Chambers, Danielle

From: Dave Favero <dfavero@racertrust.org>
Sent: Thursday, May 08, 2014 3:30 PM
To: Joy Brooks, MDEQ
Cc: Grant Trigger; Rick Zablocki; Carl Garvey; Pardys, John-Eric; Tomka, Mike; Nate Nemani, EPA; Steve Warren, OHM; Holly Milewski, GM; Ray Ilkka, GM; Vicky Chmura, Lake States
Subject: RACER Response to Your April 7 Notice Violation, Request for Information ~COR-058502~
Attachments: 10040-Nodular-Response to MDEQ 20140407 Ltr-20140508-Final.pdf

Joy,
Please find RACER's response attached. After you have had a chance to review please let me know if you would like to discuss.

Thanks,
David Favero
Deputy Cleanup Manager - Michigan

RACER | 500 Woodward Avenue, Suite 1510 | Detroit, MI 48226 | dfavero@racertrust.org | direct line – 734.879.9525 | c – 217.741.6235 | www.racertrust.org

Revitalizing Auto Communities
Environmental Response Trust

May 8, 2014

Joy I. Brooks, District Flood Engineer
Water Resources Division
Michigan Department of Environmental Quality
Saginaw Bay District Office
401 Ketchum Street, Suite B
Bay City, Michigan 48708

RE: MDEQ April 7, 2014, Violation Notice, Request for Information
Complaint File Number 14-73-0002-V
RACER Saginaw Nodular Industrial Land

Dear Ms. Brooks:
This letter and attachments are provided in response to the above referenced request for information. As there are three distinct areas that are addressed in your information request, this response is organized in three sections with the specific information requested followed by RACER's responses, which are italicized, for each area.

A. Spoils Pile

1. The project purpose.
Lake States Railway was/is in the process of removing material from ditches on their property and RACER agreed for Lake States to temporarily place the material to allow for dewatering prior to off-site transport for disposal.

2. Date work was undertaken.
Lake States Railway began work and placed material on RACER property in approximately February 2014.

3. Name(s) of the contractor(s) who did the work.
RACER understands that Lake States' contractor is;
Shaw Contracting Co.
509 Morton Street
Bay City, MI 48706

4. Property owner's full name.
   RACER Properties LLC.

5. A copy of any pre-work or post-work elevation surveys conducted on the property.
   An elevation survey completed for the Site in 1996 is provided in Attachment 1. In addition, elevations recently surveyed of the spoils pile location are included in Attachment. Please note that the spoils placed earlier this spring are all located above elevation 590 – and going forward additional spoils will be placed above elevation 590 – therefore, that activity is exempt from floodplain regulation under MAC R 323.1312.

   > R 323.1312 Applicability of rules.
   > Rule 312. These rules do not apply to any of the following:
   > …
   > (l) Excavating or dredging activities where dredged materials are placed in an upland area that is out of the floodplain.

6. A copy of the current development plans, including plan views, cross sections, and elevations of the previously existing ground surface and proposed final grades.
   Spoils from the Lake States ditch dredging project are planned to be placed on RACER property on land that is above the 100 year flood elevation of 589.3. See Attachment 2 and for other plans regarding the ditch area.

7. Any other relevant information that will assist our review.
   None.

B. Access Road

1. The project purpose.
   RACER understands that the project's purpose was to provide an adequate road for General Motors (GM) LLC to transport waste material from its plant on the west side of Veterans Memorial Parkway through its easement on RACER property to GM LLC's landfill north of RACER's secondary pond. Easement documentation is provided in Attachment 3.

2. Date work was undertaken.
   RACER understands that GM LLC will be providing MDEQ with additional information.

3. Name(s) of the contractor(s) who did the work.
   RACER understands that GM LLC will be providing MDEQ with additional information.

4. Property owner's full name.

RACER Properties LLC.

5. A copy of any pre-work or post-work elevation surveys conducted on the property.

   An elevation survey completed for the Site in 1996 is included in Attachment 1.

6. A copy of the current development plans, including plan views, cross sections, and elevations of the previously existing ground surface and proposed final grades.

   RACER currently has no plans for this area as GM LLC as an easement over the area.

7. Any other relevant information that will assist our review.

   None.

C. Primary Basins Closure

1. The project purpose.

   The project purpose was to help stabilize Site stormwater management by reducing ponding and seepage into the secondary pond, and to use the classified sand that was staged in another area of the Site. The USEPA approved Work Plan for the project is included in Attachment 4.

2. Date work was undertaken.

   The work, with the exception of seeding, was completed from November 26, 2012 through approximately February 22, 2013. The Construction Completion Report is included in Attachment 5.

3. Name(s) of the contractor(s) who did the work.

   Fisher Companies of Midland, MI.

4. Property owner's full name.

   RACER Properties LLC.

5. A copy of any pre-work or post-work elevation surveys conducted on the property.

   See the Work Plan and Construction Completion report included in Attachments 4 and 5.

6. A copy of the current development plans, including plan views, cross sections, and elevations of the previously existing ground surface and proposed final grades.

   See the Work Plan and Construction Completion report included in Attachments 4 and 5.

7. Any other relevant information that will assist our review.

   The primary basins were designed so when wastewater was discharged to the basins it would overflow into the adjacent secondary pond through weirs at the northern end of each basin. The elevation of the top of the weirs was approximately 597 feet above mean sea level. See information in Attachment 6.

   Prior to initiation of this work, RACER's consultant, CRA, spoke to an MDEQ representative and based on the site review conducted at that time there was no indication of the need for a Part 31 permit and all work was performed with full knowledge of MDEQ.

In summary and based on the responses above and the information attached, the spoils pile was placed above the 100 year flood elevation. Moreover, RACER has not engaged in any activity wherein fill was placed below the 100 year flood elevation and above the design level of the primary basins (no reduction in flood storage as filling occurred above the design level of the basins).

As to the access road please look for additional information from General Motors LLC.

Please contact me if you would like to discuss this matter further.

