CONESTOGA-ROVERS & ASSOCIATES

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DRAFT MEMORANDUM

TO:	Richard Conforti, MDEQ, Cheryl Howe, MDEQ	REF. NO.:	058502
FROM:	John-eric Pardys/kf/10	DATE:	January 21, 2015
CC:	Nate Nemani, U.S. EPA, Michael Tomka (CRA), Dave Favero (RACER)		
RE:	**RACER Waste Management Unit Status, Saginaw Nodular Industrial Land**		

The following memorandum presents a summary of Revitalizing Auto Community Environmental Response's (RACER's) understanding of the current status of the Resource Conservation Recovery Act (RCRA) Hazardous Waste Management Units (WMUs) located on RACER's Saginaw Nodular Industrial Land Site in Saginaw, Michigan (Site). The Site was previously a portion of a larger facility owned by General Motors Corporation (GMC) called the Saginaw Metal Casting Operations (SMCO) Facility, which was split between General Motors LLC and RACER as a result of the GMC bankruptcy. Figure 1 highlights the portions of the larger SMCO Facility that since March 31, 2011 have been owned by RACER and presents all seven WMU locations identified in the Description of Current Conditions (August 1995) document. For the purposes of this memorandum only the WMUs owned by RACER (3, 4, 5, and 7) are being reviewed.

Historical documents associated with the WMUs were reviewed, as well as, the Michigan Department of Environmental Quality (MDEQ) Hazardous Waste Permitting website to determine the current status of the WMUs. Table 1 presents a document chronology for each of the WMUs on RACER's Saginaw Nodular Industrial Land. Attachment A presents a screen capture of the MDEQ Hazardous Waste Permitting website. The website summarizes the "Legal Operating Status" of hazardous waste "Units" at the SMCO Facility. A table found on Figure 1 summarizes the status of the WMUs on RACER property, which is based on historical documentation and MDEQ's website.

The following discrepancies on the WMUs status were identified between the historical documentation and the MDEQ website:

- WMU – Former Nodular Iron Plant Oil House RCRA Hazardous Waste Drum Storage Area (Alias G.1 or WMU 3) was not matched with any of the entries on the MDEQ website. Attachment B presents a copy of the most recent information that was submitted to the MDEQ on this WMU.
- WMU – Former (Replacement) Desulfurization Slag RCRA Treatment Unit (Alias G.5, WMU-7, or NewTreat) was identified on the MDEQ website as "ISCA – Interim Status – Referred to Corrective Action", whereas a MDEQ letter dated February 27, 2004, certified closure of this WMU. Attachment C presents a copy of the closure letter.

Based on the historical documentation, MDEQ approved the closure of WMUs 4, 5, and 7. Therefore, the MDEQ should update their website under the "Legal Op Status" heading for "NewTreat", WMU 7 from "ISCA – Interim Status – Referred to Corrective Action" to "ISCP – Interim Status – Closed With Waste in Place" to be consistent with the "Legal Op Status" of WMUs 4 and 5 that were also closed in the closure letter presented in Attachment C.

Based on historical documentation, no response from MDEQ has been provided to date on the request for closure for WMU 3. WMU 3 does not appear to match any of the entries on MDEQ's website. In addition, soil and groundwater data collected as part of the RCRA Facility Investigation (RFI) in the vicinity of WMU 3 was screened against applicable Michigan Part 201 screening criteria as of June 2005, as presented in the RFI databox figures included in Attachment D, and evaluated in the Human Health Risk Assessment (HHRA) and the Ecological Risk Assessment (ERA). The data from this area only exceeded screening criteria in groundwater for Michigan Part 201 Industrial commercial II, III, and IV Drinking Water criteria for two constituents; arsenic and antimony. The HHRA and ERA reviewed reasonable exposure pathways and concluded that there were no unacceptable risks to human health or the environment in the vicinity of WMU 3. Therefore, based on the information submitted to MDEQ and the conclusions of the HHRA and ERA, we believe MDEQ should approve closure of WMU 3.

Furthermore, based on the level of investigation conducted in each of the WMU areas evidenced by the number of Pre-RFI and RFI investigative locations on Figure 1, the WMUs have been adequately characterized. The characterization information has been considered as part of the on-going Corrective Action process, including the August 2005 Description of Current Conditions, the September 2012 Supplemental RFI Report, and the April 2013 Draft Final Corrective Measures Proposal.

Finally, based on the above discussion and attached supporting information, we believe there is no additional action required to address the WMUs except for the proposed final corrective measures, which includes site-wide deed restrictions on land use at the Site to remain consistent with the current industrial (nonresidential) use and for on-Site groundwater use as a potable source.

Figure 1 – Waste Management Unit Locations

Table 1 – WMU Documentation Chronology

Attachment A – Screen Capture of the MDEQ Hazardous Waste Permitting Website
Attachment B – Closure Certification Report – Nodular Iron Oil House RCRA Hazardous Waste Storage Area
Attachment C – Certificate of Final Closure of Hazardous Waste Management Units
Attachment D – RFI Databox Figures

WASTE MANAGEMENT UNIT ALIASES				
DOCC (1995) - FORMER RCRA TSD UNITS	DOCC (1995) INVESTIGATIVE UNIT AREAS OF INTEREST	CLOSURE STATUS BASED ON RACER DOCUMENTATION	MDEQ - WEBSITE (OCT. 2014) UNIT NAME	MDEQ - WEBSITE (OCT. 2014) CLOSURE STATUS
RACER				
3. FORMER NODULAR IRON DRUM STORAGE AREA	G.1	CLOSURE CERTIFCATION REPORT SUBMITTED TO MDEQ ON JULY 26, 1999		
4. FORMER NODULAR IRON WASTE PAINT SHED	G.3	CLOSED FEB. 27, 2004 (MDEQ)	PAINTPAD	INTERIM STATUS - CLOSED WITH WASTE IN PLACE
5. FORMER NODULAR IRON HAZARDOUS WASTE CONTROL TANK	G.2	CLOSED FEB. 27, 2004 (MDEQ)	HWCONTROL	INTERIM STATUS - CLOSED WITH WASTE IN PLACE
7. FORMER REPLACEMENT DESULPHERIZATION SLAG TREATMENT UNIT	G.5	CLOSED FEB. 27, 2004 (MDEQ)	NEWTREAT	INTERIM STATUS - REFERRED TO CORRECTIVE ACTION

Nº	Revision	Date	Initial

N

0 250 500ft

LEGEND

- A-- INVESTIGATIVE UNIT BOUNDARY AND IDENTIFIER
- APPROXIMATE LIMITS OF RACER PROPERTY
- GM LLC PROPERTY
- 6 WMU LOCATION
- MONITORING WELL LOCATION
- SOIL BORING LOCATION

SCALE VERIFICATION

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

Approved

DRAWING STATUS

Status	Date	Initial

REVITALIZING AUTO COMMUNITIES ENVIRONMENTAL RESPONSE TRUST
SAGINAW NODULAR INDUSTRIAL LAND

SAGINAW, MICHIGAN

WASTE MANAGEMENT UNIT LOCATIONS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:

Project Manager:	Reviewed By:	Date:	
M. TOMKA	J. PARDYS	AUGUST 2014	
Scale: 1:500	Project Nº: 58502-T02	Report Nº: PRES009	Drawing Nº: figure 1

58502-T02(PRES009)GN-WA002 NOV 25/2014

TABLE 1

WMU DOCUMENTATION CHRONOLOGY
SAGINAW NODULAR INDUSTRIAL LAND
SAGINAW, MICHIGAN

FORMER NODULAR IRON PLANT OIL HOUSE RCRA HAZARDOUS WASTE DRUM STORAGE AREA
Alias: G.1 - DOCC (1995), WMU 3 - Phase 1A Work Plan (1998)

Document Date	Author	Transmitted to:	Type of Document	Re:
July 26, 1999	EMCON	Stephen G. Bude, MDEQ	Report	Closure Certification Report - Nodular Iron Oil House RCRA Hazardous Waste Storage Area

FORMER RCRA HAZARDOUS WASTE CONTROL AST
Alias: G.2 - DOCC (1995), WMU 5 - Phase 1A Work Plan (1998), HWControl - MDEQ Website (2014)

Document Date	Author	Transmitted to:	Type of Document	Re:
December 21, 1987	RMT Inc.		Report	Closure Plan for Interim Status Hazardous Waste Control Tank
April 28, 1988	Andrea R. Schoenrock - MDNR	William Hudson - GMC	Letter	Closure Plan Review
June 10, 1988	Alan J. Howard - MDNR	William Hudson - GMC	Letter	Closure Plans
October 5, 1989	RMT Inc.		Report	Documentation Report for RCRA Closure of a Hazardous Waste Control Tank
May 24, 1999	Cheryl Howe - MDEQ	William K. Steinmann - EMCON	Letter	Review of Closure Certification Reports
January 9, 2001	Cheryl R. Hiatt - GMC	Cheryl Howe - MDEQ	Letter	Response to MDEQ's Technical Review - Comments on the Hazardous Waste Control Tank Report
February 27, 2004	George W. Bruchmann - MDEQ	Cheryl R. Hiatt - GMC	Letter	Certification of Final Closure of Hazardous Waste Management Units

FORMER NODULAR WASTE PAINT SHED RCRA HAZARDOUS WASTE DRUM STORAGE AREA
Alias: G.3 - DOCC (1995), WMU 4 - Phase 1A Work Plan (1998), PaintPad - MDEQ Website (2014)

Document Date	Author	Transmitted to:	Document Type	Re:
December 21, 1987	RMT Inc.		Report	Closure Plan for Interim Status Paint Storage Building Drum Storage Area
April 28, 1988	Andrea R. Schoenrock - MDNR	William Hudson - GMC	Letter	Closure Plan Review
May 26, 1988	RMT Inc.		Report Addendum	Addendum to Closure Plan for Interim Status Paint Storage Building Drum Storage Area
June 10, 1988	Alan J. Howard - MDNR	William Hudson - GMC	Letter	Closure Plans
September 1988	RMT Inc.		Report	Documentation Report for RCRA Closure of the Paint Storage Building Drum Storage Area
May 24, 1999	Cheryl Howe - MDEQ	William K. Steinmann - EMCON	Letter	Review of Closure Certification Reports
January 9, 2001	Cheryl R. Hiatt - GMC	Cheryl Howe - MDEQ	Letter	Response to MDEQ's Technical Review - Comments on the Paint Storage Building Drum Storage Area Report
February 27, 2004	George W. Bruchmann - MDEQ	Cheryl R. Hiatt - GMC	Letter	Certification of Final Closure of Hazardous Waste Management Units

FORMER (REPLACEMENT) DESULFURIZATION SLAG RCRA TREATMENT UNIT
Alias: G.5 - DOCC (1995), WMU 7 - Phase 1A Work Plan (1998), NewTreat - MDEQ Website (2014)

Document Date	Author	Transmitted to:	Document Type	Re:
December 21, 1987	RMT Inc.		Report	Interim Status Closure Plan for Existing Calcium Carbide Desulfurization Slag Treatment Bunker
April 28, 1988	Andrea R. Schoenrock - MDNR	William Hudson - GMC	Letter	Closure Plan Review
May 26, 1988	Richard C. Krueger and Thomas J. Jan	Andrea R. Schoenrock - MDNR	Letter	Addenda to RCRA Closure Plans
May 26, 1988	RMT Inc.		Report Addendum	Addendum to Closure Plan for Interim Status Paint Storage Building Drum Storage Area
June 10, 1988	Alan J. Howard - MDNR	William Hudson - GMC	Letter	Closure Plans
July 15, 1988	RMT Inc.		Report	Ammendments the the Closure Plan for the Existing Calcium Carbide Desulfurization Slag Treatment Bunker
July 21, 1988	William Hudson - GMC	Andrea R. Schoenrock - MDNR	Letter	Closure Plans for the Old and Existing Calcium Carbide Desulfurization Slag Treatment Units
September 26, 1988	Andrea R. Schoenrock - MDNR	William Hudson - GMC	Letter	Calcium Carbide Slag Units
October 1991	Joseph B. Medved - GMC	Cheryl Howe - MDEQ	Report	Documentation Report for RCRA Closure of an Existing Calcium Carbide Desulfurization Slag Treatment Bunker
May 24, 1999	Cheryl Howe - MDEQ	William K. Steinmann - EMCON	Letter	Review of Closure Certification Reports
September 11, 2001	Cheryl R. Hiatt - GMC	Cheryl Howe - MDEQ	Letter	Response to MDEQ's Technical Review - Comments on the Existing Calcium Carbide Desulfurization Slag Treatment Unit Report
February 27, 2004	George W. Bruchmann - MDEQ	Cheryl R. Hiatt - GMC	Letter	Certification of Final Closure of Hazardous Waste Management Units

Attachment A

Screen Capture of the MDEQ
Hazardous Waste Permitting Website

395505 / MID041793340 SAGINAW METAL CASTING OPERATIONS
2815 HACK ROAD, SAGINAW, MI 48601

Facility

	Requires MOR	NCAPS	Baseline Group
	No	H - High	2020

General:

Requires MOR: No
NCAPS: H - High
Baseline Group: 2020
Recycles Recyclable Material on Site: No

Assignments:

District Staff: Walkington, Terry (INACTIVE)
EQA Staff:
Permit Engineer: Howe, Cheryl
EPA Staff: Mirtha Capiro, Enf.
Geologist: Carnagie, Mary
Lead Agency: E - EPA
Toxicologist:

Facility Workplan Commitments | Area RAU | Program Universes (11) | Authorized B.R. Mgmt. Method Codes (0) | Authorized Waste Codes (1) | Recycles Recyclable Material On-Site Waste Codes (0) | **Units (6)**

	Unit Name	Process	Effective Date	Legal Op Status	Capacity
6	OLDTREAT	T04 - OTHER TREATMENT	5/24/1999	ISCP - Interim Status - Closed With Waste In Place	7,000.00
7	NEWTREAT	D99 - OTHER DISPOSAL	5/24/1999	ISCA - Interim Status - Referred to Corrective Action	50.00
	PARTSPAD	S01 - CONTAINER	2/7/1985	ISIN - Interim Status - Inactive/closing, But Not Yet Rcra Closed	5.00
4	PAINTPAD	S01 - CONTAINER	5/24/1999	ISCP - Interim Status - Closed With Waste In Place	4,725.00
5	HWCONTROL	T01 - TANK TREATMENT	5/24/1999	ISCP - Interim Status - Closed With Waste In Place	10,000.00
	GREYPAD	S01 - CONTAINER	11/10/1998	ISCC - Interim Status - Clean Closed	1,045.00

Attachment B

Closure Certification Report –
Nodular Iron Oil House RCRA Hazardous Waste Storage Area

EMCON
603 East Diehl Road • Suite 123 • Naperville, Illinois 60563-1477 • **(630) 505-9450** • Fax (630) 505-9454

July 26, 1999
Project: 84068-063.009

Mr. Stephen G. Buda, P.E.
Chief, Hazardous Waste Permits
Michigan Department of Environmental Quality
Waste Management Division
John A. Hannah Building
P.O. Box 30241
Lansing, Michigan 48909-7741

Re: Closure Certification Report for Nodular Iron Oil House RCRA Hazardous Waste Storage Area at General Motors' Saginaw Metal Casting Operations, Saginaw, Michigan

Dear Mr. Buda:

Enclosed please find the Closure Certification Report for the Nodular Iron Oil House RCRA Hazardous Waste Storage Area at the General Motors Saginaw Metal Casting Operations Plant in Saginaw, Michigan.

If you have any questions or comments, or would like any additional information, please contact our office.

Sincerely,

EMCON

William K. Steinmann, CPG
Senior Project Manager

James J. McGuigan, P.E., CHMM
Site Restoration Department Manager

Attachment: Closure Certification Report for Nodular Iron Oil House RCRA Hazardous Waste Storage Area

cc: Mirtha Capiro, U.S.EPA
Ed Haapala, MDEQ Bay City District
Cheryl Hiatt, GM Remediation Team
Jean Caufield, GM Remediation Team
Tony Thrubis, GM Legal Staff
Dr. Lisa Williams, U.S. DOI, Fish and Wildlife

U:\84068063\009\RCRAUNIT\BUDALTR.DOC-96\it:1

CLOSURE CERTIFICATION REPORT

Nodular Iron Oil House RCRA Hazardous Waste Storage Area
Former Nodular Iron Plant
(Saginaw Metal Casting Operations)
2100 Veterans Memorial Parkway
Saginaw, Michigan

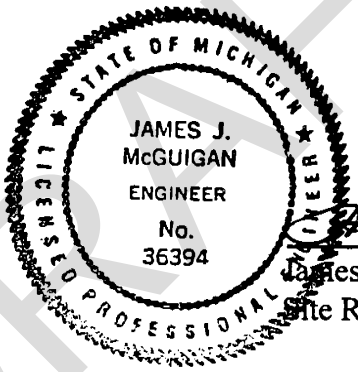
JULY 1999

Prepared by:

EMCON
603 East Diehl Road, Suite 123
Naperville, Illinois

CERTIFICATION OF CLOSURE

"I certify under penalty of law 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 gather and evaluate 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, and the closure activities for this unit have been conducted in substantial conformance with the approved closure plan. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."



James J. McGuigan, P.E., CHMM
Site Restoration Department Manager

Cheryl R. Hiatt
General Motors Corporation

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Figure 2: Former Nodular Iron Plant Oil House Building Layout 1-4

LIST OF ATTACHMENTS

Attachment I: RCRA Part A Permit Application (November 17, 1980)
Attachment II: Closure Plan (May 19, 1981)
Attachment III: Photographic Documentation of Closure Activities
Attachment IV: Wastewater Characterization Analysis
Attachment V: Waste Disposal Manifests

1 INTRODUCTION

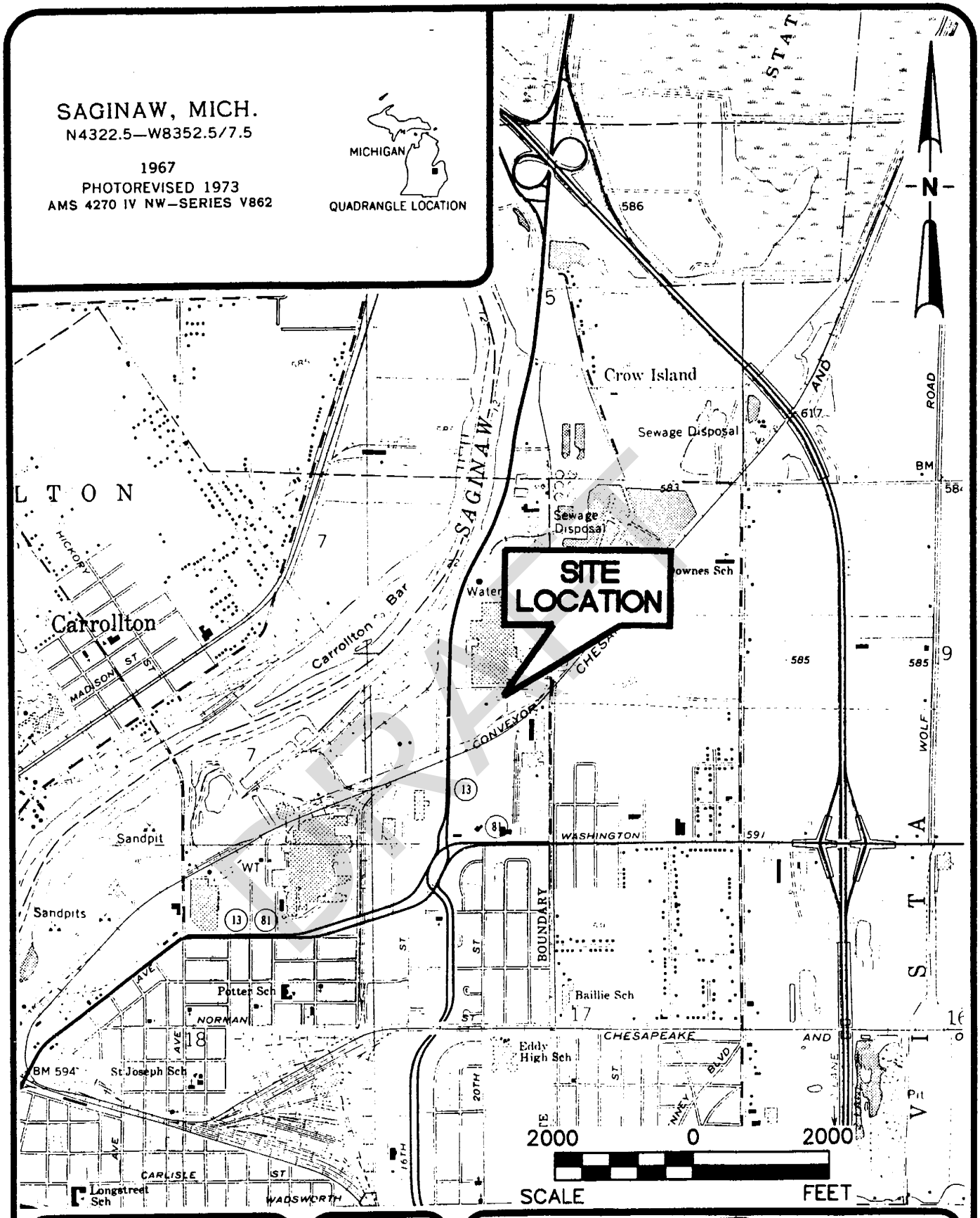
1.1 Purpose

In accordance with Part 111 of the Michigan Natural Resources and Environmental Protection Act (NREPA), Public Act 451 of 1994, as amended, and in compliance with the closure provisions of 40 CFR, Part 265, Subpart G, this report certifies the closure of a Resource Conservation and Recovery Act (RCRA) Storage Area, formerly located at General Motors Corporation's (GM) Nodular Iron Plant, 2100 Veterans Memorial Parkway, Saginaw, Michigan (now part of the Saginaw Metal Casting Operations - SMCO). The United States Environmental Protection Agency (U.S.EPA) Identification Number for SMCO is MID 041 793 340.

1.2 Background

The former storage unit was located at the former Nodular Iron Plant Oil House, 2100 Veterans Memorial Parkway, Saginaw, Michigan, within the NE 1/4 of the SW 1/4 of Section 8, Township 12 North, Range 5 East, Saginaw County, Michigan (refer to **Figure 1**).

