k)fluoranthene	207-08-9	70	42	3.60E+01	3.45E+00	3.40E+00	3.45E+00		2.10E+02	c	2.E-06		2.E-07	
B	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	70	10	3.50E-01			3.50E-01		1.20E+03	c	3.E-09	3.E-05	3.E-09	3.E-05
B	SVOC	Carbazole	86-74-8	56	21	1.10E+01			1.10E+01		8.60E+02	c	1.E-07		1.E-07	
B	SVOC	Chrysene	218-01-9	70	45	5.30E+01			5.30E+01		2.10E+03	c	3.E-07		3.E-07	
B	SVOC	Dibenz(a,h)anthracene	53-70-3	70	21	1.10E+01	1.75E+00	1.71E+00	1.75E+00		2.10E+00	c	5.E-05		8.E-06	
B	SVOC	Dibenzofuran	132-64-9	70	17	6.90E+00	1.65E+00	1.63E+00	1.65E+00		3.10E+03	nc		2.E-03		5.E-04
B	SVOC	2,4-Dimethylphenol	105-67-9	70	1	4.50E-01			4.50E-01		1.20E+04	nc		4.E-05		4.E-05
B	SVOC	Fluoranthene	206-44-0	70	50	9.90E+01	9.25E+00	9.03E+00	9.25E+00		2.20E+04	nc		5.E-03		4.E-04
B	SVOC	Fluorene	86-73-7	70	20	1.20E+01			1.20E+01		2.60E+04	nc		5.E-04		5.E-04
B	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	70	38	3.20E+01	3.10E+00	3.01E+00	3.10E+00		2.10E+01	c	2.E-05		1.E-06	
B	SVOC	2-Methylnaphthalene	91-57-6	97	36	2.40E+01	2.32E+00	2.23E+00	2.32E+00		1.90E+02	nc		1.E-01		1.E-02
B	SVOC	Methylphenol (total)	1319-77-3	70	4	1.43E+00			1.43E+00		3.10E+03	nc		5.E-04		5.E-04
B	SVOC	Naphthalene	91-20-3	111	26	1.30E+01	1.16E+00	1.17E+00	1.17E+00		1.90E+02	nc		7.E-02		6.E-03
B	SVOC	Phenanthrene	85-01-8	70	47	9.40E+01	7.34E+00	6.82E+00	7.34E+00		2.90E+04	nc		3.E-03		3.E-04
B	SVOC	Phenol	108-95-2	70	3	1.50E-01			1.50E-01		3.70E+05	nc		4.E-07		4.E-07
B	SVOC	Pyrene	129-00-0	70	47	9.50E+01	7.76E+00	7.34E+00	7.76E+00		2.90E+04	nc		3.E-03		3.E-04
B	PHYS	Cation exchange capacity	CATEC	1	1	7.20E+00			7.20E+00							
B	PHYS	Organic Carbon (total)	C-012	1	1	1.43E+04			1.43E+04							
B	PHYS	Solids (total)	C-008	41	14	9.76E+05			9.76E+05							
B	PHYS	Solids (total)	C-008	41	27	2.10E+02			2.10E+02							
B	P/PCB	PCBs (total)	1336-36-3	54	12	4.35E+01	2.47E+00	2.85E+00	2.85E+00		7.40E+00	c	6.E-05	4.E+00	4.E-06	3.E-01
B	OTHER	Formaldehyde	50-00-0	9	6	9.60E+00			9.60E+00		9.20E+04	nc	2.E-11	1.E-04	2.E-11	1.E-04
B	OTHER	Kjeldahl nitrogen (total)	C-021	14	14	9.29E+02			9.29E+02							
B	INORG	Aluminum	7429-90-5	22	22	1.11E+04	6.72E+03	6.70E+03	6.72E+03	6.90E+03	9.20E+05	nc		5.E-03		
B	INORG	Antimony	7440-36-0	24	7	4.87E+01	2.19E+01	2.07E+01	2.19E+01		4.10E+02	nc		1.E-01		5.E-02
B	INORG	Arsenic	7440-38-2	49	46	3.70E+01	6.64E+00	6.57E+00	6.64E+00	5.80E+00	1.60E+01	c	2.E-05	1.E-01	5.E-07	3.E-03
B	INORG	Barium	7440-39-3	49	49	2.28E+03	3.73E+02	3.60E+02	3.73E+02	7.50E+01	6.70E+04	nc		3.E-02		4.E-03
B	INORG	Beryllium	7440-41-7	22	8	1.20E+00	6.67E-01	6.60E-01	6.67E-01		1.90E+03	nc	5.E-10	6.E-04	3.E-10	4.E-04
B	INORG	Cadmium	7440-43-9	49	29	3.80E+01	6.58E+00	6.34E+00	6.58E+00	1.20E+00	4.50E+02	nc	1.E-08	8.E-02	2.E-09	1.E-02
B	INORG	Calcium	7440-70-2	14	14	9.72E+04			9.72E+04							
B	INORG	Chromium (total)	7440-47-3	41	41	2.40E+02	6.69E+01	6.90E+01	6.90E+01		2.50E+03	nc	5.E-07	1.E-01	2.E-07	3.E-02
B	INORG	Chromium III	16065-83-1	8	8	1.96E+02			1.96E+02	1.80E+01	1.50E+06	nc		1.E-04		1.E-04
B	INORG	Chromium VI	18540-29-9	8	1	6.00E-01			6.00E-01		6.40E+02	c	9.E-09	2.E-04	9.E-09	2.E-04
B	INORG	Cobalt	7440-48-4	14	10	6.00E+00			6.00E+00	6.80E+00	1.30E+04	nc				
B	INORG	Copper	7440-50-8	22	21	2.04E+02	1.03E+02	9.21E+01	1.03E+02	3.20E+01	4.10E+04	nc		4.E-03		2.E-03
B	INORG	Cyanide (total)	57-12-5	19	1	7.00E-01			7.00E-01	3.90E-01	1.20E+04	nc		3.E-05		3.E-05
B	INORG	Iron	7439-89-6	14	14	1.34E+04			1.34E+04	1.20E+04	3.10E+05	nc		5.E-03		5.E-03
B	INORG	Lead	7439-92-1	72	71	1.12E+05			1.88E+03	2.10E+01	7.50E+02	nc				
B	INORG	Mercury	7439-97-6	41	12	3.80E+01	8.44E+00	8.45E+00	8.45E+00	1.30E-01	1.36E+01	nc		3.E+00		6.E-01
B	INORG	Nickel	7440-02-0	22	17	7.50E+01	4.00E+01	3.72E+01	4.00E+01	2.00E+01	2.00E+04	nc		3.E-03		1.E-03
B	INORG	Selenium	7782-49-2	41	17	3.80E+01	8.08E+00	7.48E+00	8.08E+00	4.10E-01	5.10E+03	nc		7.E-03		2.E-03
B	INORG	Silver	7440-22-4	41	27	9.50E+00	2.06E+00	2.01E+00	2.06E+00	1.00E+00	5.10E+03	nc		2.E-03		2.E-04
B	INORG	Tin	7440-31-5	14	2	3.20E+01			3.20E+01		6.10E+05	nc		5.E-05		5.E-05
B	INORG	Vanadium	7440-62-2	22	22	2.20E+01	1.58E+01	1.56E+01	1.58E+01		7.20E+03	nc		3.E-03		2.E-03
B	INORG	Zinc	7440-66-6	22	22	2.10E+02	1.08E+02	9.18E+01	1.08E+02	4.70E+01	3.10E+05	nc		5.E-04		2.E-04
D	WQ	Ammonia	7664-41-7	2	2	4.00E-01			4.00E-01							
D	WQ	Sulfide (total)	18496-25-8	28	20	3.00E+03			3.00E+03							
D	VOC	Acetone	67-64-1	6	3	4.30E-01			4.30E-01		6.00E+03	nc		7.E-05		7.E-05
D	VOC	Benzene	71-43-2	88	5	5.00E-02	2.40E-02	2.21E-02	2.40E-02		1.30E+01	c	4.E-08	2.E-03	2.E-08	1.E-03
D	VOC	1,2-Dichlorobenzene	95-50-1	91	1	1.00E-02			1.00E-02		4.10E+03	nc		2.E-06		2.E-06
D	VOC	1,3-Dichlorobenzene	541-73-1	91	1	4.10E-02			4.10E-02		6.30E+01	nc		7.E-04		7.E-04
D	VOC	1,4-Dichlorobenzene	106-46-7	91	1	2.00E-02			2.00E-02		7.90E+01	c	3.E-09	1.E-05	3.E-09	1.E-05
D	VOC	Ethyl Benzene	100-41-4	88	3	2.00E-02			2.00E-02		2.00E+02	c	1.E-09	3.E-06	1.E-09	3.E-06
D	VOC	Methylene Chloride	75-09-2	71	5	3.00E-02			3.00E-02		2.10E+02	c	1.E-09	3.E-06	1.E-09	3.E-06
D	VOC	Tetrachloroethene	127-18-4	71	3	1.19E-01			1.19E-01		3.40E+01	c	4.E-08	7.E-05	4.E-08	7.E-05
D	VOC	Toluene	108-88-3	88	8	4.00E-02			4.00E-02		2.20E+03	nc		2.E-05		2.E-05
D	VOC	1,2,4-Trichlorobenzene	120-82-1	91	2	1.50E-01			1.50E-01		5.60E+03	nc		3.E-05		3.E-05
D	VOC	1,1,1-Trichloroethane	71-55-6	71	3	2.60E+00			2.60E+00		6.90E+03	nc		4.E-04		4.E-04
D	VOC	Trichloroethene	79-01-6	71	2	5.40E-02			5.40E-02		1.20E+00	c	5.E-07	5.E-04	5.E-07	5.E-04
D	VOC	Xylenes (total)	1330-20-7	88	4	8.00E-02			8.00E-02		9.00E+02	nc		9.E-05		9.E-05
D	SVOC	Acenaphthene	83-32-9	123	23	1.90E+00			1.90E+00		2.90E+04	nc		7.E-05		7.E-05
D	SVOC	Acenaphthylene	208-96-8	123	13	7.00E-01			7.00E-01		2.90E+04	nc		2.E-05		2.E-05
D	SVOC	Anthracene	120-12-7	123	50	5.60E+00			5.60E+00		2.40E+05	nc		2.E-05		2.E-05
D	SVOC	Benzo(a)anthracene	56-55-3	123	62	2.90E+01	2.52E+00	2.24E+00	2.52E+00		2.10E+01	c	1.E-05		1.E-06	
D	SVOC	Benzo(a)pyrene	50-32-8	123	64	3.00E+01	2.66E+00	2.48E+00	2.66E+00		2.10E+00	c	1.E-04		1.E-05	
D	SVOC	Benzo(b)fluoranthene	205-99-2	123	63	3.40E+01	2.93E+00	2.61E+00	2.93E+00		2.10E+01	c	2.E-05		1.E-06	
D	SVOC	Benzo(g,h,i)perylene	191-24-2	123	56	1.40E+01			1.40E+01		2.90E+04	nc		5.E-04		5.E-04
D	SVOC	Benzo(k)fluoranthene	207-08-9	123	59	2.40E+01	2.07E+00	1.95E+00	2.07E+00		2.10E+02	c	1.E-06		1.E-07	
D	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	91	27	5.00E+00			5.00E+00		1.20E+03	c	4.E-08	4.E-04	4.E-08	4.E-04
D	SVOC	Butylbenzylphthalate	85-68-7	91	2	7.00E-02			7.00E-02		1.20E+05	nc		6.E-07		6.E-07
D	SVOC	Carbazole	86-74-8	63	26	6.00E+00			6.00E+00		8.60E+02	c	7.E-08		7.E-08	
D	SVOC	Chrysene	218-01-9	123	65	3.40E+01			3.40E+01		2.10E+03	c	2.E-07		2.E-07	

Table 5a: Industrial Worker Cancer Risk and HQ Summary - Soil
GM: SMCO, Saginaw Michigan

IU	Chem Group	Chemical	CASRN	Analyzed	Detected	Max Detected (mg/kg)	95% Bootstrap UCL Shallow (mg/kg)	95% Bootstrap UCL All Depths (mg/kg)	EPC (mg/kg)	MDEQ Statewide Default Background Levels (mg/kg)	Ind Screening Criteria (mg/kg)		Ind Cancer Risk for Max Detected	Ind HQ for Max Detected	Ind Cancer Risk for EPC	Ind HQ for EPC
D	SVOC	Dibenz(a,h)anthracene	53-70-3	123	21	4.00E+00	4.65E-01	5.06E-01	5.06E-01		2.10E+00	c	2.E-05		2.E-06	
D	SVOC	Dibenzofuran	132-64-9	91	27	7.00E-01			7.00E-01		3.10E+03	nc		2.E-04		2.E-04
D	SVOC	3,3'-Dichlorobenzidine	91-94-1	91	1	6.50E-01			6.50E-01		3.80E+01	c	2.E-07		2.E-07	
D	SVOC	Diethylphthalate	84-66-2	91	5	1.20E-01			1.20E-01		4.90E+05	nc		2.E-07		2.E-07
D	SVOC	2,4-Dimethylphenol	105-67-9	91	1	2.00E-01			2.00E-01		1.20E+04	nc		2.E-05		2.E-05
D	SVOC	Dimethylphthalate	131-11-3	91	1	1.00E-01			1.00E-01		6.20E+06	nc		2.E-08		2.E-08
D	SVOC	Di-n-butylphthalate	84-74-2	91	6	1.15E-01			1.15E-01		6.20E+04	nc		2.E-06		2.E-06
D	SVOC	Fluoranthene	206-44-0	123	72	5.30E+01	5.02E+00	4.24E+00	5.02E+00		2.20E+04	nc		2.E-03		2.E-04
D	SVOC	Fluorene	86-73-7	123	25	2.30E+00			2.30E+00		2.60E+04	nc		9.E-05		9.E-05
D	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	123	55	1.80E+01	1.63E+00	1.46E+00	1.63E+00		2.10E+01	c	9.E-06		8.E-07	
D	SVOC	2-Methylnaphthalene	91-57-6	91	39	3.20E+00	4.91E-01	3.05E-01	4.91E-01		1.90E+02	nc		2.E-02		3.E-03
D	SVOC	Methylphenol (total)	1319-77-3	91	9	1.80E+00	2.36E-01	2.60E-01	2.60E-01		3.10E+03	nc		6.E-04		8.E-05
D	SVOC	Naphthalene	91-20-3	146	42	6.00E-01	2.09E-01	2.50E-01	2.50E-01		1.90E+02	nc		3.E-03		1.E-03
D	SVOC	Phenanthrene	85-01-8	123	70	2.90E+01	2.85E+00	2.42E+00	2.85E+00		2.90E+04	nc		1.E-03		1.E-04
D	SVOC	Phenol	108-95-2	91	22	3.30E+00			3.30E+00		3.70E+05	nc		9.E-06		9.E-06
D	SVOC	Pyrene	129-00-0	123	72	5.00E+01	4.54E+00	4.15E+00	4.54E+00		2.90E+04	nc		2.E-03		2.E-04
D	PHYS	CARBON	7440-44-0	2	2	3.72E+00			3.72E+00							
D	PHYS	Cation exchange capacity	CATEC	4	4	1.23E+01			1.23E+01							
D	PHYS	Organic Carbon (total)	C-012	4	4	4.79E+04			4.79E+04							
D	PHYS	Solids (total)	C-008	28	4	9.25E+01			9.25E+01							
D	PHYS	Solids (total)	C-008	28	24	9.72E+05			9.72E+05							
D	P/PCB	PCBs (total)	1336-36-3	317	176	5.15E+02	3.06E+00	3.17E+01	3.17E+01		7.40E+00	c	7.E-04	5.E+01	4.E-05	3.E+00
D	OTHER	Formaldehyde	50-00-0	20	13	8.40E+01		1.57E+01	1.57E+01		9.20E+04	nc	2.E-10	9.E-04	4.E-11	2.E-04
D	OTHER	Kjeldahl nitrogen (total)	C-021	28	28	4.08E+02			4.08E+02							
D	INORG	Aluminum	7429-90-5	56	56	5.98E+04	1.75E+04	1.67E+04	1.75E+04	6.90E+03	9.20E+05	nc		6.E-02		1.E-02
D	INORG	Antimony	7440-36-0	53	11	9.46E+02	1.77E+02	1.51E+02	1.77E+02		4.10E+02	nc		2.E+00		4.E-01
D	INORG	Arsenic	7440-38-2	56	56	3.51E+01	4.85E+00	5.79E+00	5.79E+00	5.80E+00	1.60E+01	c	2.E-05	1.E-01		
D	INORG	Barium	7440-39-3	56	56	5.00E+02	1.67E+02	1.44E+02	1.67E+02	7.50E+01	6.70E+04	nc		6.E-03		1.E-03
D	INORG	Beryllium	7440-41-7	56	35	6.00E+00	1.63E+00	1.57E+00	1.63E+00		1.90E+03	nc	3.E-09	3.E-03	7.E-10	9.E-04
D	INORG	Cadmium	7440-43-9	56	4	3.00E-01			3.00E-01	1.20E+00	4.50E+02	nc				
D	INORG	Calcium	7440-70-2	28	28	2.20E+05			2.20E+05							
D	INORG	Chromium (total)	7440-47-3	34	34	2.28E+03	3.50E+02	5.41E+02	5.41E+02		2.50E+03	nc	5.E-06	9.E-01	1.E-06	2.E-01
D	INORG	Chromium III	16065-83-1	24	24	3.58E+02			3.58E+02	1.80E+01	1.50E+06	nc		2.E-04		2.E-04
D	INORG	Chromium VI	18540-29-9	24	4	1.28E+00	6.58E-01	1.10E+00	1.10E+00		6.40E+02	c	2.E-08	5.E-04	2.E-08	4.E-04
D	INORG	Cobalt	7440-48-4	28	24	1.00E+01			1.00E+01	6.80E+00	1.30E+04	nc	2.E-09	2.E-04	2.E-09	2.E-04
D	INORG	Copper	7440-50-8	56	56	7.16E+02	8.52E+01	9.71E+01	9.71E+01	3.20E+01	4.10E+04	nc		2.E-02		2.E-03
D	INORG	Cyanide (total)	57-12-5	42	6	1.89E+01		3.87E+00	3.87E+00	3.90E-01	1.20E+04	nc		2.E-03		3.E-04
D	INORG	Iron	7439-89-6	28	28	7.63E+04		2.52E+04	2.52E+04	1.20E+04	3.10E+05	nc		2.E-01		4.E-02
D	INORG	Lead	7439-92-1	57	57	3.97E+02			6.94E+01	2.10E+01	7.50E+02	nc				
D	INORG	Nickel	7440-02-0	56	55	4.81E+02	3.93E+01	5.78E+01	5.78E+01	2.00E+01	2.00E+04	nc		2.E-02		2.E-03
D	INORG	Selenium	7782-49-2	28	2	2.00E+00			2.00E+00	4.10E-01	5.10E+03	nc		3.E-04		3.E-04
D	INORG	Tin	7440-31-5	28	3	4.20E+01			4.20E+01		6.10E+05	nc		7.E-05		7.E-05
D	INORG	Vanadium	7440-62-2	56	56	7.83E+01	2.37E+01	2.51E+01	2.51E+01		7.20E+03	nc		1.E-02		3.E-03
D	INORG	Zinc	7440-66-6	56	56	2.79E+03	5.68E+02	2.82E+02	5.68E+02	4.70E+01	3.10E+05	nc		9.E-03		2.E-03
E	WQ	Sulfide (total)	18496-25-8	33	30	2.53E+03			2.53E+03							
E	VOC	Acetone	67-64-1	2	2	5.50E+00			5.50E+00		6.00E+03	nc		9.E-04		9.E-04
E	VOC	Benzene	71-43-2	64	5	4.20E-01			4.20E-01		1.30E+01	c	3.E-07	2.E-02	3.E-07	2.E-02
E	VOC	2-Butanone	78-93-3	1	1	1.00E+00			1.00E+00		2.70E+04	nc		4.E-05		4.E-05
E	VOC	Chloromethane	74-87-3	64	2	1.25E-01			1.25E-01		2.70E+01	c	5.E-08		5.E-08	
E	VOC	1,1-Dichloroethane	75-34-3	64	1	1.65E+00			1.65E+00		1.70E+03	nc		1.E-03		1.E-03
E	VOC	1,1-Dichloroethene	75-35-4	64	1	5.10E-02			5.10E-02		4.10E+02	nc		1.E-04		1.E-04
E	VOC	cis-1,2-Dichloroethene	156-59-2	64	1	1.40E-02			1.40E-02		1.50E+02	nc		9.E-05		9.E-05
E	VOC	Ethyl Benzene	100-41-4	64	4	2.00E-01			2.00E-01		2.00E+02	c	1.E-08	3.E-05	1.E-08	3.E-05
E	VOC	Methylene Chloride	75-09-2	64	1	4.00E-02			4.00E-02		2.10E+02	c	2.E-09	4.E-06	2.E-09	4.E-06
E	VOC	Tetrachloroethene	127-18-4	64	1	6.00E-02			6.00E-02		3.40E+01	c	2.E-08	3.E-05	2.E-08	3.E-05
E	VOC	Toluene	108-88-3	64	2	5.80E-01			5.80E-01		2.20E+03	nc		3.E-04		3.E-04
E	VOC	1,2,4-Trichlorobenzene	120-82-1	69	1	5.00E-01			5.00E-01		5.60E+03	nc		9.E-05		9.E-05
E	VOC	1,1,1-Trichloroethane	71-55-6	64	1	6.65E+00			6.65E+00		6.90E+03	nc		1.E-03		1.E-03
E	VOC	1,1,2-Trichloroethane	79-00-5	64	1	5.25E-02			5.25E-02		1.60E+01	c	3.E-08	4.E-04	3.E-08	4.E-04
E	VOC	Trichloroethene	79-01-6	64	3	2.60E-01		4.75E-02	4.75E-02		1.20E+00	c	2.E-06	2.E-03	4.E-07	4.E-04
E	VOC	Xylenes (total)	1330-20-7	64	10	1.32E+00			1.32E+00		9.00E+02	nc		1.E-03		1.E-03
E	SVOC	Acenaphthene	83-32-9	69	11	6.30E-01			6.30E-01		2.90E+04	nc		2.E-05		2.E-05
E	SVOC	Anthracene	120-12-7	69	20	5.50E-01			5.50E-01		2.40E+05	nc		2.E-06		2.E-06
E	SVOC	Benzo(a)anthracene	56-55-3	69	33	1.39E+00			1.39E+00		2.10E+01	c	7.E-07		7.E-07	
E	SVOC	Benzo(a)pyrene	50-32-8	69	27	2.48E+00	3.22E-01	3.59E-01	3.59E-01		2.10E+00	c	1.E-05		2.E-06	
E	SVOC	Benzo(b)fluoranthene	205-99-2	69	32	2.28E+00	3.49E-01	3.78E-01	3.78E-01		2.10E+01	c	1.E-06		2.E-07	
E	SVOC	Benzo(g,h,i)perylene	191-24-2	69	30	3.48E+00			3.48E+00		2.90E+04	nc		1.E-04		1.E-04
E	SVOC	Benzo(k)fluoranthene	207-08-9	69	29	1.38E+00			1.38E+00		2.10E+02	c	7.E-08		7.E-08	
E	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	69	18	2.40E+00			2.40E+00		1.20E+03	c	2.E-08	2.E-04	2.E-08	2.E-04
E	SVOC	Butylbenzylphthalate	85-68-7	69	5	5.03E+00			5.03E+00		1.20E+05	nc		4.E-05		4.E-05
E	SVOC	Carbazole	86-74-8	30	10	3.15E-01			3.15E-01		8.60E+02	c	4.E-09		4.E-09	
E	SVOC	Chrysene	218-01-9	69	38	1.47E+00			1.47E+00		2.10E+03	c	7.E-09		7.E-09	
E	SVOC	Dibenz(a,h)anthracene	53-70-3	69	15	8.25E-01	1.28E-01	2.06E-01	2.06E-01		2.10E+00	c	4.E-06		1.E-06	
E	SVOC	Dibenzofuran	132-64-9	69	20	6.00E-01			6.00E-01		3.10E+03	nc		2.E-04		2.E-04
E	SVOC	Diethylphthalate	84-66-2	69	1	5.00E-02			5.00E-02		4.90E+05	nc		1.E-07		1.E-07
E	SVOC	2,4-Dimethylphenol	105-67-9	69	11	5.00E-01			5.00E-01		1.20E+04	nc		4.E-05		4.E-05
E	SVOC	Di-n-butylphthalate	84-74-2	69	9	1.00E+00			1.00E+00		6.20E+04	nc		2.E-05		2.E-05