Sincerely,

David Favero

David Favero
Deputy Cleanup Manager – Michigan

Attachments

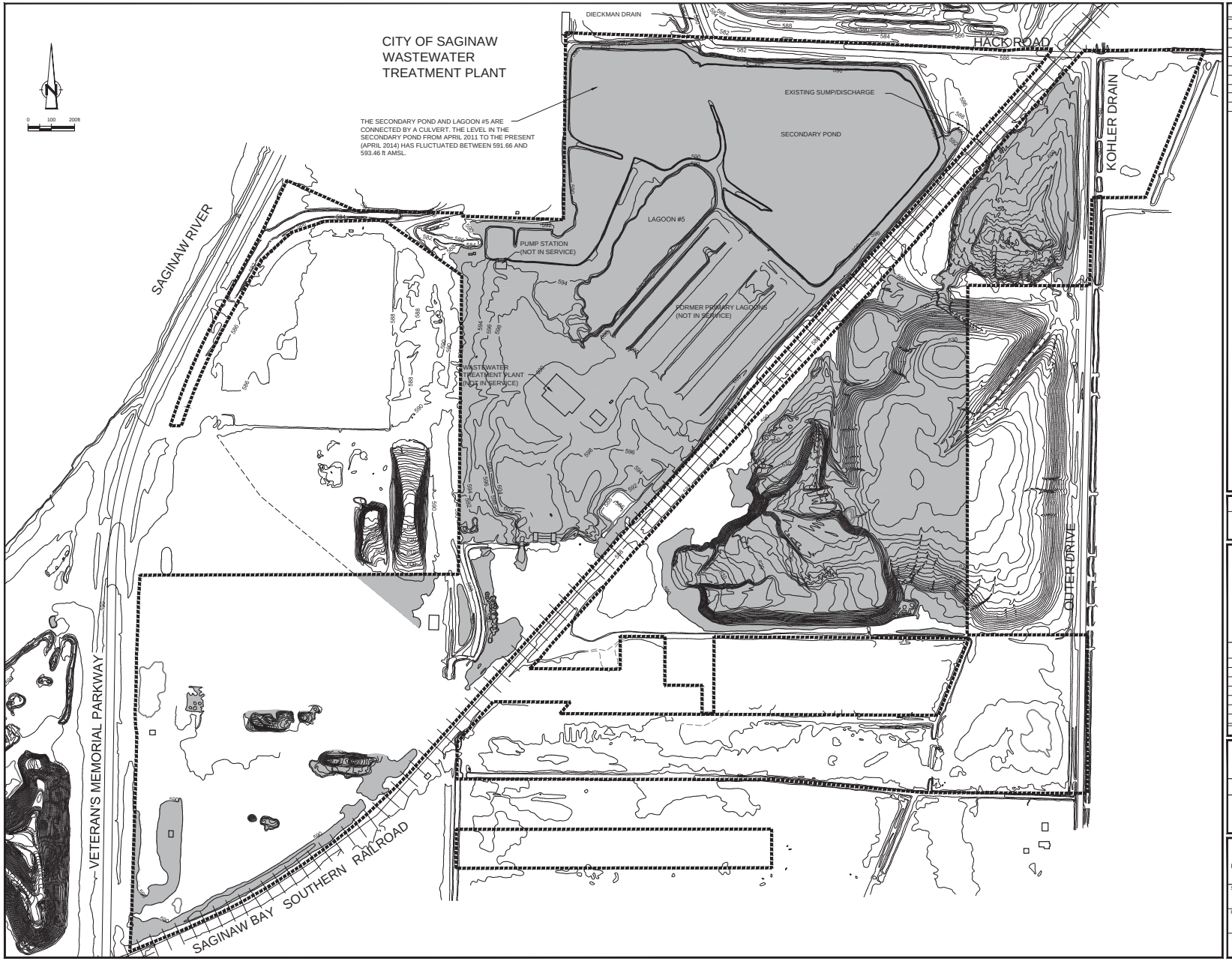
1. 1996 Elevation Survey
2. Lake States Spoils Area and Ditch Project
3. GM LLC Easement
4. Site Stabilization Work Plan for Closure of Four Primary Settling Basins, CRA, July 2012
5. Construction Completion, Primary Settling Basins, CRA, September 4, 2013
6. Primary Basins Information

c: Jeff Cain, Buena Vista Township
Jim Thews, Saginaw SESC Officer

Nate Nemani, USEPA
Vickie Chmura, Lake States Railway
Carl Garvey, RACER
Grant Trigger, RACER
Rick Zablocki, RACER
John-Eric Pardys/Mike Tomka, CRA
Steve Warren, OHM
Holly Milewski, General Motors, LLC

ATTACHMENT 1

1996 Elevation Survey



No.	Revision	Date	Initial

LEGEND

586 EXISTING CONTOUR ELEVATION

AREA ABOVE FLOOD ELEVATION OF 590 ft AMSL

APPROXIMATE LIMITS OF RACER PROPERTY

SOURCE: TOPOGRAPHY DRAWING RECEIVED FROM SANBORN (AN AERIAL PHOTOGRAPHY COMPANY) JANUARY 3, 1996 - STATE PLANE

SCALE VERIFICATION

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

Approved

DRAWING STATUS

Status	Date	Initial

RACER TRUST
SAGINAW NODULAR INDUSTRIAL LAND
SAGINAW, MICHIGAN

AREA ABOVE FLOOD ELEVATION

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:

Project Manager:	Reviewed By:	Date:	
MT	JEP	APRIL 2014	
Scale: AS SHOWN	Project No.: 58502-T02	Report No.: PRES008	Drawing No.: figure 1.1

58502-T02(PRES008)GN-WA001 APR 22/2014

ATTACHMENT 2

Lake States Spoils Area and Ditch Project

ARCHITECTS. ENGINEERS. PLANNERS.