According to the facility's RCRA Part A Permit Application (November 17, 1980), this unit consisted of a ten foot square storage pad (**Attachment I**). In actuality, the unit consisted of two,



EMCON

DATE	1/28/99
DWN	AMC
APP	BKS
REV	
PROJECT NO.	84068-063.009

FIGURE 1
FORMER NODULAR IRON PLANT OIL HOUSE
SAGINAW, MICHIGAN

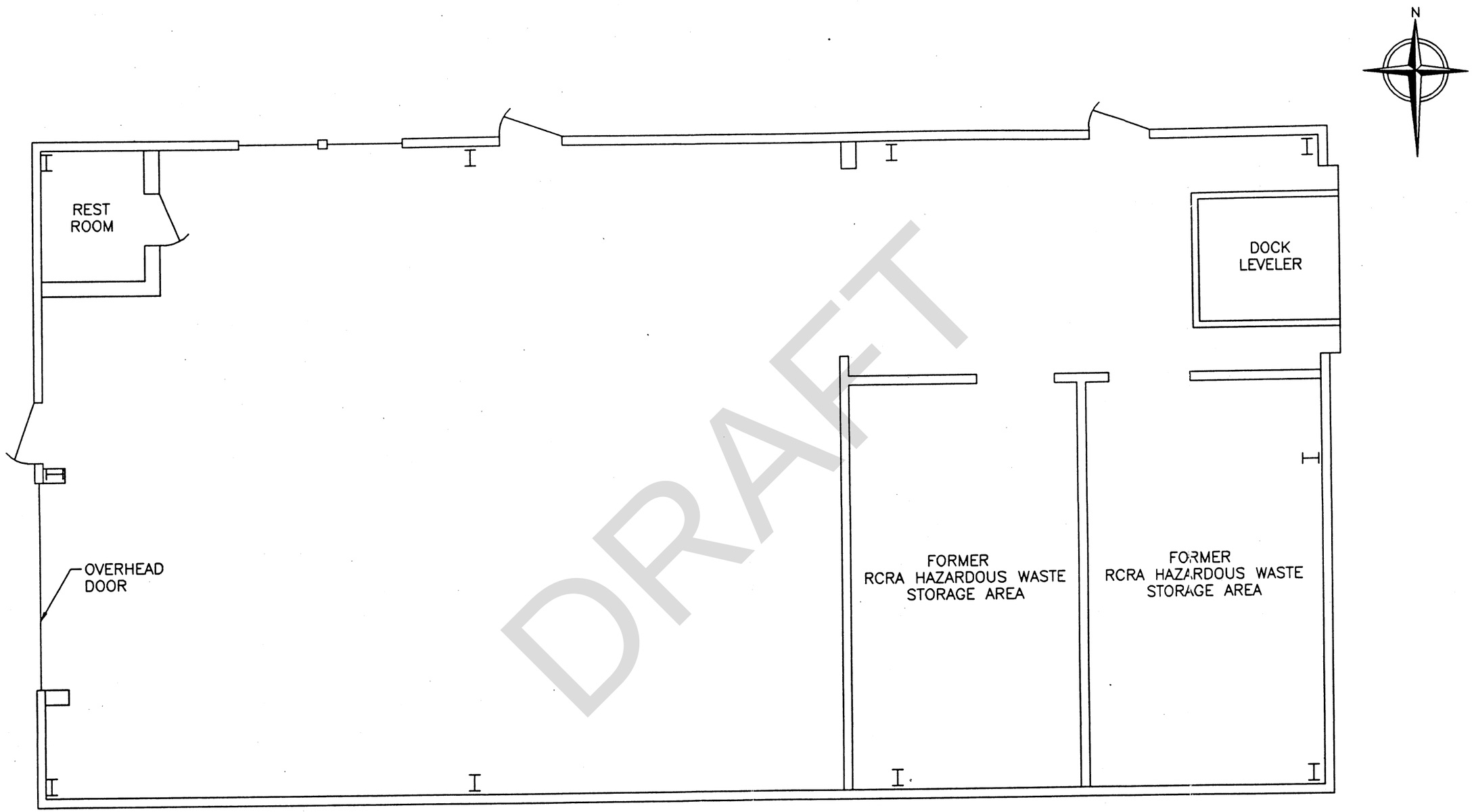
SITE LOCATION AND TOPOGRAPHIC MAP

approximately eleven feet by nineteen feet by fifteen feet high rooms complete with concrete and steel walls, a concrete floor, a ceiling and metal fire doors (refer to **Figure 2**).

The use of the Oil House Storage Unit reportedly began at former Nodular Iron Plant start-up in 1966 and continued until just prior to plant closure in 1987. The Oil House Storage Unit was utilized to store hazardous waste materials staged in 55-gallon barrels until proper disposal. The main waste believed to have been stored on this pad was 1,1,1-trichloroethane (TCA) with lesser amounts of polychlorinated biphenyls (PCBs), chlorobenzene, waste petroleum naphtha, waste oils, and possibly trichloroethylene (TCE).

General Motors submitted a Closure Plan (dated May 19, 1981) to the U.S.EPA, for this storage area and others, pursuant to 40 CFR, Part 265, Subpart G, Sections 265.110 through 265.120 (**Attachment II**) on April 14, 1983. The Closure Plan was public noticed in the *Saginaw News* on May 5, 1983.

In an August 17, 1998, meeting between the Michigan Department of Environmental Quality - Waste Management Division (MDEQ-WMD), GM, and GM's consultant EMCON, it was agreed that GM could attain closure for this unit by implementing and adhering to the 1981 Closure Plan.



EMCON

0 5 10
SCALE IN FEET

DATE 5/20/99
DWN AMC
APP BKS
REV
PROJECT NO.
84068-063.009

FIGURE 2
SAGINAW METAL CASTING OPERATIONS
2100 VETERANS MEMORIAL PARKWAY
SAGINAW, MICHIGAN
FORMER NODULAR IRON PLANT
OIL HOUSE BUILDING LAYOUT

2 CLOSURE ACTIVITIES

On November 2, 1998, Clean Harbors Environmental Services, Inc. (Clean Harbors) of Chicago, Illinois mobilized to the Nodular Iron Oil House for the purpose of decontaminating/cleaning the RCRA Storage Area. A representative from EMCON was present at the site to direct and supervise the decontamination/cleaning activities. Photographic documentation of the closure activities is included in **Attachment III**).

2.1 Field Decontamination/Cleaning

On November 2, 1998, Mr. Steven M. Clayton, Staff Geologist, with the EMCON office in Northville, Michigan, supervised the decontamination of the Nodular Iron Plant Oil House RCRA Hazardous Waste Drum Storage Area located on the site of the Former Saginaw Nodular Iron Plant at 2100 Veterans Memorial Parkway, Saginaw, Michigan. The purpose of the decontamination event was to ensure the removal of any residual material on the walls and floor of the two-room storage facility located in the Nodular Iron Oil House in preparation for closure and demolition activities. Mr. Clayton met with Dave Longdon, foreman for Clean Harbors, and discussed the agenda for decontamination of the storage building. Mr. Longdon was assisted by two crew members, T. Waisley and E. Bogan.

The walls and floor of each room were scrubbed with a 5% alkaline caustic scrub solution. Clean Harbors washed the walls and floor with the caustic scrub solution and extendible scrub brushes. The solution was drawn off via vacuum pick-up and containerized in two 55-gallon drums. As a final step, the walls and floor of each room were steam cleaned. The rinse water from the steaming operations was also drawn off via vacuum pick-up and collected in the same two 55-gallon drums. Mr. Clayton supervised and documented (via digital photographs presented in **Attachment III**) the decontamination process and documented the cleaning operation of each room. The two 55-gallon drums were sealed, labeled, and placed near the entrance of the former Nodular Iron Plant Oil House. The decontamination process was completed following the 1981 Approved General Motors Closure Plan and the health and safety plan developed for the site[1]. Yellow Tyvek suits, respiratory protection, nitrile gloves, safety glasses, and rubber boots were worn by all three members of the Clean Harbors crew during the entire decontamination process.

2.2 Wastewater Disposal

Clean Harbors collected representative samples from the two 55-gallon drums for waste characterization analysis (**Attachment IV**). On January 19, 1999, Clean Harbors removed the barrels from the site and transported the drums to Clean Harbors Services, Inc. in Chicago, Illinois for treatment and disposal. The waste manifest is included as **Attachment V**.

[1] Part VI of the Phase 1A RCRA Facility Investigation Workplan (June 1998, Revision 2).

3 SUMMARY AND CONCLUSIONS

On November 2, 1998, under the direction and supervision of EMCON, Clean Harbors Environmental Services, Inc. of Chicago, Illinois completed decontamination/cleaning activities at the Former Nodular Iron Plant Oil House RCRA Hazardous Waste Storage Area, located at 2100 Veterans Memorial Parkway, Saginaw, Michigan. These activities were completed in accordance with the Closure Plan which was previously approved by the Michigan Department of Environmental Quality - Waste Management Division.

The storage area consisted of two enclosed rooms within the Oil House Building (approximate dimensions of 11 feet by 19 feet by 15 feet high) that were utilized to store hazardous waste (1,1,1-TCA, PCBs, waste petroleum naphtha, chlorobenzene, waste oils, and possibly TCE). Decontamination/cleaning activities were completed on November 2, 1998.

Two, 55-gallon drums of wash rinse water were generated from the decontamination activities and were properly disposed by Clean Harbors. The Oil House Building was demolished in the spring of 1999 after completing decontamination and cleaning activities at the RCRA Hazardous Waste Storage Area.

Based on the above, GM and EMCON conclude that the closure activities have been successfully completed in conformance with the specifications in the approved Closure Plan. Therefore, GM respectfully requests that closure be granted for the former Nodular Iron Plant Oil House RCRA

Hazardous Waste Storage Area and that all financial assurance requirements be released for this former unit.

ATTACHMENT I

RCRA Part A Permit Application (November 17, 1980)

Part A Original
11/17/80

Please print or type in the unshaded areas only.
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158

FORM 1 GENERAL

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

F M I D 0 4 1 7 9 3

LABEL ITEMS

- I. EPA I.D. NUMBER
- III. FACILITY NAME
- V. FACILITY MAILING ADDRESS
- VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUC

If a preprinted label has been it in the designated space. Re ation carefully; if any of it is through it and enter the cor appropriate fill-in area below the preprinted data is absent *left of the label space lists that should appear)*, please p proper fill-in area(s) below. complete and correct, you ne Items I, III, V, and VI *(exc must be completed regardless* items If no label has been pr the instructions for detailed tions and for the legal auth which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced ter

SPECIFIC QUESTIONS	MARK "X" YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK "X" YES
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X		B. Does or will this facility *(either existing or proposed)* include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)	
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)	X		N.A.	D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)	
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X		X	F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)	
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X		J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)	

III. NAME OF FACILITY

1 SKIP G M C C H E V R O L E T S A G I N A W C A S T I N G & P A R T S P L.

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2 C A R T E R N O R M A N C H F M E T A L L U R G I S T	5 1 7 7 7 6 2 5 7 2

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 2 1 0 0 V E T E R A N S M E M O R I A L P A R K W A Y

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 S A G I N A W	M I	4 8 6 0 1

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

2 1 0 0 V E T E R A N S M E M O R I A L P A R K W A Y

B. COUNTY NAME

S A G I N A W

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE (if known)

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
3321 Grey Iron Foundry	3320 Iron and Steel Foundries
C. THIRD	**D. FOURTH**
3714 Motor Vehicle Parts & Accesories	3710 Motor Vehicles & Equipment

VIII. OPERATOR INFORMATION

A. NAME

GMC CHEVROLET SAGINAW CASTING & PARTS PL

B. Is the na... Item VII... owner? [X] YES

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)

F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC (other than federal or state)
O = OTHER (specify)

P (specify)

D. PHONE (area code & nu...

A 517 776 2...

E. STREET OR P.O. BOX

2100 VETERANS MEMORIAL PARKWAY

F. CITY OR TOWN | **G. STATE** | **H. ZIP CODE** | **IX. INDIAN LAND**

SAGINAW | MI | 48601

Is the facility located on Indian land? [ ] YES [X] NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water): 9 N MI0011139	D. PSD (Air Emissions from Proposed Sources): 9 P NA
B. UIC (Underground Injection of Fluids): 9 U NA	E. OTHER (specify): 9 (specify) State Air Pollution Permits - See Attachment
C. RCRA (Hazardous Wastes): 9 NA	E. OTHER (specify): 9 2 & 7 (specify) City of Saginaw Sani... Sewer (Parts & Cstg. Plts.

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must s... the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous w... treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other sur... water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

The Chevrolet Metal Casting Plants in Saginaw produce grey and nodular iron castings used in the automotive industry. The specific process involves the melting of iron and s... scrap with coke, limestone, dolomite and fluorspar in water cooled cupolas to make molten ... This is poured into green sand molds with or without cores for the manufacture of the abo... castings.

The Chevrolet Parts Plant Manufacturing and Machining Plant produces water pumps, oil... pumps and flywheel ring gears as major components. Machining is performed on cast iron, aluminum and steel.

XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and... attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in... application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitt... false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
...rt D. Lund Vice President, General Motors Corp. General Manager, Chevrolet Motor Div.	Robert D. Lund	November 17, ...

COMMENTS FOR OFFICIAL USE ONLY

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S…

FORM 3 RCRA

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER

F	M	I	D	0	4	1	7	9	3

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for y… revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter … EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

[X] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

[ ] 2. NEW FACILITY (Complete i…

C	YR.	MO.	DAY
8	1 9	0 9	- -

FOR EXISTING FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

YR.	MO.	DAY

FOR NE… PROVID… (yr., mo., … TION BE… EXPECT…

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

[ ] 1. FACILITY HAS INTERIM STATUS

[ ] 2. FACILITY HAS A RCRA PE…

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are … entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of cod… describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes th… measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE … MEASURE FOR … DESIGN CAP…
Treatment:		
TANK	T01	GALLONS PER D… LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER D… LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR … METRIC TONS PE… GALLONS PER H… LITERS PER HOU…
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER D… LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U

UNIT OF MEASURE	UNIT OF MEASURE CODE
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H

UNIT OF MEASURE	
ACRE-FEET	
HECTARE-METER	
ACRES	
HECTARES	

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gall… other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C	DUP	T/A	C
C	DUP		1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	2. UNIT OF MEASURE (enter code)
X-1	S 0 2	600	G		5			
X-2	T 0 3	20	E		6			
1	S O 1	5775.0	G		7			
2	S O 3	70.0	Y		8			
3	T O 4	7000.0	U		9			

Continued from the front.

III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES *(code "T04")*. FOR EACH PROCESS ENTERED HE INCLUDE DESIGN CAPACITY.

T04 - The Calcium Carbide Slag pile, accumulated daily, is soaked with water to decompose any unreacted calcium carbide.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER – Enter the four–digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four–digit number*(s)* from 40 CFR, Subpart C that describes the cha tics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY – For each listed waste entered in column A estimate the quantity of that waste that will be handled on ar basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non–listed waste*(s)* that will be which possess that characteristic or contaminant.

C. UNIT OF MEASURE – For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the app codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure tak account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:
   For listed hazardous waste: For each listed hazardous waste entered in column A select the code*(s)* from the list of process codes contained in to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   For non–listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of proce contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non–listed hazardous wastes that that characteristic or toxic contaminant.
   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER – Hazardous wastes that can be descri more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that lir "Included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* – A facility will treat and dispose of an estimated 900 per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non–listed wastes. Two are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an est 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S8

EPA I.D. NUMBER (enter from page 1): MIDO417933340

FOR OFFICIAL USE ONLY: W DUP 2 DUP

D. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
1	F001	84,000	P	S01	
2	D001	13,100	P	S01	
3	D003	17,280	T	S03 T04	
4	D001				Included with above
5	D002	19,200	P	S01	
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

Continued from the front.

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. (enter from page 1)

F	M	I	D	0	4	1	7	9	3	3	4	0	T/C	6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail)*.

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground-level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail)*.

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, & seconds)	LONGITUDE (degrees, minutes, & seconds)
43 27 00 N	083 55 08 W

VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. (area code)
E	

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
F	G		

IX. OWNER CERTIFICATION

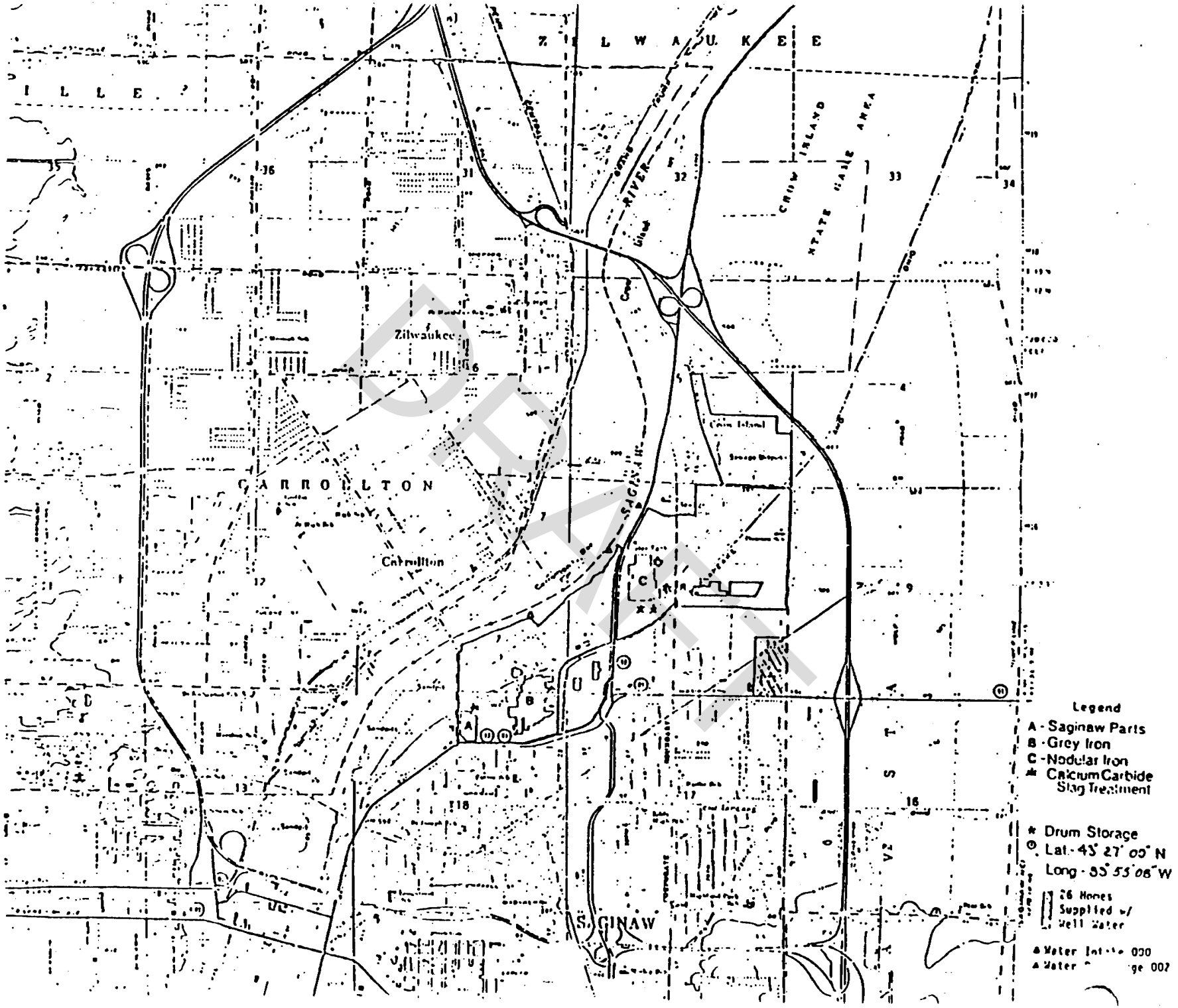
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
Robert D. Lund Vice President, General Motors Corp General Manager, Chevrolet Motor Div	Robert D. Lund	November 17, 1980

X. OPERATOR CERTIFICATION

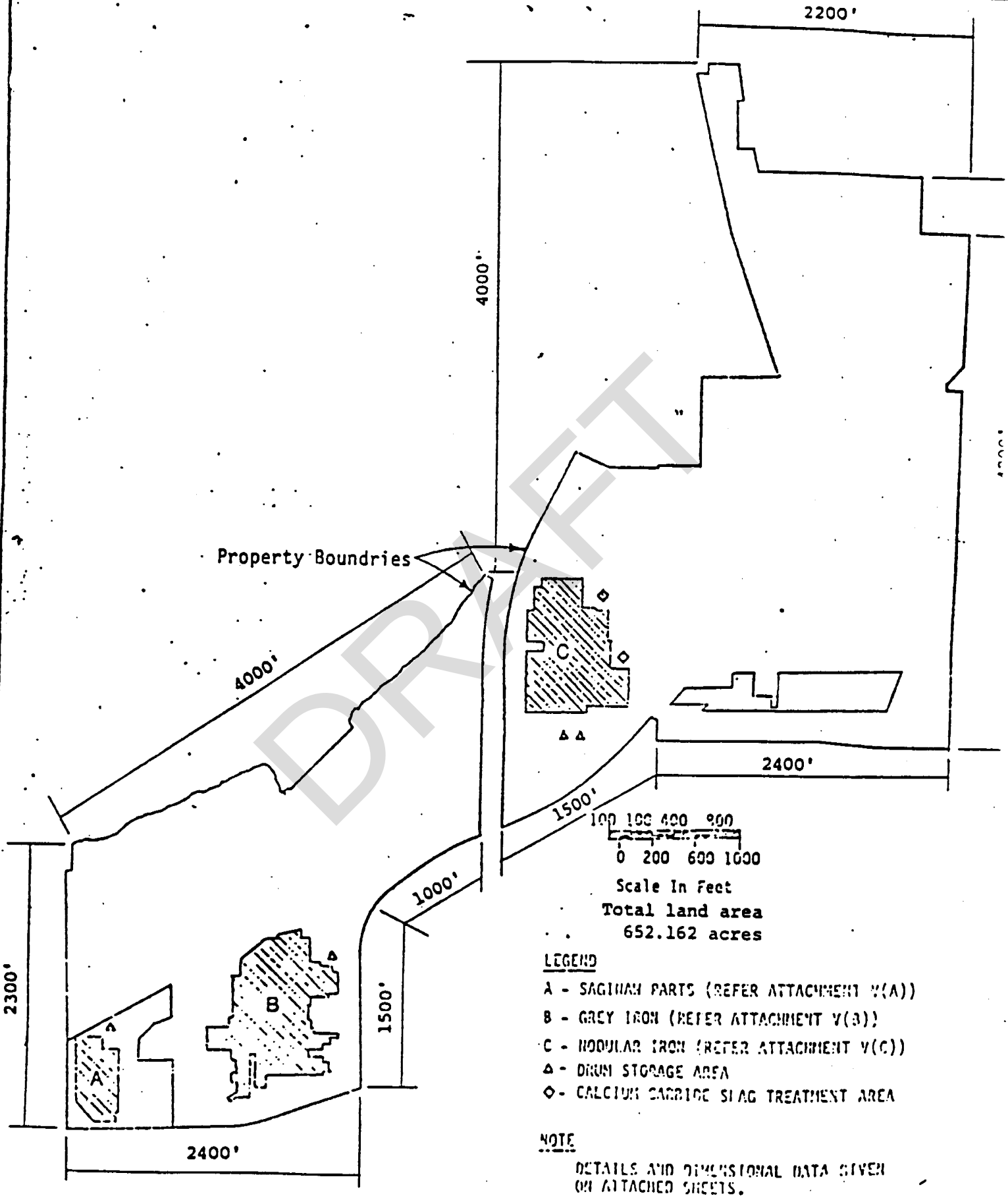
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED


Z I L W A U K E E
I L L E
Zilwaukee
CARROLLTON
Carrollton
S. GINAW
Legend
A - Saginaw Parts
B - Grey Iron
C - Nodular Iron
Calcium Carbide Slag Treatment
Drum Storage
Lat - 43° 27' 05" N
Long - 83° 55' 08" W
26 Homes Supplied w/ Well Water
DRAFT

Continued from page 4

V. FACILITY DRAWING (See page 4)



Total land area
652.162 acres

LEGEND

A - SAGINAW PARTS (REFER ATTACHMENT V(A))

B - GREY IRON (REFER ATTACHMENT V(B))

C - NODULAR IRON (REFER ATTACHMENT V(C))

△ - DRUM STORAGE AREA

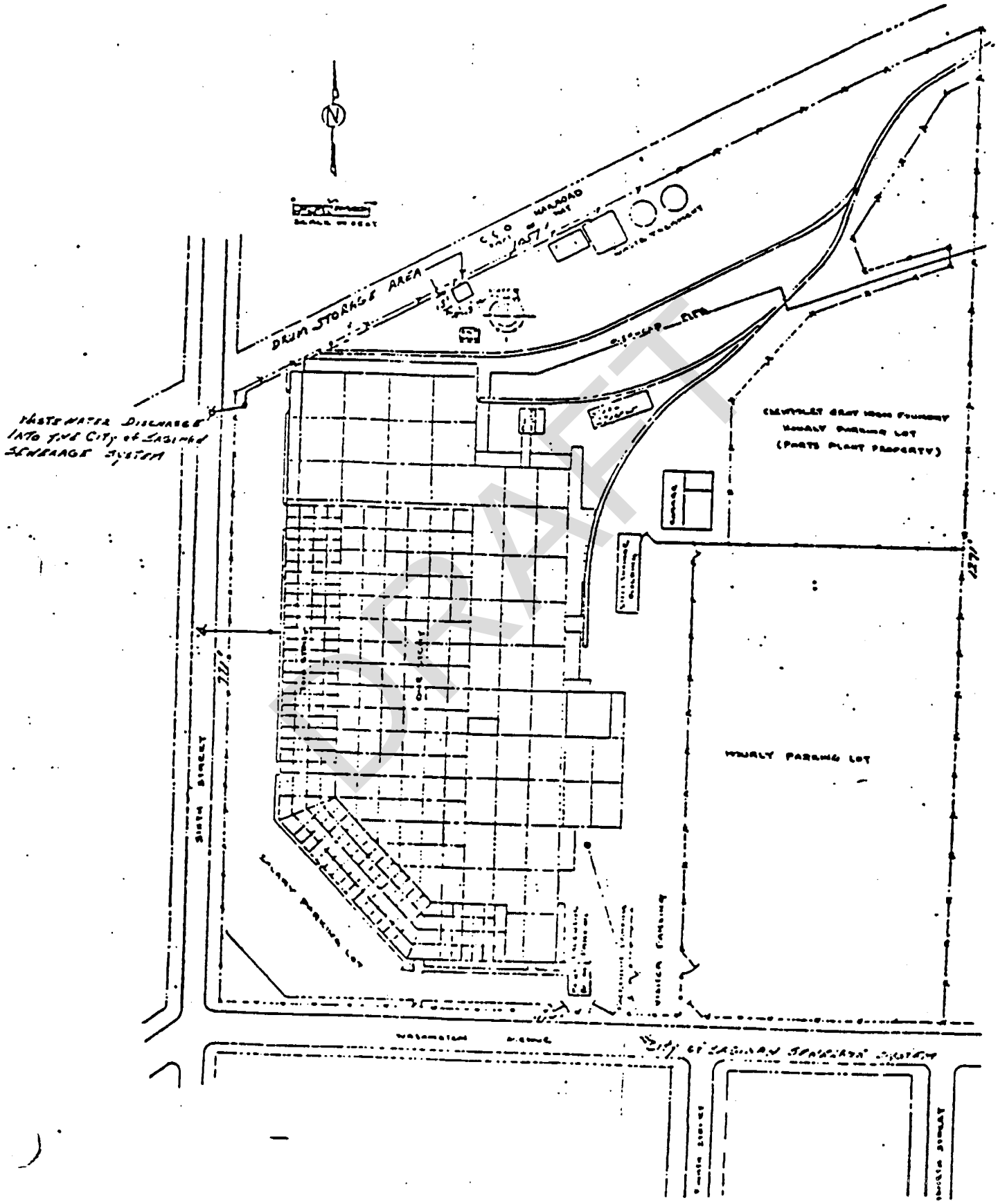
◇ - CALCIUM CARBIDE SLAG TREATMENT AREA

NOTE

DETAILS AND DIMENSIONAL DATA GIVEN ON ATTACHED SHEETS.

EPA ID Number: MID041793340

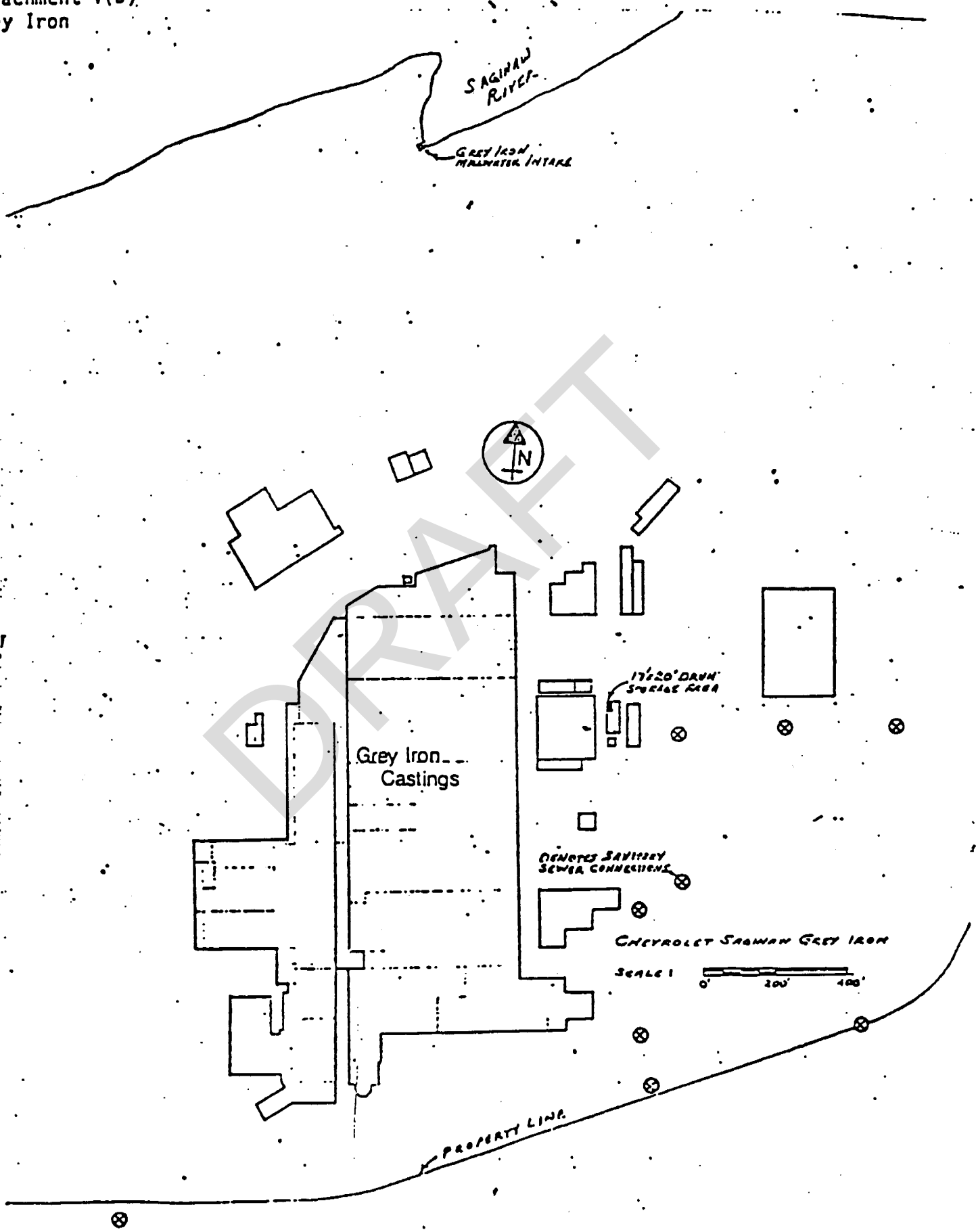
Attachment V(A)
Saginaw.Parts



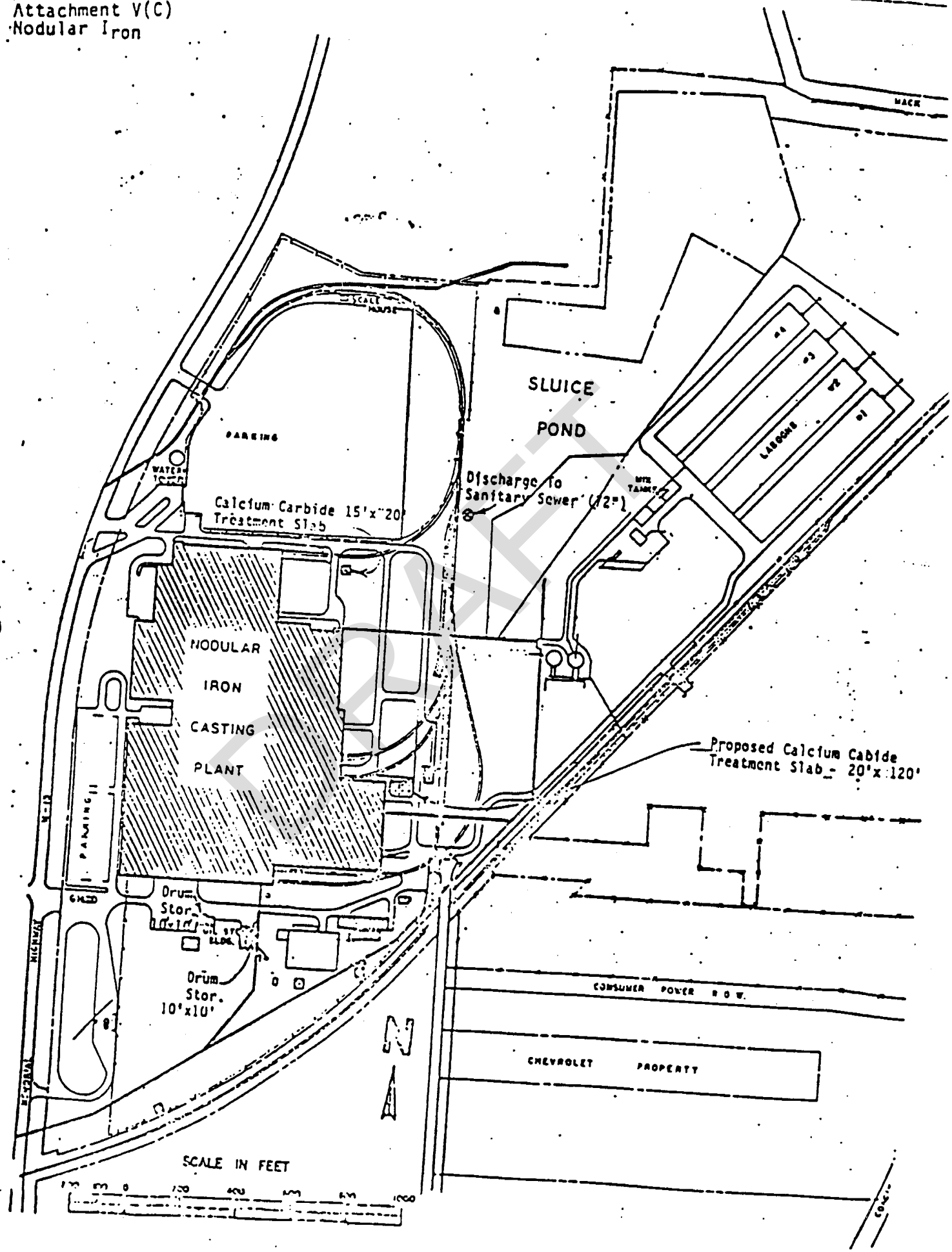
continued from page 4

V. FACILITY DRAWING (see page 4)

Attachment V(B)
Grey Iron



Attachment V(C)
Nodular Iron



EPA ID Number: MID041793340

LETTER -

EPA

ACKNOWLEDGEMENT OF NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

This is to acknowledge that you have filed a Notification of Hazardous Waste Activity for the installation located at the address shown in the box below to comply with Section 3010 of the Resource Conservation and Recovery Act *(RCRA)*. Your EPA Identification Number for that installation appears in the box below. The EPA Identification Number must be included on all shipping manifests for transporting hazardous wastes; on all Annual Reports that generators of hazardous waste, and owners and operators of hazardous waste treatment, storage and disposal facilities must file with EPA; on all applications for a Federal Hazardous Waste Permit; and other hazardous waste management reports and documents required under Subtitle C of RCRA.

EPA I.D. NUMBER ➤ I.D.-1793360 [illegible]

INSTALLATION ADDRESS ➤ 4160 VETERANS [illegible]

EPA Form 8700-12A (4-80)

Part A Revised
9/28/81

Please print or type in the unshaded areas only (shaded areas are spaced for elite type, i.e., 12 c. per inch).

Form Approved OMB No. 158-R

FORM 1 GENERAL

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER: F M I D 0 4 1 7 9 1

FACILITY

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been p... it in the designated space. Review ...ation carefully; if any of it is in... through it and enter the correct ... appropriate fill-in area below. A... the preprinted data is absent (m... *left of the label space lists the... that should appear)*, please pro... proper fill-in area(s) below. If ... complete and correct, you need ... items I, III, V, and VI *(except ... must be completed regardless)*. ... items. If no label has been prov... the instructions for detailed ... tions and for the legal author... which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "... questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the t... If the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if y... is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced term...

SPECIFIC QUESTIONS	MARK "X" YES	NO	FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X	
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)	X		X
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X		N.A.
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X	
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

SPECIFIC QUESTIONS	YES	NO
B. Does or will this facility *(either existing or proposed)* include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)		
D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)		
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		
J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		

III. NAME OF FACILITY

1 SKIP: GMC CHEVROLET SAGINAW CASTING & PARTS PLT

IV. FACILITY CONTACT

A. NAME & TITLE (last, first, & title)	B. PHONE (area code & no.)
2 CARTER NORMAN CHF METALLURGIST	517 776 2572

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX	
3 2100 VETERANS MEMORIAL PARKWAY	

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 SAGINAW	MI	48601

RECEIV... SEP ... Water Quality-...

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER	
5 2100 VETERANS MEMORIAL PARKWAY	

B. COUNTY NAME	
SAGINAW	

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE (if known)
6 SAGINAW	MI	48601	073

CONTIN...

INUED FROM THE FRONT

IC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
3321 (specify) Grey Iron Foundry	3320 (specify) Iron and Steel Foundries
C. THIRD	**D. FOURTH**
3714 (specify) Motor Vehicle Parts & Accessories	3710 (specify) Motor Vehicles and Equipment

OPERATOR INFORMATION

A. NAME: GMC CHEVROLET SAGINAW CASTING & PARTS PLT

B. Is the name listed in Item VIII-A also the owner? [X] YES [ ] NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL, M = PUBLIC (other than federal or state), S = STATE, O = OTHER (specify), P = PRIVATE
Answer: P (specify)

D. PHONE (area code & no.): A 517 776 2572

E. STREET OR P.O. BOX: 100 VETERANS MEMORIAL PARKWAY

F. CITY OR TOWN: SAGINAW

G. STATE: MI

H. ZIP CODE: 48601

IX. INDIAN LAND
Is the facility located on Indian lands? [ ] YES [X] NO

EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)	D. PSD (Air Emissions from Proposed Sources)
N MI0011139	P NA
B. UIC (Underground Injection of Fluids)	**E. OTHER (specify)**
U NA	9 (specify) State Air Pollution Permits - See Attachment
C. RCRA (Hazardous Wastes)	**E. OTHER (specify)**
R NA	9 2 & 7 (specify) City of Saginaw Sanitary Sewer (Parts & Csto. Plts. Rest

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

The Chevrolet Metal Casting Plants in Saginaw produce grey and nodular iron castings used in the automotive industry. The specific process involves the melting of iron and steel scrap with coke, limestone, dolomite and fluorspar in water cooled cupolas to make molten iron. This is poured into green sand molds with or without cores for the manufacture of the above castings.

The Chevrolet Parts Plant Manufacturing and Machining Plant produces water pumps, oil pumps and flywheel ring gears as major components. Machining is performed on cast iron, aluminum and steel.

XIII. CERTIFICATION (see instructions)

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A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
Robert D. Lund, Vice Pres.-GMC Gen. Mgr. - Chevrolet Motor Div.	Robert D. Lund	9-24-81

COMMENTS FOR OFFICIAL USE ONLY

C

GMC CHEVROLET CASTINGS AND PARTS PLANT

AIR POLLUTION PERMIT RECORD

Parts Plant	Nodular Iron	Grey Iron	Grey Iron
273-74	56-68	89-71A	38-74B
101-76	68-68A	126-71	350-80
434-77	68-68B	90-71A	361-74
708-78	68-68C	91-71A	349-80
954-78	68-68D	92-71	392-73
13-79	73-68	125-71	105-74
238-79	139-69	93-71A	35-78
101-80	140-69	411-77	37-78
	141-69	127-71	38-78
	42-70	235-79	39-78
	42-70A	95-71	24-75
	42-70B	36-78	225-79
	42-70C	307-74A	40-78
	292-72	8-76	41-78
	449-73	640-79	947-79
	158-73	240-76	42-78
	74-70	286-76	134-76
	58-73	812-77	43-78
	59-73	814-77	44-78
	74-70A	813-77	45-78
	129-74	216-73	46-78
	130-74	344-73	47-78
	131-74	393-73	400-75
	276-74	79-76	48-78
	129-76	501-79	49-78
	416-75	593-77	50-78
	366-76	253-74	101-79
	93-77	916-79	100-79
	405-77	811-77	23-74D
	262-78	918-78	23-74C
	437-78	234-80	23-74B
	1052-78	210-73	23-74A
	720-79	507-77	88-78
		18-80	302-73
		33-77	113-76
		451-80	303-73
		44-77	100-73
		35-77	101-73
		36-77	102-73
		224-79	103-73
		223-79	
		222-79	
		221-79	
		38-74A	

ATTACHMENT II

Closure Plan (May 19, 1981)

CLOSURE PLAN
CHEVROLET METAL CASTINGS
GENERAL MOTORS CORPORATION

I. Introduction

Under the U.S. EPA Regulations, 40 CFR, Part 265, Subpart G, Sections 265.110 through 265.120, each facility which stores, treats, or disposes of hazardous wastes must have a closure plan on file. This closure plan has been prepared to cover the following facility:

A. EPA I.D. Number: MID041793340

B. Facility Name: General Motors Corporation
Chevrolet Saginaw Casting & Parts Plant
2100 Veterans Memorial Parkway

C. This Plan Prepared by: David C. Ruhland, Project Engineer
May 18, 1981

Plan Revisions:

Mk.	Date	Revision	By

D. Facilities for Hazardous Waste:

Location	Type	Materials Handled
~~Parts Plant~~	~~Storage~~	~~Used Chlorathene VG, Paint Residues, & Thinners~~
Grey Iron	Storage	Used Chlorathene VG, Used caustic solution Paint Residues, & Thinners
Nodular Iron	Storage	Used Chlorathene VG Paint Residues, & Thinners
Nodular Iron	Treatment	Calcium Carbide Slag

II. Maximum Waste Inventory - The following table shows the maximum quantity of wastes on hand at any one time:

Used 1,1,1, Trichlorethane	120 - 55 Gal. Drums
Paint Residue & Thinners	120 - 55 Gal. Drums
Caustic Solution	60 - 55 Gal. Drums
Calcium Carbide Slag	720 Tons

III. Schedule for Closing

This facility does not have a definite closure date. The following schedule is open-ended. It lists the time table for closure in terms or elapsed time subsequent to the time that EPA, or an EPA authorized state agency, has approved this Closure Plan (refer Section 265.112 c)

Day 1 - Plant termination of hazardous waste activity.

Day 10 - All paint residues, thinners, caustic solution and degreaser solvents removed from storage and shipped for disposal.

Day 20 - Storage areas washed with a detergent solution and rinsed with potable water. Detergent solution and rinse water will be collected, tested and if required will be disposed of in an approved landfill.