Table 5a: Industrial Worker Cancer Risk and HQ Summary - Soil
GM: SMCO, Saginaw Michigan

IU	Chem Group	Chemical	CASRN	Analyzed	Detected	Max Detected (mg/kg)	95% Bootstrap UCL Shallow (mg/kg)	95% Bootstrap UCL All Depths (mg/kg)	EPC (mg/kg)	MDEQ Statewide Default Background Levels (mg/kg)	Ind Screening Criteria (mg/kg)		Ind Cancer Risk for Max Detected	Ind HQ for Max Detected	Ind Cancer Risk for EPC	Ind HQ for EPC
E	SVOC	Di-n-octylphthalate	117-84-0	69	1	1.25E-01			1.25E-01		2.50E+04	nc		5.E-06		5.E-06
E	SVOC	Fluoranthene	206-44-0	69	38	2.40E+00			2.40E+00		2.20E+04	nc		1.E-04		1.E-04
E	SVOC	Fluorene	86-73-7	69	13	9.70E-01			9.70E-01		2.60E+04	nc		4.E-05		4.E-05
E	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	69	26	3.23E+00	2.57E-01	3.66E-01	3.66E-01		2.10E+01	c	2.E-06		2.E-07	
E	SVOC	Isophorone	78-59-1	69	3	8.70E-01			8.70E-01		1.80E+04	c	5.E-10	7.E-06	5.E-10	7.E-06
E	SVOC	2-Methylnaphthalene	91-57-6	69	34	8.00E+00			8.00E+00		1.90E+02	nc		4.E-02		4.E-02
E	SVOC	Methylphenol (total)	1319-77-3	69	14	2.00E+00			2.00E+00		3.10E+03	nc		6.E-04		6.E-04
E	SVOC	Naphthalene	91-20-3	109	35	2.10E+00			2.10E+00		1.90E+02	nc		1.E-02		1.E-02
E	SVOC	Phenanthrene	85-01-8	69	39	3.30E+00			3.30E+00		2.90E+04	nc		1.E-04		1.E-04
E	SVOC	Phenol	108-95-2	69	23	2.50E+00			2.50E+00		3.70E+05	nc		7.E-06		7.E-06
E	SVOC	Pyrene	129-00-0	69	39	1.99E+00			1.99E+00		2.90E+04	nc		7.E-05		7.E-05
E	SVOC	2,4,6-Tribromophenol	118-79-6	18	18	9.20E+01			9.20E+01							
E	PHYS	Cation exchange capacity	CATEC	3	3	1.91E+01			1.91E+01							
E	PHYS	Organic Carbon (total)	C-012	3	3	4.29E+05			4.29E+05							
E	PHYS	Solids (total)	C-008	39	6	9.23E+01			9.23E+01							
E	PHYS	Solids (total)	C-008	39	33	9.73E+05			9.73E+05							
E	P/PCB	PCBs (total)	1336-36-3	94	50	5.22E+01	5.47E+00	2.03E+00	5.47E+00		7.40E+00	c	7.E-05	5.E+00	7.E-06	5.E-01
E	OTHER	Formaldehyde	50-00-0	4	3	6.00E+00			6.00E+00		9.20E+04	nc	1.E-11	7.E-05	1.E-11	7.E-05
E	OTHER	Kjeldahl nitrogen (total)	C-021	33	33	6.05E+03			6.05E+03							
E	INORG	Aluminum	7429-90-5	64	64	2.85E+04			2.85E+04	6.90E+03	9.20E+05	nc		2.E-02		2.E-02
E	INORG	Antimony	7440-36-0	64	12	5.10E+01	1.09E+01	8.13E+00	1.09E+01		4.10E+02	nc		1.E-01		3.E-02
E	INORG	Arsenic	7440-38-2	64	64	1.90E+01	5.18E+00	4.30E+00	5.18E+00	5.80E+00	1.60E+01	c	8.E-06	5.E-02		
E	INORG	Barium	7440-39-3	64	64	4.26E+02			4.26E+02	7.50E+01	6.70E+04	nc		5.E-03		5.E-03
E	INORG	Beryllium	7440-41-7	64	37	3.00E+00			3.00E+00		1.90E+03	nc	1.E-09	2.E-03	1.E-09	2.E-03
E	INORG	Cadmium	7440-43-9	64	9	2.00E+00			2.00E+00	1.20E+00	4.50E+02	nc	3.E-10	2.E-03	3.E-10	2.E-03
E	INORG	Calcium	7440-70-2	33	33	1.70E+05			1.70E+05							
E	INORG	Chromium (total)	7440-47-3	33	33	4.42E+02	1.66E+02	1.21E+02	1.66E+02		2.50E+03	nc	1.E-06	2.E-01	4.E-07	7.E-02
E	INORG	Chromium III	16065-83-1	31	31	4.23E+02			4.23E+02	1.80E+01	1.50E+06	nc		3.E-04		3.E-04
E	INORG	Chromium VI	18540-29-9	31	18	4.30E+00			4.30E+00		6.40E+02	c	7.E-08	2.E-03	7.E-08	2.E-03
E	INORG	Cobalt	7440-48-4	33	22	8.00E+00			8.00E+00	6.80E+00	1.30E+04	nc	6.E-10	9.E-05	6.E-10	9.E-05
E	INORG	Copper	7440-50-8	64	63	5.33E+02			5.33E+02	3.20E+01	4.10E+04	nc		1.E-02		1.E-02
E	INORG	Cyanide (total)	57-12-5	34	10	1.18E+01			1.18E+01	3.90E-01	1.20E+04	nc		1.E-03		1.E-03
E	INORG	Iron	7439-89-6	33	33	9.56E+04	4.23E+04	2.83E+04	4.23E+04	1.20E+04	3.10E+05	nc		3.E-01		1.E-01
E	INORG	Lead	7439-92-1	64	64	2.03E+03			6.88E+01	2.10E+01	7.50E+02	nc				
E	INORG	Mercury	7439-97-6	33	3	6.00E-01			6.00E-01	1.30E-01	1.36E+01	nc		3.E-02		3.E-02
E	INORG	Nickel	7440-02-0	64	55	8.90E+01			8.90E+01	2.00E+01	2.00E+04	nc		3.E-03		3.E-03
E	INORG	Selenium	7782-49-2	33	3	2.00E+00			2.00E+00	4.10E-01	5.10E+03	nc		3.E-04		3.E-04
E	INORG	Tin	7440-31-5	33	4	2.20E+01			2.20E+01		6.10E+05	nc		4.E-05		4.E-05
E	INORG	Vanadium	7440-62-2	64	64	4.75E+01			4.75E+01		7.20E+03	nc		7.E-03		7.E-03
E	INORG	Zinc	7440-66-6	64	64	1.81E+03			1.81E+03	4.70E+01	3.10E+05	nc		6.E-03		6.E-03
F	WQ	Sulfide (total)	18496-25-8	16	8	3.07E+02			3.07E+02							
F	SVOC	Acenaphthene	83-32-9	16	1	3.25E-01			3.25E-01		2.90E+04	nc		1.E-05		1.E-05
F	SVOC	Acenaphthylene	208-96-8	16	1	6.75E-01			6.75E-01		2.90E+04	nc		2.E-05		2.E-05
F	SVOC	Anthracene	120-12-7	16	1	3.18E+00			3.18E+00		2.40E+05	nc		1.E-05		1.E-05
F	SVOC	Benzo(a)anthracene	56-55-3	16	1	6.08E+00			6.08E+00		2.10E+01	c	3.E-06		3.E-06	
F	SVOC	Benzo(a)pyrene	50-32-8	16	1	5.08E+00			5.08E+00		2.10E+00	c	2.E-05		2.E-05	
F	SVOC	Benzo(b)fluoranthene	205-99-2	16	1	4.43E+00			4.43E+00		2.10E+01	c	2.E-06		2.E-06	
F	SVOC	Benzo(g,h,i)perylene	191-24-2	16	1	1.93E+00			1.93E+00		2.90E+04	nc		7.E-05		7.E-05
F	SVOC	Benzo(k)fluoranthene	207-08-9	16	1	4.28E+00			4.28E+00		2.10E+02	c	2.E-07		2.E-07	
F	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	16	1	1.43E+00			1.43E+00		1.20E+03	c	1.E-08	1.E-04	1.E-08	1.E-04
F	SVOC	Chrysene	218-01-9	16	1	7.08E+00			7.08E+00		2.10E+03	c	3.E-08		3.E-08	
F	SVOC	Dibenz(a,h)anthracene	53-70-3	16	1	7.25E-01			7.25E-01		2.10E+00	c	3.E-06		3.E-06	
F	SVOC	Dibenzofuran	132-64-9	16	1	3.75E-01			3.75E-01		3.10E+03	nc		1.E-04		1.E-04
F	SVOC	Fluoranthene	206-44-0	16	1	1.46E+01			1.46E+01		2.20E+04	nc		7.E-04		7.E-04
F	SVOC	Fluorene	86-73-7	16	1	1.13E+00			1.13E+00		2.60E+04	nc		4.E-05		4.E-05
F	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	16	1	2.88E+00			2.88E+00		2.10E+01	c	1.E-06		1.E-06	
F	SVOC	Naphthalene	91-20-3	32	1	1.00E-01			1.00E-01		1.90E+02	nc		5.E-04		5.E-04
F	SVOC	Phenanthrene	85-01-8	16	1	1.06E+01			1.06E+01		2.90E+04	nc		4.E-04		4.E-04
F	SVOC	Pyrene	129-00-0	16	1	1.16E+01			1.16E+01		2.90E+04	nc		4.E-04		4.E-04
F	PHYS	Cation exchange capacity	CATEC	1	1	7.00E+00			7.00E+00							
F	PHYS	Organic Carbon (total)	C-012	1	1	3.98E+04			3.98E+04							
F	PHYS	Solids (total)	C-008	16	16	9.46E+05			9.46E+05							
F	OTHER	Formaldehyde	50-00-0	4	1	2.80E+00			2.80E+00		9.20E+04	nc	7.E-12	3.E-05	7.E-12	3.E-05
F	OTHER	Kjeldahl nitrogen (total)	C-021	16	16	1.56E+03			1.56E+03							
F	INORG	Aluminum	7429-90-5	16	16	1.76E+04			1.76E+04	6.90E+03	9.20E+05	nc		1.E-02		1.E-02
F	INORG	Arsenic	7440-38-2	16	16	9.00E+00			9.00E+00	5.80E+00	1.60E+01	c	2.E-06	1.E-02	2.E-06	1.E-02
F	INORG	Barium	7440-39-3	16	16	2.38E+02			2.38E+02	7.50E+01	6.70E+04	nc		2.E-03		2.E-03
F	INORG	Beryllium	7440-41-7	16	1	2.00E+00			2.00E+00		1.90E+03	nc	9.E-10	1.E-03	9.E-10	1.E-03
F	INORG	Calcium	7440-70-2	16	16	9.29E+04			9.29E+04							
F	INORG	Chromium (total)	7440-47-3	16	16	1.33E+02			1.33E+02		2.50E+03	nc	3.E-07	5.E-02	3.E-07	5.E-02
F	INORG	Cobalt	7440-48-4	16	16	1.20E+01			1.20E+01	6.80E+00	1.30E+04	nc	3.E-09	4.E-04	3.E-09	4.E-04
F	INORG	Copper	7440-50-8	16	16	9.50E+01			9.50E+01	3.20E+01	4.10E+04	nc		2.E-03		2.E-03
F	INORG	Cyanide (total)	57-12-5	16	2	4.20E+00			4.20E+00	3.90E-01	1.20E+04	nc		3.E-04		3.E-04
F	INORG	Iron	7439-89-6	16	16	5.28E+04			5.28E+04	1.20E+04	3.10E+05	nc		1.E-01		1.E-01
F	INORG	Lead	7439-92-1	16	16	2.95E+02			3.50E+01	2.10E+01	7.50E+02	nc				
F	INORG	Nickel	7440-02-0	16	15	5.00E+01			5.00E+01	2.00E+01	2.00E+04	nc		2.E-03		2.E-03
F	INORG	Tin	7440-31-5	16	2	2.50E+01			2.50E+01		6.10E+05	nc		4.E-05		4.E-05

Table 5a: Industrial Worker Cancer Risk and HQ Summary - Soil
GM: SMCO, Saginaw Michigan