OHM Advancing Communities

memorandum

Date: May 5, 2014

To: Dave Favero, RACER Trust
cc:
From: Steve Warren

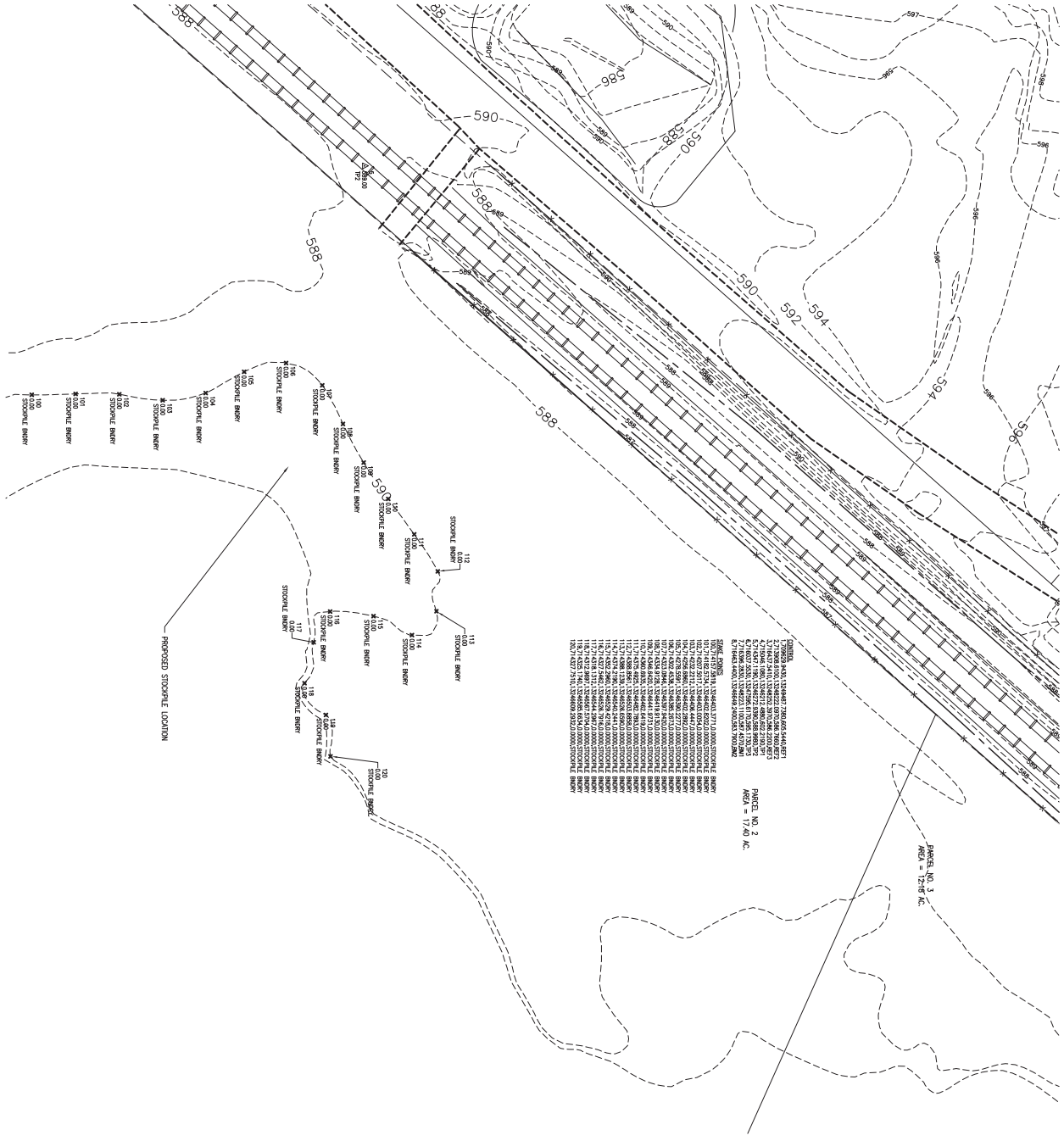
Re: Saginaw Nodular Iron

On April 14, 2014, we staked the location of the 590.0 elevation in the vicinity of a proposed spoils location. The spoils are coming from some drainage work being performed by Lake States Railroad along their Rights of Ways. The Lake States Railroad intersects the RACER property and has drainage issues that are causing a concern of derailment. A minimal amount of spoils were placed prior to our staking. The spoils that were placed were found to be upland of the 590.0 elevation.

The activities that were visible at the time of our survey work are above the 100 year floodplain elevation. Attached you will find a drawing that represents the 590 elevation.

OHM Advisors
929 BRIDGEVIEW SOUTH
SAGINAW, MICHIGAN 48604
T 989.393.4200
F 734.522.6427
OHM-Advisors.com

DRAWING PATH: P:\4000_4100\4018\40011_Saginaw_Nodular_Iron_Facility\dwg\Plans_Const\STOCKPILE_AREA_590_DEQ.dwg May 05, 2014 - 10:09am



Know what's below. Call before you dig. 811

RACER TRUST
INDUSTRIAL PARK
STOCKPILE AREA STAKING PLAN

SHEET ## OF ##

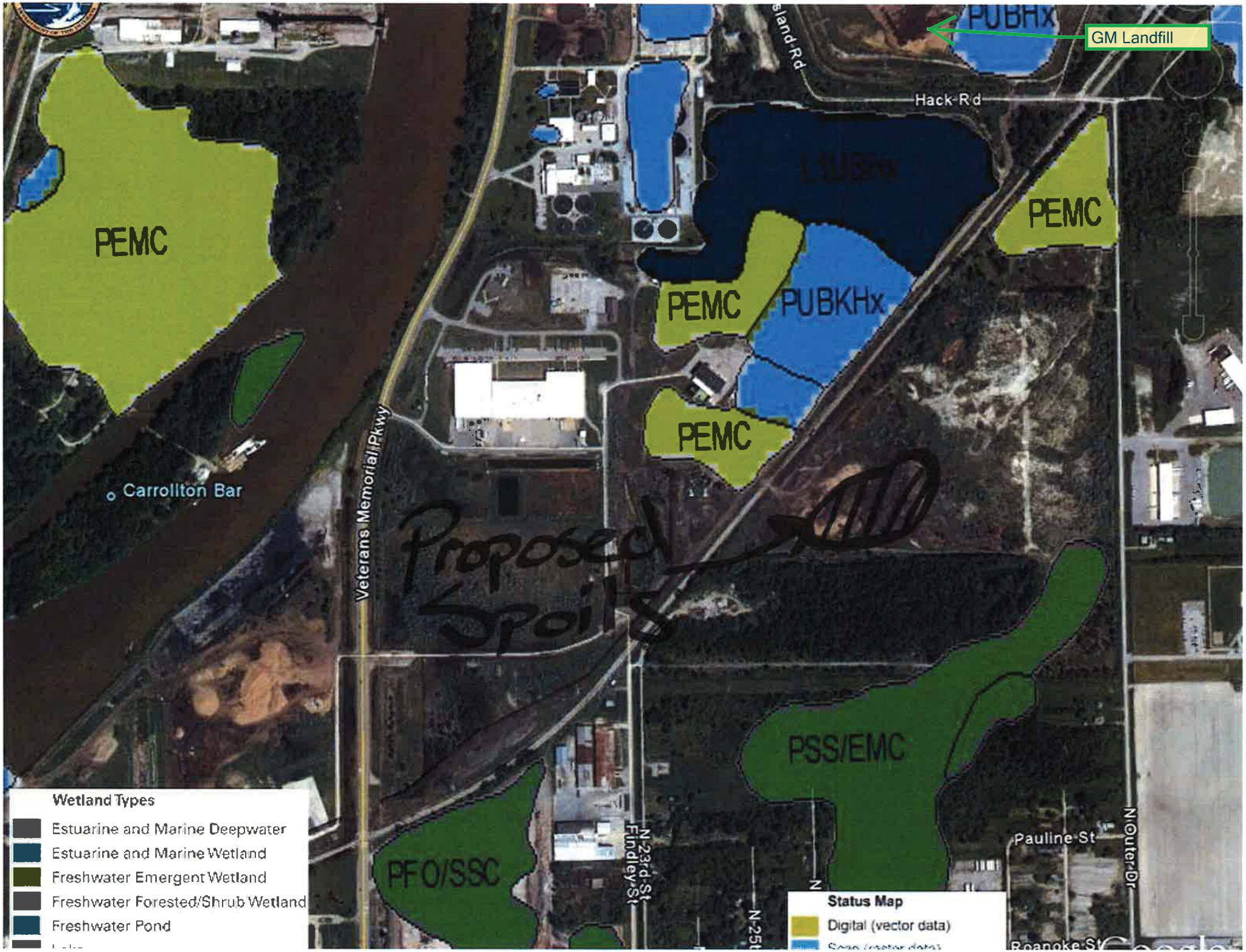
DATE	CADD	ENGI / ARCH	PROJ MGR	SECTION	TOWN	RANGE	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORIZ DATUM	VERT DATUM
	KCB	SLW	SLW	8	T.12N.	R.5E.	SAGINAW COUNTY	####	H: 1"=200' V:	####	####