Day 28 - Contents of the calcium carbide slag treatment area will be treated to deactivate the unreacted calcium carbide. Treated material will be removed to disposal area.

Day 30 - Any used drums will be shipped for proper disposal/ reclamation.

Day 35 - Closure should be complete.

Day 40 - Certification of closure by independant registered professional engineer.

IV. Decontamination of Facility & Equipment:

1. Pretreatment of Calcium Carbide Slag Treatment Area:

All Calcium Carbide slag will be treated to neutralize any unreacted materials prior to the removal of this facility. All neutralized material will be disposed of in approved areas. The treatment area will be rinsed thoroughly with potable water.

2. *Decontamination of 1,1,1, Trichlorethane Storage Area:*

Once the area is cleared of all 55 gallon drums, the walls and floor of the storage facility will be washed with a 5% alkaline detergent solution. The solution will be drawn off via vacuum pick-up and stored in a bulk tank for disposal. As a final step, the walls and floor will be steam cleaned to ensure removal of the material.

3. *Decontamination of Paint Residue & Thinner Storeage Facilities:*

Once the area is cleared of all 55 gallon drums, the walls and floor of the storage facility will be washed with a 5% alkaline detergent solution. The solution will be drawn off via vacuum pick-up and stored in a bulk tank for disposal. As a final step, the walls and floor will be steam cleaned to ensure removal of the material.

4. *Decontamination of Caustic Solution Storage Areas:*

Once the area is cleared of all 55 gallon drums, the walls and floor of the storage facility will be washed with a 5% alkaline detergent solution. The solution will be drawn off via vacuum pick-up and stored in a bulk tank for disposal. As a final step, the walls and floor will be steam cleaned to ensure removal of the material.

Cost Estimates for Closure (To be updated annually on April 1st) (1981 $'s)

Prepared by: Doyle Hanson, General Supt. Plant Engineering

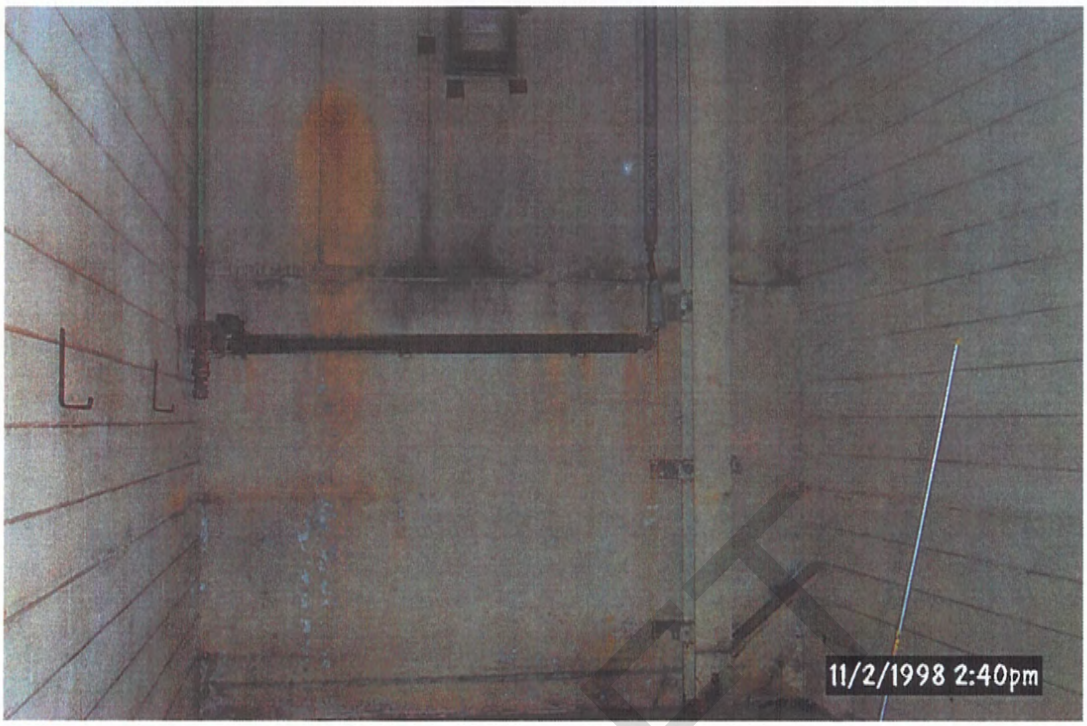
Area	Total Cost	
A. 1,1,1, Trichlorethane Storage		
1) NICP	$4000	
2) GICP	4000	
3) Saginaw Parts	1500	
Total		$9500
B. Paint Residue & Thinners Storage		
1) NICP	$4000	
2) GICP	4000	
3) Saginaw Parts	1500	
Total		$9500
C. Caustic Solution Storage		
1) GICP Only	$6000	$6000
D. Calcium Carbide Slag Treatment	$4500	$4500
Total		$29,500

ATTACHMENT III

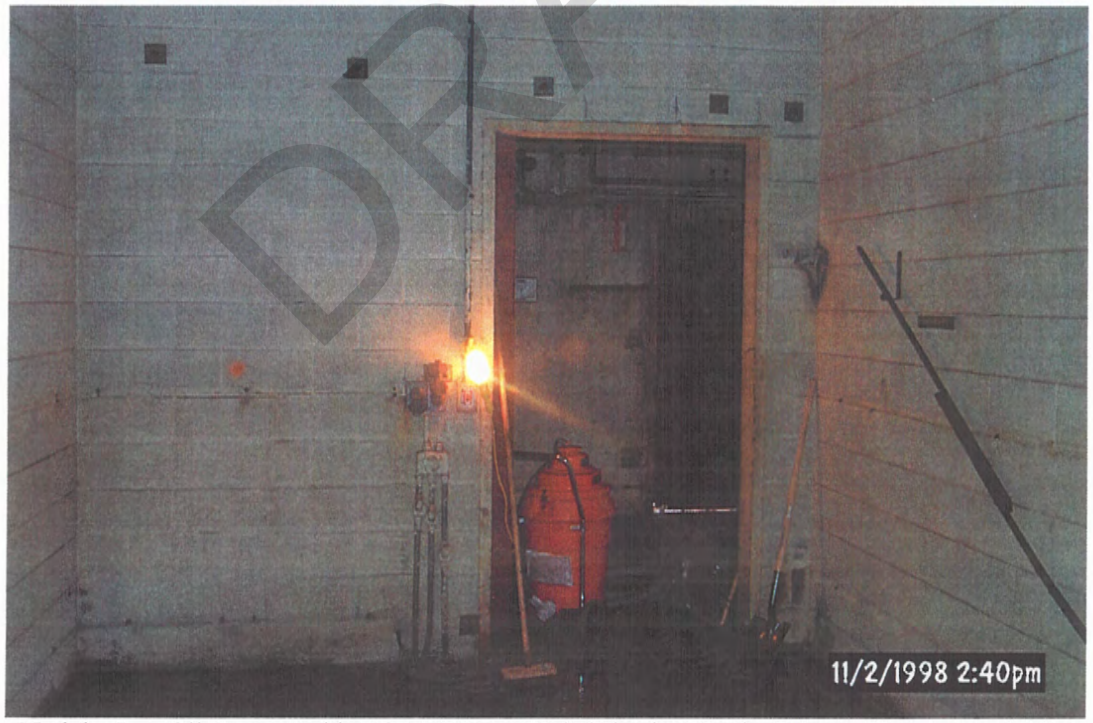
Photographic Documentation of Closure Activities

Nodular Iron Oil House, West Entrance (Prior to Cleaning Activities)

Nodular Iron Oil House, Viewing Southeast (Prior to Cleaning Activities)



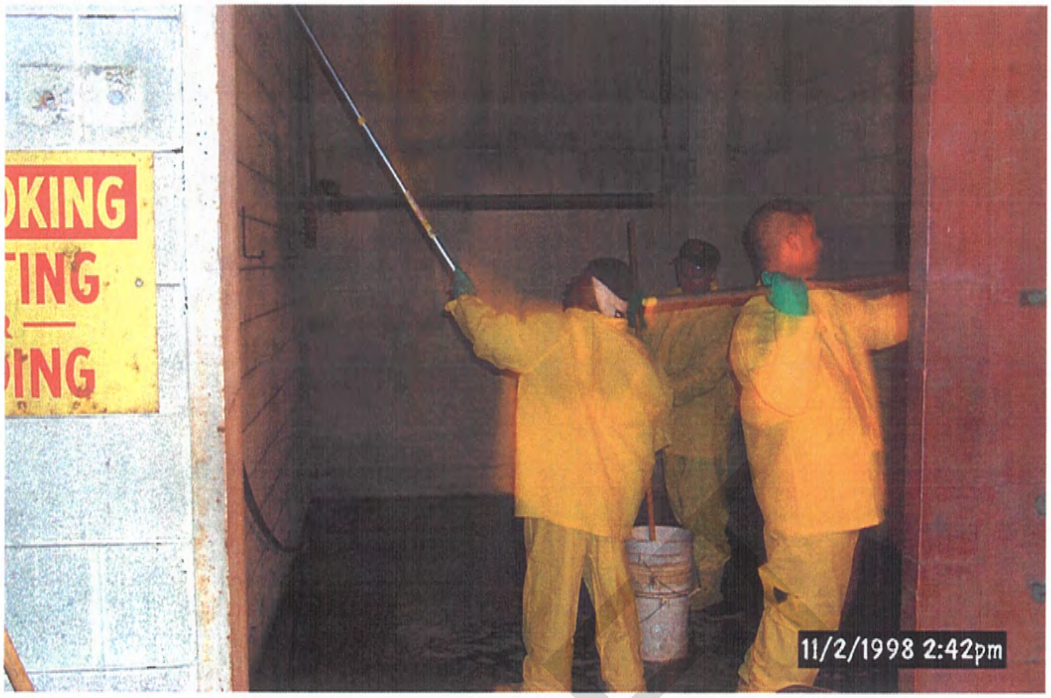
Nodular Iron Oil House, RCRA Storage Unit (Viewing South - Prior to Cleaning Activities)



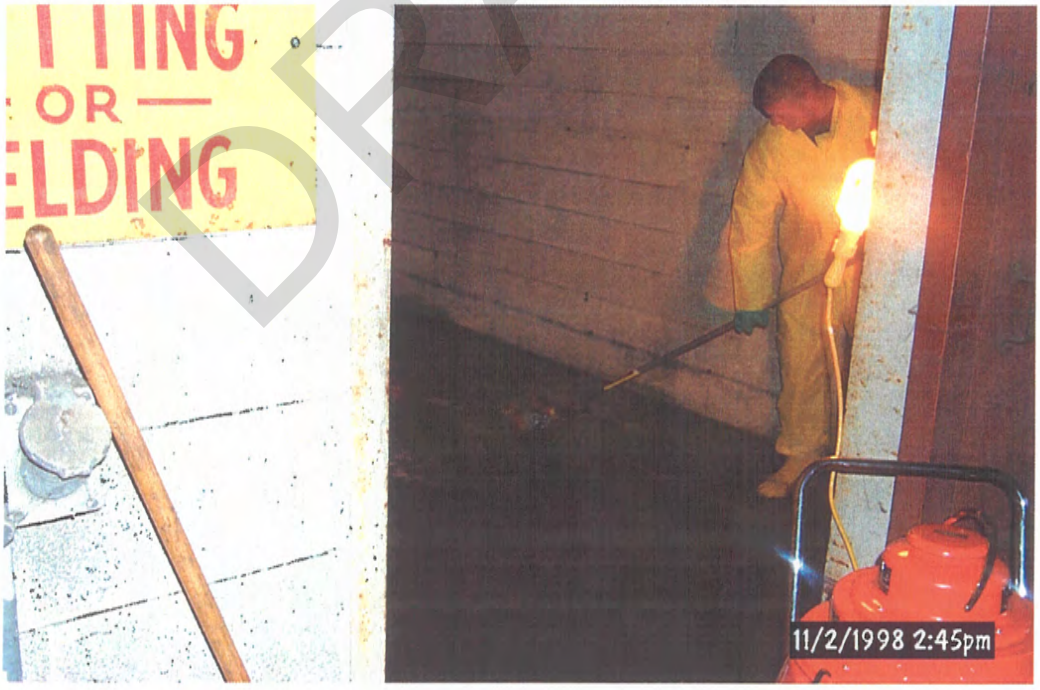
Nodular Iron Oil House, Inside RCRA Storage Unit (Viewing North - Prior to Cleaning Activities)

Inside Nodular Iron Oil House, Viewing East Outside of RCRA Storage Units (Prior to Cleaning Activities)

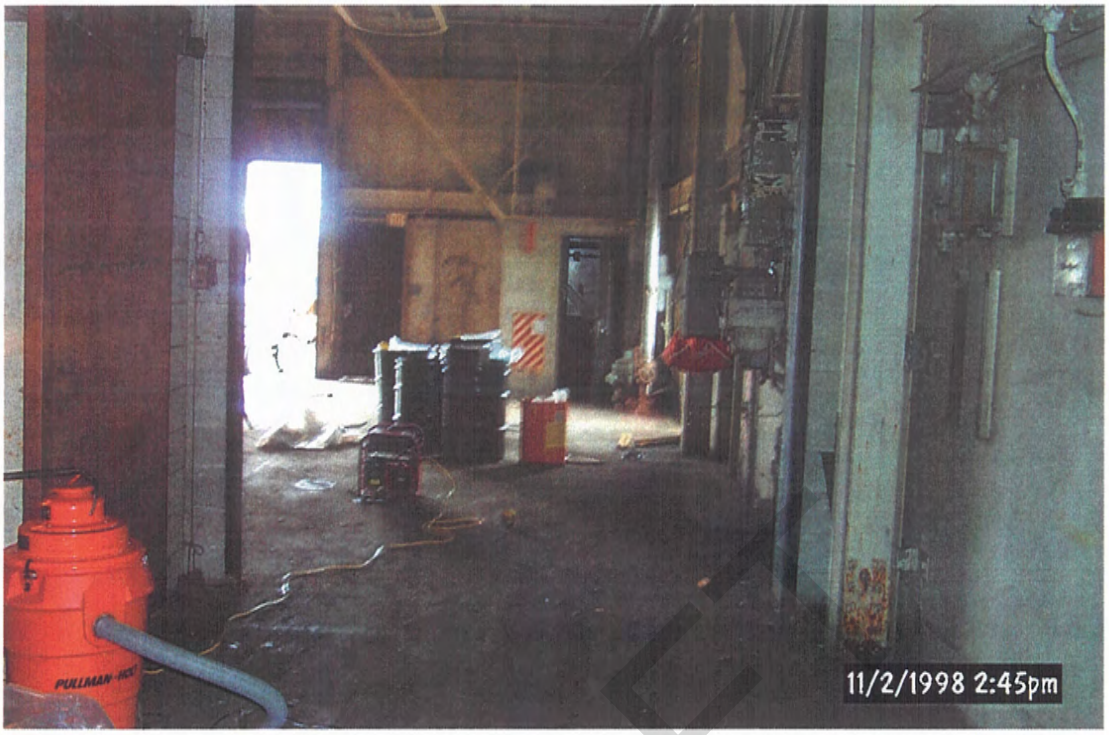
Nodular Iron Oil House, Inside RCRA Storage Unit (Viewing South - Prior to Cleaning Activities)



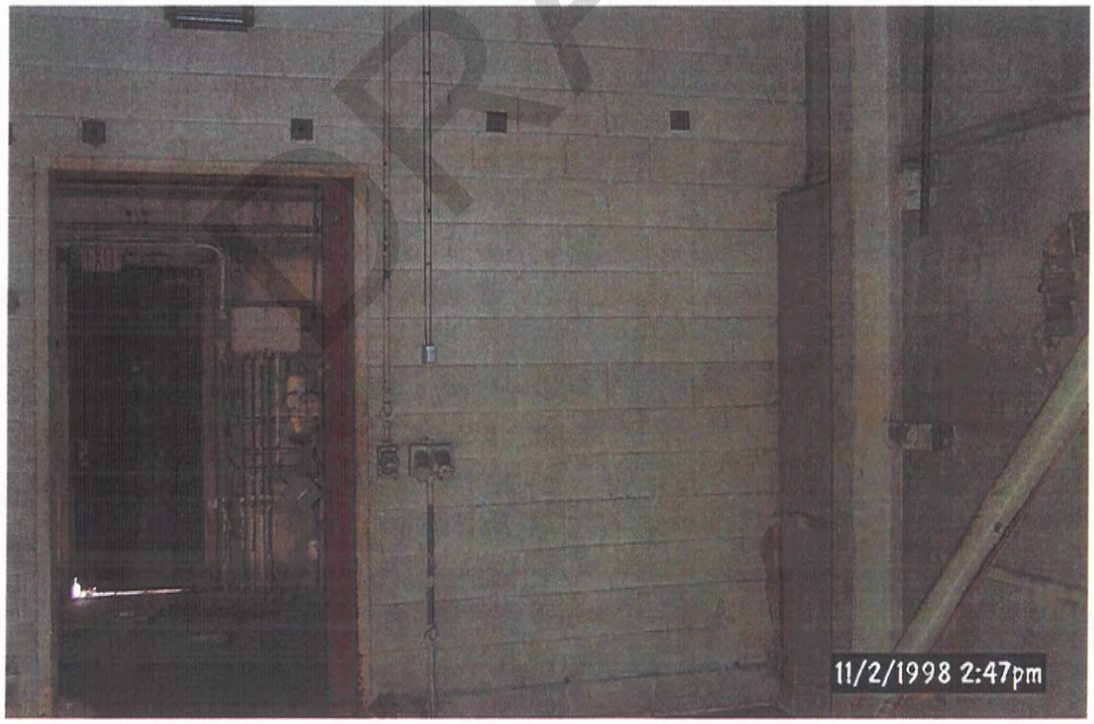
Nodular Iron Oil House, RCRA Storage Unit (Floor and Wall Scrubing)



Nodular Iron Oil House, Vacuum Pick-Up of Wash Water

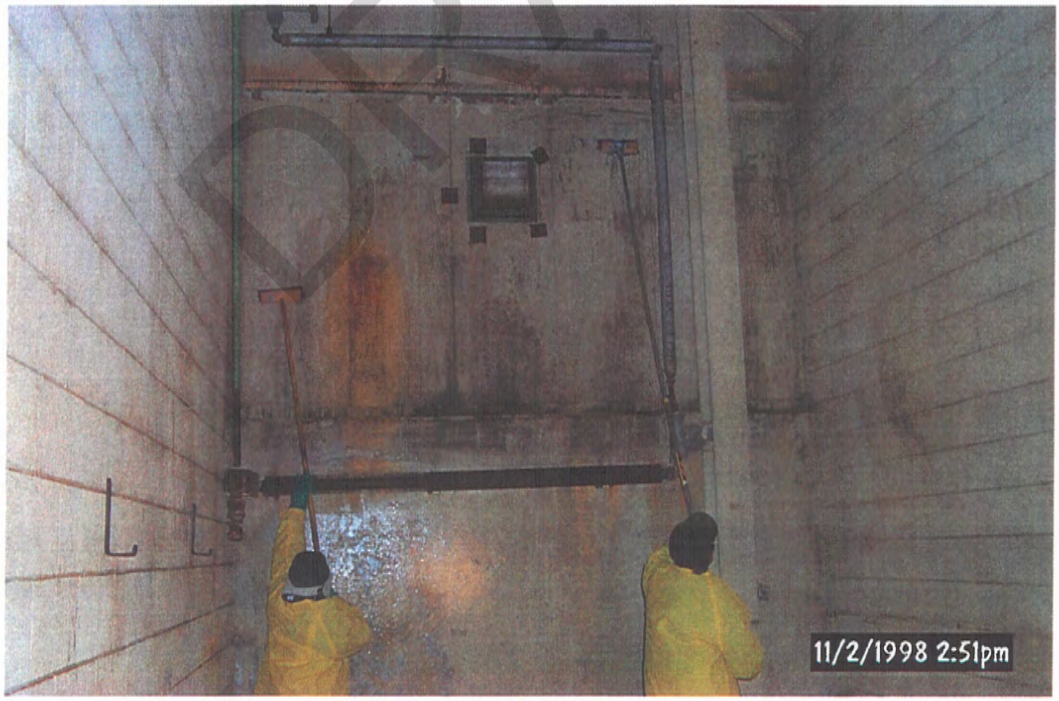


Nodular Iron Oil House, Outside of RCRA Storage Units (Viewing West)



Nodular Iron Oil House, Inside RCRA Storage Unit (Viewing North - Prior to Cleaning Activities)

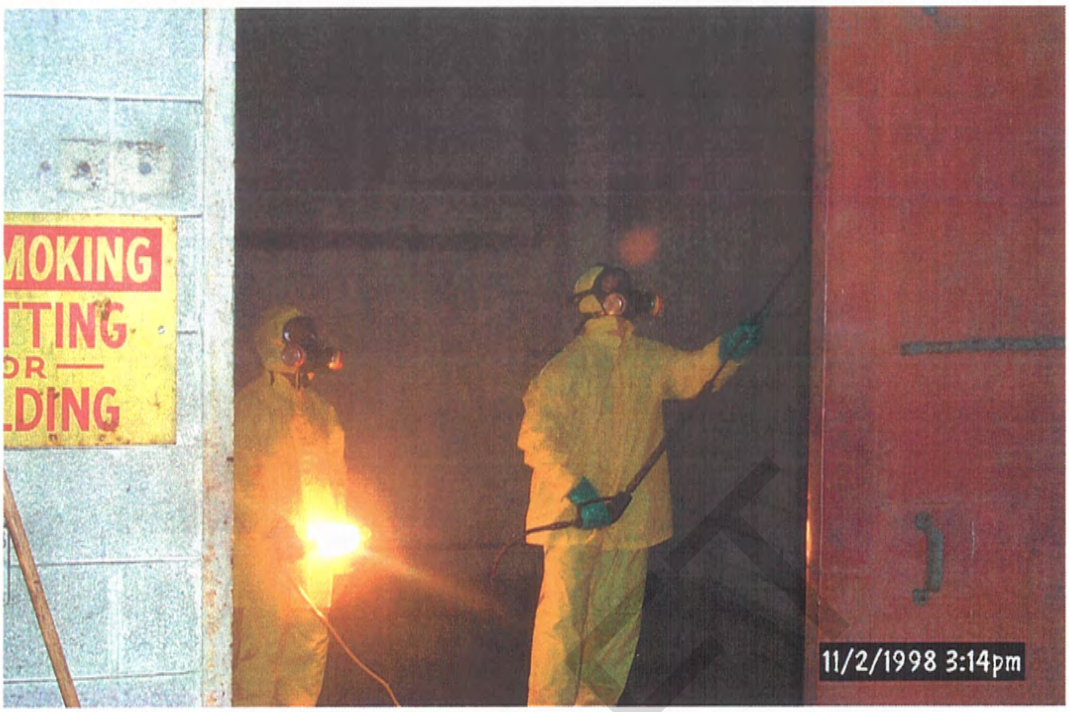
Nodular Iron Oil House, RCRA Storage Unit (Viewing South - Prior to Cleaning Activities)