IU	Chem Group	Chemical	CASRN	Analyzed	Detected	Max Detected (mg/kg)	95% Bootstrap UCL Shallow (mg/kg)	95% Bootstrap UCL All Depths (mg/kg)	EPC (mg/kg)	MDEQ Statewide Default Background Levels (mg/kg)	Ind Screening Criteria (mg/kg)		Ind Cancer Risk for Max Detected	Ind HQ for Max Detected	Ind Cancer Risk for EPC	Ind HQ for EPC
F	INORG	Vanadium	7440-62-2	16	16	3.90E+01			3.90E+01		7.20E+03	nc		5 E-03		5 E-03
F	INORG	Zinc	7440-66-6	16	16	2.70E+02			2.70E+02	4.70E+01	3.10E+05	nc		7 E-04		7 E-04
G	WQ	Ammonia	7664-41-7	56	41	8.00E+01			8.00E+01							
G	WQ	Nitrogen, Ammonia	14797-41-7	9	8	1.37E+02			1.37E+02							
G	WQ	Sulfide (total)	18496-25-8	24	22	1.44E+03			1.44E+03							
G	VOC	Acetone	67-64-1	41	1	9.10E-02			9.10E-02		6.00E+03	nc		2 E-05		2 E-05
G	VOC	Benzene	71-43-2	129	13	1.50E-01			1.50E-01		1.30E+01	c	1 E-07	6 E-03	1 E-07	6 E-03
G	VOC	2-Butanone	78-93-3	41	1	6.55E-02			6.55E-02		2.70E+04	nc		2 E-06		2 E-06
G	VOC	n-Butylbenzene	104-51-8	28	4	6.20E-02			6.20E-02		2.20E+03	nc		3 E-05		3 E-05
G	VOC	sec-Butylbenzene	135-98-8	28	1	2.60E-02			2.60E-02							
G	VOC	Carbon Disulfide	75-15-0	93	2	1.70E-01			1.70E-01		1.20E+03	nc		1 E-04		1 E-04
G	VOC	Chlorobenzene	108-90-7	93	2	5.10E-02			5.10E-02		5.30E+02	nc		1 E-04		1 E-04
G	VOC	p-Cymene	99-87-6	28	1	3.00E-02			3.00E-02							
G	VOC	1,2-Dichlorobenzene	95-50-1	108	8	4.00E+00			4.00E+00		4.10E+03	nc		1 E-03		1 E-03
G	VOC	1,3-Dichlorobenzene	541-73-1	108	4	3.50E-01			3.50E-01		6.30E+01	nc		6 E-03		6 E-03
G	VOC	1,4-Dichlorobenzene	106-46-7	108	5	9.60E-01			9.60E-01		7.90E+01	c	1 E-07	5 E-04	1 E-07	5 E-04
G	VOC	1,1-Dichloroethane	75-34-3	93	3	3.20E-01			3.20E-01		1.70E+03	nc		2 E-04		2 E-04
G	VOC	1,2-Dichloroethane	107-06-2	93	2	1.00E-01			1.00E-01		6.00E+00	c	2 E-07	4 E-03	2 E-07	4 E-03
G	VOC	cis-1,2-Dichloroethene	156-59-2	93	3	7.50E-02			7.50E-02		1.50E+02	nc		5 E-04		5 E-04
G	VOC	trans-1,2-Dichloroethene	156-60-5	93	1	5.00E-02			5.00E-02		2.30E+02	nc		2 E-04		2 E-04
G	VOC	Ethyl Benzene	100-41-4	129	10	1.06E-01			1.06E-01		2.00E+02	c	5 E-09	1 E-05	5 E-09	1 E-05
G	VOC	Methylene Chloride	75-09-2	93	4	2.30E-01			2.30E-01		2.10E+02	c	1 E-08	2 E-05	1 E-08	2 E-05
G	VOC	n-Propylbenzene	103-65-1	28	1	3.90E-02			3.90E-02		2.20E+03	nc		2 E-05		2 E-05
G	VOC	Styrene	100-42-5	93	1	3.80E-02			3.80E-02		1.80E+04	nc		2 E-06		2 E-06
G	VOC	Toluene	108-88-3	93	15	2.60E-01			2.60E-01		2.20E+03	nc		1 E-04		1 E-04
G	VOC	1,2,4-Trichlorobenzene	120-82-1	113	7	1.75E+00			1.75E+00		5.60E+03	nc		3 E-04		3 E-04
G	VOC	1,1,1-Trichloroethane	71-55-6	93	2	5.20E-01			5.20E-01		6.90E+03	nc		8 E-05		8 E-05
G	VOC	Trichloroethene	79-01-6	93	7	1.50E-01		2.85E-02	2.85E-02		1.20E+00	c	1 E-06	1 E-03	2 E-07	3 E-04
G	VOC	1,2,4-Trimethylbenzene	95-63-6	28	9	1.40E-01			1.40E-01		1.70E+02	nc		8 E-04		8 E-04
G	VOC	1,3,5-Trimethylbenzene	108-67-8	28	6	8.90E-02			8.90E-02		7.00E+01	nc		1 E-03		1 E-03
G	VOC	Xylenes (total)	1330-20-7	129	15	2.34E-01			2.34E-01		9.00E+02	nc		3 E-04		3 E-04
G	SVOC	Acenaphthene	83-32-9	113	6	1.20E+00			1.20E+00		2.90E+04	nc		4 E-05		4 E-05
G	SVOC	Acenaphthylene	208-96-8	113	1	1.05E-01			1.05E-01		2.90E+04	nc		4 E-06		4 E-06
G	SVOC	Acetophenone	98-86-2	48	1	5.00E-01			5.00E-01							
G	SVOC	Anthracene	120-12-7	113	24	5.00E-01			5.00E-01		2.40E+05	nc		2 E-06		2 E-06
G	SVOC	Benzo(a)anthracene	56-55-3	113	29	3.10E+00	2.00E-01	3.85E-01	3.85E-01		2.10E+01	c	1 E-06		2 E-07	
G	SVOC	Benzo(a)pyrene	50-32-8	113	26	5.00E+00	2.05E-01	5.56E-01	5.56E-01		2.10E+00	c	2 E-05		3 E-06	
G	SVOC	Benzo(b)fluoranthene	205-99-2	113	25	4.00E+00	2.14E-01	4.70E-01	4.70E-01		2.10E+01	c	2 E-06		2 E-07	
G	SVOC	Benzo(g,h,i)perylene	191-24-2	113	28	4.10E+00			4.10E+00		2.90E+04	nc		1 E-04		1 E-04
G	SVOC	Benzo(k)fluoranthene	207-08-9	113	20	4.00E+00			4.00E+00		2.10E+02	c	2 E-07		2 E-07	
G	SVOC	bis(2-Chloroethyl) ether	111-44-4	113	6	2.60E-01			2.60E-01		5.50E+00	c	5 E-07		5 E-07	
G	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	113	15	1.60E+01			1.60E+01		1.20E+03	c	1 E-07	1 E-03	1 E-07	1 E-03
G	SVOC	Butylbenzylphthalate	85-68-7	113	1	7.40E-02			7.40E-02		1.20E+05	nc		6 E-07		6 E-07
G	SVOC	Carbazole	86-74-8	65	4	6.45E-02			6.45E-02		8.60E+02	c	8 E-10		8 E-10	
G	SVOC	Chrysene	218-01-9	113	32	3.00E+00			3.00E+00		2.10E+03	c	1 E-08		1 E-08	
G	SVOC	Dibenz(a,h)anthracene	53-70-3	113	6	1.20E+00		2.22E-01	2.22E-01		2.10E+00	c	6 E-06		1 E-06	
G	SVOC	Dibenzofuran	132-64-9	113	31	6.20E-01			6.20E-01		3.10E+03	nc		2 E-04		2 E-04
G	SVOC	2,4-Dichlorophenol	120-83-2	112	1	6.30E-02			6.30E-02		1.80E+03	nc		4 E-05		4 E-05
G	SVOC	2,4-Dimethylphenol	105-67-9	112	7	6.90E-02			6.90E-02		1.20E+04	nc		6 E-06		6 E-06
G	SVOC	Di-n-butylphthalate	84-74-2	113	4	5.70E-02			5.70E-02		6.20E+04	nc		9 E-07		9 E-07
G	SVOC	Fluoranthene	206-44-0	113	45	3.40E+00			3.40E+00		2.20E+04	nc		2 E-04		2 E-04
G	SVOC	Fluorene	86-73-7	113	13	2.00E+00			2.00E+00		2.60E+04	nc		8 E-05		8 E-05
G	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	113	17	5.00E+00	1.74E-01	5.30E-01	5.30E-01		2.10E+01	c	2 E-06		3 E-07	
G	SVOC	2-Methylnaphthalene	91-57-6	113	54	2.50E+01	2.50E+00	1.28E+00	2.50E+00		1.90E+02	nc		1 E-01		1 E-02
G	SVOC	Methylphenol (total)	1319-77-3	113	15	5.00E-01			5.00E-01		3.10E+03	nc		2 E-04		2 E-04
G	SVOC	Naphthalene	91-20-3	156	53	2.20E+00			2.20E+00		1.90E+02	nc		1 E-02		1 E-02
G	SVOC	Phenanthrene	85-01-8	113	57	2.10E+00			2.10E+00		2.90E+04	nc		7 E-05		7 E-05
G	SVOC	Phenol	108-95-2	113	29	5.10E+00			5.10E+00		3.70E+05	nc		1 E-05		1 E-05
G	SVOC	Phenolics, Recoverable (total)	64743-03-9	177	45	1.10E+01			1.10E+01		3.70E+05	nc		3 E-05		3 E-05
G	SVOC	Pyrene	129-00-0	113	30	3.60E+00			3.60E+00		2.90E+04	nc		1 E-04		1 E-04
G	PHYS	Solids (total)	C-008	82	24	9.31E+01			9.31E+01							
G	PHYS	Solids (total)	C-008	82	24	9.75E+05			9.75E+05							
G	PHYS	Solids (total)	C-008	82	34	9.46E+01			9.46E+01							
G	P/PCB	PCBs (total)	1336-36-3	142	61	1.28E+01	1.06E+00	6.27E-01	1.06E+00		7.40E+00	c	2 E-05	1 E+00	1 E-06	1 E-01
G	OTHER	Formaldehyde	50-00-0	8	5	4.00E+00			4.00E+00		9.20E+04	nc	1 E-11	4 E-05	1 E-11	4 E-05
G	OTHER	Kjeldahl nitrogen (total)	C-021	24	24	4.41E+03			4.41E+03							
G	INORG	Aluminum	7429-90-5	84	84	2.92E+04			2.92E+04	6.90E+03	9.20E+05	nc		2 E-02		2 E-02
G	INORG	Antimony	7440-36-0	84	4	1.20E+01			1.20E+01		4.10E+02	nc		3 E-02		3 E-02
G	INORG	Arsenic	7440-38-2	296	282	8.10E+01	5.38E+00	4.89E+00	5.38E+00	5.80E+00	1.60E+01	c	5 E-05	3 E-01		
G	INORG	Barium	7440-39-3	100	88	2.73E+02			2.73E+02	7.50E+01	6.70E+04	nc		3 E-03		3 E-03
G	INORG	Beryllium	7440-41-7	84	32	3.00E+00			3.00E+00		1.90E+03	nc	1 E-09	2 E-03	1 E-09	2 E-03
G	INORG	Cadmium	7440-43-9	259	33	7.40E+00			7.40E+00	1.20E+00	4.50E+02	nc	2 E-09	1 E-02	2 E-09	1 E-02
G	INORG	Calcium	7440-70-2	70	70	1.81E+05			1.81E+05							
G	INORG	Chromium (total)	7440-47-3	232	230	4.87E+02	5.51E+01	6.05E+01	6.05E+01		2.50E+03	nc	1 E-06	2 E-01	1 E-07	2 E-02
G	INORG	Chromium III	16065-83-1	7	7	1.99E+01			1.99E+01	1.80E+01	1.50E+06	nc		1 E-06		1 E-06
G	INORG	Chromium VI	18540-29-9	7	1	1.20E+00			1.20E+00		6.40E+02	c	2 E-08	5 E-04	2 E-08	5 E-04
G	INORG	Cobalt	7440-48-4	70	58	9.00E+00			9.00E+00	6.80E+00	1.30E+04	nc	1 E-09	2 E-04	1 E-09	2 E-04

Table 5a: Industrial Worker Cancer Risk and HQ Summary - Soil
GM: SMCO, Saginaw Michigan

IU	Chem Group	Chemical	CASRN	Analyzed	Detected	Max Detected (mg/kg)	95% Bootstrap UCL Shallow (mg/kg)	95% Bootstrap UCL All Depths (mg/kg)	EPC (mg/kg)	MDEQ Statewide Default Background Levels (mg/kg)	Ind Screening Criteria (mg/kg)		Ind Cancer Risk for Max Detected	Ind HQ for Max Detected	Ind Cancer Risk for EPC	Ind HQ for EPC
G	INORG	Copper	7440-50-8	88	87	4.76E+02			4.76E+02	3.20E+01	4.10E+04	nc		1 E-02		1 E-02
G	INORG	Cyanide (total)	57-12-5	24	6	9.90E+00			9.90E+00	3.90E-01	1.20E+04	nc		8 E-04		8 E-04
G	INORG	Fluoride	16984-48-8	155	154	8.80E+03	1.49E+03	8.89E+02	1.49E+03		3.70E+04	nc		2 E-01		4 E-02
G	INORG	Iron	7439-89-6	70	70	1.04E+05	2.87E+04	3.13E+04	3.13E+04	1.20E+04	3.10E+05	nc		3 E-01		6 E-02
G	INORG	Lead	7439-92-1	259	140	2.20E+02			1.94E+01	2.10E+01	7.50E+02	nc				
G	INORG	Magnesium	7439-95-4	28	28	3.72E+04			3.72E+04							
G	INORG	Mercury	7439-97-6	74	7	9.50E-02			9.50E-02	1.30E-01	1.36E+01	nc				
G	INORG	Nickel	7440-02-0	84	75	7.10E+01			7.10E+01	2.00E+01	2.00E+04	nc		3 E-03		3 E-03
G	INORG	Potassium	7440-09-7	28	28	1.61E+03			1.61E+03							
G	INORG	Selenium	7782-49-2	235	37	6.00E+00			6.00E+00	4.10E-01	5.10E+03	nc		1 E-03		1 E-03
G	INORG	Sodium	7440-23-5	28	27	4.17E+02			4.17E+02							
G	INORG	Thallium	7440-28-0	70	27	1.60E-01			1.60E-01		6.80E+01	nc		2 E-03		2 E-03
G	INORG	Tin	7440-31-5	42	1	1.20E+01			1.20E+01		6.10E+05	nc		2 E-05		2 E-05
G	INORG	Vanadium	7440-62-2	84	84	3.60E+01			3.60E+01		7.20E+03	nc		5 E-03		5 E-03
G	INORG	Zinc	7440-66-6	243	235	1.30E+03			1.30E+03	4.70E+01	3.10E+05	nc		4 E-03		4 E-03
H	WQ	Sulfide (total)	18496-25-8	22	15	7.91E+02			7.91E+02							
H	VOC	Benzene	71-43-2	25	3	9.70E-02			9.70E-02		1.30E+01	c	7 E-08	4 E-03	7 E-08	4 E-03
H	VOC	Ethyl Benzene	100-41-4	25	1	5.40E-02			5.40E-02		2.00E+02	c	3 E-09	7 E-06	3 E-09	7 E-06
H	VOC	Toluene	108-88-3	25	3	1.40E-01			1.40E-01		2.20E+03	nc		6 E-05		6 E-05
H	VOC	Trichloroethene	79-01-6	25	1	1.20E-01			1.20E-01		1.20E+00	c	1 E-06	1 E-03	1 E-06	1 E-03
H	VOC	Xylenes (total)	1330-20-7	25	3	2.45E-01			2.45E-01		9.00E+02	nc		3 E-04		3 E-04
H	SVOC	Acenaphthene	83-32-9	24	1	4.00E-01			4.00E-01		2.90E+04	nc		1 E-05		1 E-05
H	SVOC	Benzo(a)anthracene	56-55-3	24	1	1.50E+00			1.50E+00		2.10E+01	c	7 E-07		7 E-07	
H	SVOC	Benzo(a)pyrene	50-32-8	24	2	3.30E+00		5.17E-01	5.17E-01		2.10E+00	c	2 E-05		2 E-06	
H	SVOC	Benzo(b)fluoranthene	205-99-2	24	3	2.80E+00		4.80E-01	4.80E-01		2.10E+01	c	1 E-06		2 E-07	
H	SVOC	Benzo(g,h,i)perylene	191-24-2	24	2	2.80E+00			2.80E+00		2.90E+04	nc		1 E-04		1 E-04
H	SVOC	Benzo(k)fluoranthene	207-08-9	24	2	2.00E+00			2.00E+00		2.10E+02	c	1 E-07		1 E-07	
H	SVOC	Chrysene	218-01-9	24	2	1.90E+00			1.90E+00		2.10E+03	c	9 E-09		9 E-09	
H	SVOC	Dibenz(a,h)anthracene	53-70-3	24	1	6.00E-01			6.00E-01		2.10E+00	c	3 E-06		3 E-06	
H	SVOC	Fluoranthene	206-44-0	24	1	1.60E+00			1.60E+00		2.20E+04	nc		7 E-05		7 E-05
H	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	24	2	2.80E+00		4.70E-01	4.70E-01		2.10E+01	c	1 E-06		2 E-07	
H	SVOC	2-Methylnaphthalene	91-57-6	24	3	1.70E+00			1.70E+00		1.90E+02	nc		9 E-03		9 E-03
H	SVOC	Methylphenol (total)	1319-77-3	24	1	5.50E-01			5.50E-01		3.10E+03	nc		2 E-04		2 E-04
H	SVOC	Naphthalene	91-20-3	48	5	7.30E-01			7.30E-01		1.90E+02	nc		4 E-03		4 E-03
H	SVOC	Phenanthrene	85-01-8	24	3	8.00E-01			8.00E-01		2.90E+04	nc		3 E-05		3 E-05
H	SVOC	Phenol	108-95-2	24	4	9.00E-01			9.00E-01		3.70E+05	nc		2 E-06		2 E-06
H	SVOC	Pyrene	129-00-0	24	4	1.70E+00			1.70E+00		2.90E+04	nc		6 E-05		6 E-05
H	PHYS	Cation exchange capacity	CATEC	1	1	1.40E+01			1.40E+01							
H	PHYS	Organic Carbon (total)	C-012	1	1	4.64E+04			4.64E+04							
H	PHYS	Solids (total)	C-008	24	24	9.60E+05			9.60E+05							
H	PCB	PCBs (total)	1336-36-3	24	3	1.00E+00		2.70E-01	2.70E-01		7.40E+00	c	1 E-06	9 E-02	4 E-07	2 E-02
H	OTHER	Formaldehyde	50-00-0	7	2	2.10E+01			2.10E+01		9.20E+04	nc	5 E-11	2 E-04	5 E-11	2 E-04
H	OTHER	Kjeldahl nitrogen (total)	C-021	24	24	5.86E+02			5.86E+02							
H	INORG	Aluminum	7429-90-5	30	30	1.42E+04			1.42E+04	6.90E+03	9.20E+05	nc		8 E-03		8 E-03
H	INORG	Antimony	7440-36-0	30	1	7.10E+00			7.10E+00		4.10E+02	nc		2 E-02		2 E-02
H	INORG	Arsenic	7440-38-2	30	30	1.20E+01	3.16E+00	3.82E+00	3.82E+00	5.80E+00	1.60E+01	c	4 E-06	2 E-02		
H	INORG	Barium	7440-39-3	30	30	1.83E+02			1.83E+02	7.50E+01	6.70E+04	nc		2 E-03		2 E-03
H	INORG	Beryllium	7440-41-7	30	5	2.00E+00			2.00E+00		1.90E+03	nc	9 E-10	1 E-03	9 E-10	1 E-03
H	INORG	Cadmium	7440-43-9	30	2	2.00E+00			2.00E+00	1.20E+00	4.50E+02	nc	3 E-10	2 E-03	3 E-10	2 E-03
H	INORG	Calcium	7440-70-2	24	24	1.03E+05			1.03E+05							
H	INORG	Chromium (total)	7440-47-3	24	24	1.05E+02			1.05E+02		2.50E+03	nc	2 E-07	4 E-02	2 E-07	4 E-02
H	INORG	Chromium III	16065-83-1	6	6	1.44E+02			1.44E+02	1.80E+01	1.50E+06	nc		8 E-05		8 E-05
H	INORG	Cobalt	7440-48-4	24	17	6.00E+00			6.00E+00	6.80E+00	1.30E+04	nc				
H	INORG	Copper	7440-50-8	30	30	4.29E+01			4.29E+01	3.20E+01	4.10E+04	nc		3 E-04		3 E-04
H	INORG	Cyanide (total)	57-12-5	24	8	1.45E+01			1.45E+01	3.90E-01	1.20E+04	nc		1 E-03		1 E-03
H	INORG	Iron	7439-89-6	24	24	4.44E+04		1.90E+04	1.90E+04	1.20E+04	3.10E+05	nc		1 E-01		2 E-02
H	INORG	Lead	7439-92-1	30	30	1.57E+02			2.03E+01	2.10E+01	7.50E+02	nc				
H	INORG	Nickel	7440-02-0	30	27	2.78E+01			2.78E+01	2.00E+01	2.00E+04	nc		4 E-04		4 E-04
H	INORG	Selenium	7782-49-2	24	2	1.00E+00			1.00E+00	4.10E-01	5.10E+03	nc		1 E-04		1 E-04
H	INORG	Tin	7440-31-5	24	2	1.60E+01			1.60E+01		6.10E+05	nc		3 E-05		3 E-05
H	INORG	Vanadium	7440-62-2	30	30	2.25E+01			2.25E+01		7.20E+03	nc		3 E-03		3 E-03
H	INORG	Zinc	7440-66-6	30	30	3.33E+03			3.33E+03	4.70E+01	3.10E+05	nc		1 E-02		1 E-02
I	WQ	pH	C-006	1	1	7.92E+00			7.92E+00							
I	WQ	Sulfide (total)	18496-25-8	19	13	3.28E+02			3.28E+02							
I	VOC	Acetone	67-64-1	1	1	3.00E-01			3.00E-01		6.00E+03	nc		5 E-05		5 E-05
I	VOC	Bromomethane	74-83-9	54	1	3.05E-02			3.05E-02		1.30E+01	nc		2 E-03		2 E-03
I	VOC	Carbon Disulfide	75-15-0	54	1	4.60E-01			4.60E-01		1.20E+03	nc		4 E-04		4 E-04
I	VOC	Ethyl Benzene	100-41-4	54	2	1.60E-01			1.60E-01		2.00E+02	c	8 E-09	2 E-05	8 E-09	2 E-05
I	VOC	Methylene Chloride	75-09-2	54	3	4.00E-02			4.00E-02		2.10E+02	c	2 E-09	4 E-06	2 E-09	4 E-06
I	VOC	Toluene	108-88-3	54	1	5.80E-02			5.80E-02		2.20E+03	nc		3 E-05		3 E-05
I	VOC	Xylenes (total)	1330-20-7	54	3	6.00E-01			6.00E-01		9.00E+02	nc		7 E-04		7 E-04
I	SVOC	Acenaphthene	83-32-9	48	2	9.00E-01			9.00E-01		2.90E+04	nc		3 E-05		3 E-05
I	SVOC	Benzo(a)anthracene	56-55-3	48	2	6.00E-01			6.00E-01		2.10E+01	c	3 E-07		3 E-07	
I	SVOC	Benzo(a)pyrene	50-32-8	48	2	1.40E+00		2.24E-01	2.24E-01		2.10E+00	c	7 E-06		1 E-06	
I	SVOC	Benzo(b)fluoranthene	205-99-2	48	2	1.00E+00			1.00E+00		2.10E+01	c	5 E-07		5 E-07	
I	SVOC	Benzo(g,h,i)perylene	191-24-2	48	2	1.30E+00			1.30E+00		2.90E+04	nc		4 E-05		4 E-05
I	SVOC	Benzo(k)fluoranthene	207-08-9	48	2	8.00E-01			8.00E-01		2.10E+02	c	4 E-08		4 E-08	