CLIENT: RACER TRUST — JOB #: ####

REVISIONS: | REVISIONS: | REVISIONS:

929 BRIDGEVIEW SOUTH | SAGINAW, MICHIGAN 48601 | P (989) 393-4200 | F (734) 522-8427 WWW.OHM-ADVISORS.COM

OHM


PUBHx
GM Landfill
Island Rd
Hack Rd
PEMC
PEMC
PUBKHx
PEMC
PEMC
Carrollton Bar
Veterans Memorial Pkwy
Proposed Spoil
PSS/EMC
PFO/SSC
N 23rd St
Findley St
Pauline St
N Outer Dr
Roanoke St
Wetland Types
Estuarine and Marine Deepwater
Estuarine and Marine Wetland
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Status Map
Digital (vector data)

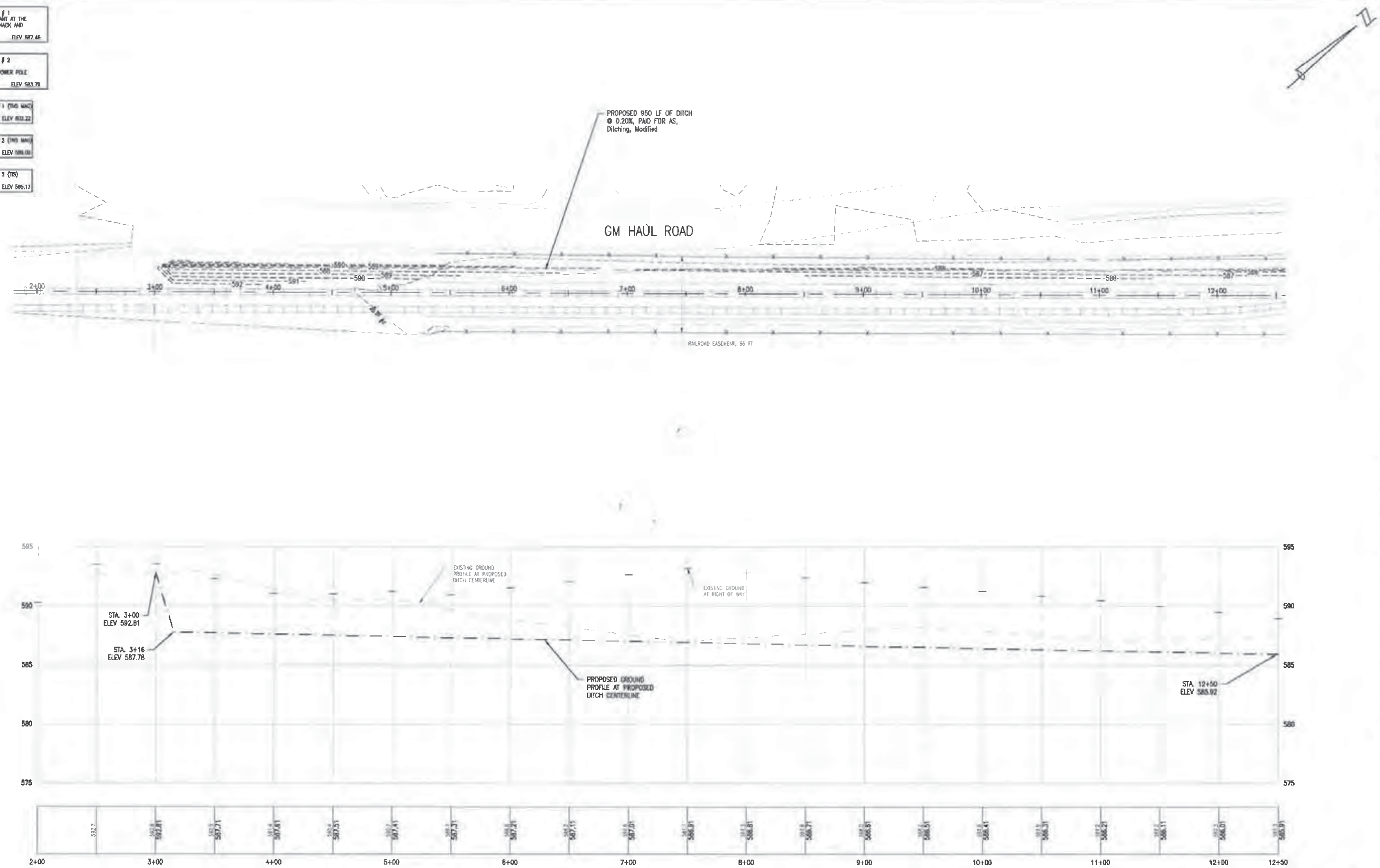
JOB BENCHMARK # 1
ARROW ON HYDRANT AT THE SW CORNER OF HACK AND OUTER DRIVE
ELEV 587.48

JOB BENCHMARK # 2
FOUND NAIL IN POWER POLE
ELEV 583.79

TRAVERSE POINT # 1 (THIS MAG)
N 715048.108
E 13249212.488 ELEV 603.22

TRAVERSE POINT # 2 (THIS MAG)
N 714347.119
E 13248272.939 ELEV 586.00

TRAVERSE POINT # 3 (TRS)
N 716037.553
E 13247585.617 ELEV 585.17



Know what's **below.** **Call** before you dig.