Nodular Iron Oil House, RCRA Storage Unit Wall Scrubing (Viewing South)

Nodular Iron Oil House, RCRA Storage Unit Wall Scrubing (Viewing South)

Nodular Iron Oil House, RCRA Storage Unit Steam Cleaning After Scrubing (Viewing South)

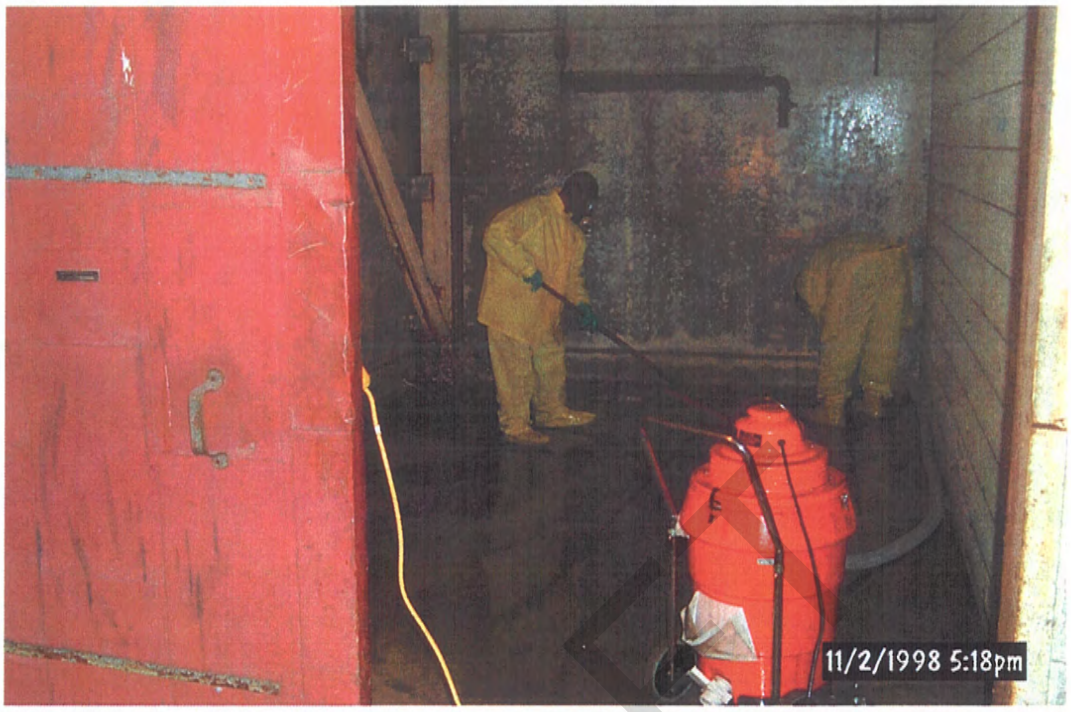


Nodular Iron Oil House, Steam Cleaning RCRA Storage Unit (Viewing South)

Nodular Iron Oil House, RCRA Storage Unit After Steam Cleaning Activities (Viewing South)

Nodular Iron Oil House, Vacuum Pick-Up of Wash Water After Steam Cleaning Activities (Viewing North)

Nodular Iron Oil House, Steam Cleaning RCRA Storage Unit (Viewing Southeast)



Nodular Iron Oil House, Vacuum Pick-Up of Wash Water (Viewing South)

Nodular Iron Oil House, Inside RCRA Storage Unit (Viewing North After Final Cleaning)

Nodular Iron Oil House, Inside RCRA Storage Unit (Viewing South After Final Cleaning)

ATTACHMENT IV

Wastewater Characterization Analysis

GREAT LAKES ANALYTICAL

1380 Busch Parkway
Buffalo Grove, Illinois 60089

Email: info@glalabs.com
(847) 808-7766 FAX (847) 808-7772

Date: November 16, 1998

Clean Harbors
11800 S. Stoney Island Ave.
Chicago, IL 60617
Attention: John Behrens

Project: EMCON/General Motors

Enclosed are the results from 1 water sample received at Great Lakes Analytical on November 9, 1998. The requested analyses are listed below:

SAMPLE#	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
8111831	Water: CH121333	11/3/98	TCLP RCRA Metals Flash Point, EPA ASTMD92-85 Reactive Cyanide, EPA 7.3.3 Reactive Sulfide, EPA 7.3.4 PCB, EPA 8082 TCLP VOC, EPA 8260 TCLP SVOC, EPA 8270 pH by EPA 9040

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

GREAT LAKES ANALYTICAL

Kevin W. Keeley
Laboratory Director

GREAT LAKES ANALYTICAL

1380 Busch Parkway
Buffalo Grove, Illinois 60089

Email: info@glalabs.com
(847) 808-7766 FAX (847) 808-7772

Clean Harbors
11800 S. Stoney Island Ave.
Chicago, IL 60617
Attention: John Behrens

Client Project ID: EMCON/General Motors
Sample Descript: TCLP Extract: CH121333
Lab Number: 811-1831

Sampled: Nov 3, 1998
Received: Nov 9, 1998
Extracted: Nov 10, 1998
Analyzed: Nov 12, 1998
Reported: Nov 16, 1998

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP): METALS

Analyte	EPA Method	Detection Limit mg/L (ppm)	Sample Results mg/L (ppm)
Arsenic	3015/7060	0.050	N.D.
Barium	3015/6010	2.0	N.D.
Cadmium	3015/6010	0.010	N.D.
Chromium	3015/6010	0.010	0.018
Lead	3015/7421	0.0015	0.014
Mercury	7470	0.0020	0.0081
Selenium	3015/7740	0.010	N.D.
Silver	3015/6010	0.050	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

GREAT LAKES ANALYTICAL

Kevin W. Keeley
Laboratory Director

GREAT LAKES ANALYTICAL

1380 Busch Parkway
Buffalo Grove, Illinois 60089

Email: info@glalabs.com
(847) 808-7766 FAX (847) 808-7772

Clean Harbors	Client Project ID:	EMCON/General Motors	Sampled:	Nov 3, 1998
11800 S. Stoney Island Ave.	Sample Descript:	Water	Received:	Nov 9, 1998
Chicago, IL 60617	Analysis for:	pH by EPA 9040		
Attention: John Behrens	First Sample #:	811-1831	Analyzed:	Nov 9, 1998
			Reported:	Nov 16, 1998

LABORATORY ANALYSIS FOR: pH by EPA 9040

Sample Number	Sample Description	Sample Result pH units	Temperature °C
811-1831	CH121333	8.3	22

GREAT LAKES ANALYTICAL

Kevin W. Keeley
Laboratory Director

GREAT LAKES ANALYTICAL

1380 Busch Parkway
Buffalo Grove, Illinois 60089

Email: info@glalabs.com
(847) 808-7766 FAX (847) 808-7772

Clean Harbors
11800 S. Stoney Island Ave.
Chicago, IL 60617
Attention: John Behrens

Client Project ID: EMCON/General Motors
Sample Descript: Water: CH121333

Lab Number: 811-1831

Sampled: Nov 3, 1998
Received: Nov 9, 1998

Analyzed: Nov 9, 1998
Reported: Nov 16, 1998

LABORATORY ANALYSIS

Analyte	EPA Method	Sample Results
Flash Point, Closed Cup(F).....	ASTMD93-85	>200

GREAT LAKES ANALYTICAL

Kevin W. Keeley
Laboratory Director

GREAT LAKES ANALYTICAL

1380 Busch Parkway
Buffalo Grove, Illinois 60089

Email: info@glalabs.com
(847) 808-7766 FAX (847) 808-7772

Clean Harbors	Client Project ID:	EMCON/General Motors	Sampled:	Nov 3, 1998
11800 S. Stoney Island Ave.	Sample Descript:	Water:: CH121333	Received:	Nov 9, 1998
Chicago, IL 60617				
Attention: John Behrens	Lab Number:	811-1831	Analyzed:	Nov 11, 1998
			Reported:	Nov 16, 1998

LABORATORY ANALYSIS

Analyte	EPA Method	Detection Limit mg/L		Sample Results mg/L
Reactive Cyanide	7.3.3	0.010		N.D.
Reactive Sulfide	7.3.4	6.5		N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

GREAT LAKES ANALYTICAL

Kevin W. Keeley
Laboratory Director

GREAT LAKES ANALYTICAL

1380 Busch Parkway
Buffalo Grove, Illinois 60089

Email: info@glalabs.com
(847) 808-7766 FAX (847) 808-7772

Clean Harbors	Client Project ID:	EMCON/General Motors	Sampled:	Nov 3, 1998
11800 S. Stoney Island Ave.	Sample Descript:	Water: CH121333	Received:	Nov 9, 1998
Chicago, IL 60617	Analysis Method:	EPA 8082	Extracted:	Nov 10, 1998
Attention: John Behrens	Lab Number:	811-1831	Analyzed:	Nov 10, 1998
			Reported:	Nov 16, 1998

POLYCHLORINATED BIPHENYLS (EPA 8082)

Analyte	Detection Limit µg/L	Sample Results µg/L
PCB 1016	1.0	N.D.
PCB 1221	1.0	N.D.
PCB 1232	1.0	N.D.
PCB 1242	1.0	N.D.
PCB 1248	1.0	N.D.
PCB 1254	1.0	N.D.
PCB 1260	1.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

GREAT LAKES ANALYTICAL

Kevin W. Keeley
Laboratory Director

GREAT LAKES ANALYTICAL

1380 Busch Parkway
Buffalo Grove, Illinois 60089

Email: info@glalabs.com
(847) 808-7766 FAX (847) 808-7772

Clean Harbors
11800 S. Stoney Island Ave.
Chicago, IL 60617
Attention: John Behrens

Client Project ID: EMCON/General Motors
Sample Descript: TCLP Extract: CH121333
Analysis Method: EPA 8260
Lab Number: 811-1831

Sampled: Nov 3, 1998
Received: Nov 9, 1998

Analyzed: Nov 13, 1998
Reported: Nov 16, 1998

TCLP VOLATILES

Analyte	Detection Limit mg/L	Sample Results mg/L
Benzene	0.40	N.D.
Carbon tetrachloride	0.40	N.D.
Chlorobenzene	0.40	N.D.
Chloroform	0.40	N.D.
1,2-Dichloroethane	0.40	N.D.
1,1-Dichloroethylene	0.40	N.D.
Methyl ethyl ketone	100	N.D.
Tetrachloroethylene	0.40	N.D.
Trichloroethylene	0.40	N.D.
Vinyl chloride	0.16	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

GREAT LAKES ANALYTICAL

Kevin W. Keeley
Laboratory Director

GREAT LAKES ANALYTICAL

1380 Busch Parkway
Buffalo Grove, Illinois 60089

Email: info@glalabs.com
(847) 808-7766 FAX (847) 808-7772

Clean Harbors
11800 S. Stoney Island Ave.
Chicago, IL 60617
Attention: John Behrens

Client Project ID: EMCON/General Motors
Sample Descript: TCLP Extract: CH121333
Analysis Method: EPA 8270
Lab Number: 811-1831

Sampled: Nov 3, 1998
Received: Nov 9, 1998
Extracted: Nov 13, 1998
Analyzed: Nov 14, 1998
Reported: Nov 16, 1998

TCLP SEMI-VOLATILES

Analyte	Detection Limit mg/L	Sample Results mg/L
o-Cresol	20	N.D.
m-, p-Cresol	20	N.D.
Cresol	20	N.D.
1,4-Dichlorobenzene	0.75	N.D.
2,4-Dinitrotoluene	0.020	N.D.
Hexachlorobenzene	0.020	N.D.
Hexachloro-1,3-butadiene	0.050	N.D.
Hexachloroethane	0.30	N.D.
Nitrobenzene	0.20	N.D.
Pentachlorophenol	10	N.D.
Pyridine	0.50	N.D.
2,4,5-Trichlorophenol	40	N.D.
2,4,6-Trichlorophenol	0.20	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

GREAT LAKES ANALYTICAL

Kevin W. Keeley
Laboratory Director

Accreditations Certifications: Delaware IL 063; Illinois EPA 100261; New Jersey DEP-54001; New York DOH-11437
Tennessee DOH 02321; Tennessee DEC; USACE; Virginia 00164; Wisconsin DNR-999917160

CleanHarbors

Clean Harbors Analytical Services, Inc., 325 Wood Rd., Braintree, MA 02184 | CHAIN OF CUSTODY RECORD | Sample Custodian — (617) 849-1800 | Page 1 of 1

Client: _____ Project Name: Emon/General Motors Work Order/P.O. #: IL144337 Date: 11/3/98

Report To: John Behrens Address: 11800 S. Stony Island Ave Phone #: _____

Date Samples Collected: _____ by: _____ Date Samples Received: _____

Airbill/Bill of Lading? Y N NOTE: Samples received unpreserved will be preserved upon arrival at CHAS. Samples were: Preserved Unpreserved

Sample I.D.	Sampling Information: Date	Time	Station Location	Sample Matrix	Analysis: PH	Flashpoint	Reactive Sulfide/Cyanide	TCLP Metals	TCLP Organics	TCLP SVOCs	PCBs		# of con.	CHAS Sample #
CH121333	11/3		Drummed Rinsate	water	✓	✓	✓	✓	✓	✓	✓		02	8111831

	VOA Vial	Glass Bottle	Plastic Bottle	Pres.	Volume
		2			

Relinquished by: _____ Date: _____ Time: _____

Received by: _____ Date: 11-9-98 Time: 1230

Relinquished by: _____ Date: 11-9 Time: 1530

Received by: _____ Date: 11-9-98 Time: 1530

Preservation Key: A — Acidified with _____
B — Filtered, C — Sample chilled, D— NaOH,
E — NaThiosulfate, W — Sample Ambient, F — Other

REMARKS/COMMENTS: (Sample storage, nonstandard bottles, cautions, special instructions)

Standard Turnaround

Standard laboratory turnaround time is 2 weeks from date of receipt. Accelerated turnaround may be assessed a surcharge.
Accelerated turnaround requested: _____
Confirmed by: _____ Surcharge: _____

Location of samples: _____

Turnaround: 24 Hrs. 48 Hrs. 1 Week 2 Weeks Other: _____

CHL 119

ATTACHMENT V

Waste Disposal Manifests

STATE OF ILLINOIS

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

EPA Form 8700-22 (Rev. 6-89)

5710

FOR SHIPMENT OF [redacted] AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM [redacted] WASTE MANIFEST

1. Generator's US EPA ID No.: N/A

Manifest Document No.: 13395

2. Page 1 of 1

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address / Location If Different

General Motors Corporation
PO Box 5079 1629 N Washington
Saginaw, MI 48605

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS" 1-800-645-8265

A. Illinois Manifest Document Number: IL 7734497 FEE PAID IF APPLICABLE

B. Illinois Generator's ID: 9260019999

5. Transporter 1 Company Name: Clean Harbors Env. Services, Inc.

6. US EPA ID Number: MAD039322250

C. Illinois Transporter's ID:

D. (781) 849-1800 Transporter's Phone

7. Transporter 2 Company Name

8. US EPA ID Number

E. Illinois Transporter's ID: 14478

F. ( ) Transporter's Phone

9. Designated Facility Name and Site Address

Clean Harbors Services, INC.
11800 South Stony Island Ave.
Chicago, Illinois 60617

10. US EPA ID Number: ILD000608471

G. Illinois Facility's ID: 0316000951

H. Facility's Phone: (773) 646-6202

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. NON D.O.T Regulated Material, NON DOT Hazardous, Non	002	DF	00170	G	EPA HW Number: XXCLASS A" Authorization Number:
b.					EPA HW Number: XX Authorization Number:
c.					EPA HW Number: XX Authorization Number:
d.					EPA HW Number: XX Authorization Number:

J. Additional Description for Materials Listed Above

11a. CH121333

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

2 55GAL DRUMS. PLACED INTO 2-poly overpacks, WO# IL147635

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: Gilbert Jensen

Signature: [signature]

Date: Month 01 Day 12 Year 99

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: RICHARD LA FERRARA

Signature: [signature]

Date: Month 01 Day 12 Year 99

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of [redacted] materials covered by this manifest except as noted in item 19.

Printed/Typed Name: JESSE ARENADO

Signature: [signature]

Date: Month 01 Day 22 Year 99

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

Modular Iron Plant Oil House

Pictures of RCRA Pad cleaning
November 2, 1998
Clean Harbors

j:\84068063\005\photos\

P0000362.jpg → P0000384.jpg

7/8/99

RCRA Report
& from Jean

✓(1) Cert. 1 sig. PE
1 Sig. GM — No NAME

(2) Att. I permit
NPDES excl. only - take out

✓(3) 1-1 CFR 265 not 264
Subpart G (interim status
RCRA Storage Area)
MDVR Resource(s) placed

✓(4) 3-1 3 P Inst Sch.
0.1 Hours gone was denied after
clean-up

✓(5) Substantial conformance
← delete

Need to respond to TM letter from EPA
Peter Booth

✓ make Δ's
– cover letter to Steve Budda
✓ Remove Draft & Privileged
✓ 009 / RCRA

Attachment C

Certificate of Final Closure of Hazardous Waste Management Units

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

February 27, 2004

CERTIFIED MAIL

Ms. Cheryl R. Hiatt, Project Coordinator
General Motors Corporation
Worldwide Facilities Group - Remediation Team
Troy Technology Park South - Building A
Mail Code: 483-619-356
1996 Technology Drive
Troy, Michigan 48083

Dear Ms. Hiatt:

SUBJECT: Certification of Final Closure of Hazardous Waste Management Units
General Motors Corporation, Saginaw Metal Casting Operations
MID 041 793 340

The Michigan Department of Environmental Quality (MDEQ), Waste and Hazardous Materials Division (WHMD), has completed its review of the certifications of closure for the General Motors Corporation (GMC), Saginaw Metal Casting Operations (Facility) based upon the information provided in your April 28, 2003, letter to Ms. Cheryl Howe. Previous closure certification information was submitted on November 6, 1989, October 30, 1991, January 9, 2001, and September 11, 2001. The four hazardous waste management units covered by these closure certifications are the Hazardous Waste Control Tank, the Paint Storage Building Drum Storage Area, the Old Calcium Carbide Desulfurization Slag Treatment Unit, and the Existing Calcium Carbide Desulfurization Slag Treatment Unit. Based on this review, the GMC is hereby released from its closure responsibilities for the four hazardous waste management units at the Facility under Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and its administrative rules, Michigan Administrative Code R 299.9101 *et seq*. The GMC is, therefore, no longer required to demonstrate financial capability for closure and liability coverage of the four hazardous waste management units at the Facility.

Facility Status

With this acceptance of the certification of closure, the Facility can no longer be operated as a hazardous waste treatment, storage, or disposal facility. If hazardous waste is generated at the Facility, it must be managed in accordance with all applicable generator requirements in R 299.9301 through R 299.9312.

Financial Capability

The GMC demonstrates financial assurance for closure of the Facility by use of Surety Bond Number M2022532. In accordance with R 299.9703(5), this acceptance of the certification of closure constitutes a release from the requirement to maintain such financial assurance for the Facility. The bond also includes financial assurance for post-closure of

the Facility. The need for any long-term post-closure exposure controls or monitoring is being deferred to corrective action. At this time, the United States Environmental Protection Agency (U.S. EPA) is the lead regulatory agency for the Facility's corrective action requirements. By separate letter, the MDEQ will authorize the cancellation of the bond.

The GMC demonstrates financial responsibility for liability coverage of the Facility by use of an insurance policy. In accordance with R 299.9710(16), this acceptance of the certification of closure constitutes a release from the requirement to maintain such financial responsibility. The GMC is no longer required to include the Facility on the insurance endorsement used to demonstrate the required liability coverage.

Corrective Action

This acceptance of the certification of closure does not constitute a release from any corrective action responsibilities that the GMC may have under Part 111 or under the federal Resource Conservation and Recovery Act of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984. In addition to the responsibility to close regulated hazardous waste management units, owners and operators are responsible to conduct corrective actions for releases of hazardous wastes and hazardous waste constituents from waste management units.

The MDEQ has not received the deed notice for the Facility as required by R 299.9525. This violation has been entered into the MDEQ's Waste Data System, which also is reflected in the U.S. EPA's Enforcement and Compliance History Online system. This deed notice must be filed as soon as possible. For more information, please contact Mr. Clay Spencer, Hazardous Waste and Radiological Protection Section (HWRPS), WHMD, at 517-373-7968.

If you have any questions regarding this letter, please contact Ms. Howe, HWRPS, at 517-373-9881.