Table 5a: Industrial Worker Cancer Risk and HQ Summary - Soil
GM: SMCO, Saginaw Michigan

IU	Chem Group	Chemical	CASRN	Analyzed	Detected	Max Detected (mg/kg)	95% Bootstrap UCL Shallow (mg/kg)	95% Bootstrap UCL All Depths (mg/kg)	EPC (mg/kg)	MDEQ Statewide Default Background Levels (mg/kg)	Ind Screening Criteria (mg/kg)		Ind Cancer Risk for Max Detected	Ind HQ for Max Detected	Ind Cancer Risk for EPC	Ind HQ for EPC
I	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	48	1	6.00E-01			6.00E-01		1.20E+03	c	5.E-09	5.E-05	5.E-09	5.E-05
I	SVOC	Chrysene	218-01-9	48	3	7.00E-01			7.00E-01		2.10E+03	c	3.E-09		3.E-09	
I	SVOC	Dibenzofuran	132-64-9	48	2	1.40E+00			1.40E+00		3.10E+03	nc		5.E-04		5.E-04
I	SVOC	Fluoranthene	206-44-0	48	3	7.00E-01			7.00E-01		2.20E+04	nc		3.E-05		3.E-05
I	SVOC	Fluorene	86-73-7	48	3	2.00E+00			2.00E+00		2.60E+04	nc		8.E-05		8.E-05
I	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	48	2	1.30E+00			1.30E+00		2.10E+01	c	6.E-07		6.E-07	
I	SVOC	2-Methylnaphthalene	91-57-6	48	8	4.10E+01		4.44E+00	4.44E+00		1.90E+02	nc		2.E-01		2.E-02
I	SVOC	Naphthalene	91-20-3	95	12	1.40E+01			1.40E+01		1.90E+02	nc		7.E-02		7.E-02
I	SVOC	Phenanthrene	85-01-8	48	6	4.00E+00			4.00E+00		2.90E+04	nc		1.E-04		1.E-04
I	SVOC	Phenol	108-95-2	48	1	6.00E-01			6.00E-01		3.70E+05	nc		2.E-06		2.E-06
I	SVOC	Pyrene	129-00-0	48	3	9.00E-01			9.00E-01		2.90E+04	nc		3.E-05		3.E-05
I	PHYS	Oxidation reduction potential	ORP	1	1	1.72E+02			1.72E+02							
I	PHYS	Solids (total)	C-008	47	22	9.10E+01			9.10E+01							
I	PHYS	Solids (total)	C-008	47	25	9.69E+05			9.69E+05							
I	P/PCB	PCBs (total)	1336-36-3	26	1	2.50E-01			2.50E-01		7.40E+00	c	3.E-07	2.E-02	3.E-07	2.E-02
I	OTHER	Formaldehyde	50-00-0	49	28	7.80E+01			7.80E+01		9.20E+04	nc	2.E-10	8.E-04	2.E-10	8.E-04
I	OTHER	Kjeldahl nitrogen (total)	C-021	25	25	2.33E+03			2.33E+03							
I	INORG	Aluminum	7429-90-5	37	37	2.80E+04			2.80E+04	6.90E+03	9.20E+05	nc		2.E-02		2.E-02
I	INORG	Antimony	7440-36-0	37	2	6.20E+00			6.20E+00		4.10E+02	nc		2.E-02		2.E-02
I	INORG	Arsenic	7440-38-2	37	37	1.00E+01	2.69E+00	3.07E+00	3.07E+00	5.80E+00	1.60E+01	c	3.E-06	2.E-02		
I	INORG	Barium	7440-39-3	37	37	1.95E+02			1.95E+02	7.50E+01	6.70E+04	nc		2.E-03		2.E-03
I	INORG	Beryllium	7440-41-7	37	12	3.90E+00			3.90E+00		1.90E+03	nc	2.E-09	2.E-03	2.E-09	2.E-03
I	INORG	Cadmium	7440-43-9	37	1	2.00E+00			2.00E+00	1.20E+00	4.50E+02	nc	3.E-10	2.E-03	3.E-10	2.E-03
I	INORG	Calcium	7440-70-2	25	25	1.17E+05			1.17E+05							
I	INORG	Chromium (total)	7440-47-3	27	27	9.10E+01			9.10E+01		2.50E+03	nc	2.E-07	4.E-02	2.E-07	4.E-02
I	INORG	Chromium III	16065-83-1	10	10	9.77E+01			9.77E+01	1.80E+01	1.50E+06	nc		5.E-05		5.E-05
I	INORG	Chromium VI	18540-29-9	10	1	2.50E+00			2.50E+00		6.40E+02	c	4.E-08	1.E-03	4.E-08	1.E-03
I	INORG	Cobalt	7440-48-4	25	21	1.50E+01			1.50E+01	6.80E+00	1.30E+04	nc	4.E-09	6.E-04	4.E-09	6.E-04
I	INORG	Copper	7440-50-8	37	37	5.20E+01			5.20E+01	3.20E+01	4.10E+04	nc		5.E-04		5.E-04
I	INORG	Cyanide (total)	57-12-5	26	2	1.30E+00			1.30E+00	3.90E-01	1.20E+04	nc		8.E-05		8.E-05
I	INORG	Iron	7439-89-6	25	25	3.64E+04			3.64E+04	1.20E+04	3.10E+05	nc		8.E-02		8.E-02
I	INORG	Lead	7439-92-1	37	37	2.86E+02			1.57E+01	2.10E+01	7.50E+02	nc				
I	INORG	Nickel	7440-02-0	37	33	4.00E+01			4.00E+01	2.00E+01	2.00E+04	nc		1.E-03		1.E-03
I	INORG	Selenium	7782-49-2	25	1	1.00E+00			1.00E+00	4.10E-01	5.10E+03	nc		1.E-04		1.E-04
I	INORG	Tin	7440-31-5	25	2	4.80E+01			4.80E+01		6.10E+05	nc		8.E-05		8.E-05
I	INORG	Vanadium	7440-62-2	37	37	4.90E+01			4.90E+01		7.20E+03	nc		7.E-03		7.E-03
I	INORG	Zinc	7440-66-6	37	37	6.67E+03			6.67E+03	4.70E+01	3.10E+05	nc		2.E-02		2.E-02
J	WQ	Sulfide (total)	18496-25-8	7	2	8.00E+00			8.00E+00							
J	PHYS	Solids (total)	C-008	7	7	8.67E+05			8.67E+05							
J	OTHER	Kjeldahl nitrogen (total)	C-021	7	7	9.55E+02			9.55E+02							
J	INORG	Aluminum	7429-90-5	7	7	1.45E+04			1.45E+04	6.90E+03	9.20E+05	nc		8.E-03		8.E-03
J	INORG	Arsenic	7440-38-2	7	7	9.00E+00			9.00E+00	5.80E+00	1.60E+01	c	2.E-06	1.E-02	2.E-06	1.E-02
J	INORG	Barium	7440-39-3	7	7	1.02E+02			1.02E+02	7.50E+01	6.70E+04	nc		4.E-04		4.E-04
J	INORG	Calcium	7440-70-2	7	7	1.02E+05			1.02E+05							
J	INORG	Chromium (total)	7440-47-3	7	7	2.70E+01			2.70E+01		2.50E+03	nc	6.E-08	1.E-02	6.E-08	1.E-02
J	INORG	Cobalt	7440-48-4	7	7	1.20E+01			1.20E+01	6.80E+00	1.30E+04	nc	3.E-09	4.E-04	3.E-09	4.E-04
J	INORG	Copper	7440-50-8	7	7	2.30E+01			2.30E+01	3.20E+01	4.10E+04	nc				
J	INORG	Iron	7439-89-6	7	7	2.55E+04			2.55E+04	1.20E+04	3.10E+05	nc		4.E-02		4.E-02
J	INORG	Lead	7439-92-1	7	7	8.10E+01			2.37E+01	2.10E+01	7.50E+02	nc				
J	INORG	Nickel	7440-02-0	7	7	3.30E+01			3.30E+01	2.00E+01	2.00E+04	nc		7.E-04		7.E-04
J	INORG	Vanadium	7440-62-2	7	7	3.50E+01			3.50E+01		7.20E+03	nc		5.E-03		5.E-03
J	INORG	Zinc	7440-66-6	7	7	1.32E+02			1.32E+02	4.70E+01	3.10E+05	nc		3.E-04		3.E-04

Notes:

The Screening Criteria for Pyrene was used as a surrogate for Phenanthrene and Benzo(g,h,i)perylene
The Screening Criteria for Phenol was used as a surrogate for Phenols (total)
The Screening Criteria for Naphthalene was used as a surrogate for 2-Methylnaphthalene
The Screening Criteria for cis-1,2-Dichloroethene was used as a surrogate for 1,2-Dichloroethene (total)
The Screening Criteria for Chromium (total) is based on Cr VI
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol
The concentrations for all PCB isomers were summed before comparing to Polychlorinated biphenyls (PCBs) for cancer effects and Aroclor 1254 for noncancer effects
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria
The Screening Criteria for Mercury was calculated by ENVIRON to account for the vapor inhalation pathway using EPA Region 9 equations, RfC from IRIS, and chemical properties from EPA's Soil Screening Guidance

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
UCL - Upper Confidence Limit on the Mean
EPC - Exposure Point Concentration

Table 5b: Estimated Cumulative Cancer Risks and HIs for Industrial Worker Based on Maximum Concentrations GM: SMCO, Saginaw Michigan			
IU	**Matrix**	**Cumulative Risk**	**HI**
A	Soil	1.E-05	4.E-01
B	Soil	**4.E-04**	**8.E+00**
D	Soil	**9.E-04**	**5.E+01**
E	Soil	1.E-04	**6.E+00**
F	Soil	4.E-05	2.E-01
G	Soil	1.E-04	**2.E+00**
H	Soil	3.E-05	3.E-01
I	Soil	1.E-05	5.E-01
J	Soil	2.E-06	8.E-02

Table 5c: Estimated Cumulative Cancer Risks and HIs for Industrial Worker Based on Maximum and 95% UCL Concentrations[1] GM: SMCO, Saginaw Michigan			
IU	**Matrix**	**Cumulative Risk**	**HI**
B	Soil	5.E-05	1.E+00
D	Soil	6.E-05	**4.E+00**
E	Soil	1.E-05	9.E-01
G	Soil	7.E-06	4.E-01
Notes:			
1. Risks for only selected chemicals are based on 95% UCL concentrations in IU B, D, E, and G. The other chemicals in these IUs are based on maximum detected concentration in the IUs.			

Table 6a: Industrial Worker Cancer Risk and HQ Summary - Sediment
GM: SMCO, Saginaw Michigan

Area	Chem Group	Chemical	CASRN	Analyzed	Detected	Max Detected (mg/kg)	Site Specific Background (mg/kg)	Ind Screening Criteria (mg/kg)		Ind Cancer Risk for Max Detected	Ind HQ for Max Detected
C	WQ	Sulfide (acid-volatile)	18496-25-8AV	2	2	4.37E+04					
C	PHYS	Organic Carbon (total)	C-012	2	2	1.08E+01					
C	PHYS	Solids (total)	C-008	2	2	2.52E+01					
C	P/PCB	PCBs (total)	1336-36-3	2	2	1.60E+00		7.40E-01	c	2.E-06	1.E-01
C	INORG	Aluminum	7429-90-5	2	2	1.58E+04	6.90E+03	9.20E+05	nc		1.E-02
C	INORG	Antimony	7440-36-0	2	2	4.30E+01		4.10E+02	nc		1.E-01
C	INORG	Arsenic	7440-38-2	2	2	6.50E+01	5.80E+00	1.60E+00	c	4.E-05	2.E-01
C	INORG	Barium	7440-39-3	2	2	1.49E+02	7.50E+01	6.70E+04	nc		1.E-03
C	INORG	Beryllium	7440-41-7	2	2	1.00E+00		1.90E+03	nc	5.E-10	5.E-04
C	INORG	Cadmium	7440-43-9	4	4	2.30E+01	1.20E+00	4.50E+02	nc	7.E-09	5.E-02
C	INORG	Calcium	7440-70-2	2	2	9.98E+04					
C	INORG	Chromium (total)	7440-47-3	2	2	9.30E+01		4.50E+02	c	2.E-07	4.E-02
C	INORG	Cobalt	7440-48-4	2	2	8.00E+00	6.80E+00	1.90E+03	c	6.E-10	9.E-05
C	INORG	Copper	7440-50-8	4	4	4.26E+02	3.20E+01	4.10E+04	nc		1.E-02
C	INORG	Iron	7439-89-6	2	2	3.09E+04	1.20E+04	3.10E+05	nc		6.E-02
C	INORG	Lead	7439-92-1	4	4	1.55E+03	2.10E+01	7.50E+02	nc		
C	INORG	Nickel	7440-02-0	4	4	6.00E+01	2.00E+01	2.00E+04	nc		2.E-03
C	INORG	Selenium	7782-49-2	2	2	2.70E+01	4.10E-01	5.10E+03	nc		5.E-03
C	INORG	Silver	7440-22-4	2	2	5.00E+00	1.00E+00	5.10E+03	nc		8.E-04
C	INORG	Thallium	7440-28-0	2	2	8.00E+00		6.80E+01	nc		1.E-01
C	INORG	Tin	7440-31-5	2	2	1.24E+02		6.10E+05	nc		2.E-04
C	INORG	Vanadium	7440-62-2	2	2	5.80E+01		7.20E+03	nc		8.E-03
C	INORG	Zinc	7440-66-6	4	4	2.93E+04	4.70E+01	3.10E+05	nc		9.E-02
H	WQ	Sulfide (acid-volatile)	18496-25-8AV	6	6	2.85E+04					
H	SVOC	Benzo(a)anthracene	56-55-3	2	1	1.40E+00		2.10E+00	c	7.E-07	
H	SVOC	Benzo(a)pyrene	50-32-8	2	1	1.60E+00		2.10E-01	c	8.E-06	
H	SVOC	Benzo(b)fluoranthene	205-99-2	2	1	2.10E+00		2.10E+00	c	1.E-06	
H	SVOC	Benzo(k)fluoranthene	207-08-9	2	1	1.60E+00		2.10E+01	c	8.E-08	
H	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	2	1	5.80E+00		1.20E+02	c	5.E-08	5.E-04
H	SVOC	Chrysene	218-01-9	2	1	2.20E+00		2.10E+02	c	1.E-08	
H	SVOC	2,4-Dimethylphenol	105-67-9	2	1	1.20E+00		1.20E+04	nc		1.E-04
H	SVOC	Fluoranthene	206-44-0	2	1	3.10E+00		2.20E+04	nc		1.E-04
H	SVOC	2-Methylnaphthalene	91-57-6	2	1	1.40E+00		1.90E+02	nc		7.E-03
H	SVOC	Naphthalene	91-20-3	2	1	1.20E+00		1.90E+02	nc		6.E-03
H	SVOC	Phenanthrene	85-01-8	2	1	2.50E+00		2.90E+04	nc		9.E-05
H	SVOC	Pyrene	129-00-0	2	1	4.70E+00		2.90E+04	nc		2.E-04
H	PHYS	Cation exchange capacity	CATEC	3	3	2.25E+02					
H	PHYS	Organic Carbon (total)	C-012	6	6	1.60E+01					
H	PHYS	Solids (total)	C-008	6	6	2.85E+01					
H	P/PCB	PCBs (total)	1336-36-3	6	6	7.15E+00		7.40E-01	c	1.E-05	7.E-01
H	INORG	Aluminum	7429-90-5	6	6	1.98E+04	6.90E+03	9.20E+05	nc		1.E-02
H	INORG	Antimony	7440-36-0	6	3	4.30E+01		4.10E+02	nc		1.E-01
H	INORG	Arsenic	7440-38-2	6	6	4.70E+01	5.80E+00	1.60E+00	c	3.E-05	2.E-01
H	INORG	Barium	7440-39-3	6	6	2.59E+02	7.50E+01	6.70E+04	nc		3.E-03
H	INORG	Beryllium	7440-41-7	6	6	2.00E+00		1.90E+03	nc	9.E-10	1.E-03

Table 6a: Industrial Worker Cancer Risk and HQ Summary - Sediment
GM: SMCO, Saginaw Michigan