OHM

WWW.OHM-ADVISORS.COM

929 Bridgeview South | Saginaw, MI 48604 | P (989) 393-4200 | F (734) 522-6427

RACER TRUST

NODULAR SITE
DRAINAGE IMPROVEMENTS

SHEET
1

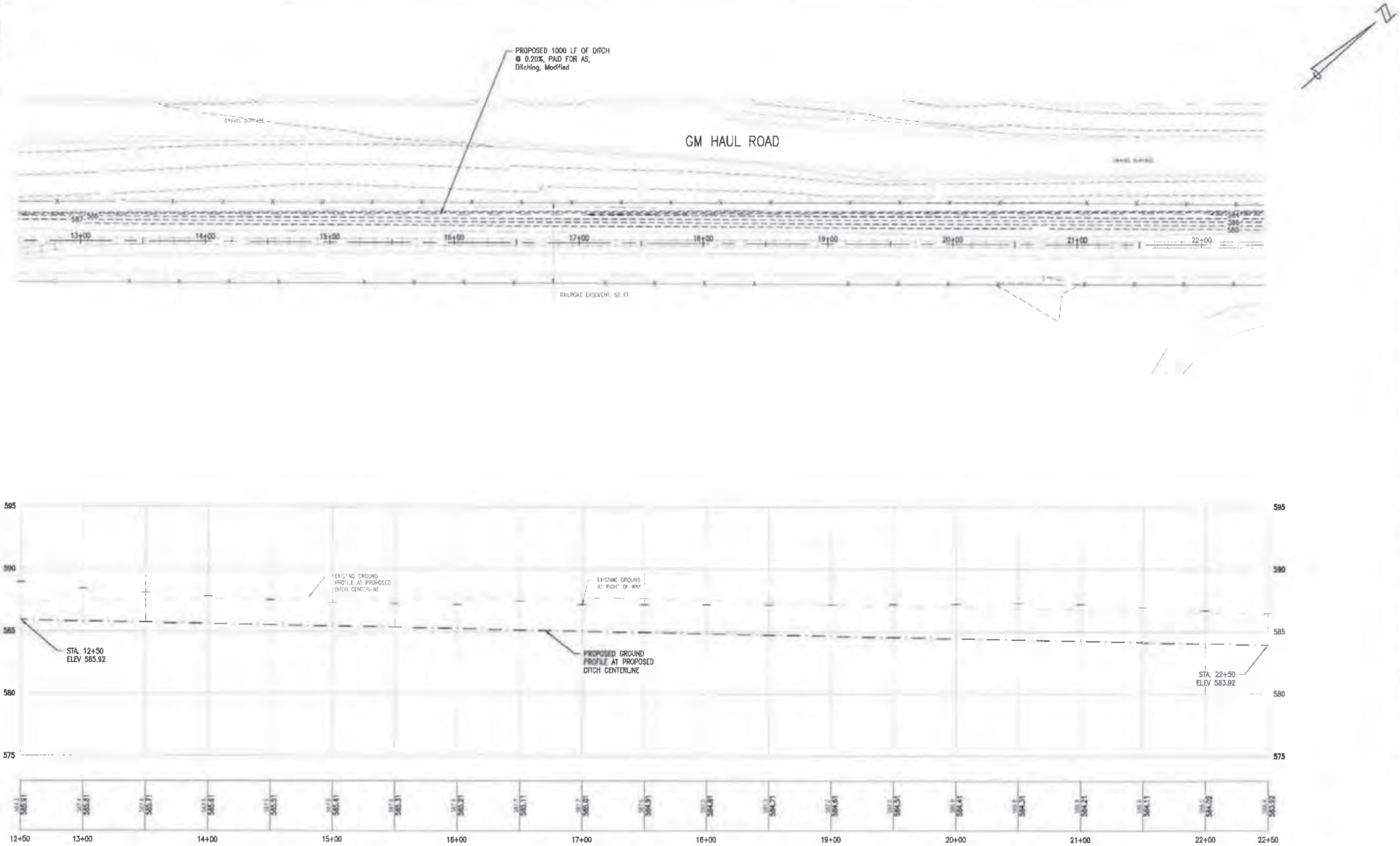
JOB BENCHMARK # 1
ARROW ON HYDRANT AT THE SW CORNER OF HACK AND OUTER DRIVE
ELEV 587.48

JOB BENCHMARK # 2
FOUND NAIL IN POWER POLE
ELEV 583.79

TRAVERSE POINT # 1 (TNS MAG)
N 715046.108
E 13246212.486 ELEV 602.22

TRAVERSE POINT # 2 (TNS MAG)
N 714347.119
E 13246272.939 ELEV 588.00

TRAVERSE POINT # 3 (TIS)
N 716037.563
E 13247565.617 ELEV 585.17



OHM

RACER TRUST

SAGINAW COUNTY

BUENA VISTA TOWNSHIP

REVISIONS:

929 Bridgeview South | Saginaw, MI 48604 | P (989) 393-4200 | F (734) 522-6427

WWW.OHM-ADVISORS.COM

NODULAR SITE
DRAINAGE IMPROVEMENTS

SHEET
2

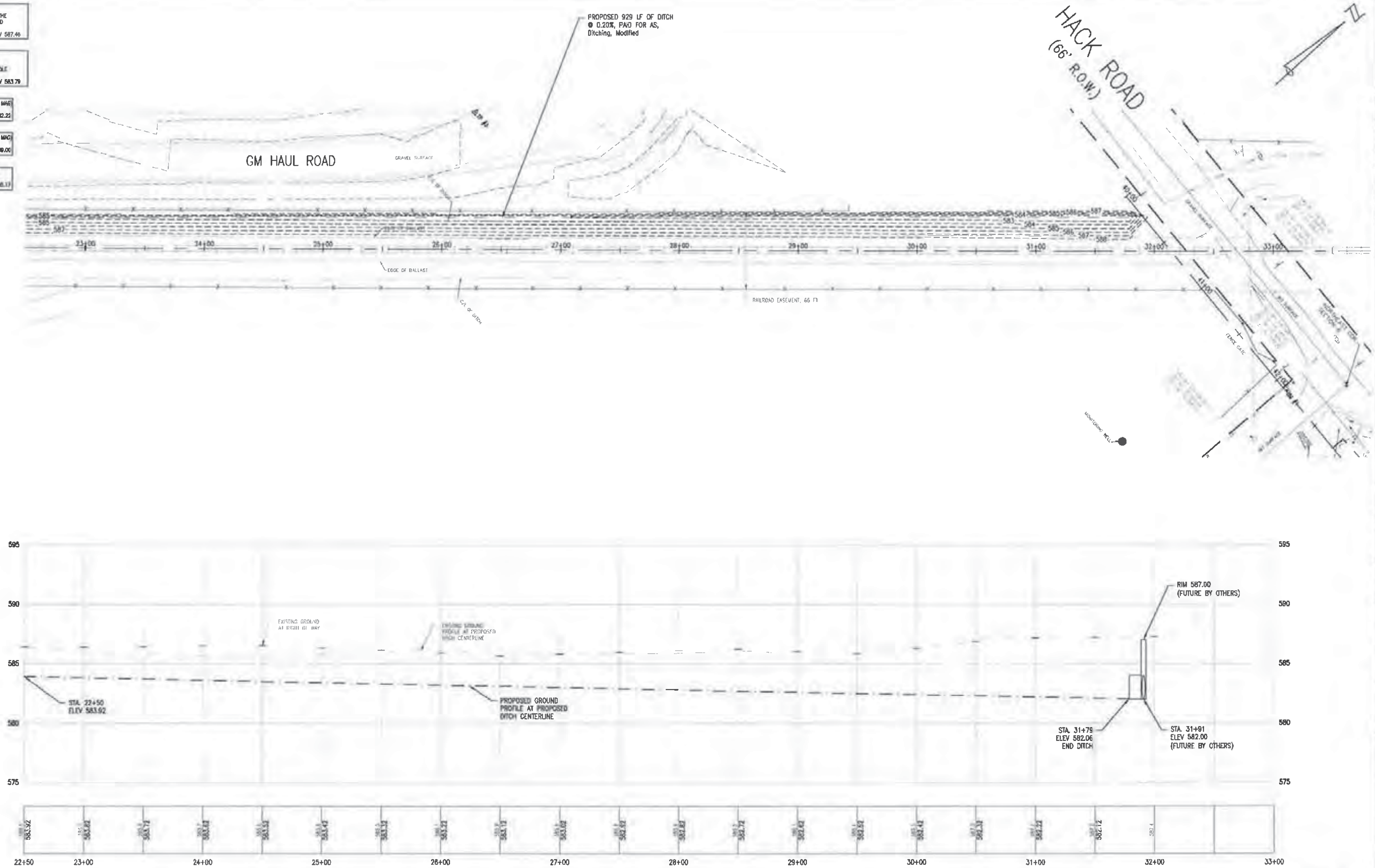
JOB BENCHMARK # 1
ARROW ON HYDRANT AT THE SW CORNER OF HACK AND OUTER DRIVE
ELEV 587.46

JOB BENCHMARK # 2
FOUND NAIL IN POWER POLE
ELEV 583.79

TRAVERSE POINT # 1 (TNS MAG)
N 715046.108
E 13246212.468 ELEV 602.22

TRAVERSE POINT # 2 (TNS MAG)
N 714347.119
E 13248272.938 ELEV 589.00

TRAVERSE POINT # 3 (IPS)
N 718037.553
E 13247595.617 ELEV 586.17



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OHM

929 Bridgeview South | Saginaw, MI 48604 | P (989) 393-4200 | F (734) 522-6427
WWW.OHM-ADVISORS.COM

RACER TRUST

NODULAR SITE
DRAINAGE IMPROVEMENTS

SHEET
3

JOB BENCHMARK # 1
ARROW ON HYDRANT AT THE SW CORNER OF HACK AND OUTER DRIVE
ELEV 587.46

JOB BENCHMARK # 2
FOUND NAIL IN POWER POLE
ELEV 593.76

TRAVERSE POINT # 1 (TP1)
N 715048.108
E 1324627.402 ELEV 592.33

TRAVERSE POINT # 2 (TP2)
N 714367.119
E 1324627.830 ELEV 589.06

TRAVERSE POINT # 3 (TP3)
N 716027.533
E 1324756.617 ELEV 586.17

HACK ROAD
(66' R.O.W.)

STATION EQUATION
STA. 40+34 EQUALS STA. 31+98

PR MANHOLE RIM 587.00
PAID FOR AS, Dr Structure, 60 Inch dia

PROPOSED 171 LF OF 36" SLCPP STORM SEWER @ 0.50%, 50 LF OF STORM SEWER SHALL FOLLOW TRENCH DETAIL B BACKFILL, PAID FOR AS, Sewer, SLCPP, 36 Inch, Tr Det A, Modified – 121 Ft Sewer, SLCPP, 36 Inch, Tr Det B, Modified – 50 Ft

PROPOSED 10 LF OF 24" SLCPP STORM SEWER W/ FLARED END SECTION AND 5 SYD OF RIP RAP PAID FOR AS, Sewer, SLCPP, 24 Inch, Tr Det A, Modified Culv End Sect, 24 Inch Riprap, Plain

PROPOSED OUTLET W/ FLARED END SECTION AND 10 SYD OF RIP RAP PAID FOR AS, Culv End Sect, 36 Inch Riprap, Plain

REMOVE AND REPLACE 48 SYD OF HMA PAVEMENT – SEE DETAIL, PAID FOR AS Remove And Replace Pavement (Outer Drive)

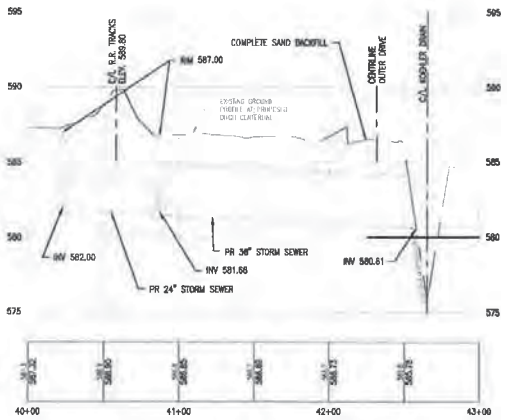
PR MANHOLE RIM 587.00
PAID FOR AS, Dr Structure, 72 Inch dia

PROPOSED 10 LF OF 24" SLCPP STORM SEWER W/ FLARED END SECTION AND 5 SYD OF RIP RAP PAID FOR AS, Sewer, SLCPP, 24 Inch, Tr Det A, Modified Culv End Sect, 24 Inch Riprap, Plain

PROPOSED 53 LF BORE AND JACK W/ 24" STEEL PIPE, MINIMUM WALL THICKNESS = 0.375, RATED FOR E80 LOADING @ 0.50% SLOPE PAID FOR AS, Bore & Jack 24" Steel Pipe, 0.375" (E80 Rated)

NORTH OUTER DRIVE (66' R.O.W.)