Sincerely,

George W. Bruchmann, Chief
Waste and Hazardous Materials Division
517-373-9523

cc: Mr. William McFarland, GMC
Mr. Peter Ramanauskas, U.S. EPA
Ms. Liane Shekter Smith, MDEQ
Mr. Stephen Buda, MDEQ
Ms. De Montgomery, MDEQ
Mr. Terry Walkington, MDEQ
Mr. Steve Sliver, MDEQ
Ms. Cheryl Howe, MDEQ
Mr. Clay Spencer, MDEQ
Mr. Ron Stone, MDEQ
Base File

Attachment D

RFI Databox Figures

Chemical Name	A	B	C	D
1,1-Dichloroethene	5.70E+02	7.80E+04	1.50E+01	3.30E-01
1,2-Dichloropropane	5.50E+02	1.20E+05	5.10E+01	7.40E+00
2,4-Dimethylphenol	3.60E+04	2.10E+06	-	-
2-Butanone (Methyl Ethyl Ketone)	2.70E+04	2.90E+07	3.50E+04	2.70E+04
Aluminum	3.70E+05	-	-	-
Ammonia	-	2.90E+06	-	-
Antimony	6.70E+02	5.90E+03	-	-
Arsenic	3.70E+01	9.10E+02	-	-
Benzene	4.00E+02	4.70E+05	9.90E+01	8.40E+00
Benzo(a)anthracene	8.00E+01	-	-	-
Benzo(a)pyrene	8.00E+00	1.90E+03	-	-
Benzo(b)fluoranthene	8.00E+01	-	-	-
Benzo(g,h,i)perylene	7.00E+03	3.50E+05	-	-
Benzo(k)fluoranthene	8.00E+02	-	-	-
Beryllium	1.60E+03	5.90E+02	-	-
bis(2-Ethylhexyl)phthalate	1.00E+04	8.90E+05	-	-
Cadmium	2.10E+03	2.20E+03	-	-
Carbazole	2.40E+03	-	-	-
Chromium III (Trivalent)	1.00E+06	1.50E+05	-	-
Chromium Total	9.20E+03	2.40E+02	-	-
Chromium VI (Hexavalent)	9.20E+03	2.40E+02	-	-
Chrysene	8.00E+03	-	-	-
cis-1,2-Dichloroethene	6.40E+02	1.00E+06	4.30E+02	4.10E+01
Cobalt	9.00E+03	5.90E+03	-	-
Cyanide (total)	2.50E+02	2.50E+02	-	-
Dibenz(a,h)anthracene	8.00E+00	-	-	-
Ethylbenzene	1.40E+02	1.30E+07	3.10E+03	1.40E+02
Fluoranthene	1.30E+05	4.10E+06	8.80E+05	1.00E+05
Formaldehyde	6.00E+04	3.00E+05	6.90E+01	6.50E+01
Indeno(1,2,3-cd)pyrene	8.00E+01	-	-	-
Iron	5.80E+05	-	-	-
Lead	9.00E+02	4.40E+04	-	-
Manganese	9.00E+04	1.50E+03	-	-
Mercury	5.80E+02	8.80E+03	6.20E+01	8.90E+01
Methylphenol (Cresol)	3.60E+04	2.90E+06	-	-
Naphthalene	5.20E+04	8.80E+04	3.50E+02	4.70E+02
Nickel	1.50E+05	1.60E+04	-	-
Pentachlorophenol	3.20E+02	1.30E+05	-	-
pH Field	-	-	-	-
Phenanthrene	5.20E+03	2.90E+03	1.90E+02	5.10E+03
Phenol	1.20E+04	1.80E+07	-	-
Selenium	9.60E+03	5.90E+04	-	-
Total PCBs	1.60E+01	6.50E+03	2.80E+04	1.60E+04
Trichloroethene	5.00E+02	2.30E+06	4.40E+02	3.70E+01
Vanadium	5.50E+03	-	-	-
Vinyl chloride	3.40E+01	8.90E+05	1.70E+02	2.80E+00
Xylene (total)	1.50E+02	1.30E+08	6.50E+04	1.50E+02
Zinc	6.30E+05	-	-	-

A Michigan Part 201 Industrial and Commercial II Direct Contact Criteria
B Michigan Part 201 Soil Industrial commercial II, III and IV particulate inhalation criteria
C Michigan Part 201 Soil Industrial commercial II, III and IV SM volatilization to ambient air criteria
D Michigan Part 201 Soil Industrial commercial II, III and IV volatilization to indoor air criteria

SB-04836b	12/5/01 0-2(ft BGS)	12/5/01 2-4(ft BGS)
Arsenic	2.8 U	1.2 J

SB-04836a	12/5/01 0-2(ft BGS)	12/5/01 2-4(ft BGS)
Arsenic	3.1 U	0.6 J

SB-04836e	12/5/01 0-2(ft BGS)	12/5/01 2-4(ft BGS)
Arsenic	3 U	0.9 J

SB-04836d	12/5/01 0-2(ft BGS)	12/5/01 2-4(ft BGS)
Arsenic	0.7 J	0.9 J

SB-04836c	12/5/01 0-2(ft BGS)	12/5/01 2-4(ft BGS)
Arsenic	2.8 U	2.4 J/2.2 J

SB-05036i	12/6/01 0-2(ft BGS)	12/6/01 2-4(ft BGS)
Arsenic	1.9 J	2 J

SB-05036g	12/6/01 0-2(ft BGS)	12/6/01 2-4(ft BGS)
Arsenic	2.1 J	2.2 J

SB-05036b	12/6/01 0-2(ft BGS)	12/6/01 2-4(ft BGS)
Arsenic	1.4 J	2.3 J

SB-05036a	12/11/01 0-2(ft BGS)	12/11/01 2-4(ft BGS)
Arsenic	1.8/0.5 J	1.2 U

B-8 (2000-G)	11/29/00 0-2(ft BGS)
Arsenic	1.5
Chromium Total	47.8
Manganese	1260
Total PCBs	0.1 U

SB-04835A	1/11/05 0-2(ft BGS)	1/11/05 2-4(ft BGS)
Chromium III (Trivalent)	45.6 J	44.1 J
Chromium Total	Spec	Spec
Chromium VI (Hexavalent)	0.7 U	0.7 U

SB-04835B	1/11/05 0-2(ft BGS)	1/11/05 2-4(ft BGS)
Chromium III (Trivalent)	16.1 J	15.5 J/14.8 J
Chromium Total	Spec	Spec/Spec
Chromium VI (Hexavalent)	0.7 U	0.7 U/0.7 U

TMW-04835	3/6/03 0-2(ft BGS)	3/6/03 2-4(ft BGS)	3/6/03 8-10(ft BGS)	3/6/03 16-18(ft BGS)
Arsenic	1.4	1.1	4	3.6
Chromium Total	309 (B)	15.6	59 J	13.1
Manganese	856 J	126 J	403 J	189 J
Total PCBs	0.11 J	0.38 U	0.5 U	0.37 U

B-7 (2000-G)	11/29/00 1-2.5(ft BGS)
Arsenic	0.9 J/1 J
Chromium Total	13.5/13.8
Manganese	114/159
Total PCBs	0.1 U/0.1 U

B-9 (2000-G)	11/29/00 1-3(ft BGS)
Arsenic	1.7
Chromium Total	17.1
Manganese	304
Total PCBs	0.1 U

B-10 (2000-G)	11/29/00 4-6(ft BGS)
Arsenic	1.3
Chromium Total	10.7
Manganese	101
Total PCBs	0.1 U

TMW-04135	3/6/03 0-2(ft BGS)	3/6/03 2-4(ft BGS)	3/6/03 8-10(ft BGS)
Arsenic	1.8	2.6	1.9
Chromium Total	16.6	19.4	11.5
Manganese	274 J	229 J	152 J
Total PCBs	0.0715 J	0.38 U	0.39 U

SB-04435	12/9/02 0-2(ft BGS)	12/9/02 2-4(ft BGS)
Total PCBs	0.12 U	0.12 U

SB-04834B	3/7/03 0-2(ft BGS)	3/7/03 2-4(ft BGS)
Total PCBs	0.4 U	0.0514 J

SB-04335	3/6/03 0-2(ft BGS)	3/6/03 2-4(ft BGS)
Total PCBs	0.108 J	0.39 U

SB-04834D	12/10/01 0-2(ft BGS)	12/9/02 0-2(ft BGS)	12/10/01 2-4(ft BGS)	12/9/02 2-4(ft BGS)	12/10/01 4-6(ft BGS)	12/9/02 4-6(ft BGS)	12/9/02 6-8(ft BGS)
Total PCBs	1.11 J	0.539 J	13.4 J	0.282 J/0.257 J	4.04 J/5.24 J	0.12 U	0.12 U

SB-04834	9/15/98 0-2(ft BGS)	12/9/02 0-2(ft BGS)	12/9/02 2-4(ft BGS)	9/15/98 4-6(ft BGS)	12/9/02 4-6(ft BGS)	12/9/02 6-8(ft BGS)	9/15/98 13-15(ft BGS)
Arsenic	2	-	-	3	-	-	8
Chromium Total	9 J	-	-	25 J	-	-	14 J
Manganese	212 J	-	-	200 J	-	-	344 J
Total PCBs	0.4 J	0.46 J	0.27 J	0.85 J	0.53 J	0.49 J	0.1 U

SB-04334	12/9/02 0-2(ft BGS)	12/9/02 2-4(ft BGS)	12/9/02 4-6(ft BGS)	12/9/02 6-8(ft BGS)
Total PCBs	0.56 J	0.89 J	0.43 J	0.13 U

SB-04333B	12/9/02 0-2(ft BGS)	12/9/02 2-4(ft BGS)
Total PCBs	0.31 J	1.05 J

SB-04433D	12/4/01 0-2(ft BGS)	12/4/01 4-6(ft BGS)
Total PCBs	9.7 J/11.2 J	0.92 J

SB-04433c	12/4/01 0-2(ft BGS)	12/4/01 4-6(ft BGS)
Total PCBs	1.36 J/0.76 J	0.43 J

TMW-04130	3/6/03 0-2(ft BGS)	3/6/03 2-4(ft BGS)	3/6/03 8-10(ft BGS)	3/6/03 18-20(ft BGS)
Arsenic	1.2	2.4	1.7	4.8
Chromium Total	68.6	21.6	12.1	7.3
Manganese	1220 J	292 J	246 J	150 J
Total PCBs	0.38 U	0.46 U	0.41 U	0.49 U

SB-04332B	3/6/03 0-2(ft BGS)	3/6/03 2-4(ft BGS)
Total PCBs	0.079 J	0.0729 J

TMW-04127	3/6/03 0-2(ft BGS)	3/6/03 2-4(ft BGS)	3/6/03 8-10(ft BGS)
Arsenic	1.4	1.4/1.4	1.6
Chromium Total	69.4	42.8/54.2	5.9
Manganese	1590 J	825 J/901 J	77.2 J
Total PCBs	0.36 U	0.35 U/0.35 U	0.41 U

TMW-04332	12/9/02 0-2(ft BGS)	12/9/02 2-4(ft BGS)	12/9/02 4-6(ft BGS)
Total PCBs	1.09 J	0.13 U	0.17 U

SB-04432	12/9/02 0-2(ft BGS)	12/9/02 2-4(ft BGS)
Total PCBs	0.263 J/0.257 J	0.13 U/0.12 U

SB-04433b	12/4/01 0-2(ft BGS)	12/4/01 4-6(ft BGS)
Total PCBs	4.66 J	0.51 J

TMW-04531	3/7/03 0-2(ft BGS)	3/7/03 2-4(ft BGS)	3/7/03 8-10(ft BGS)
Arsenic	4.5	0.79	3.8
Chromium Total	23.8	17.5	37.8
Manganese	208 J	310 J	795 J
Total PCBs	0.54 U	0.38 U	0.43 U

TMW-04528	3/7/03 0-2(ft BGS)	3/7/03 2-4(ft BGS)	3/7/03 8-10(ft BGS)	3/7/03 18-20(ft BGS)
Arsenic	1.1	0.44	1.2	6.7
Chromium Total	20.4	6.7	9.5	13.3
Manganese	440 J	69.7 J	120 J	452 J
Total PCBs	0.35 U	0.38 U	0.48 U	0.74 U

SB-04533c	12/5/01 0-2(ft BGS)	12/5/01 2-4(ft BGS)
Total PCBs	1.04 J	0.386 J

SB-04535	12/9/02 0-2(ft BGS)	12/9/02 2-4(ft BGS)
Total PCBs	0.44 J	0.43 J

SB-05036c	12/11/01 0-2(ft BGS)	12/11/01 2-4(ft BGS)
Arsenic	2.6	2.5

SB-05036d	12/6/01 0-2(ft BGS)	12/6/01 2-4(ft BGS)
Arsenic	0.7 J/0.7 J	0.8 J

SB-05036e	12/6/01 0-2(ft BGS)	12/6/01 2-4(ft BGS)
Arsenic	2.6 J	3.5

SB-05036f	12/6/01 0-2(ft BGS)	12/6/01 2-4(ft BGS)
Arsenic	1.3 J	1.4 J

SB-05036h	12/6/01 0-2(ft BGS)	12/6/01 2-4(ft BGS)
Arsenic	2.4 J	4.4

MW-05036	10/30/98 0-2(ft BGS)	10/30/98 4-6(ft BGS)	10/30/98 30-32(ft BGS)
Arsenic	2	4	4/5
Chromium Total	59	71	12/13
Manganese	1100	1200	214/215
Total PCBs	0.1 U	0.1 U	0.1 U/0.1 U

TMW-05035	3/6/03 0-2(ft BGS)	3/6/03 2-4(ft BGS)	3/6/03 8-10(ft BGS)
Arsenic	0.91	2.3	0.93
Chromium Total	43.5	62.9	7.4
Manganese	1230 J	1130 J	83.1 J
Total PCBs	0.4 U	0.071 J	0.4 U

SB-04634	12/9/02 0-2(ft BGS)	12/9/02 2-4(ft BGS)
Total PCBs	0.417 J	0.336 J

SB-04634b	12/10/01 0-2(ft BGS)	12/10/01 4-6(ft BGS)
Total PCBs	1.36 J	0.329 J

MW-04831	9/10/98 0-2(ft BGS)	9/10/98 6-8(ft BGS)	9/10/98 24-26(ft BGS)	9/10/98 26-28(ft BGS)
Arsenic	10	8	2	5
Chromium Total	126	85	7	12
Manganese	1030	963	146 J	247 J
Total PCBs	0.1 U	0.1 U	0.1 U	0.1 U

SB-04534c	12/10/01 0-2(ft BGS)	12/10/01 4-6(ft BGS)
Total PCBs	0.263 J	0.13 U

SB-04433a	12/4/01 0-2(ft BGS)	12/4/01 4-6(ft BGS)
Total PCBs	0.82 J	0.34 J

SB-04533a	12/10/01 0-2(ft BGS)	12/10/01 4-6(ft BGS)
Total PCBs	0.316 J	0.275 J

SB-04533b	12/5/01 0-2(ft BGS)	12/5/01 2-4(ft BGS)
Total PCBs	0.38 J	0.89 J

SB-04533d	12/5/01 0-2(ft BGS)	12/5/01 2-4(ft BGS)
Total PCBs	0.318 J/0.329 J	1.38 J

TMW-05032	3/7/03 0-2(ft BGS)	3/7/03 2-4(ft BGS)	3/7/03 8-10(ft BGS)	3/7/03 18-20(ft BGS)
Arsenic	2.3	1.1	5.1	3.6
Chromium Total	33.7 J	18.8	44.7	5.3
Manganese	1250 J	300 J	722 J	182 J
Total PCBs	0.047 J	0.39 U	0.8 U	0.43 U

BUILDING
BUILDING
PARKING
STOCKPILE
FLOODED AREA
FORMER NODULAR IRON PLANT AREA
G
G - NORTH
G - SOUTH
SEE FIGURE G2a FOR DETAIL OF THIS AREA

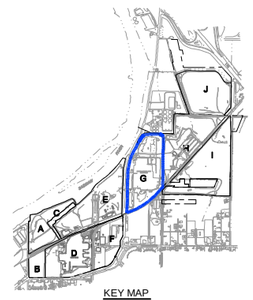
0 100 200ft

LEGEND
- INVESTIGATIVE UNIT BOUNDARY AND IDENTIFIER
- MONITORING WELL LOCATION - RFI
- SOIL BORING LOCATION - RFI
- SAMPLE LOCATION - NO REPORTED DATA
- SOIL BORING LOCATION - HISTORICAL
- MONITORING WELL LOCATION - HISTORICAL

SB-04836a	12/5/01 0-2(ft BGS)	12/5/01 2-4(ft BGS)
Arsenic	ND (3.1) U	0.6 J

SAMPLE LOCATION
SAMPLE DATE
SAMPLE DEPTH
RESULT (mg/kg)
PARAMETER

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. DATABOX ANALYTE LIST DEVELOPED BASED ON A MINIMUM OF ONE EXCEEDNACE OF SCREENING CRITERIA PER INVESTIGATIVE UNIT PER MATRIX (i.e. SOIL OR GROUNDWATER). TOTAL PCBs ARE PRESENTED FOR ALL LOCATIONS SAMPLED. IU SPECIFIC ANALYTES NOT ANALYZED FOR AT A GIVEN LOCATION ARE OMITTED FROM THE CORRESPONDING DATABOX.
4. SPEC INDICATES THAT THE TOTAL CHROMIUM CONCENTRATION HAS BEEN SPECIATED, USING THE HEXAVALENT CHROMIUM RESULTS TO CALCULATE THE TRIVALENT CHROMIUM CONCENTRATION.



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 - SOUTH
RFI PHASE 1C - SOIL

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.	FEBRUARY 2007	
Scale: 1" = 200'	Project №: 17075-16	Report №: 027	Drawing №: figure 13.2

17075-16(027)GN-WA020 FEB 08/2007

Chemical Name	A	B	C	D
1,1-Dichloroethene	5.70E+02	7.80E+04	1.50E+01	3.30E-01
1,2-Dichloropropane	5.50E+02	1.20E+05	5.10E+01	7.40E+00
2,4-Dimethylphenol	3.60E+04	2.10E+06	-	-
2-Butanone (Methyl Ethyl Ketone)	2.70E+04	2.90E+07	3.50E+04	2.70E+04
Aluminum	3.70E+05	-	-	-
Ammonia	-	2.90E+06	-	-
Antimony	6.70E+02	5.90E+03	-	-
Arsenic	3.70E+01	9.10E+02	-	-
Benzene	4.00E+02	4.70E+05	9.90E+01	8.40E+00
Benzo(a)anthracene	8.00E+01	-	-	-
Benzo(a)pyrene	8.00E+00	1.90E+03	-	-
Benzo(b)fluoranthene	8.00E+01	-	-	-
Benzo(g,h,i)perylene	7.00E+03	3.50E+05	-	-
Benzo(k)fluoranthene	8.00E+02	-	-	-
Beryllium	1.60E+03	5.90E+02	-	-
bis(2-Ethylhexyl)phthalate	1.00E+04	8.90E+05	-	-
Cadmium	2.10E+03	2.20E+03	-	-
Carbazole	2.40E+03	-	-	-
Chromium III (Trivalent)	1.00E+06	1.50E+05	-	-
Chromium Total	9.20E+03	2.40E+02	-	-
Chromium VI (Hexavalent)	9.20E+03	2.40E+02	-	-
Chrysene	8.00E+03	-	-	-
cis-1,2-Dichloroethene	6.40E+02	1.00E+06	4.30E+02	4.10E+01
Cobalt	9.00E+03	5.90E+03	-	-
Cyanide (total)	2.50E+02	2.50E+02	-	-
Dibenz(a,h)anthracene	8.00E+00	-	-	-
Ethylbenzene	1.40E+02	1.30E+07	3.10E+03	1.40E+02
Fluoranthene	1.30E+05	4.10E+06	8.80E+05	1.00E+05
Formaldehyde	6.00E+04	3.00E+05	6.90E+01	6.50E+01
Indeno(1,2,3-cd)pyrene	8.00E+01	-	-	-
Iron	5.80E+05	-	-	-
Lead	9.00E+02	4.40E+04	-	-
Manganese	9.00E+04	1.50E+03	-	-
Mercury	5.80E+02	8.80E+03	6.20E+01	8.90E+01
Methylphenol (Cresol)	3.60E+04	2.90E+06	-	-
Naphthalene	5.20E+04	8.80E+04	3.50E+02	4.70E+02
Nickel	1.50E+05	1.60E+04	-	-
Pentachlorophenol	3.20E+02	1.30E+05	-	-
pH Field	-	-	-	-
Phenanthrene	5.20E+03	2.90E+03	1.90E+02	5.10E+03
Phenol	1.20E+04	1.80E+07	-	-
Selenium	9.60E+03	5.90E+04	-	-
Total PCBs	1.60E+01	6.50E+03	2.80E+04	1.60E+04
Trichloroethene	5.00E+02	2.30E+06	4.40E+02	3.70E+01
Vanadium	5.50E+03	-	-	-
Vinyl chloride	3.40E+01	8.90E+05	1.70E+02	2.80E+00
Xylene (total)	1.50E+02	1.30E+08	6.50E+04	1.50E+02
Zinc	6.30E+05	-	-	-

A Michigan Part 201 Industrial and Commercial II Direct Contact Criteria
B Michigan Part 201 Soil Industrial commercial II, III and IV particulate inhalation criteria
C Michigan Part 201 Soil Industrial commercial II, III and IV SM volatilization to ambient air criteria
D Michigan Part 201 Soil Industrial commercial II, III and IV volatilization to indoor air criteria

SB-04533e	12/10/01	12/10/01
	0-2(ft BGS)	4-6(ft BGS)
Total PCBs	0.316 J	0.275 J

SB-04435	12/9/02	12/9/02
	0-2(ft BGS)	2-4(ft BGS)
Total PCBs	0.12 U	0.12 U

SB-04634B	3/7/03	3/7/03
	0-2(ft BGS)	2-4(ft BGS)
Total PCBs	0.4 U	0.0514 J

SB-04535	12/9/02	12/9/02
	0-2(ft BGS)	2-4(ft BGS)
Total PCBs	0.44 J	0.43 J

SB-04434	9/15/98	12/9/02	12/9/02	9/15/98	12/9/02	12/9/02	9/15/98
	0-2(ft BGS)	0-2(ft BGS)	2-4(ft BGS)	4-6(ft BGS)	4-6(ft BGS)	6-8(ft BGS)	13-15(ft BGS)
Arsenic	2	-	-	3	-	-	5
Chromium Total	9 J	-	-	25 J	-	-	14 J
Manganese	212 J	-	-	200 J	-	-	344 J
Total PCBs	0.4 J	0.46 J	0.27 J	0.85 J	0.53 J	0.49 J	0.1 U

SB-04534D	12/10/01	12/9/02	12/10/01	12/9/02	12/10/01	12/9/02	12/9/02
	0-2(ft BGS)	0-2(ft BGS)	2-4(ft BGS)	2-4(ft BGS)	4-6(ft BGS)	6-8(ft BGS)	6-8(ft BGS)
Total PCBs	1.11 J	0.539 J	13.4 J	0.262 J/0.257 J	4.04 J/5.24 J	0.12 U	0.12 U