Area	Chem Group	Chemical	CASRN	Analyzed	Detected	Max Detected (mg/kg)	Site Specific Background (mg/kg)	Ind Screening Criteria (mg/kg)		Ind Cancer Risk for Max Detected	Ind HQ for Max Detected
H	INORG	Cadmium	7440-43-9	12	12	3.70E+01	1.20E+00	4.50E+02	nc	1.E-08	8.E-02
H	INORG	Calcium	7440-70-2	6	6	1.16E+05					
H	INORG	Chromium (total)	7440-47-3	6	6	1.11E+02		4.50E+02	c	2.E-07	4.E-02
H	INORG	Cobalt	7440-48-4	6	6	1.20E+01	6.80E+00	1.90E+03	c	3.E-09	4.E-04
H	INORG	Copper	7440-50-8	12	12	3.82E+02	3.20E+01	4.10E+04	nc		9.E-03
H	INORG	Iron	7439-89-6	6	6	4.64E+04	1.20E+04	3.10E+05	nc		1.E-01
H	INORG	Lead	7439-92-1	12	12	2.49E+03	2.10E+01	7.50E+02	nc		
H	INORG	Mercury	7439-97-6	12	4	3.00E-01	1.30E-01	1.36E+01	nc		1.E-02
H	INORG	Nickel	7440-02-0	12	12	5.30E+01	2.00E+01	2.00E+04	nc		2.E-03
H	INORG	Selenium	7782-49-2	6	6	1.70E+01	4.10E-01	5.10E+03	nc		3.E-03
H	INORG	Silver	7440-22-4	6	4	6.00E+00	1.00E+00	5.10E+03	nc		1.E-03
H	INORG	Thallium	7440-28-0	6	3	1.40E+01		6.80E+01	nc		2.E-01
H	INORG	Tin	7440-31-5	6	6	1.70E+02		6.10E+05	nc		3.E-04
H	INORG	Vanadium	7440-62-2	6	6	9.40E+01		7.20E+03	nc		1.E-02
H	INORG	Zinc	7440-66-6	12	12	3.56E+04	4.70E+01	3.10E+05	nc		1.E-01
J	WQ	Sulfide (acid-volatile)	18496-25-8AV	5	5	2.21E+02					
J	PHYS	Cation exchange capacity	CATEC	4	4	6.91E+01					
J	PHYS	Organic Carbon (total)	C-012	5	5	5.45E+00					
J	PHYS	Solids (total)	C-008	5	5	8.09E+01					
J	P/PCB	PCBs (total)	1336-36-3	5	1	4.50E-01		7.40E-01	c	6.E-07	4.E-02
J	INORG	Aluminum	7429-90-5	5	5	1.16E+04	6.90E+03	9.20E+05	nc		5.E-03
J	INORG	Antimony	7440-36-0	5	1	1.10E+01		4.10E+02	nc		3.E-02
J	INORG	Arsenic	7440-38-2	5	5	5.00E+00	5.80E+00	1.60E+00	c		
J	INORG	Barium	7440-39-3	5	5	8.50E+01	7.50E+01	6.70E+04	nc		1.E-04
J	INORG	Cadmium	7440-43-9	10	3	4.00E-01	1.20E+00	4.50E+02	nc		
J	INORG	Calcium	7440-70-2	5	5	1.20E+05					
J	INORG	Chromium (total)	7440-47-3	5	5	2.60E+01		4.50E+02	c	6.E-08	1.E-02
J	INORG	Cobalt	7440-48-4	5	5	8.00E+00	6.80E+00	1.90E+03	c	6.E-10	9.E-05
J	INORG	Copper	7440-50-8	10	10	3.00E+01	3.20E+01	4.10E+04	nc		
J	INORG	Iron	7439-89-6	5	5	1.82E+04	1.20E+04	3.10E+05	nc		2.E-02
J	INORG	Lead	7439-92-1	11	11	3.90E+01	2.10E+01	7.50E+02	nc		
J	INORG	Nickel	7440-02-0	10	7	2.50E+01	2.00E+01	2.00E+04	nc		3.E-04
J	INORG	Vanadium	7440-62-2	5	5	2.50E+01		7.20E+03	nc		3.E-03
J	INORG	Zinc	7440-66-6	10	10	1.94E+02	4.70E+01	3.10E+05	nc		5.E-04
NA	SVOC	Benzo(a)pyrene	50-32-8	46	36	2.40E+01		2.10E-01	c	1.E-04	
NA	PHYS	Organic Carbon (total)	C-012	31	31	7.64E+00					
NA	P/PCB	PCBs (total)	1336-36-3	31	1	3.18E-01		7.40E-01	c	4.E-07	3.E-02
NA	INORG	Aluminum	7429-90-5	31	31	1.34E+04	6.90E+03	9.20E+05	nc		7.E-03
NA	INORG	Antimony	7440-36-0	31	10	6.30E+00		4.10E+02	nc		2.E-02
NA	INORG	Arsenic	7440-38-2	31	31	9.50E+00	5.80E+00	1.60E+00	c	2.E-06	1.E-02
NA	INORG	Barium	7440-39-3	31	31	1.08E+02	7.50E+01	6.70E+04	nc		5.E-04
NA	INORG	Beryllium	7440-41-7	31	12	7.00E-01		1.90E+03	nc	3.E-10	4.E-04
NA	INORG	Cadmium	7440-43-9	34	6	1.20E+00	1.20E+00	4.50E+02	nc		
NA	INORG	Chromium (total)	7440-47-3	31	31	5.65E+01		4.50E+02	c	1.E-07	2.E-02
NA	INORG	Copper	7440-50-8	31	29	4.68E+01	3.20E+01	4.10E+04	nc		4.E-04

Table 6a: Industrial Worker Cancer Risk and HQ Summary - Sediment
GM: SMCO, Saginaw Michigan

Area	Chem Group	Chemical	CASRN	Analyzed	Detected	Max Detected (mg/kg)	Site Specific Background (mg/kg)	Ind Screen-ing Criteria (mg/kg)		Ind Cancer Risk for Max Detected	Ind HQ for Max Detected
NA	INORG	Lead	7439-92-1	31	31	7.01E+01	2.10E+01	7.50E+02	nc		
NA	INORG	Nickel	7440-02-0	34	34	7.58E+01	2.00E+01	2.00E+04	nc		3.E-03
NA	INORG	Vanadium	7440-62-2	31	31	2.70E+01		7.20E+03	nc		4.E-03
NA	INORG	Zinc	7440-66-6	31	31	1.93E+02	4.70E+01	3.10E+05	nc		5.E-04

Notes:

The Screening Criteria for Pyrene was used as a surrogate for Phenanthrene and Benzo(g,h,i)perylene.

The Screening Criteria for Phenol was used as a surrogate for Phenols (total).

The Screening Criteria for Naphthalene was used as a surrogate for 2-Methylnaphthalene.

The Screening Criteria for cis-1,2-Dichloroethene was used as a surrogate for 1,2-Dichloroethene (total).

The Screening Criteria for Chromium (total) is based on Cr VI

The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.

The concentrations for all PCB isomers were summed before comparing to Polychlorinated biphenyls (PCBs) for cancer effects and Aroclor 1254 for noncancer effects.

The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.

The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

The Screening Criteria for Mercury was calculated by ENVIRON to account for the vapor inhalation pathway using: EPA Region 9 equations, RfC from IRIS, and chemical properties from EPA's Soil Screening Guidance.

Chem Group - Chemical Group

Carc Class - EPA Weight-of-Evidence Cancer Classification

Table 6b: Estimated Cumulative Cancer Risks and HIs for Industrial Worker Based on Maximum Concentrations GM: SMCO, Saginaw Michigan			
IU	**Matrix**	**Industrial Cumulative Risk**	**Industrial HI**
C	Sediment	4.E-05	9.E-01
H	Sediment	5.E-05	**2.E+00**
J	Sediment	7.E-07	1.E-01
Notes:			
Risks in IU H do not change significantly when 95% UCL concentrations are used as exposure point concentrations for selected chemicals with potentially significant concentrations.			

TABLE 7
Proposed EI Monitoring Plan
SMCO, Saginaw, Michigan

Investigative Unit	Location	Parameter	Frequency	Monitoring Purpose
A	MW-00124	mercury	annual	GSI
A	MW-00124	vanadium	annual	GSI
A	MW-00821	SVOCs (PAHs)	annual	Downgradient of MW-01119
A	MW-00925	cyanide	annual	GSI
A	MW-00925	vanadium	annual	GSI
A	MW-00925	mercury	annual	GSI
A	MW-01329	chromium, total & hexavalent	annual	GSI
B	MW-00309	SVOCs (PAHs)	annual	Downgradient of SB-00408a
B	MW-00208	VOCs (vinyl chloride)	annual	Downgradient of MW-00509
B	MW-00208	SVOCs (PAHs)	annual	Downgradient of SB-00408a & SB-00307c
B	New Well	VOCs (vinyl chloride)	annual	Downgradient of VAP-00208
B	New Well	SVOCs (PAHs)	annual	Downgradient of SB-00307c
E	MW-01827	chromium, total & hexavalent	annual	GSI
E	MW-01827	vanadium	annual	GSI
E	MW-01827	mercury	annual	GSI
E	MW-02432	chromium, total & hexavalent	annual	GSI
E	MW-02432	mercury	annual	GSI
E	MW-03240	chromium, total & hexavalent	annual	GSI
E	MW-03240	cobalt	annual	GSI
E	MW-03240	vanadium	annual	GSI
E	MW-03240	lead	annual	GSI
E	MW-03240	mercury	annual	GSI
E	MW-03746	chromium, total & hexavalent	annual	GSI
E	MW-03746	vanadium	annual	GSI
G	MW-04250	chromium, total & hexavalent	annual	GSI
G	MW-04250	cyanide	annual	GSI
G	MW-04250	mercury	annual	GSI
G	MW-04250	vanadium	annual	GSI
G	MW-04250	pH	annual	GSI
G	MW-04757	chromium, total & hexavalent	annual	GSI
G	MW-04757	cyanide	annual	GSI
G	MW-04757	vanadium	annual	GSI
G	MW-04864	chromium, total & hexavalent	annual	GSI
G	MW-04864	ammonia	annual	GSI
G	MW-04864	pH	annual	GSI
G	MW-04864	vanadium	annual	GSI

Notes:
1. Wells evaluated using most recent groundwater data compared to appropriate EI criteria.
2. All samples for metals analyses will be collected using low flow sampling techniques and will be unfiltered.
3. GSI = Selected to monitor stability based on exceedances of groundwater surface water interface criteria in most recent samples.

APPENDICES

APPENDIX A
Conceptual Site Model

Scenarios for Potential Human Exposure
GMC Saginaw Metal Casting Operations - Saginaw, Michigan

Exposure Area & Exposure Point(s)	Receptor Population	Exposure Route	Exposure Medium	Possible Currently	Possible in Future	Comments
On-Facility						
Investigation Unit A: Miscellaneous Sluice Sand and Bulk Storage Area						
Description: Investigation Unit A encompasses a 37-acre area that is primarily comprised of a grassy field; formerly it included a large quench slag stockpile and two settling ponds from which water was discharged to the Saginaw River via Outfall 001. The ponds have since been filled-in.						
A.1: Former Quench Slag Staging Area "B"; A.2: Former Bulk Raw Materials Storage; A.3: Former Sluice Sand Settling/Reclaim Area	Routine Workers	ingestion and dermal contact	surface soil	yes	yes	A portion of Investigation Unit A is currently leased for asphalt operations. The entire unit is unpaved. In addition, the unit is partially fenced and, therefore, may be accessed by trespassers. According to the City of Saginaw Master Plan and Future Land Use Plan Map, this area is zoned for industrial use. Consequently, the use of the area for future residential purposes is unlikely.
		inhalation	vapor and particulates in air from surface soil	yes	yes	
	Occasional Excavation/Maintenance Workers	ingestion and dermal contact	surface and subsurface soil	yes	yes	
		inhalation	vapor and particulates in air from disturbed surface and subsurface soil	yes	yes	
	Residents	ingestion and dermal contact	surface soil	no	no	
		inhalation	vapor and particulates in air from surface soil	no	no	
	Trespassers	ingestion and dermal contact	surface soil	yes	yes	
		inhalation	vapor and particulates in air from surface soil	yes	yes	

Scenarios for Potential Human Exposure
GMC Saginaw Metal Casting Operations - Saginaw, Michigan

Exposure Area & Exposure Point(s)	Receptor Population	Exposure Route	Exposure Medium	Possible Currently	Possible in Future	Comments
Investigation Unit B: Former Parts Plant						
Description: Investigation Unit B encompasses a 14-acre area comprised of a vacant lot, the site of the former Parts Plant which was demolished in 1985.						
B.1: Former RCRA Hazardous Waste Drum Storage Area (Clean closed)	Routine Workers	ingestion and dermal contact	surface soil	yes	yes	Construction trailers are currently located on Investigation Unit B for implementation of modernization plans. Although the perimeter of this unit is currently fenced, the gate is not locked, which allows access to the unit by trespassers. According to the City of Saginaw Master Plan and Future Land Use Plan Map, this area is zoned for industrial use. Consequently, the use of the area for future residential purposes is unlikely.
B.2: Former Electric Department PCB Storage Area		inhalation	vapor and particulates in air from surface soil	yes	yes	
B.3: Former PCB Storage Area B.4: Former Interior Drum Storage Area B.5: Former Wastewater Treatment System B.6: Former Machine Storage Pad B.7: Former Cyanide Dip Tanks and Emergency Dump Tank UST B.8: Former Bulk Gasoline USTs B.9: Former Coolant Systems B.10: Former Waste Oil ASTs	Occasional Excavation/Maintenance Workers	ingestion and dermal contact	surface and subsurface soil	yes	yes	
		inhalation	vapor and particulates in air from disturbed surface and subsurface soil	yes	yes	
	Residents	ingestion and dermal contact	surface soil	no	no	
		inhalation	vapor and particulates in air from surface soil	no	no	
B.11: Former "Rag Oil" Tank B.12: Former Hammer Mill (Swagger) B.13: Former Cast Iron Chip Car Station B.14: Former aluminum Chip Car Station B.15: Former Steel Chip Car Station	Trespassers	ingestion and dermal contact	surface soil	yes	yes	
		inhalation	vapor and particulates in air from surface soil	yes	yes	

Scenarios for Potential Human Exposure
GMC Saginaw Metal Casting Operations - Saginaw, Michigan

Exposure Area & Exposure Point(s)	Receptor Population	Exposure Route	Exposure Medium	Possible Currently	Possible in Future	Comments
Investigation Unit C: Process Water Reservoir						
Description: Investigation Unit C encompasses a 6-acre area consisting solely of the 266,000 ft^2 Process Water Reservoir. This reservoir is approximately 15-20 ft deep with steep banks.						
C.1: Process Water Reservoir	Maintenance Workers	ingestion and dermal contact	surface water	yes	yes	This portion of the facility is still in operation. Potential worker exposure occurs while in a boat out in the reservoir during semi-annual application of algaecide. The depth of water and steep nature of the banks precludes contact with sediment. Investigation Unit C is currently unfenced and, therefore, may be accessed by trespassers. According to the City of Saginaw Master Plan and Future Land Use Plan Map, this area is zoned for industrial use. Furthermore, this unit is surrounded by land used for industrial purposes and is integral to continued GM operation. Consequently, the use of the area for future residential purposes is unlikely.
		inhalation	vapor in air from surface water	yes	yes	
		ingestion and dermal contact	sediment	no	no	
	Residents	ingestion and dermal contact	surface water	no	no	
		inhalation	vapor in air from surface water	no	no	
		ingestion and dermal contact	sediment	no	no	
	Trespassers	ingestion and dermal contact	surface water	yes	yes	
		inhalation	vapor in air from surface water	yes	yes	
		ingestion and dermal contact	sediment	no	no	

Scenarios for Potential Human Exposure
GMC Saginaw Metal Casting Operations - Saginaw, Michigan

Exposure Area & Exposure Point(s)	Receptor Population	Exposure Route	Exposure Medium	Possible Currently	Possible in Future	Comments
Investigation Unit D: Grey Iron Plant						
Descriptions: Investigation Unit D encompasses a 60-acre area, which includes the 1.8 million ft^2 Grey Iron Plant built in 1918, currently undergoing its fifth modernization.						
D.1: Grey Iron Oil House RCRA Hazardous Waste Drum Accumulation Area (Clean closed) D.2-D.6: Accumulation/Storage Areas D.7-D.10: Equipment/Boring/Sand Staging Area D.11-D.13: Non-Hazardous Waste Drum/Hazardous Materials Storage D.14: Concrete Staging Area D.15: Steam Cleaning Room D.16: Air Scrubber Systems D.17-D.18: UST D.19-D.23: UST (Tanks removed - Closure approved by MDEQ) D.24-D.25: UST D.26-D.27: AST D.28-D.35: Releases/Leaks/Contamination	Routine Workers	ingestion and dermal contact	surface soil	yes	yes	This portion of the facility is still in operation. In addition to plant activities, construction trailers are located within this unit to facilitate implementation of modernization plans. The majority of the Grey Iron Plant area is paved or is covered by buildings. Exposures to soil could occur in unpaved or unmaintained areas. The perimeter of Investigation Unit D is mostly fenced, while the remaining area on the northern side is protected from trespassers by continuous security. According to the City of Saginaw Master Plan and Future Land Use Plan Map, this area is zoned for industrial use. Furthermore, GM plans to continue plant operations as evidenced by a recent large capital investment. Consequently, the use of the area for future residential purposes is unlikely.
		inhalation	vapor and particulates in air from surface soil	yes	yes	
	Occasional Excavation/Maintenance Workers	ingestion and dermal contact	surface and subsurface soil	yes	yes	
		inhalation	vapor and particulates in air from disturbed surface and subsurface soil	yes	yes	
	Residents	ingestion and dermal contact	surface soil	no	no	
		inhalation	vapor and particulates in air from surface soil	no	no	
	Trespassers	ingestion and dermal contact	surface soil	no	no	
		inhalation	vapor and particulates in air from surface soil	no	no	

Scenarios for Potential Human Exposure
GMC Saginaw Metal Casting Operations - Saginaw, Michigan

Exposure Area & Exposure Point(s)	Receptor Population	Exposure Route	Exposure Medium	Possible Currently	Possible in Future	Comments
Investigation Unit E: Riverdock Area						
Description: Investigation Unit E encompasses an 84-acre area, which includes the former Riverdock buildings (demolished), recyclable materials staging areas, the Powerhouse, and the Advanced Development Lab. The Powerhouse has three ASTs, two of which are certified closed, and one 300,000 gallon empty AST. The Riverdock contained a 1,000-gallon septic tank.						
E.1: Former ADL Waste 1,1,1-TCA Satellite Drum Accumulation/Storage Area E.2: Former ADL PCB Accumulation/Storage Area E.3: Current ADL Drum Accumulation/Storage Area	Routine Workers	ingestion and dermal contact	surface soil	yes	yes	This portion of the facility is still in operation. This area is currently partially fenced and, therefore, may be accessed by trespassers. According to the City of Saginaw Master Plan and Future Land Use Plan Map, this area is zoned for industrial use. Furthermore, this unit is integral to continued GM operation. Consequently, the use of the area for future residential purposes is unlikely.
		inhalation	vapor and particulates in air from surface soil	yes	yes	
E.4: Riverdock Crane Repair Building Underground Septic System (Removed Feb '99) E.5: Current Casting Sand/Metal Reclamation Area E.6: Former Quench Slag Staging Area "A"	Occasional Excavation/Maintenance Workers	ingestion and dermal contact	surface and subsurface soil	yes	yes	
		inhalation	vapor and particulates in air from disturbed surface and subsurface soil	yes	yes	
E.7: Former (Original) Boring Staging Area E.8: Former Boring Staging Area E.9: Current Core Sand Staging Area E.10: Powerhouse Fuel Oil ASTs E.11: Former Riverdock Crane Repair Building UST (G.I. #6, Clean closed)	Residents	ingestion and dermal contact	surface soil	no	no	
		inhalation	vapor and particulates in air from surface soil	no	no	
E.12: Riverdock Crane Repair Building UST (G.I. #9) E.13: Former Mill Water Pump House UST (N.I. #9, MDEQ closure report pending) E.14: Allegedly Buried Drums	Trespassers	ingestion and dermal contact	surface soil	yes	yes	
		inhalation	vapor and particulates in air from surface soil	yes	yes	