KOHLER DRAIN



811 Know what's below. Call before you dig.

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RACER TRUST

NODULAR SITE
DRAINAGE IMPROVEMENTS

SHEET 4

ATTACHMENT 3

GM LLC Easement

3

2010032112
L-2601 P-1430 R ES Page 1 of 10
OFFICIAL SEAL Saginaw County, Michigan
Mildred M. Dodak Register Of Deeds
November 24, 2010 02:47 PM

EASEMENT AGREEMENT

(Access Easement)

THIS EASEMENT AGREEMENT (the "**Agreement**") is made as of November 24, 2010 between **MOTORS LIQUIDATION COMPANY**, a Delaware corporation formerly known as General Motors Corporation ("**Grantor**"), and **GENERAL MOTORS LLC**, a Delaware limited liability company formerly known as General Motors Company ("**Grantee**").

RECITALS

A. Grantor is the owner of that certain real property situated in Buena Vista Township, Saginaw County, Michigan and legally described on Exhibit A attached hereto and made a part hereof (the "**Grantor Property**").

B. Grantee is the owner of those certain real properties situated in Buena Vista Township, Saginaw County, Michigan and legally described on Exhibit B attached hereto and made a part hereof (the "**Grantee Properties**"; together with the Grantor Property, the "**Property**").

C. Grantee has requested that Grantor provide Grantee an easement over the portion of the Grantor Property legally described on Exhibit C attached hereto and made a part hereof (the "**Easement Area**"). The Easement Area is depicted on Exhibit D attached hereto and made a part hereof.

D. Grantor is willing to provide Grantee the easement pursuant to the terms of this Agreement.

NOW, THEREFORE, for and in consideration of the mutual covenants and conditions contained herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Grantor and Grantee hereby agree as follows:

1. **RECITALS**. The foregoing recitals are acknowledged to be accurate and are incorporated herein by reference.

2. **GRANT OF EASEMENTS**. Grantor does hereby grant, bargain and convey unto Grantee, its successors and assigns, for the benefit of Grantee and the Grantee Properties, a permanent and perpetual non-exclusive easement in, under, over and through the Easement Area for

the purpose of pedestrian and vehicular ingress and egress to, from and between the Grantee Properties and public roadway, and to install, construct, repair, replace, operate, use, inspect and maintain such ingress and egress as is deemed necessary for Grantee's use.

3. **AGREEMENTS REGARDING EASEMENTS.**

(a) Restrictions on Building. Grantor and Grantee hereby agree that no buildings or other structures, except as permitted by this Agreement or otherwise as is necessary for the Grantee's use of the easements in accordance with Paragraph 2 hereof, shall at any time be placed anywhere on the Easement Area without Grantee's prior written consent, which consent Grantee may withhold in its sole and absolute discretion.

(b) Incidental Rights. The easements and rights of use created by this Agreement include the creation of all incidental rights reasonably necessary for the use and enjoyment of such easements and rights for their intended purpose, including, without limitation, temporary rights to portions of the Grantor Property adjacent to the Easement Area for installing, constructing and/or maintaining any improvements in the Easement Area permitted under this Agreement, provided that such rights shall not unreasonably interfere with Grantor's use of the Grantor Property. Grantor shall not impede or restrict Grantee's ingress and egress at any time to, on, over and through the Easement Area.

(c) Maintenance of Easement Area. Grantee shall maintain the Easement Area as Grantee deems necessary for Grantee's use thereof and shall repair all damage to the Grantor Property caused by Grantee or Grantee's employees, contractors, representatives or agents.

(d) Supervision. Grantee shall be solely responsible during the term of this Agreement for all work performed by or at Grantee's direction in connection with its use of the Easement Area.

(e) Conformity with Laws. Grantee's use of the Easement Area shall at all times be in compliance with all local, state, and federal laws, statutes, rules, and regulations pertaining thereto. Grantee shall be solely responsible for obtaining and maintaining any and all permits or other licenses required for Grantee to use the Easement Area in accordance with this Agreement.

(f) Protection from Liens. Grantee shall keep the Easement Area and the Grantor Property and every part thereof free and clear of any and all liens and encumbrances for work performed by Grantee, or on Grantee's behalf, on the Easement Area, provided that Grantee may contest any such liens in good faith using appropriate legal proceedings and further provided that, if any such lien attaches or if a notice or claim therefor is asserted during any period of time in which Grantor has notified Grantee that Grantor has entered into a contract to sell the Grantor Property, as a condition precedent to the right to contest, Grantee shall bond over or otherwise provide security (as permitted by applicable law in such proceeding), the effect of which is to prevent such lien from attaching to Grantor's title in the Grantor Property or any proceeds accruing from the sale thereof.

4. **SUCCESSORS AND ASSIGNS; COVENANTS RUNNING WITH LAND**. This Agreement shall bind and inure to the benefit of the respective successors and assigns of the parties hereto. The terms and provisions of this Agreement shall be deemed to be "covenants running with the land" and shall benefit and bind each respective successor-in-title to the parties hereto.

5. **FURTHER ASSURANCES**. The parties agree, at any time and from time to time, at the requesting party's expense, to execute, acknowledge where appropriate, and deliver such further instruments and documents and to take such other action as either party may reasonably request in order to carry out the intent and purpose of this Agreement.

6. **GOVERNING LAW**. This Agreement shall be governed by, and construed in accordance with, the laws of the state in which the Property is located, without regard to its conflicts of laws provisions.