SB-04433b	12/4/01	12/4/01
	0-2(ft BGS)	4-6(ft BGS)
Total PCBs	4.66 J	0.51 J

SB-04335	3/8/03	3/8/03
	0-2(ft BGS)	2-4(ft BGS)
Total PCBs	0.108 J	0.39 U

SB-04334	12/9/02	12/9/02	12/9/02	12/9/02
	0-2(ft BGS)	2-4(ft BGS)	4-6(ft BGS)	6-8(ft BGS)
Total PCBs	0.56 J	0.89 J	0.43 J	0.13 U

SB-04333B	12/9/02	12/9/02
	0-2(ft BGS)	2-4(ft BGS)
Total PCBs	0.31 J	1.05 J

SB-04332b	3/8/03	3/8/03
	0-2(ft BGS)	2-4(ft BGS)
Total PCBs	0.079 J	0.0729 J

TMW-04332	12/9/02	12/9/02	12/9/02
	0-2(ft BGS)	2-4(ft BGS)	4-6(ft BGS)
Total PCBs	1.09 J	0.13 U	0.17 U

SB-04433D	12/4/01	12/4/01
	0-2(ft BGS)	4-6(ft BGS)
Total PCBs	9.7 J/11.2 J	0.92 J

SB-04433c	12/4/01	12/4/01
	0-2(ft BGS)	4-6(ft BGS)
Total PCBs	1.36 J/0.76 J	0.43 J

SB-04432	12/9/02	12/9/02
	0-2(ft BGS)	2-4(ft BGS)
Total PCBs	0.263 J/0.257 J	0.13 U/0.12 U

SB-04533d	12/5/01	12/5/01
	0-2(ft BGS)	2-4(ft BGS)
Total PCBs	0.318 J/0.329 J	1.36 J

SB-04534b	12/10/01	12/10/01
	0-2(ft BGS)	4-6(ft BGS)
Total PCBs	1.36 J	0.329 J

SB-04634	12/9/02	12/9/02
	0-2(ft BGS)	2-4(ft BGS)
Total PCBs	0.417 J	0.336 J

SB-04534c	12/10/01	12/10/01
	0-2(ft BGS)	4-6(ft BGS)
Total PCBs	0.263 J	0.13 U

SB-04433a	12/4/01	12/4/01
	0-2(ft BGS)	4-6(ft BGS)
Total PCBs	0.82 J	0.34 J

SB-04533b	12/5/01	12/5/01
	0-2(ft BGS)	2-4(ft BGS)
Total PCBs	0.36 J	0.89 J

TMW-04531	3/7/03	3/7/03	3/7/03
	0-2(ft BGS)	2-4(ft BGS)	8-10(ft BGS)
Arsenic	4.5	0.79	3.6
Chromium Total	23.8	17.5	37.6
Manganese	208 J	310 J	795 J
Total PCBs	0.54 U	0.38 U	0.43 U

SB-04533c	12/5/01	12/5/01
	0-2(ft BGS)	2-4(ft BGS)
Total PCBs	1.04 J	0.366 J

TMW-04436 B-7 (2000) SB-04836A SB-04836B MW-04836 SB-04836C TMW-04936 B-7 (1987) B-14 B-12 SB-04836E SB-04836D B-15 SB-05036I B-8 (2000-G) TMW-04935 TMW-05035 B-9 (2000-G) TMW-04135 TMW-04235B SB-04635A TMW-04436 B-11 TMW-04635 SB-04635B TMW-04235A MW-04435 SB-04335 SB-04534A SB-04535 SB-04435 SB-04435A MW-04835 SB-04634b MW-04934 SB-04434 SB-04534E SB-04534B MW-04434 SB-04534D MW-04534 SB-04634 FNDN FNDN TMW-04233 BB-4B MW-04333 SB-04334 SB-04534C SB-04434A SB-04433A SB-04433A SB-04433D SB-04433B SB-04533D SB-04333B SB-04333A SB-04433C SB-04533B SB-04533-C TMW-05032 MW-04433 SB-04332b SB-04432 TMW-04531 TMW-04332 MW-04831 TMW-04630 TMW-04130 TMW-04528

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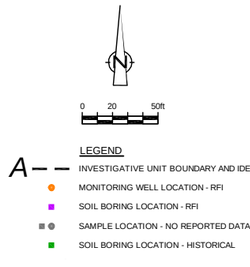


KEY MAP

0 20 50ft

LEGEND

- INVESTIGATIVE UNIT BOUNDARY AND IDENTIFIER
- MONITORING WELL LOCATION - RFI
- SOIL BORING LOCATION - RFI
- SAMPLE LOCATION - NO REPORTED DATA
- SOIL BORING LOCATION - HISTORICAL

SB-04634	12/9/02	12/9/02
	0-2(ft BGS)	2-4(ft BGS)
Total PCBs	0.357 J	0.271 J

SAMPLE LOCATION
SAMPLE DATE
SAMPLE DEPTH
RESULT (mg/kg)
PARAMETER

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. DATABOX ANALYTE LIST DEVELOPED BASED ON A MINIMUM OF ONE EXCEEDNACE OF SCREENING CRITERIA PER INVESTIGATIVE UNIT PER MATRIX (i.e. SOIL OR GROUNDWATER). TOTAL PCBs ARE PRESENTED FOR ALL LOCATIONS SAMPLED. IU SPECIFIC ANALYTES NOT ANALYZED FOR AT A GIVEN LOCATION ARE OMITTED FROM THE CORRESPONDING DATABOX.
4. SPEC INDICATES THAT THE TOTAL CHROMIUM CONCENTRATION HAS BEEN SPECIATED, USING THE HEXAVALENT CHROMIUM RESULTS TO CALCULATE THE TRIVALENT CHROMIUM CONCENTRATION.

SCALE VERIFICATION

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

GENERAL MOTORS CORPORATION
SAGINAW METAL CASTING OPERATIONS

SAGINAW, MICHIGAN

INVESTIGATIVE UNIT G - SOUTH
RFI PHASE 1C - SOIL

CONESTOGA-ROVERS & ASSOCIATES

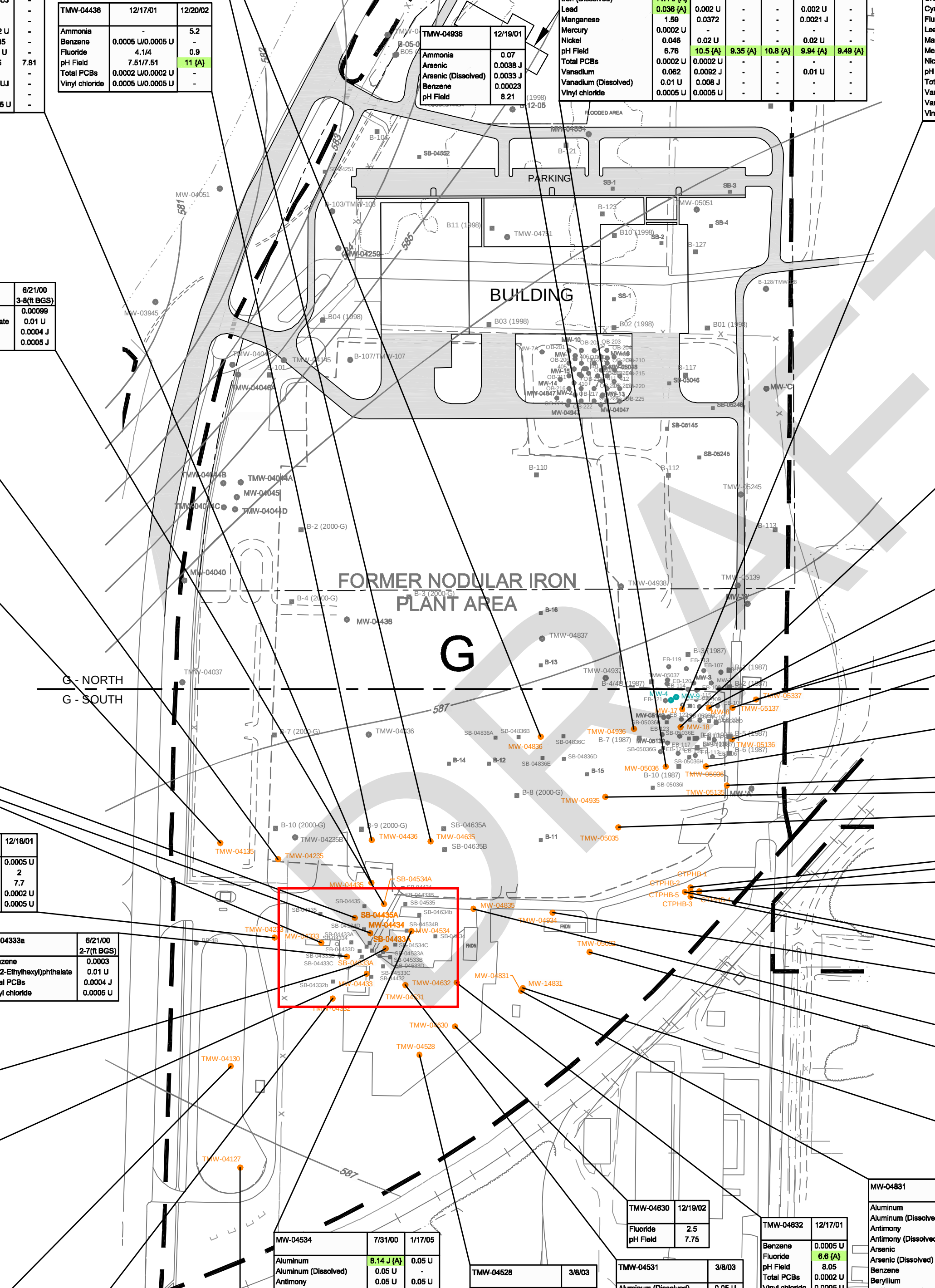
Source Reference:
MICHIGAN STATE PLANE SOUTH, NAD 83 USING INTERNATIONAL FEET, NGVD 88
TOPO - SANBORN, 1996

Project Manager:	Reviewed By:	Date:	
I.R.	M.T.	FEBRUARY 2007	
Scale: 1" = 50'	Project N#: 17075-16	Report N#: 027	Drawing N#: figure 13.2a

17075-16(027)GN-WA021 FEB 08/2007

Chemical Name	A	B	C	D
1,1-Dichloroethene	7.00E-03	1.10E+01	1.30E+00	6.50E-02
1,2-Dichloropropane	5.00E-03	1.60E+01	3.60E+01	2.90E-01
2,4-Dimethylphenol	1.00E+00	5.20E+02	-	3.80E-01
2-Butanone (Methyl Ethyl Ketone)	3.80E+01	2.40E+05	2.40E+05	2.20E+00
Aluminum	4.10E+00	6.40E+04	-	-
Aluminum (Dissolved)	4.10E+00	6.40E+04	-	-
Ammonia	1.00E+01	-	7.10E+03	-
Antimony	6.00E-03	6.80E+01	-	1.30E-01
Antimony (Dissolved)	6.00E-03	6.80E+01	-	1.30E-01
Arsenic	1.00E-02	4.30E+00	-	1.50E-01
Arsenic (Dissolved)	1.00E-02	4.30E+00	-	1.50E-01
Benzene	5.00E-03	1.10E+01	3.50E+01	2.00E-01
Benzo(a)anthracene	8.50E-03	9.40E-03	-	-
Benzo(a)pyrene	5.00E-03	1.00E-03	-	-
Benzo(b)fluoranthene	1.50E-03	1.50E-03	-	-
Benzo(g,h,i)perylene	1.00E-03	1.00E-03	-	-
Benzo(k)fluoranthene	1.00E-03	1.00E-03	-	-
Beryllium	4.00E-03	2.90E+02	-	1.20E+00
Beryllium (Dissolved)	4.00E-03	2.90E+02	-	1.20E+00
bis(2-Ethylhexyl)phthalate	6.00E-03	3.20E-01	-	3.20E-02
Boron	5.00E-01	6.20E+04	-	1.90E+00
Cadmium	5.00E-03	1.90E+02	-	1.30E-01
Cadmium (Dissolved)	5.00E-03	1.90E+02	-	1.30E-01
Carbazole	3.50E-01	7.40E+00	-	1.00E-02
Chromium III (Trivalent)	1.10E+02	2.90E+05	-	9.40E+00
Chromium Total	1.00E-01	4.60E+02	-	1.10E-02
Chromium Total (Dissolved)	1.00E-01	4.60E+02	-	1.10E-02
Chromium VI (Hexavalent)	1.00E-01	4.60E+02	-	1.10E-02
Chromium VI (Hexavalent) (Dissolved)	1.00E-01	4.60E+02	-	1.10E-02
Chrysene	1.60E-03	1.60E-03	-	-
cis-1,2-Dichloroethene	7.00E-02	2.00E+02	2.10E+02	6.20E-01
Cobalt	1.00E-01	2.40E+03	-	1.00E-01
Cobalt (Dissolved)	1.00E-01	2.40E+03	-	1.00E-01
Cyanide (total)	2.00E-01	5.70E+01	-	5.20E-03
Dibenz(a,h)anthracene	2.00E-03	2.00E-03	-	-
Ethylbenzene	7.00E-01	1.70E+02	1.70E+02	1.80E-02
Fluoranthene	2.10E-01	2.10E-01	2.10E-01	1.60E-03
Fluoride	4.00E+00	-	-	-
Fluorine	2.00E+00	1.20E+04	-	-
Formaldehyde	3.80E+00	3.00E+04	3.60E+02	1.20E-01
Indeno(1,2,3-cd)pyrene	2.00E-03	2.00E-03	-	-
Iron	5.60E+00	5.80E+04	-	-
Iron (Dissolved)	5.60E+00	5.80E+04	-	-
Lead	4.00E-03	-	-	1.90E-01
Lead (Dissolved)	4.00E-03	-	-	1.90E-01
Manganese	2.50E+00	9.10E+03	-	5.90E+01
Manganese (Dissolved)	2.50E+00	9.10E+03	-	5.90E+01
Mercury	2.00E-03	5.60E-02	5.60E-02	1.30E-06
Mercury (Dissolved)	2.00E-03	5.60E-02	5.60E-02	1.30E-06
Methylphenol (Cresol)	1.00E+00	8.10E+02	-	7.10E-02
Naphthalene	1.50E+00	3.10E+01	3.10E+01	1.30E-02
Nickel	1.00E-01	7.40E+04	-	2.10E+02
Nickel (Dissolved)	1.00E-01	7.40E+04	-	2.10E+02
Pentachlorophenol	1.00E-03	2.00E-01	-	2.80E-03
pH Field	8.50E+00	-	-	9.00E+00
Phenanthrene	1.50E-01	1.00E+00	1.00E+00	2.40E-03
Phenol	1.30E+01	2.90E+04	-	2.10E-01
Selenium	5.00E-02	9.70E+02	-	5.00E-03
Selenium (Dissolved)	5.00E-02	9.70E+02	-	5.00E-03
Total PCBs	5.00E-04	3.30E-03	4.50E-02	2.00E-04
Trichloroethene	5.00E-03	2.20E+01	9.70E+01	2.00E-01
Vanadium	6.20E-02	9.70E+02	-	1.20E-02
Vanadium (Dissolved)	6.20E-02	9.70E+02	-	1.20E-02
Vinyl chloride	2.00E-03	1.00E+00	1.30E+01	1.50E-02
Xylene (total)	1.00E+01	1.90E+02	1.90E+02	3.50E-02
Zinc	5.00E+00	1.10E+05	-	2.20E+01
Zinc (Dissolved)	5.00E+00	1.10E+05	-	2.20E+01

A Michigan Part 201 Industrial commercial II III and IV Drinking Water Criteria
B Michigan Part 201 Groundwater Contact Criteria
C Michigan Part 201 Industrial commercial II, III and IV Groundwater Volatilization to Indoor Air Criteria
D Michigan Part 201 Groundwater surface water interface Criteria



MW-04435	7/31/00	3/28/05	10/7/05
Aluminum	22.6 J {A}	0.0451 J	-
Aluminum (Dissolved)	0.05 U	-	-
Antimony	0.05 U	0.05 U	-
Antimony (Dissolved)	0.05 U	-	-
Arsenic	0.0165 J {A}	0.0022 J	-
Arsenic (Dissolved)	0.0018 J	-	-
Benzene	0.0005 U	0.0005 U	-
Beryllium	0.0009 J	0.005 U	-
bis(2-Ethylhexyl)phthalate	0.01 U	-	-
Chromium III (Trivalent)	0.151 J	-	-
Chromium Total	Spec	0.01 UJ	-
Chromium VI (Hexavalent)	0.01 U	-	-
Cyanide (total)	0.01 U	-	-
Lead	0.079 {A}	0.002 U	-
Manganese	2.32	0.585	-
Nickel	0.0594	0.02 U	-
pH Field	7.24	8.5	7.81
Total PCBs	0.0002 U	-	-
Vanadium	0.0298	0.01 UJ	-
Vanadium (Dissolved)	0.01 U	-	-
Vinyl chloride	0.0033 J {A}	0.0005 U	-

TMW-04835	3/7/03
Aluminum (Dissolved)	0.05 U
Ammonia	4.2 J
Antimony (Dissolved)	0.0014 J
Arsenic (Dissolved)	0.0026 J
Benzene	0.001 U
bis(2-Ethylhexyl)phthalate	0.005 U
Iron (Dissolved)	1.6
Total PCBs	0.0002 U
Vanadium (Dissolved)	0.007 U
Vinyl chloride	0.001 U

TMW-04436	12/17/01	12/20/02
Ammonia	-	5.2
Benzene	0.0005 U/0.0005 U	-
Fluoride	4.1/4	0.9
pH Field	7.51/7.51	11 {A}
Total PCBs	0.0002 U/0.0002 U	-
Vinyl chloride	0.0005 U/0.0005 U	-

MW-04836	8/2/00	12/14/01	12/1/02	1/29/04	1/18/05	10/7/05
Aluminum	108 J {A}	-	-	-	0.05 U	-
Aluminum (Dissolved)	0.05 U	-	-	-	-	-
Ammonia	2.03	0.05	-	-	-	-
Antimony	0.05 U	-	-	-	0.05 U	-
Antimony (Dissolved)	0.05 U	-	-	-	-	-
Arsenic	0.0565 {A}	-	-	-	0.0047 J	-
Arsenic (Dissolved)	0.0022 J	0.0042 J	-	-	-	-
Benzene	0.0002	0.0005 U	-	-	-	-
Beryllium	0.0048 J {A}	-	-	-	0.005 U	-
Chromium III (Trivalent)	0.256 J	-	-	-	-	-
Chromium Total	Spec	-	-	-	0.005 U	-
Chromium VI (Hexavalent)	0.01 U	-	-	-	-	-
Fluoride	2.8	-	-	-	-	-
Lead	0.212 {A}	-	-	-	0.002 U	-
Manganese	4.11 {A}	-	-	-	0.257	-
Nickel	0.231 {A}	-	-	-	0.02 U	-
pH Field	7.74	7.37	11.2 {A}	7.7	7.45	7.32
Vanadium	0.208 {A}	-	-	-	0.01 U	-
Vanadium (Dissolved)	0.01 U	-	-	-	-	-
Vinyl chloride	0.0005 U	-	-	-	-	-

TMW-04936	12/19/01
Ammonia	0.07
Arsenic	0.0038 J
Arsenic (Dissolved)	0.0033 J
Benzene	0.00023
pH Field	8.21

MW-05036	12/3/98	8/2/00	12/14/01	1/29/04	1/18/05	10/7/05
Aluminum	13.1 {A}	0.813	-	-	0.05 U	-
Aluminum (Dissolved)	0.05 U	0.136	-	-	-	-
Ammonia	-	-	2.4	-	-	-
Antimony	0.05 U	0.05 U	-	-	0.05 U	-
Antimony (Dissolved)	0.05 U	0.05 U	-	-	-	-
Arsenic	0.021 {A}	0.0103	-	-	0.0113 {A}	-
Arsenic (Dissolved)	0.005 U	0.0089	0.0081	-	-	-
Benzene	0.0005 U	0.0005 U	0.0005 U	-	-	-
Beryllium	0.005 U	0.005 U	-	-	0.005 U	-
bis(2-Ethylhexyl)phthalate	0.01 U	0.01 U	-	-	-	-
Chromium III (Trivalent)	-	0.005 U	-	-	-	-
Chromium Total	0.007	Spec	-	-	0.005 U	-
Chromium VI (Hexavalent)	-	0.01 U	-	-	-	-
Cyanide (total)	0.01 U	0.005 J	-	-	-	-
Fluoride	-	9.1 {A}	-	-	-	-
Iron	45.3 {A}	-	-	-	-	-
Iron (Dissolved)	11.4 J {A}	-	-	-	-	-
Lead	0.036 {A}	0.002 U	-	-	0.002 U	-
Manganese	1.59	0.0372	-	-	0.0021 J	-
Mercury	0.0002 U	-	-	-	-	-
Nickel	0.046	0.02 U	-	-	0.02 U	-
pH Field	6.76	10.5 {A}	9.35 {A}	10.8 {A}	9.94 {A}	9.49 {A}
Total PCBs	0.0002 U	0.0002 U	-	-	-	-
Vanadium	0.062	0.0092 J	-	-	0.01 U	-
Vanadium (Dissolved)	0.01 U	0.008 J	-	-	-	-
Vinyl chloride	0.0005 U	0.0005 U	-	-	-	-