Scenarios for Potential Human Exposure
GMC Saginaw Metal Casting Operations - Saginaw, Michigan

Exposure Area & Exposure Point(s)	Receptor Population	Exposure Route	Exposure Medium	Possible Currently	Possible in Future	Comments
Investigation Unit F: Advanced Materials Development Center (AMDC) and Administrative Building						
Description: Investigation Unit F encompasses a 41-acre area, which includes the former administrative building (demolished in 1998), a 48,000 ft^2 Advanced Materials Development Center building (AMDC) constructed in 1965 as a warehouse and renovated in 1988 for its current use, and two former filling stations with a total of seven USTs, the removal of which is undocumented.						
F.1: Former North Filling Station USTs F.2: Former South Filling Station USTs	Routine Workers	ingestion and dermal contact	surface soil	no	no	Industrial activity in Investigation Unit F is limited to the parking lot and the AMDC. The remaining area is unpaved. In particular, the area of the two former filling stations is covered by grass. Any contamination resulting from the USTs would be deep below ground surface. Potential direct exposure would only be encountered through excavation or maintenance activities. The location of the two former USTs is currently partially fenced and, therefore, may be accessed by trespassers. According to the City of Saginaw Master Plan and Future Land Use Plan Map, this area is zoned for industrial use. Consequently, the use of the area for future residential purposes is unlikely.
		inhalation	vapor in air from subsurface soil	yes	yes	
	Occasional Excavation/Maintenance Workers	ingestion and dermal contact	subsurface soil	yes	yes	
		inhalation	vapor and particulates in air from disturbed subsurface soil	yes	yes	
	Residents	ingestion and dermal contact	surface soil	no	no	
		inhalation	vapor in air from subsurface soil	no	no	
	Trespassers	ingestion and dermal contact	surface soil	no	no	
		inhalation	vapor and particulates in air from subsurface soil	yes	yes	

Scenarios for Potential Human Exposure
GMC Saginaw Metal Casting Operations - Saginaw, Michigan

Exposure Area & Exposure Point(s)	Receptor Population	Exposure Route	Exposure Medium	Possible Currently	Possible in Future	Comments
Investigation Unit G: Former Nodular Iron Plant						
Description: Investigation Unit G encompasses a 67-acre area, which includes the north parking lot and the former Nodular Iron Plant that was operated from 1966 to its closing in 1987; the plant has been dismantled. Hazardous waste activities were conducted outside of the plant on the south and east sides; a former calcium carbide desulfurization unit was operated on the north side from 1979 to 1981.						
G.1: Former Oil House RCRA Hazardous Waste Drum Storage Area (Closure report submittal to MDEQ pending) G.2: Former RCRA Hazardous Waste Control Tank (AST) (MDEQ reviewing closure report) G.3: Former Waste Paint Shed RCRA Hazardous Waste Drum Storage Unit (MDEQ reviewing closure report) G.4: Former (Original) Desulfurization Slag RCRA Treatment Unit, "Weathering Slab" (MDEQ reviewing closure report) G.5: Former (Replacement) Desulfurization Slag RCRA Treatment Unit (MDEQ reviewing closure report) G.6: Former Waste PCB Transformer/Drum Storage Area G.7: Basement Sumps (4) G.8: Former Virgin Oils Storage Pad G.9: Former Core Sand Staging Area G.10: Former Oil House UST North (N.I. #1, Tank removed 1988) G.11: Former Gasoline UST West (N.I. #2, Tank removed 1988) G.12: Former Oil House USTs South (N.I. #3, N.I. #4, N.I. #5, N.I. #6) G.13: Former Cooling Tower Pump House UST (N.I. #7, MDEQ closure report pending) G.14: Former Oil House UST West (N.I. #8) G.15: Elevator Hydraulic Leaks G.16: 01/26/89 Possible Chlorobenzene Release	Routine Workers	ingestion and dermal contact	surface soil	yes	yes	Currently, only the north parking lot is still in use; the former Nodular Iron Plant has been dismantled, and the desulfurization pad and surrounding soil was removed per an MDNR approved closure plan. The perimeter of GM's portion of Investigation Unit G is currently fenced. However, the north parking lot, which was sold for commercial land use, is partially fenced and, therefore, may be accessed by trespassers. According to the City of Saginaw Master Plan and Future Land Use Plan Map, this area is zoned for industrial use. Consequently, the use of the area for future residential purposes is unlikely.
		inhalation	vapor and particulates in air from surface soil	yes	yes	
	Occasional Excavation/Maintenance Workers	ingestion and dermal contact	surface and subsurface soil	yes	yes	
		inhalation	vapor and particulates in air from disturbed surface and subsurface soil	yes	yes	
	Residents	ingestion and dermal contact	surface soil	no	no	
		inhalation	vapor and particulates in air from surface soil	no	no	
	Trespassers	ingestion and dermal contact	surface soil	yes	yes	
		inhalation	vapor and particulates in air from surface soil	yes	yes	

Scenarios for Potential Human Exposure
GMC Saginaw Metal Casting Operations - Saginaw, Michigan

Exposure Area & Exposure Point(s)	Receptor Population	Exposure Route	Exposure Medium	Possible Currently	Possible in Future	Comments
Investigation Unit H: Stormwater Discharge Ditch and Wastewater Treatment System						
Description: Investigation Unit H encompasses a 75-acre area, which includes the wastewater treatment system and a discharge ditch. The WWTP consists of four primary and one large secondary settling basin. The primary lagoons have been in operation since the construction of the WWTP in 1976. Prior to this time, the secondary settling basin was the primary settling basin for approximately ten years. Effluent from the lagoons was discharged via the drainage ditch to a permitted outlet to the Saginaw River. This outlet has been plugged and the discharge ditch currently receives only stormwater. Discharge from the lagoons is presently recycled for use in the Grey Iron Plant.						
H.1: Primary Settling Basins H.2: Secondary Settling Basin H.3: Stormwater Discharge Ditch H.4: Temporary Classified Sand Staging Areas H.5: Current Filter Cake Roll-Off Container(s)	Routine Workers	ingestion and dermal contact	surface soil	yes	yes	This portion of the facility is still in operation. The perimeter of Investigation Unit H is currently fenced to prevent trespassing. The former NPDES permit for Outfall 002 (MI 0001139, the ditch) has been withdrawn, and the outlet to the Saginaw River has been plugged (RFI Workplan, Volume 1, pg. 1: 3-12). According to the Buena Vista Charter Township Community Development Plan, this area is zoned for industrial use (pg. 66). Furthermore, this unit is integral to continued GM operation. Consequently, the use of the area for future residential purposes is unlikely.
		inhalation	vapor and particulates in air from surface soil	yes	yes	
		ingestion and dermal contact	surface water	no	no	
		inhalation	vapor in air from surface water	yes	yes	
		ingestion and dermal contact	sediment	no	no	
	Occasional Excavation/Maintenance Workers	ingestion and dermal contact	surface and subsurface soil	yes	yes	
		inhalation	vapor and particulates in air from disturbed surface and subsurface soil	yes	yes	
		ingestion and dermal contact	surface water	yes	yes	
		inhalation	vapor in air from surface water	yes	yes	
		ingestion and dermal contact	sediment	yes	yes	
	Residents	ingestion and dermal contact	surface soil	no	no	
		inhalation	vapor and particulates in air from surface soil	no	no	
		ingestion and dermal contact	surface water	no	no	
		inhalation	vapor in air from surface water	no	no	
		ingestion and dermal contact	sediment	no	no	
	Trespassers	ingestion and dermal contact	surface soil	no	no	
		inhalation	vapor and particulates in air from surface soil	no	no	
		ingestion and dermal contact	surface water	no	no	
		inhalation	vapor in air from surface water	no	no	
		ingestion and dermal contact	sediment	no	no	

Scenarios for Potential Human Exposure
GMC Saginaw Metal Casting Operations - Saginaw, Michigan

Exposure Area & Exposure Point(s)	Receptor Population	Exposure Route	Exposure Medium	Possible Currently	Possible in Future	Comments
Investigation Unit I: Classified Sand Staging Area						
Description: Investigation Unit I encompasses a 67-acre area, which includes a classified sand staging area (1983 - present), a former quench slag staging area (1965 - 1987), a former metals reclamation staging area (1965 - 1987), and three former Downes school building USTs (1956 - 1988 when the building was demolished).						
I.1: Classified Sand Staging Area I.2: Former Nodular Iron Quench Slag Staging Area I.3: Former Nodular Iron Metals Reclamation Staging Area I.4 Former Downes School Building USTs (N.I. #10, N.I. #11, N.I. #12, MDEQ closure report pending)	Routine Workers	ingestion and dermal contact	surface soil	no	yes	This portion of the facility is still in operation. Potentially impacted soil is covered by piles of soil and/or classified sand and, therefore, not available for exposure. This area is currently partially fenced and, therefore, may be accessed by trespassers. During removal of UST #12 a petroleum odor was detected. Consequently, 5 yd^3 of additional soil was removed for disposal (DOCC, Volume 1, pg. 14-3). According to the Buena Vista Charter Township Community Development Plan, this area is zoned for industrial use (pg. 66). Consequently, the use of the area for future residential purposes is unlikely.
		inhalation	vapor and particulates in air from surface soil	yes	yes	
	Occasional Excavation/Maintenance Workers	ingestion and dermal contact	surface and subsurface soil	no	yes	
		inhalation	vapor and particulates in air from disturbed surface and subsurface soil	yes	yes	
	Residents	ingestion and dermal contact	surface soil	no	no	
		inhalation	vapor and particulates in air from surface soil	no	no	
	Trespassers	ingestion and dermal contact	surface soil	no	yes	
		inhalation	vapor and particulates in air from surface soil	yes	yes	

Scenarios for Potential Human Exposure
GMC Saginaw Metal Casting Operations - Saginaw, Michigan

Exposure Area & Exposure Point(s)	Receptor Population	Exposure Route	Exposure Medium	Possible Currently	Possible in Future	Comments
Investigation Unit J: On-Site Landfill						
Description: Investigation Unit J encompasses a 71-acre area, which includes a 60-acre MDEQ-licensed Type III landfill (industrial monofill) that has been in operation since circa 1978, and which has a leachate collection system and ground water monitoring system. The Gage (Deikmann) drain also runs along the northern boundary of this Investigation Unit.						
J.1: MDEQ-licensed Type III Landfill	Routine Workers	ingestion and dermal contact	surface soil	no	no	This portion of the facility is still in operation. "Phases I and II (on the east side...) have been completed and are currently idle (but classified as active). Phase III (on the west side) is currently operational" (DOCC, Volume 1, pg. 15-1). Quarterly ground water monitoring has been conducted since 1980 (RFI Workplan, Volume 1, pg. 1: 3-14). This area is currently partially fenced and, therefore, may be accessed by trespassers. Workers in this unit are subject to a separate HASP. According to the Buena Vista Charter Township Community Development Plan, this area is zoned for industrial use (pg. 66). Consequently, the use of the area for future residential purposes is unlikely.
		inhalation	vapor and particulates in air from surface soil	no	no	
		ingestion and dermal contact	surface water	no	no	
		inhalation	vapor in air from surface water	no	no	
		ingestion and dermal contact	sediment	no	no	
	Maintenance Workers	ingestion and dermal contact	surface soil	no	no	
		inhalation	vapor and particulates in air from disturbed surface and subsurface soil	no	no	
		ingestion and dermal contact	surface water	no	no	
		inhalation	vapor in air from surface water	no	no	
		ingestion and dermal contact	sediment	no	no	

Scenarios for Potential Human Exposure GMC Saginaw Metal Casting Operations - Saginaw, Michigan						
Exposure Area & Exposure Point(s)	**Receptor Population**	**Exposure Route**	**Exposure Medium**	**Possible Currently**	**Possible in Future**	**Comments**
	Residents	ingestion and dermal contact	surface soil	no	no	
		inhalation	vapor and particulates in air from surface soil	no	no	
		ingestion and dermal contact	surface water	no	no	
		inhalation	vapor in air from surface water	no	no	
		ingestion and dermal contact	sediment	no	no	
	Trespassers	ingestion and dermal contact	surface soil	yes	yes	
		inhalation	vapor and particulates in air from surface soil	yes	yes	
		ingestion and dermal contact	surface water	yes	yes	
		inhalation	vapor in air from surface water	yes	yes	
		ingestion and dermal contact	sediment	yes	yes	

Scenarios for Potential Human Exposure
GMC Saginaw Metal Casting Operations - Saginaw, Michigan

Exposure Area & Exposure Point(s)	Receptor Population	Exposure Route	Exposure Medium	Possible Currently	Possible in Future	Comments
Off-Facility						
Surrounding Land Areas	Residents	inhalation	vapor and particulates in air from surface soil	yes	yes	Surrounding land also includes commercial and industrial use, but potential exposures to worker population would be lower than those for the residential population.
			vapor and particulates in air from disturbance of subsurface soil	yes	yes	
			vapor in air from surface water	yes	yes	
Saginaw River	Recreational Boaters	ingestion and dermal contact	surface water	yes	yes	No surface water or fish samples will be collected from the Saginaw River. The potential impact by ground water on exposure media is evaluated. Potential exposures may occur through recreational activity in the river including fishing and boating. The City of Saginaw intends to further encourage the use of the Saginaw River for recreational purposes (City of Saginaw Master Plan, pg. IV-8). A fish consumption advisory recommends that certain species of fish be consumed in a limited quantity, particularly for pregnant women, and that certain species of fish (carp and catfish) be avoided altogether (City of Saginaw Master Plan, pg. II-3). It is expected that the shallow ground water discharges into the Saginaw River (RFI Phase 1B Work Plan, Sec. 2.4).
		inhalation	vapor in air from surface water	yes	yes	
	Fishermen	ingestion and dermal contact	fish	yes	yes	
		ingestion and dermal contact	surface water	yes	yes	
		inhalation	vapor in air from surface water	yes	yes	

Scenarios for Potential Human Exposure
GMC Saginaw Metal Casting Operations - Saginaw, Michigan

Exposure Area & Exposure Point(s)	Receptor Population	Exposure Route	Exposure Medium	Possible Currently	Possible in Future	Comments
Hypothetical drinking water well in the uppermost aquifer at a location allowable under MDEQ and MDPH regulations. MDEQ regulations (325.10801 through 325.10833) and MDPH regulations (325.1601 through 325.1676) apply to wells used to supply groundwater for a public water supply and a private water supply, respectively. The regulations include provisions for a minimum well casing depth of 25 ft below ground surface (325.10818, 325.1632), location of any well outside an area subject to flooding (325.10816, 325.1625) and beyond the specified isolation distances from contamination sources (325.10808 and 325.10812, 325.1622).	Residents	ingestion, dermal contact and inhalation	ground water	no	yes	Since 1948, the City of Saginaw (which also supplies the township of Buena Vista) has obtained its drinking water supply from the Whitestone Point area in Lake Huron (City of Saginaw Master Plan, pg. II-77). The abundant supply of water from Lake Huron and the lack of adequate aquifers almost eliminates the use of ground water wells in the area. Officials in the City of Saginaw were unaware of any ground water drinking wells. In Buena Vista, a limited number of private wells reportedly do exist (Buena Vista Community Development Plan, pg. 12). A computerized well search of the area revealed one domestic well that is screened at a depth of 101 ft, located more than 2 miles north of the center of the GM property. In addition, an active supply well exists 1-2 miles north of the center of the property; the well serves fewer than 101 persons.

APPENDIX B
ENVIRON's Discussion Paper on the Michigan Part 201 PSIC

DISCUSSION PAPER

MICHIGAN PART 201 GENERIC SOIL PARTICULATE INHALATION CRITERIA

Prepared for
General Motors Corporation
Detroit, Michigan

Prepared by
ENVIRON Corporation
Princeton, New Jersey

March 2000

DISCUSSION PAPER

MICHIGAN PART 201 GENERIC SOIL PARTICULATE INHALATION CRITERIA

1 Introduction

According to MDEQ's August 31, 1998 Part 201 Generic Soil Inhalation Criteria for Ambient Air: Technical Support Document, the generic particulate soil inhalation criteria (PSIC) include the following assumptions:

- Soil particulate emissions include both a component from wind erosion and a component from vehicle traffic on unpaved roads (page 9); and
- A "safety" factor of two is necessary to account for short-term peaks in particulate ambient air concentrations (page 12).

These assumptions are not necessarily appropriate in all situations. This paper discusses situations in which these assumptions are not necessary and explains the derivation of alternate PSIC for these cases.

2 Wind Erosion and Vehicle Traffic

MDEQ's generic PSIC are calculated assuming that airborne soil particles are generated from both wind erosion and vehicle traffic on unpaved roads. However, where there is little or no potential for vehicle traffic on unpaved roads, the evaluation of potential exposures to respirable airborne soil particulates (PM_{10}) should use PSIC that are based on emissions from only wind erosion. In this case, the PSIC can be calculated using a particulate emission factor (PEF) of 2.99×10^8 m^3/kg, which is obtained by setting the Ev term to zero in the equation for PEF in Attachment A of the Technical Support Document. This PEF can then be substituted into Equations 15 and 17 to calculate PSIC that are based on only wind erosion.

Alternately, such PSIC also can be calculated by multiplying the MDEQ generic PSIC by the ratio of the PEF for only wind erosion to the MDEQ default PEF, as follows:

$$PSIC_w = PSIC \cdot \frac{PEF_w}{PEF} = PSIC \cdot \frac{2.99 \times 10^8}{3.95 \times 10^7} = PSIC \times 7.57$$

where:

$PSIC_W$	=	PSIC based on only wind erosion (mg/kg)
PSIC	=	MDEQ default PSIC, which includes both wind erosion and vehicle traffic (mg/kg)
PEF_W	=	PEF for wind erosion only (m^3/kg)
PEF	=	MDEQ default PEF for wind erosion and vehicle traffic (m^3/kg)

Likewise, a PSIC for only vehicle traffic $PSIC_v$ could be similarly calculated. Algebraic manipulation of Equation 15 or 17 gives the relationship between the PSIC that includes both wind erosion and vehicle traffic and the separate $PSIC_w$ and $PSIC_v$ is as follows:

$$PSIC = \left[\frac{1}{PSIC_w} + \frac{1}{PSIC_v} \right]^{-1}$$

3 Short-Term Peak Particulate Air Concentrations

The MDEQ generic PSIC for many chemicals are half of the values calculated from Equation 17 (PSIC based on noncancer effects). According to the Technical Support Document, the PSIC for "chemicals which are associated with quarterly, 24-hour, 8-hour, or 1-hour averaging times under the Air Toxics Rules" were divided by 2. The Technical Support Document explained that this adjustment was made to account for short-term peak particulate air concentrations, which are typically twice as high as annual average concentrations (page 12). MDEQ based its factor of two on a review of air monitoring data, which showed that the ratio of the 90th percentile 24-hour average air particulate concentration is approximately twice the annual average.

In accounting for the higher peak 24-hour air particulate concentrations, MDEQ's adjustment of the PSIC did not account for the proper use of short-term inhalation limits that are available for evaluating potential exposures over such a short exposure period. Short-term inhalation limits are higher (often by more than 10-fold) than the chronic reference concentrations (RfCs) used in Equation 17, which are highly conservative limits for protection over a lifetime of daily exposure. Clearly, the peak 24-hour air particulate concentrations considered by MDEQ occur no more frequently than 10% of the time. However, by dividing in half the PSIC calculated from Equation 17, MDEQ essentially used chronic RfCs to evaluate an acute exposure, which is a highly conservative approach.

For a chemical that has short-term inhalation limits, the MDEQ adjustment factor of 2 is unnecessary. For such chemicals, short-term PSIC should be calculated using short-term inhalation limits. For many chemicals, short-term inhalation limits are available from several sources, including the NIOSH and the ACGIH. These short-term limits should be used in place of the chronic RfC in Equation 17, when the PEF is divided by 2 to approximate peak 24-hour particulate air concentrations. The calculated short-term PSIC for a chemical then can be compared with its long-term PSIC (based on an annual average PEF and chronic RfC) to identify whether the short- or long-term PSIC is more stringent.

4 Example

MDEQ's generic PSIC for manganese (Mn) in soil at an industrial site is 1,500 mg/kg, as published in Operational Memorandum #18. However, the generic PSIC calculated using Equation 17 is 2,940 mg/kg, when the PEF given in Attachment A of the Technical Support Document is not divided by 2. This is the correct generic PSIC for evaluating potential long-term exposures to Mn in airborne soil particulate, because it is calculated using the chronic RfC

of 0.00005 mg/m^3 for Mn and a conservative estimate of the annual-average air particulate concentration.

Potential exposures to peak 24-hour air particulate concentrations of Mn can be evaluated by using short-term inhalation limits for Mn. The Occupational Safety and Health Administration (OSHA) has established a permissible exposure limit (PEL) of 1 mg/m^3 for Mn and a ceiling limit of 5 mg/m^3. The American Conference of Governmental Industrial Hygienists (ACGIH) has recommended a threshold limit value of 0.2 mg/m^3 for Mn. The lowest of these inhalation limits is 4,000-fold higher than the chronic RfC. This increase in the allowable inhalation limit that corresponds to shortening the period of exposure from a chronic to an acute period more than offsets the doubling of the air particulate concentration. That is, a short-term PSIC would be much higher than the PSIC of 2,940 mg/kg calculated using Equation 17. Therefore the appropriate generic PSIC for Mn, accounting for both long- and short-term exposures would be 2,940 mg/kg.

The generic PSIC of 2,940 mg/kg accounts for both wind erosion and vehicle traffic. A generic $PSIC_W$ for wind erosion only would be approximately 22,300 mg/kg, which can be obtained from 2,940 mg/kg times 7.57 as discussed above. A generic $PSIC_V$ for only vehicle traffic using MDEQ's assumptions for industrial/commercial sites would be approximately 3,390 mg/kg. It can be verified that the $PSIC_W$ and $PSIC_V$ "add up" to the PSIC of 2,940 mg/kg (i.e., $[22{,}300^{-1}+3{,}390^{-1}]^{-1}$).

As noted in the Technical Support Document, site-specific adjustments to the MDEQ default assumptions regarding other parameters affecting emission and dispersion may be necessary (e.g., groundcover fraction, soil type, source size) before using the PSIC, $PSIC_W$, or $PSIC_V$ for site-specific evaluations.

General Motors Corporation
Saginaw Metal Castings Operation (SMCO)
EI CA725 & CA750
September 17, 2003

APPENDIX C
Health-Based Evaluation of Data to Streamline RCRA Facility Investigations (RFIs) at General Motors Facilities

HEALTH-BASED EVALUATION OF DATA TO STREAMLINE RCRA FACILITY INVESTIGATIONS (RFIs) AT GENERAL MOTORS FACILITIES

1 Introduction

This document explains the human health risk assessment approaches that have been used and are currently in use to streamline the evaluation of data during RCRA facility investigations (RFIs) at General Motors Corporation (GM) facilities. The approaches discussed below have been described and explained in RFI Work Plans and RFI Reports that the U. S. Environmental Protection Agency (EPA) has reviewed and/or approved during RFIs at GM facilities. This document is intended to provide a stand-alone discussion that can serve as a quick reference during ongoing or new RFIs at GM facilities.

Risk-based data evaluation techniques are used at two different stages of the RFI to streamline decision-making. Initially, human health risk-based criteria are used to guide and streamline field investigations and to identify situations that might warrant interim measures. After completion of field investigations, results of risk-based screening conducted during the field investigations are combined with risk-based computations to streamline the baseline human health risk assessment which supports decisions regarding whether corrective measures at a facility are warranted.

2 Streamlining Field Investigations

Human health risk assessment principles are used to evaluate data during RFI field investigations to support decisions regarding the need for further field work and to identify situations that might warrant interim measures. The approach discussed below streamlines the review of data by segregating data that indicate a higher potential for health significance under current and reasonably expected future land use from those that indicate a low potential. This allows investigators to focus on a subset of the typically voluminous site characterization data as they make decisions about what additional field investigation is necessary. The segregation of data at this stage of the RFI is not used to eliminate areas, media, or chemicals from a human health risk assessment; it is used to eliminate areas, media, or chemicals from further field investigation.

The segregation of data after each phase of field investigation is done in two main steps. The first step uses computer-automated procedures to compare quantitatively the site characterization data to conservative risk-based screening criteria, and to present the results in tables and data-box figures which show the data that exceed criteria and their spatial distribution. The second step combines these quantitative summaries with professional judgment to reach decisions regarding the need for additional data to support risk-based determinations of whether interim measures or corrective measures are warranted. The procedures for these two steps are further discussed below.

2.1 Quantitative Comparison to Screening Criteria

The initial segregation of site characterization data is accomplished by using conservative, risk-based screening criteria that are relevant to the exposure scenarios in the preliminary conceptual site model that is developed and refined during the RFI. The screening criteria and the use of these criteria are based on EPA guidance for conducting screening-level assessment of sites under RCRA and CERCLA. The risk-based screening criteria and the procedures for evaluating soil, groundwater, sediment, and surface water data are as follows:

Soil

Soil data are evaluated using two sets of screening criteria—one that is based on exposures under residential land use and another that is based on exposures under commercial/industrial land use. The two sets of criteria are used to provide two successively more focused levels of data screening to segregate data that indicate a higher potential for health significance from those that indicate a low potential.

The first-level segregation is done using screening criteria based on residential land use. The highest concentration of each chemical detected in surface and subsurface soil at each area of interest (AOI) is quantitatively compared to these criteria. AOIs include solid waste management units (SWMUs) and areas of concerns (AOCs) identified by EPA, as well as other areas identified by GM. Results of the quantitative comparison for every chemical at each AOI are summarized on tables that show the ratios of the highest site-related concentrations at an AOI to the screening criteria. Site-related concentrations are those in excess of background levels, which are estimated from site-specific data collected during the field investigations, or from published data appropriate to the region in which the facility is located if site-specific data are not available.

Chemicals with at least one concentration that exceeds the residential criteria at any AOI are selected for display on data-box figures to show their spatial distribution across the facility. The figures show the concentrations of these chemicals for every sample across the facility,

regardless of whether a concentration exceeds criteria in a particular sample. If the number of chemicals selected is too large to allow effective display on the figures, the selection approach and/or the layout of the figures may be modified as necessary to improve usability of the figures. Chemicals that do not have any concentration that exceeds the criteria at any AOI are included on the summary tables, but are not included on the figures.

The second-level segregation is done using screening criteria based on commercial/industrial land use. Because current land use at GM facilities is industrial and reasonably expected future land use is typically industrial as well, these screening criteria provide a more efficient means for identifying data that indicate the highest potential for health significance at these facilities. This level of screening is not applied to data collected off-site or from on-site areas where reasonably expected future land use might not be commercial/industrial. Where this level of screening is conducted, the surface and subsurface soil data at each AOI are quantitatively compared to the commercial/industrial screening criteria to identify every concentration that exceeds any of these criteria. The results of the comparisons are summarized on tables as ratios of the highest site-related concentrations at an AOI to these criteria, and are also used to distinguish these data on the data-box figures by highlighting them with a contrasting color and/or format (e.g., bold font) so that their spatial distribution is more visually discernible.

The specific risk-based screening criteria used in the procedure described above are derived from the risk-based Region 9 PRGs and generic risk-based criteria that have been developed by other regulatory agencies. The primary screening criteria are derived from the risk-based PRGs, which are calculated using standard default exposure factors and exposure equations that EPA (1991a) believes to be adequately protective of reasonable maximum exposures under residential and commercial/industrial land uses. These PRGs address exposures to soil via incidental ingestion, dermal contact, and inhalation of soil vapors and particulates.

EPA Region 9 calculates the PRGs using a target cancer risk of 10^{-6} and a target hazard quotient (HQ) of 1. According to EPA, a target cancer risk of 10^{-6} is often used to develop screening criteria (like the PRGs) to ensure that cumulative cancer risk from exposure to multiple human carcinogens at a site would not exceed EPA's acceptable cumulative risk goal of 10^{-4} (61 FR 19432, May 1, 1996; EPA 1996; EPA 1991b). This means that as many as 100 human carcinogens can be present at a site at concentrations equal to the PRGs without exceeding the cumulative risk goal of 10^{-4}.

However, potential exposures at many sites (including GM facilities) involve far fewer human carcinogens (i.e., closer to 10 than 100). This means the PRGs calculated using a target cancer risk of 10^{-6} are far more conservative than necessary to protect for simultaneous exposures to multiple carcinogens. As such, the risk-based screening criteria for carcinogens are calculated using a target cancer risk of 10^{-5}. Extensive experience with RFIs at GM facilities has demonstrated that the use of screening criteria based on a target cancer risk of 10^{-5} and a target HQ of 1 is adequately conservative to guide field investigations. This is confirmed at the end of the field investigations by calculating actual cumulative cancer and noncancer risk estimates for each AOI, as discussed in Section 3. To facilitate later use of the screening results in these calculations, concentrations are quantitatively compared to cancer- and noncancer-based criteria separately.

The EPA Region 9 PRGs do not address potential exposures via soil vapor migration into indoor air. Therefore, the significance of potential exposures via this pathway is evaluated using screening criteria that are derived from the vapor intrusion model proposed by Johnson and Ettinger (1991) and recommended by EPA (2000) and Michigan DEQ (2002). The screening criteria are derived using the Michigan DEQ default assumptions for soil characteristics and default assumptions for residential or commercial/industrial buildings, as appropriate. Derivation of the criteria may be based on site-specific soil and/or building characteristics as such information becomes available during the field investigations.

In situations where indoor air quality is subject to requirements under Occupational Safety and Health Administration (OSHA) programs, the vapor intrusion criteria are calculated using OSHA permissible exposure limits (PELs) or other occupational inhalation standards for chemicals that do not have PELs. In situations where OSHA requirements are not applicable, the criteria are calculated using EPA-derived inhalation reference concentrations (RfCs) and unit risk factors (URFs).

Groundwater

Groundwater data are evaluated using two steps to segregate data that indicate a higher potential for health significance from those that indicate a low potential. The first step evaluates data using drinking water criteria, and the second step evaluates data using risk-based criteria for nonpotable exposures as appropriate to groundwater at the facility (e.g., dermal contact during excavations in shallow groundwater or vapor intrusion).

In the first step, all groundwater data are quantitatively compared with drinking water criteria to identify all chemicals that have a concentration higher than these criteria. Results of the

comparison for every chemical at each AOI are summarized on tables that show the ratios of the highest concentrations at an AOI to the screening criteria.

Chemicals with at least one concentration that exceeds drinking water criteria at any AOI are selected for display on data-box figures to show their spatial distribution across the facility. The figures show the concentrations of these chemicals for every sample across the facility, regardless of whether a concentration exceeds criteria in a particular sample. If the number of chemicals selected is too large to allow effective display on the figures, the selection approach and/or the layout of the figures may be modified as necessary to improve usability of the figures. Chemicals that do not have any concentration that exceeds the criteria at any AOI are included on the summary tables, but are not included on the data-box figures.

In the second step, groundwater data are quantitatively compared with nonpotable groundwater criteria that are based on worker contact during occasional excavations and vapor intrusion. Because shallow groundwater at most GM facilities is not a current or reasonably expected future drinking water supply, these screening criteria provide a more efficient means for identifying data that indicate the highest potential for health significance at these facilities. Groundwater data at each AOI are quantitatively compared to these screening criteria to identify every concentration that exceeds any of these criteria. The results are summarized on tables as ratios, and are highlighted with a contrasting color and/or format (e.g., bold font) on the data-box figures so that their spatial distribution is more visually discernible.

The specific risk-based screening criteria used in the procedure described above are derived from maximum contaminant levels (MCLs) that are established under the Safe Drinking Water Act regulations. For chemicals without MCLs, risk-based drinking water criteria are calculated using EPA standard default exposure factors for residential drinking water consumption (i.e., 2 L/day, 350 days/year, 30 years, and 70 kg body weight; EPA 1991a), EPA-derived oral reference doses (RfDs) and cancer slope factors (SFs), and a target cancer risk of 10^{-5} and a target HQ of 1.

Groundwater screening criteria for worker dermal contact with shallow groundwater during excavations and for vapor intrusion are derived from the Michigan DEQ generic groundwater cleanup criteria for these pathways (MDEQ 2002). The dermal contact criteria are relevant to only groundwater that is within the maximum typical excavation depth of approximately 3 to 4 meters. The vapor intrusion criteria are relevant to only groundwater at the water table. Like the soil vapor intrusion criteria, the groundwater vapor intrusion criteria are derived

using the Michigan DEQ default assumptions for soil characteristics and default assumptions for residential or commercial/industrial buildings, as appropriate. Derivation of the criteria may be based on site-specific soil and/or building characteristics as such information becomes available during the field investigations.

In situations where indoor air quality is subject to requirements under OSHA programs, the vapor intrusion criteria are calculated using PELs or other occupational inhalation standards for chemicals that do not have PELs. In situations where OSHA requirements are not applicable, the criteria are calculated using EPA-derived inhalation RfCs and URFs.

Sediment and Surface Water

Generic risk-based screening criteria for evaluating the health significance of potential exposure to sediments and surface water are not well established. Therefore, as a conservative approach, sediment and surface water characterization data are quantitatively compared to the risk-based screening criteria described above for evaluating soil and groundwater data, respectively, except vapor intrusion criteria are not necessary for evaluating sediment or surface water data. Use of soil and groundwater screening criteria are conservative because potential exposures of receptors to sediment and surface water at GM facilities are expected to be lower than those assumed in deriving the soil and groundwater criteria. The procedures for identifying chemicals in sediment and surface water for display on data-box figures and concentrations for highlighting are the same as those discussed above for soil and groundwater.

In summary, the results of the quantitative comparison of site characterization data to conservative, risk-based screening criteria are used to produce summary tables and data-box figures that focus attention on the chemicals and concentrations at each AOI that have the highest potential for health significance.

The data-box figure for each AOI generally shows all sample locations for a particular medium, and for each sample location it shows a box that includes data for the list of chemicals that had at least one concentration exceeding any of the screening criteria for any medium among all the AOIs under investigation. Concentrations that exceed any screening criteria based on exposures that are possible under current land use at the facility are highlighted to ensure that their potential health significance is not overlooked during review of the screening results. In cases where an unusually large number of chemicals are identified for display on data-box figures, the layout of the figures may differ from the description provided here to allow effective display of the data.

In RFIs that are conducted at GM facilities in Michigan, the primary screening criteria used during the field investigation are the Michigan Part 201 generic risk-based cleanup criteria for soil and groundwater (MDEQ 2002). The procedures for quantitative comparison of data with these criteria are analogous to the procedures discussed above.

2.2 Review of Screening Results

The tables and data-box figures produced from the initial step of data screening are then reviewed to determine, using professional judgment as appropriate, the scope of additional field work necessary to support risk-based determinations of whether interim measures or corrective measures are warranted. A key consideration during this review is whether concentrations highlighted on the data-box figures have sufficient lateral and vertical characterization to ensure that a reliable estimate of the exposure concentration (usually a 95% upper confidence limit on the mean) for a particular area can be developed to support a risk assessment. Other important considerations include the following:

- Inconsistencies in the types of chemicals found among different environmental media at an AOI as compared to expectations based on operational history and properties of the chemicals, which may suggest a potential for false negative or false positive identification of chemicals

- Obvious trends in the lateral and/or vertical distribution of concentrations, which may indicate that concentrations significantly higher than the observed concentrations may be present in areas or depths that have not been sampled

- Unusually high concentrations, which may indicate that nonaqueous-phase liquids are present

- Unusual field observations, high field screening measurements, or unexpected analytical data, which may indicate the presence of contamination in areas or depths that have not been sampled

- Unusually large variance between results from duplicate pairs and unusually high quantitation limits, which may indicate a potential for sampling or laboratory problems

- Concentrations that may not be entirely site-related, which may suggest a need for a more refined determination of background levels

Based on these considerations, decisions are made at each AOI regarding the need for further site characterization, or other actions (e.g., check for laboratory errors, remediate an area) that might be more appropriate. In general, field work would continue until it is judged that sufficient data have been collected to support a baseline risk assessment that would provide a reliable determination of whether interim or corrective measures are warranted.

3 Streamlining Human Health Risk Assessments

Once field investigations have been completed, all the site characterization data for each AOI are evaluated in a human health risk assessment to identify any conditions that warrant corrective measures. The risk assessment is streamlined by appropriate use of risk-based screening criteria to simplify the evaluation. Risk-based screening criteria can be used if their underlying exposure assumptions are appropriate for evaluating the potential exposures identified in the conceptual site model.

For example, the EPA Region 9 soil PRGs for industrial land use are based on standard default exposure factors that EPA (1991a) recommends for evaluating reasonable maximum exposures (RME) to soil in commercial/industrial settings. As such, risk-based screening criteria derived from these PRGs are appropriate for evaluating potential exposures of workers to soil during routine activities at industrial facilities. In addition, such screening criteria are also appropriate for evaluating potential exposure of other receptors that may be present at industrial facilities and have lower potential exposures to soil than routine workers. Such receptors generally include workers who perform occasional excavations during construction or maintenance, and trespassers. Attachment 1 discusses typical activities of such receptors at GM facilities and shows that their potential exposures to soil are unlikely to exceed the exposures assumed in deriving the PRGs.

The evaluation of potential exposures that are addressed by screening criteria is simplified by using the quantitative data comparison results that were developed during the field investigation, as follows:

Criteria Based on Regulatory Standards

For potential exposures that are addressed by drinking water criteria (e.g., MCLs) or vapor intrusion criteria derived from occupational inhalation standards (e.g., PELs), the results of data comparison to these criteria are used directly to determine if concentrations at an AOI warrant further evaluation for these pathways. Specifically, if the highest concentration of a chemical at an AOI does not exceed these screening criteria, then further evaluation of the chemical for these exposure pathways at the AOI is not necessary.