MW-17	6/4/98	8/7/00	12/14/01	12/19/02	1/14/05	10/7/05
Aluminum	-	0.05 U	-	-	-	-
Aluminum (Dissolved)	-	0.05 U	-	-	-	-
Ammonia	-	25.5 {A}	24.4 {A}	-	17 {A}	-
Antimony	-	0.05 U	-	-	-	-
Antimony (Dissolved)	-	0.021 J {A}	-	-	-	-
Arsenic	0.022 {A}	0.0288 {A}	-	-	-	0.022 {A}
Arsenic (Dissolved)	0.022 {A}	0.028 {A}	0.0195 {A}	-	-	0.022 {A}
Benzene	0.069 J {A}	0.045 J {A}	0.004	0.0022/0.0022	0.0014	0.069 J {A}
Beryllium	-	0.005 U	-	-	-	-
bis(2-Ethylhexyl)phthalate	0.01 U	-	-	-	-	0.01 U
Chromium III (Trivalent)	-	0.01 U	-	-	-	-
Chromium Total	0.005 U	Spec	-	-	-	0.005 U
Chromium VI (Hexavalent)	-	0.01 U	-	-	-	-
Cyanide (total)	0.01	-	-	-	-	0.01
Fluoride	-	17 {A}	-	-	-	-
Lead	0.002 U	0.002 U	-	-	-	0.002 U
Manganese	-	0.0691	-	-	-	-
Mercury	0.0005 U	-	-	-	-	0.0005 U
Nickel	0.02 U	0.02 U	-	-	-	0.02 U
pH Field	9.5 {A}	9.09 {A}	7.54	8.5/8.5	8.22	9.5 {A}
Total PCBs	0.0002 U	-	-	-	-	0.0002 U
Vanadium	-	0.01 U	-	-	-	-
Vanadium (Dissolved)	-	0.01 U	-	-	-	-
Vinyl chloride	0.0005 U	0.0005 U	-	0.0005 U/0.0005 U	0.0005 U	0.0005 U

MW-18	8/7/00	12/14/01	1/17/05	10/7/05
Aluminum	7.99 {A}	-	0.0526	-
Aluminum (Dissolved)	0.384	-	-	-
Ammonia	29.1 {A}	25.3 {A}	18.7 {A}	-
Antimony	0.05 U	-	0.05 U	-
Antimony (Dissolved)	0.0209 J {A}	-	-	-
Arsenic	0.0394 {A}	-	0.0376 {A}	-
Arsenic (Dissolved)	0.0386 {A}	0.0381 {A}	-	-
Benzene	0.0059 {A}	0.0033	0.008 {A}	-
Beryllium	0.005 U	-	0.005 U	-
Chromium III (Trivalent)	0.0375 J	-	-	-
Chromium Total	Spec	-	0.005 U	-
Chromium VI (Hexavalent)	0.01 U	-	-	-
Fluoride	15.9 {A}	-	-	-
Lead	0.041 {A}	-	0.002 U	-
Manganese	0.846	-	0.0014 J	-
Nickel	0.0283	-	0.02 U	-
pH Field	10.7 {A}	7.87	10 {A}	10.4 {A}
Vanadium	0.0336	-	0.01 U	-
Vanadium (Dissolved)	0.0235	-	-	-
Vinyl chloride	0.0005 U	-	0.0005 U	-

MW-8	8/7/00	12/14/01	12/19/02	1/14/05	10/7/05
Aluminum	0.803	-	-	-	-
Aluminum (Dissolved)	0.681	-	-	-	-
Ammonia	19.1 {A}	55.7 {A}	33 {A}	30.3 {A}	-
Antimony	0.05 U	-	-	-	-
Antimony (Dissolved)	0.05 U	-	-	-	-
Arsenic	0.0293 {A}	-	-	-	-
Arsenic (Dissolved)	0.0281 {A}	0.066 {A}	-	-	-
Benzene	0.0056 {A}	0.024 {A}	0.015 {A}	0.026 {A}	-
Beryllium	0.005 U	-	-	-	-
Chromium III (Trivalent)	0.01 U	-	-	-	-
Chromium Total	Spec	-	-	-	-
Chromium VI (Hexavalent)	0.01 U	-	-	-	-
Fluoride	12 {A}	-	-	-	-
Lead	0.0011 J	-	-	-	-
Manganese	0.0057	-	-	-	-
Nickel	0.02 U	-	-	-	-
pH Field	11 {A}	11.1 {A}	11.2 {A}	11 {A}	10.1 {A}
Vanadium	0.0078 J	-	-	-	-
Vanadium (Dissolved)	0.0072 J	-	-	-	-
Vinyl chloride	0.0005 U	-	0.0005 U	0.0005 U	-

TMW-05137	12/19/01
Ammonia	4.28
Arsenic	0.0198 {A}
Arsenic (Dissolved)	0.02 {A}
Benzene	0.0005 U
pH Field	9.5 {A}

TMW-05337	12/19/02
Ammonia	5.5
Fluoride	6.2 {A}
pH Field	8.97 {A}

TMW-05136	12/19/01
Ammonia	1.48/1.55
Arsenic	0.0029 J/0.0027 J
Arsenic (Dissolved)	0.0027 J/0.0021 J
Benzene	0.0005 U/0.0005 U
pH Field	8.27/8.27

TMW-05036	12/20/01
Ammonia	17.7 J {A}
Arsenic	0.0153 {A}
Arsenic (Dissolved)	0.015 {A}
Benzene	0.00016
pH Field	10.3 {A}

TMW-05135	12/19/02
Ammonia	8.2/7.5
Fluoride	16 {A}/16 {A}
pH Field	10.1 {A}/10.1 {A}

TMW-04935	12/20/01
Ammonia	1.07 J
Arsenic	0.0086
Arsenic (Dissolved)	0.0085
Benzene	0.0005 U
pH Field	10.9 {A}

TMW-05035	3/7/03
Aluminum (Dissolved)	1.5/1.4
Ammonia	19 J {A}/18 J {A}
Antimony (Dissolved)	0.0016 J/0.003
Arsenic (Dissolved)	0.016 {A}/0.016 {A}
Benzene	0.001 U/0.001 U
bis(2-Ethylhexyl)phthalate	0.012 {A}/0.005 U
Iron (Dissolved)	0.2/0.21
Total PCBs	0.0002 U/0.0002 U
Vanadium (Dissolved)	0.0041 J/0.0045 J
Vinyl chloride	0.001 U/0.001 U

TMW-04235	12/14/01
Benzene	0.0005 U
Fluoride	2.7
pH Field	7.36
Total PCBs	0.00019 U
Vinyl chloride	0.0005 U

SB-04534a	6/21/00 3-8(ft BGS)
Benzene	0.00099
bis(2-Ethylhexyl)phthalate	0.01 U
Total PCBs	0.0004 J
Vinyl chloride	0.0005 J

TMW-04135	3/7/03
Aluminum (Dissolved)	0.05 U
Ammonia	1.6 J
Antimony (Dissolved)	0.0018 J
Arsenic (Dissolved)	0.0031 J
Benzene	0.001 U
bis(2-Ethylhexyl)phthalate	0.005 U
Iron (Dissolved)	4.9
Total PCBs	0.0002 U
Vanadium (Dissolved)	0.007 U
Vinyl chloride	0.001 U

SB-04435a	6/21/00 0-5(ft BGS)
Benzene	0.0018
bis(2-Ethylhexyl)phthalate	0.01 U
Total PCBs	0.0002 U
Vinyl chloride	0.0025 J {A}

MW-04434	12/7/98	7/24/00	1/15/02	3/28/05
Aluminum	33.3 {A}	19.1 {A}	-	0.0779 J
Aluminum (Dissolved)	0.05 U	0.0321 J	-	-
Antimony	0.05 U	0.05 U	-	0.0418 J {A}
Antimony (Dissolved)	0.05 U	0.05 U	-	-
Arsenic	0.018 {A}	0.012 {A}	-	0.005 U
Arsenic (Dissolved)	0.005 U	0.0034 J	-	-
Benzene	0.0012	0.0015	0.002	0.0023
Beryllium	0.005 U	0.0011 J	-	0.005 U
bis(2-Ethylhexyl)phthalate	0.01 U	0.01 U	0.0097 U	-
Chromium III (Trivalent)	-	0.0787 J	-	-
Chromium Total	0.148 {A}	Spec	-	0.005 UJ
Chromium VI (Hexavalent)	-	0.0087 J	-	-
Cyanide (total)	0.01 U	0.01 U	-	-
Fluoride	-	-	6 {A}	-
Iron	95 J {A}	-	-	-
Iron (Dissolved)	0.043	-	-	-
Lead	0.089 {A}	0.047 {A}	-	0.002 U
Manganese	1.45 J	0.952	-	0.187
Mercury	0.0002 U	-	-	-
Nickel	0.075	0.0365	-	0.02 U
pH Field	8.98 {A}	8.11	8.24	8.04
Total PCBs	0.0008 J {A}	0.0004 J	0.0002 U	-
Vanadium	0.052	0.0343	-	0.01 UJ
Vanadium (Dissolved)	0.01 U	0.01 U	-	-
Vinyl chloride	0.0082 {A}	0.0052 {A}	0.0046 J {A}	0.0019

MW-04333	8/1/00	3/28/05
Aluminum	42.9 J {A}/39.8 J {A}	0.217 J
Aluminum (Dissolved)	0.05 U/0.05 U	-
Antimony	0.05 U/0.05 U	0.0718 J {A}
Antimony (Dissolved)	0.05 U/0.05 U	-
Arsenic	0.028 {A}/0.0275 {A}	0.0089
Arsenic (Dissolved)	0.0023 J/0.002 J	-
Benzene	0.0005 U/0.0005 U	-
Beryllium	0.0015 J/0.0015 J	0.005 U
bis(2-Ethylhexyl)phthalate	0.01 U/0.01 U	-
Chromium III (Trivalent)	0.219 J/0.226 J	-
Chromium Total	Spec/Spec	0.005 UJ
Chromium VI (Hexavalent)	0.01 U/0.01 U	-
Cyanide (total)	0.004 J/0.01 U	-
Lead	0.179 {A}/0.181 {A}	0.001 J
Manganese	2.83 {A}/2.98 {A}	0.637
Nickel	0.112 {A}/0.115 {A}	0.02 U
pH Field	7.14/7.14	7.41
Total PCBs	0.0002 U/0.0002 U	-
Vanadium	0.0515/0.0564	0.01 UJ
Vanadium (Dissolved)	0.01 U/0.01 U	-
Vinyl chloride	0.0005 U/0.0005 U	-

TMW-04233	12/18/01
Benzene	0.0005 U
Fluoride	2
pH Field	7.7
Total PCBs	0.0002 U
Vinyl chloride	0.0005 U

SB-04333a	6/21/00 2-7(ft BGS)
Benzene	0.0003
bis(2-Ethylhexyl)phthalate	0.01 U
Total PCBs	0.0004 J
Vinyl chloride	0.0005 U

CTPHB-1	6/4/98 3-8(ft BGS)
Benzene	0.0005 U/0.0005 U
bis(2-Ethylhexyl)phthalate	0.01 U/0.01 U
Vinyl chloride	0.0005 U/0.0005 U

CTPHB-4	6/4/98 3-8(ft BGS)
Benzene	0.0005 U
bis(2-Ethylhexyl)phthalate	0.01 U
Vinyl chloride	0.0005 U

CTPHB-2	6/4/98 3-8(ft BGS)
Benzene	0.0005 UJ
bis(2-Ethylhexyl)phthalate	0.01 U
Vinyl chloride	0.0005 U

CTPHB-5	6/4/98 3-8(ft BGS)
Benzene	0.0005 U
bis(2-Ethylhexyl)phthalate	0.01 U
Vinyl chloride	0.0005 U

CTPHB-3	6/4/98 3-8(ft BGS)
Benzene	0.0005 UJ
bis(2-Ethylhexyl)phthalate	0.01 U
Vinyl chloride	0.0005 U

MW-04835	12/17/01	12/19/02	1/29/04
Aluminum	0.116	-	-
Aluminum (Dissolved)	0.0352 J	-	-
Antimony	0.05 U	-	-
Antimony (Dissolved)	0.05 U	-	-
Arsenic	0.002 J	-	-
Arsenic (Dissolved)	0.0019 J	-	-
Benzene	-	0.00014	-
Beryllium	0.005 U	-	-
bis(2-Ethylhexyl)phthalate	0.0098 U	-	-
Chromium Total	0.005 U	-	-
Cyanide (total)	0.01 U	-	-
Lead	0.0012 J	-	-
Manganese	0.207	-	-
Nickel	0.02 U	-	-
pH Field	8.05	6.91	8.44
Total PCBs	0.00021 U	-	-
Vanadium	0.01 U	-	-
Vanadium (Dissolved)	0.01 U	-	-
Vinyl chloride	-	0.0005 U	-

TMW-04934	12/19/02
Fluoride	0.9
pH Field	7.53

SB-04433a	6/21/00 3-8(ft BGS)
Benzene	0.0005 U
bis(2-Ethylhexyl)phthalate	0.01 U
Total PCBs	0.00079 J {A}
Vinyl chloride	0.0005 U

MW-04433	8/1/00	12/19/02	3/29/05
Aluminum	8.59 J {A}	-	0.177 J
Aluminum (Dissolved)	0.05 U	-	-
Antimony	0.05 U	-	0.05 U
Antimony (Dissolved)	0.05 U	-	-
Arsenic	0.0175 J {A}	-	0.0203 {A}
Arsenic (Dissolved)	0.01	-	-
Benzene	0.0005 U	-	-
Beryllium	0.0003 J	-	0.005 U
bis(2-Ethylhexyl)phthalate	0.01 U	-	-
Chromium III (Trivalent)	0.0234 J	-	-
Chromium Total	Spec	-	0.005 UJ
Chromium VI (Hexavalent)	0.01 U	-	-
Cyanide (total)	0.01 U	-	-
Fluoride	-	2.7	-
Lead	0.024 {A}	-	0.004 U
Manganese	0.928	-	0.534
Nickel	0.0169 J	-	R
pH Field	7.25	7.04	6.88
Total PCBs	0.0002 U	-	-
Vanadium	0.0177	-	0.01 U
Vanadium (Dissolved)	0.01 U	-	-
Vinyl chloride	0.0005 U	-	-

TMW-04130	3/7/03
Aluminum (Dissolved)	0.05 U
Ammonia	4.8 J
Antimony (Dissolved)	0.0036
Arsenic (Dissolved)	0.0055 J
Benzene	0.001 U
bis(2-Ethylhexyl)phthalate	0.005 U
Iron (Dissolved)	3.3 J
Total PCBs	0.0002 U
Vanadium (Dissolved)	0.00072 J
Vinyl chloride	0.001 U

TMW-04332	12/19/02
pH Field	8.2
Total PCBs	0.0002 U

TMW-04127	3/7/03
Aluminum (Dissolved)	0.05 U
Ammonia	5.2 J
Antimony (Dissolved)	0.0024
Arsenic (Dissolved)	0.0022 J
Benzene	0.001 U
bis(2-Ethylhexyl)phthalate	0.005 U
Iron (Dissolved)	7.3 {A}
Total PCBs	0.0002 U
Vanadium (Dissolved)	0.007 U
Vinyl chloride	0.001 U

MW-04534	7/31/00	1/17/05
Aluminum	8.14 J {A}	0.05 U
Aluminum (Dissolved)	0.05 U	-
Antimony	0.05 U	0.05 U
Antimony (Dissolved)	0.05 U	-
Arsenic	0.008 J	0.0048 J
Arsenic (Dissolved)	0.0027 J	-
Benzene	0.0005 U	-
Beryllium	0.0004 J	0.005 U
bis(2-Ethylhexyl)phthalate	0.01 U	-
Chromium III (Trivalent)	0.0444 J	-
Chromium Total	Spec	0.005 U
Chromium VI (Hexavalent)	0.01 U	-
Cyanide (total)	0.01 U	-
Lead	0.045 {A}	0.002 U
Manganese	1.36	1.22
Nickel	0.0309	0.02 U
pH Field	7.56	7.46
Total PCBs	0.0002 U	-
Vanadium	0.0114	0.01 U
Vanadium (Dissolved)	0.01 U	-
Vinyl chloride	0.0005 U	-

TMW-04528	3/8/03
Aluminum (Dissolved)	0.05 U
Ammonia	5.3 J
Antimony (Dissolved)	0.0012 J
Arsenic (Dissolved)	0.01 U
Benzene	0.001 U
bis(2-Ethylhexyl)phthalate	0.005 U
Iron (Dissolved)	2.7
Total PCBs	0.0002 U
Vanadium (Dissolved)	0.007 U
Vinyl chloride	0.001 U

TMW-04630	12/19/02
Fluoride	2.5
pH Field	7.75

TMW-04531	3/8/03
Aluminum (Dissolved)	0.05 U
Ammonia	2.1 J
Antimony (Dissolved)	0.0022
Arsenic (Dissolved)	0.01 U
Benzene	0.001 U
bis(2-Ethylhexyl)phthalate	0.005 U
Iron (Dissolved)	0.96
Total PCBs	0.0002 U
Vanadium (Dissolved)	0.007 U
Vinyl chloride	0.001 U

TMW-04632	12/17/01
Benzene	0.0005 U
Fluoride	6.6 {A}
pH Field	8.05
Total PCBs	0.0002 U
Vinyl chloride	0.0005 U

MW-04831	12/3/98	7/26/00	1/18/05
Aluminum	169 {A}	16 {A}	0.05 U
Aluminum (Dissolved)	0.05 U	0.05 U	-
Antimony	0.076 {A}	0.05 U	0.05 U
Antimony (Dissolved)	0.05 U	0.05 U	-
Arsenic	0.041 {A}	0.0089	0.0025 J
Arsenic (Dissolved)	0.005 U	0.0036 J	-
Benzene	0.0005 U	0.0005 U	-
Beryllium	0.008 {A}	0.001 J	0.005 U
bis(2-Ethylhexyl)phthalate	0.01 U	0.01 U	-
Chromium III (Trivalent)	-	0.0412 J	-
Chromium Total	0.46 {A}	Spec	0.005 U
Chromium VI (Hexavalent)	-	0.01 U	-
Cyanide (total)	0.01 U	0.01 U	-
Iron	311 {A}	-	-
Iron (Dissolved)	3.31 J	-	-
Lead	0.208 {A}	0.0316 {A}	0.001 J
Manganese	7.49 {A}	1.22	0.54
Mercury	0.0006	-	-
Nickel	0.37 {A}	0.0369	0.02 U
pH Field	7.38	7.7	7.35
Total PCBs	0.0002 U	0.0002 U	-
Vanadium	0.293 {A}	0.0348	0.01 U
Vanadium (Dissolved)	0.01 U	0.01 U	-
Vinyl chloride	0.0005 U	0.0005 U	-

MW-14831	12/2/98	7/28/00	1/18/05
Aluminum	0.857	1.16/0.787	0.05 U
Aluminum (Dissolved)	0.05 U	0.05 U/0.05 U	-
Antimony	0.05 U	0.05 U/0.05 U	0.05 U
Antimony (Dissolved)	0.05 U	0.05 U/0.05 U	-
Arsenic	0.013 {A}	0.0107 {A}/0.0105 {A}	0.0074
Arsenic (Dissolved)	0.007	0.0058/0.0061	-
Benzene	0.0005 U	0.0005 U/0.0005 U	-
Beryllium	0.005 U	0.005 U/0.005 U	0.005 U
bis(2-Ethylhexyl)phthalate	0.01 U	0.01 U/0.01 U	-
Chromium III (Trivalent)	-	0.01 U/0.01 U	-
Chromium Total	0.005 U	Spec/Spec	0.005 U
Chromium VI (Hexavalent)	-	0.01 U/0.01 U	-
Cyanide (total)	0.01 U	0.01 U/0.01 U	-
Iron	2.1	-	-
Iron (Dissolved)	0.292 J	-	-
Lead	0.002 U	0.002 U/0.003	0.0012 J
Manganese	0.144	0.133 J/0.14 J	0.104
Mercury	0.0002 U	-	-
Nickel	0.02 U	0.111 {A}/0.101	0.02 U
pH Field	-	6.97/6.97	7.04
Total PCBs	0.0002 U	0.0002 U/0.0002 U	-
Vanadium	0.01 U	0.0046 J/0.005 J	0.01 U
Vanadium (Dissolved)	0.01 U	0.01 U/0.01 U	-
Vinyl chloride	0.0005 U	0.0005 U/0.0005 U	-

TMW-05032	3/8/03
Aluminum (Dissolved)	1.6/1.4
Ammonia	11 J {A}/9.5 J
Antimony (Dissolved)	0.0039/0.0014 J
Arsenic (Dissolved)	0.012 {A}/0.011 {A}
Benzene	0.001 U/0.001 U
bis(2-Ethylhexyl)phthalate	0.01 U/0.01 U
Iron (Dissolved)	0.12/0.14
Total PCBs	0.000259 J/0.000172 J
Vanadium (Dissolved)	0.0028 U/0.0027 U
Vinyl chloride	0.001 U/0.001 U

0 100 200ft

LEGEND

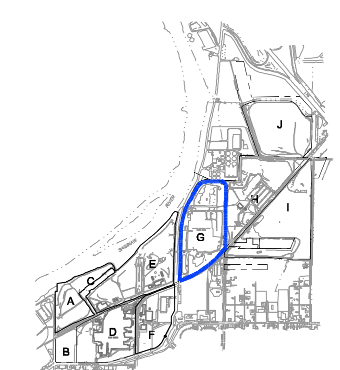
A – – INVESTIGATIVE UNIT BOUNDARY AND IDENTIFIER
—585— GROUNDWATER ELEVATION FT. AMSL (JANUARY 2005)
MONITORING WELL LOCATION - RFI
SAMPLE LOCATION - NO REPORTED DATA
MONITORING WELL LOCATION - HISTORICAL

TMW-05136	12/19/01
Arsenic	0.003 J/0.003 J

SAMPLE LOCATION
SAMPLE DATE
RESULT (mg/L)
PARAMETER

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. DATABOX ANALYTE LIST DEVELOPED BASED ON A MINIMUM OF ONE EXCEEDNACE OF SCREENING CRITERIA PER INVESTIGATIVE UNIT PER MATRIX (i.e. SOIL OR GROUNDWATER). TOTAL PCBs ARE PRESENTED FOR ALL LOCATIONS SAMPLED. IU SPECIFIC ANALYTES NOT ANALYZED FOR AT A GIVEN LOCATION ARE OMITTED FROM THE CORRESPONDING DATABOX.
4. GROUNDWATER CONTOURS REPRESENT THE UPPER SATURATED ZONE.
5. SPEC INDICATES THAT THE TOTAL CHROMIUM CONCENTRATION HAS BEEN SPECIATED, USING THE HEXAVALENT CHROMIUM RESULTS TO CALCULATE THE TRIVALENT CHROMIUM CONCENTRATION.



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 - SOUTH
RFI PHASE 1C - 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.	FEBRUARY 2007	
Scale: 1" = 200'	Project Nº: 17075-16	Report Nº: 027	Drawing Nº: figure 13.4

17075-16(027)GN-WA023 FEB 08/2007