Criteria Based on Cancer or Noncancer Risk

For potential exposures that are addressed by cancer- and noncancer-based criteria (e.g., criteria derived from EPA Region 9 PRGs), the ratios of the highest concentration of each chemical detected at an AOI to the screening criteria are used to calculate upper-bound estimates of cumulative cancer and noncancer risks. If these upper-bound estimates do not exceed EPA's cumulative cancer and noncancer risk triggers for corrective measures (i.e., cumulative site-related cancer risk of 10^{-4} and noncancer hazard index (HI) of 1), then the exposure pathways addressed by the criteria do not require further evaluation.

The estimates of cumulative cancer and noncancer risks calculated in this approach are considered upper-bound estimates of RME risks because they are based on the use of exposure assumptions that are more conservative than those recommended in EPA risk assessment guidance (EPA 1989) for estimating the RME. Specifically, using the highest concentration for all chemicals is more conservative than using 95% UCLs, which EPA allows for estimating exposure point concentrations. Also, using generic exposure factors is more conservative than using exposure factors that include site-specific considerations. For example, the screening criteria derived from PRGs assume that workers are exposed to soil for an entire work day at each AOI, but workers at GM facilities may actually spend only a fraction of the work day at a particular AOI.

If the upper-bound estimate of the cumulative cancer risk or noncancer HI for an AOI exceeds the trigger for corrective measures, then the upper-bound estimate is refined by using the 95% UCL for the chemicals that contributed the highest risks when their maximum concentrations were used in the initial cumulative risk calculations. Experience with this approach at GM facilities shows that cumulative cancer or noncancer risk estimates for a particular AOI is often influenced by only a few chemicals. This means the computation of 95% UCLs, which can be time-consuming, is usually necessary for only a few chemicals. If the refined cumulative cancer and noncancer risk estimates do not exceed EPA's cumulative cancer and noncancer risk triggers for corrective measures, then further evaluation is not necessary.

The 95% UCLs are calculated using a nonparametric bootstrap method known as the BCa (bias-corrected and accelerated) method (Efron and Tibshirani 1998) with at least 4,000 bootstrap replications to ensure adequate accuracy. The use of a nonparametric approach streamlines the computation of 95% UCLs because it does not require testing of data distributions which otherwise would be necessary in attempting to use parametric methods such as those recommended in older EPA guidance (EPA 1992). The nonparametric

bootstrap method also has the advantage over parametric methods in that it can provide a reliable result regardless of whether a data set fits any theoretical distribution.

If the simplified evaluation shows that a potential exposure at an AOI could be unacceptable, more detailed risk calculations (e.g., using site-specific exposure factors) may be performed to refine the risk estimates, or GM may decide to conduct remediation at the AOI before reassessing the potential exposure.

The conceptual site model may include potential exposures that cannot be addressed by using simplified risk calculations because appropriate risk-based screening criteria are not available. For example, screening criteria are not available for evaluating potential exposure of workers to nonaqueous-phase liquids. In such cases, a site-specific risk assessment would be conducted to evaluate these potential exposures.

4 References

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ATTACHMENT 1

Comparison of Exposure Assumptions in EPA Region 9 Soil PRGs for Industrial Land Use with Potential Exposures of Construction Workers and Trespassers

Comparison of Exposure Assumptions in EPA Region 9 Soil PRGs for Industrial Land Use with Potential Exposures of Routine Worker, Construction Workers, and Trespassers

The EPA Region 9 Preliminary Remediation Goals (PRGs) for soil at industrial sites are based on standard default exposure factors that EPA (1991a) recommends for evaluating reasonable maximum exposures (RME) to soil in commercial/industrial settings. As such, the PRGs are appropriate for evaluating potential exposures of workers to soil during routine activities at industrial facilities. In addition, the PRGs are also appropriate for evaluating potential exposure of other receptors that may be present at industrial facilities and have lower potential exposures to soil. Such receptors generally include workers who perform occasional excavations during construction or maintenance, and trespassers. The purpose of this attachment is to describe the typical activities of such receptors at GM facilities and to show that their potential exposures to soil are unlikely to exceed the exposures assumed in deriving the PRGs.

Potential receptors at GM facilities include workers who are engaged in routine manufacturing, workers who conduct occasional subsurface construction or maintenance, and trespassers. The typical activities of these receptors and their potential for exposure to soil are described below.

Routine Workers

The largest receptor population at GM facilities consists of workers who are engaged in routine manufacturing. Most of these workers spend most of their work day indoors within large manufacturing buildings. During their limited time outdoors, these workers could contact surface soil in unpaved areas. Potential routes of exposure to surface soil would include incidental ingestion, dermal contact, and inhalation of soil vapor and airborne particulates.

Construction/Maintenance Workers

A small fraction of the workers at GM facilities conduct occasional subsurface construction or maintenance that puts them in contact with both surface and subsurface soil in paved and unpaved areas of the facility (e.g., during installation or repair of underground utilities, or during removal or repair of pavement). These types of subsurface activities are typically of

limited size and duration. Typical excavations are expected to be approximately 5 m by 5 m, and the maximum excavation depth would be approximately 3 to 4 m. Potential routes of exposure to surface and subsurface soil would include incidental ingestion, dermal contact, and inhalation of soil vapor and airborne particulates.

Trespassers

Security fencing and guards control public access to GM facilities. These controls make trespassing unlikely, and would limit the duration of any unauthorized access as well as the types of activities while on-site. Trespassers are assumed to be adolescents between ages 9 to 18. While trespassing, they could come into contact with surface soil in unpaved areas. Potential routes of exposure would include incidental ingestion, dermal contact, and inhalation of soil vapor and airborne particulates.

Exposure factors appropriate for quantifying these receptors' potential exposures are summarized on Table A1 and discussed below. Also included on Table A1 for comparison are the exposure factors used in deriving the PRGs.

Routine Workers

Ingestion rate: The soil ingestion rate of 50 mg/day is EPA's recommended value for evaluating RME in industrial settings (EPA 1991a).

Dermal contact rate: The dermal contact rate is the product of the exposed skin surface area and the soil adherence factor. The surface area of 3,300 cm^2 and adherence factor of 0.2 mg/cm^2 are EPA's recommended values for evaluating RME in industrial settings (EPA 2001).

Breathing rate: The breathing rate of 20 m^3/day is EPA's recommended value for evaluating RME in industrial settings (EPA 1991).

Fraction contacted: The fraction contacted term is less than 1 because workers at GM facilities generally do not spend an entire work day at one area of exposed soil, and are unlikely to work without absences due to sickness, holidays, and inclement weather.

Exposure frequency: The frequency of 250 days/year is EPA's recommended value for evaluating RME in industrial settings (EPA 1991a). The value is based on a 5-day work week and 50 weeks per year.

Exposure duration: The duration of 25 years is EPA's recommended value for evaluating RME in industrial settings (EPA 1991a). The value is the 95^{th} percentile number of years workers work at one location.

Body weight: The body weight of 70 kg is the standard EPA-recommended value for assessing exposure of adults (EPA 1989).

Averaging time: The averaging time for evaluating exposures to carcinogens is 70 years. The averaging time for evaluating exposures to noncarcinogens is the exposure duration (EPA 1989).

Construction/Maintenance Workers

Ingestion rate: The soil ingestion rate of 200 mg/day is based on using current data on soil adherence to hands during excavation and construction activities (EPA 1997) to replace the outdated assumption originally used in deriving the ingestion rate of 480 mg/day (EPA 1991a).

Dermal contact rate: The surface area of 3,300 cm^2 and adherence factor of 0.2 mg/cm^2 are EPA-recommended values for evaluating RME in industrial settings (USEPA 2001).

Breathing rate: The breathing rate of 20 m^3/day is EPA's recommended value for evaluating RME in industrial settings (EPA 1991).

Fraction contacted: The fraction contacted term is 1.

Exposure frequency and duration: The total number of days of construction or maintenance at one area is conservatively assumed to be 50 days (5 days/year x 10 years), based on professional judgment considering the types of construction and maintenance at GM facilities.

Body weight: The body weight of 70 kg is the standard EPA-recommended value for assessing exposure of adults (EPA 1989).

Averaging time: The averaging time for evaluating exposures to carcinogens is 70 years. The averaging time for evaluating exposures to noncarcinogens is the exposure duration (EPA 1989).

Trespassers

Ingestion rate: The soil ingestion rate of 50 mg/day is based on EPA's recommended value for evaluating RME in industrial settings (EPA 1991a).

Dermal contact rate: The exposed skin surface area of 5,700 cm^2 is conservatively based on EPA's recommend value for evaluating RME of adults in residential settings (EPA 1991a). The adherence factor of 0.2 mg/cm^2 is EPA's recommended value for evaluating RME in industrial settings (USEPA 2001).

Breathing rate: The breathing rate of 20 m^3/day is EPA's recommended value for evaluating RME in industrial settings (EPA 1991).

Fraction contacted: The fraction contacted term is 0.25 (or 2/8) because trespassers should not be able to evade plant security and spend more than a couple hours in one particular area.

Exposure frequency: The frequency of 100 days/year is based on professional judgment considering normal security measures at GM facilities. This value assumes 2 days per week and 50 weeks per year.

Exposure duration: The duration of 10 years corresponds to the number of years from ages of 9 to 18.

Body weight: The body weight of 51 kg is the average for adolescents between the ages of 9 to 18 (EPA 1997).

Averaging time: The averaging time for evaluating exposures to carcinogens is 70 years. The averaging time for evaluating exposures to noncarcinogens is the exposure duration (EPA 1989).

Using these exposure factors, the doses per mg/kg of chemical in soil or per mg/m^3 in air have been calculated and are shown on Table A1 to facilitate comparison of the exposures assumed for each receptor with the exposures assumed in the PRGs. These cancer- and noncancer-based doses are shown on Table A1 in bold and are labeled as normalized lifetime average daily dose (LADD) and average daily dose (ADD), respectively.

For the purposes of determining whether the PRGs are adequately protective, the normalized cancer- and noncancer-based doses for each receptor can be compared with the corresponding normalized doses assumed in the PRGs. A direct comparison of the normalized doses on Table A1 shows that the normalized cancer- and noncancer-based doses for each route and receptor are lower than the corresponding normalized doses assumed in derivation of the PRGs. For routine workers, the normalized doses are lower than those assumed in the PRGs because these workers do not spend an entire work day at one area of exposed soil. For construction workers, the normalized LADDs are approximately 30 to 100 times lower than those assumed in the PRGs, and the normalized ADDs are approximately 10 to 50 times lower. For trespassers, the normalized LADDs are approximately 10 to 20 lower than those assumed in the PRGs, and the normalized ADDs are approximately 4 to 7 times lower.

In addition to a direct comparison of normalized doses, further consideration is appropriate for the inhalation route in the construction workers scenario, because soil-to-air transfers in this scenario could differ from those assumed in calculating the PRGs. The following analysis considers such differences and shows that they have essentially no effect on the interpretation of the normalized doses on Table A1.

Particulates

The concentration of respirable soil particulates (10 μm or smaller, i.e., PM_{10}) generated in the construction worker scenario at GM facilities can be conservatively estimated using an emission factor of 2.5 x 10^{-8} kg/m^2-s, which is for "heavy construction" as described in EPA guidance (1995). Multiplying this factor by a normalized air concentration of 4.4 kg/m^3 per kg/m^2-s for a 5 m by 5 m area source (EPA 1996) gives an estimated PM_{10} concentration of approximately 0.11 mg/m^3. Although this concentration is approximately 140 times higher than the PM_{10} concentration of 0.0008 mg/m^3 assumed in the PRGs, it contributes negligibly to the total soil intake assumed in the construction scenario. At a breathing rate of 20 m^3/day, the PM_{10} concentration of 0.11 mg/m^3 represents a soil intake of only 2.2 mg/day, which is approximately 1% of the assumed incidental soil ingestion rate of 200 mg/day.

Vapor

The PRGs are derived using a vapor concentration in air C_{air} that is estimated from the soil concentration C_{soil} as follows:

$$C_{air} = C_{soil} \cdot J \cdot C / Q$$

The vapor flux J is estimated using the model described by Jury et al (1990), and is based on an averaging period of 25 years, which corresponds to the exposure duration that EPA recommends for evaluating potential exposure of routine workers. The normalized air concentration C/Q is based on a 0.5-acre source. For the construction workers scenario, the flux J would be calculated based on an averaging period of 10 years instead, to match the assumed exposure duration for this scenario. Because the flux is inversely proportional to the square root of the averaging period, the flux for the construction workers scenario is higher than the flux assumed in the PRGs by a factor of approximately 1.6 = $(25/10)^{1/2}$. However, the C/Q for the 5 m x 5 m source assumed in the construction scenario is approximately 0.4 of that for a 0.5-acre source. Combining these factors gives a vapor concentration for the construction scenario that is approximately 0.6 of that assumed in deriving the PRGs.

The above analysis shows that potential exposure of construction workers via inhalation in the construction/excavation scenario is adequately addressed by considering the normalized doses on Table A1.

In summary, the normalized doses calculated on Table A1 show that the PRGs are adequately protective of routine workers, construction workers, and trespassers on GM facilities. In fact, the results indicate that the PRGs would be protective even assuming substantially higher exposures in the construction worker and trespasser scenarios. Furthermore, the results for the construction

scenario can be interpreted to mean that the PRGs are also protective of off-site residential receptors that might be exposed via inhalation of PM_{10} or vapors during on-site construction/excavation activities, since off-site air concentrations would be lower than on-source air concentrations due to air dispersion.

Table A1
Comparison of Exposure Factors for Receptors at GM Facilities

			EPA Region 9 PRGs		Routine Workers		Construction Workers		Adolescent Trespassers	
Soil Ingestion										
Ingestion Rate	mg-soil/day	**IR**	50	b	50	b	200	e	50	e
Conversion Factor	kg/mg	**CF**	1E-06		1E-06		1E-06		1E-06	
Fraction Contacted	unitless	**FC**	1		< 1		1		0.25	
Exposure Frequency	days/year	**EF**	250	b	250	b	5	e	100	e
Exposure Duration	years	**ED**	25	b	25	b	10	e	10	e
Body Weight	kg	**BW**	70	a	70	a	70	a	51	c
Averaging Time, cancer	days	**AT_c**	25,550	a	25,550	a	25,550	a	25,550	a
Averaging Time, noncancer	days	**AT_{nc}**	9,125	a	9,125	a	3,650	a	3,650	a
Normalized LADD	kg-soil/kg/day		**1.75E-07**		**< 1.75E-07**		**5.59E-09**		**9.59E-09**	
Normalized ADD	kg-soil/kg/day		**4.89E-07**		**< 4.89E-07**		**3.91E-08**		**6.72E-08**	
Soil Dermal Contact										
Adherence Factor	mg-soil/cm^2	**AF**	0.2	d	0.2	d	0.2	d	0.2	d
Exposed Skin Surface Area	cm^2/day	**SA**	3,300	d	3,300	d	3,300	d	5,700	b
Conversion Factor	kg/mg	**CF**	1E-06		1E-06		1E-06		1E-06	
Absorption Fraction	unitless	**ABS_d**	0.1	f	0.1	f	0.1	f	0.1	f
Fraction Contacted	unitless	**FC**	1		< 1		1		0.25	
Exposure Frequency	days/year	**EF**	250	b	250	b	5	e	100	e
Exposure Duration	years	**ED**	25	b	25	b	10	e	10	e
Body Weight	kg	**BW**	70	a	70	a	70	a	51	c
Averaging Time, cancer	days	**AT_c**	25,550	a	25,550	a	25,550	a	25,550	a
Averaging Time, noncancer	days	**AT_{nc}**	9,125	a	9,125	a	3,650	a	3,650	a
Normalized LADD	kg-soil/kg/day		**2.31E-07**		**< 2.31E-07**		**1.85E-09**		**2.19E-08**	
Normalized ADD	kg-soil/kg/day		**6.46E-07**		**< 6.46E-07**		**1.29E-08**		**1.53E-07**	
Ambient Air Inhalation										
Breathing Rate	m^3/day	**BR**	20	b	20	b	20	b	20	b
Fraction Contacted	unitless	**FC**	1		< 1		1		0.25	
Exposure Frequency	days/year	**EF**	250	b	250	b	5	e	100	e
Exposure Duration	years	**ED**	25	b	25	b	10	e	10	e
Body Weight	kg	**BW**	70	a	70	a	70	a	51	c
Averaging Time, cancer	days	**AT_c**	25,550	a	25,550	a	25,550	a	25,550	a
Averaging Time, noncancer	days	**AT_{nc}**	9,125	a	9,125	a	3,650	a	3,650	a
Normalized LADD	m^3-air/kg/day		**6.99E-02**		**< 6.99E-02**		**5.59E-04**		**3.84E-03**	
Normalized ADD	m^3-air/kg/day		**1.96E-01**		**< 1.96E-01**		**3.91E-03**		**2.69E-02**	

References:

a. RAGS, Volume I: Human Health Evaluation Manual, Part A (EPA 1989)

b. Standard default exposure factors. OSWER Directive 9285.6-03 (EPA 1991)

c. Exposure Factors Handbook (EPA 1997)

d. RAGS, Volume I: Human Health Evaluation Manual: Part E (EPA 2001)

e. Based on professional judgment and site-specific considerations discussed in the text

APPENDIX D
Estimated Dilution of Groundwater Discharging to the Saginaw River

APPENDIX D
Estimated Dilution of Groundwater Discharging to the Saginaw River

Approach
Saginaw River flow data from the United States Geological Survey were compiled in order to calculate a ratio of groundwater flow to river flow. Flow data were obtained for the period spanning 1980 to 2000, however, most years were missing some data. The most recent year with a complete data record is 1999. In accordance with MDEQ guidance, the lowest 95% exceedance of flow was calculated from daily data spanning 1980 to 2000 (946 cfs) and from 1999 (1,138 cfs). See attached Table for details.

Groundwater discharge flows were then calculated for each IU adjacent to the river (IUs A, E, and G). The groundwater flow from each area was added to generate a Site-wide groundwater discharge flow (8.9 cfs). See attached Table for details.

Dilution Ratio
The groundwater-river flow dilution was obtained by dividing the river flow by the groundwater flow. See attached Table for details. Using the river flow based on the 1980 to 2000 data and the 1999 data resulted in estimated the dilution ratios exceeding 100.

Reference
River Flow Data Source: U.S. Geological Survey
National Water Information System
Retrieved: 2003-08-27 10:21:36 EDT
USGS 04157000 SAGINAW RIVER AT SAGINAW, MI

Dilution Factor Calculations Summary
Groundwater from SMCO discharging to the Saginaw River

Parameter	Symbol	Value	Units
Hydraulic Conductivity	K	7.22E-03	ft/s
Hydraulic Gradient	I	0.016	ft/ft
95% Lowest Exceedance River Flow - 1999	Qr_1	1138	ft^3/s
95% Lowest Exceedance River Flow - 1980-2000	Qr_2	946	ft^3/s
Total Groundwater Flow	Qd	8.88	ft^3/s
Dilution Factor - 1999 Data	**Fd_1**	**128.18**	
Dilution Factor - 1980-2000 Data	**Fd_2**	**106.55**	
IU A			
Average Saturated Depth	d	18.7	ft
Total Length	l	1850	ft
Cross Sectional Area	A_A	34595	ft^2
Goundwater Flow	Qd_A	4.00	ft^3/s
IU E			
Average Saturated Depth	d	14.1	ft
Total Length	l	2600	ft
Cross Sectional Area	A_E	36660	ft^2
Goundwater Flow	Qd_E	4.23	ft^3/s
IU G			
Average Saturated Depth	d	4	ft
Total Length	l	1400	ft
Cross Sectional Area	A_G	5600	ft^2
Goundwater Flow	Qd_G	0.65	ft^3/s