7. **NOTICES**. All notices and other communications required or permitted to be given hereunder shall be in writing and shall be mailed by certified or registered mail, postage prepaid, or nationally recognized overnight courier, and shall be considered given upon receipt, addressed as follows:

If to Grantee:
General Motors LLC
c/o Worldwide Real Estate
300 Renaissance Center
Mail Code 482-B30-C96
Detroit, Michigan 48265
Attn: Executive Director of
Worldwide Real Estate

With a copy to:
General Counsel
General Motors LLC
300 Renaissance Center
Mail Code 482-C25-D81
Detroit, Michigan 48265
Attn: Attorney - Transaction Process

If to Grantor:
Motors Liquidation Company
500 Renaissance Center
14th Floor
Detroit, MI 48265
Attn: President

Either party may change the name of the person or address to which notices and other communications are to be given by so notifying the other party.

8. **SEVERABILITY**. If any provision of this Agreement or the application thereof to any person or circumstance shall be invalid or unenforceable to any extent, the remainder of this

Agreement and the application of such provision to other persons or circumstances shall not be affected thereby and shall be enforced to the greatest extent permitted by law.

9. **HEADINGS**. The section headings herein are inserted for convenience only and shall not affect construction of this Agreement.

10. **ENTIRE AGREEMENT; MODIFICATION**. This Agreement constitutes and contains the entire and only existing and binding agreement between Grantor and Grantee concerning the subject matter hereof, and supersedes all prior and contemporaneous negotiations, agreements, proposed agreements, and understandings, if any, between the parties concerning the subject matter of this agreement. Any amendment or modification hereof, in order to become effective, shall be made by written instrument and, in each instance, executed by each party hereto.

11. **NO PUBLIC DEDICATION**. Nothing contained in this Agreement will be deemed to be a gift or dedication of any portion of the Property to the general public or for any public purpose whatsoever, it being the intention of the parties hereto that this Agreement will be strictly limited to the purposes expressed herein.

12. **NO PARTNERSHIP**. No party hereto in any way or for any purpose shall be deemed by reason of this Agreement to be a partner of any other party hereto in the conduct of their respective businesses or a joint venturer or a member of a joint enterprise with such other party.

13. **EASEMENT SUPERIOR**. This Agreement and the rights, privileges and easements of the parties hereto with respect to the other parties and the Property shall in all events be superior and senior to any lien placed upon any portion of the Property, including the lien of any mortgages now or hereafter existing or encumbering the Property.

14. **COUNTERPART EXECUTION**. This Agreement may be executed in any number of counterparts and by each of the parties hereto in separate counterparts, all such counterparts together constituting but one and the same instrument.

15. **FORCE MAJEURE**. If either party hereto shall be delayed, hindered in or prevent from the performance of its obligations hereunder by reason of strikes, lockouts, labor troubles, failure of power, riots, insurrection, war, acts of God or other reasons of a like nature (a "**Force Majeure Event**") beyond the reasonable control of either party, such party shall be excused for the period of time equivalent to the delay caused by such Force Majeure Event as long as the party so affected shall have delivered written notice to the other party of such Force Majeure Event within ten (10) business days after such event.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, the Grantor and Grantee have caused this Agreement to be executed as of the date first above written.

GRANTOR:

MOTORS LIQUIDATION COMPANY,
a Delaware corporation formerly known as
General Motors Corporation

By: _____

Name: Kyle Braden
Its: VP

STATE OF Michigan)
) SS
COUNTY Wayne)

I, Pamela D. Robinson a Notary Public in and for the said county, in the state aforesaid, DO HEREBY CERTIFY that Kyle Braden, the Vice President, of Motors Liquidation Company, a Delaware corporation formerly known as General Motors Corporation, who is personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that he/she signed and delivered the said instrument as Vice President of said corporation, as his/her own free and voluntary act and as the free and voluntary act of said corporation, for the uses and purposes therein set forth.

GIVEN under my hand and notarial seal this 18th day of November, 2010.

Pamela D. Robinson
Notary Public

My Commission Expires: _____

PAMELA D ROBINSON
NOTARY PUBLIC, STATE OF MI
COUNTY OF WAYNE
MY COMMISSION EXPIRES Feb 21, 2016
ACTING IN COUNTY OF

[GRANTEE SIGNATURE PAGE FOLLOWS]

GRANTEE:

GENERAL MOTORS LLC, a Delaware limited liability company formerly known as General Motors Company

By: _____

Name: DEBRA HOMIC HOGE
Its: DIRECTOR WORLDWIDE REAL ESTATE

STATE OF Michigan)
) SS
COUNTY Wayne)

I, Pamela D. Robinson, a Notary Public in and for the said county, in the state aforesaid, DO HEREBY CERTIFY that Debra Homic Hoge, Director of Worldwide Real Estate, General Motors LLC, a Delaware limited liability company formerly known as General Motors Company, who is personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that she signed and delivered the said instrument as Director of Worldwide Real Estate of said company, as her own free and voluntary act and as the free and voluntary act of said company, for the uses and purposes therein set forth.

GIVEN under my hand and official seal this 19th day of November, 2010.

Pamela D. Robinson
Notary Public

My Commission Expires: PAMELA D ROBINSON NOTARY PUBLIC, STATE OF MI COUNTY OF WAYNE MY COMMISSION EXPIRES Feb 21, 2016 ACTING IN COUNTY OF

THIS INSTRUMENT WAS PREPARED BY:
FRANK J. EICHENLAUB, ESQ.
JENNER & BLOCK LLP
353 N. CLARK STREET
CHICAGO, IL 60654-3456
312-840-7247

UPON RECORDING, RETURN TO:
HOLLY A. MILEWSKI
GENERAL MOTORS LLC/
WORLDWIDE REAL ESTATE (WRE)
MC 482-C30-C61
300 RENAISSANCE CENTER
DETROIT, MICHIGAN 48265
313-665-6646

EXHIBIT A

Legal Description of Grantor Property

LEGAL DESCRIPTION OF Nodular Iron Site (remainder without Clay Cap Parcel):

Land situated in the Township of Buena Vista, in the County of Saginaw, State of Michigan described as follows:

THE NORTHEAST QUARTER OF SECTION 8, TOWN 12 NORTH, RANGE 5 EAST, BUENA VISTA TOWNSHIP, SAGINAW COUNTY, MICHIGAN; EXCEPT THE NORTH 800 FEET OF THE WEST 435 FEET; ALSO EXCEPT THE RAILROAD; ALSO EXCEPT DESCRIBED AS BEGINNING AT THE EAST QUARTER CORNER OF SAID SECTION; THENCE S89°44'00"W 530.01 FEET ALONG THE EAST WEST QUARTER LINE; THENCE N00°00'00"E 1502.00 FEET; THENCE N89°44'00"E 530.01 FEET; THENCE S00°00'00"W 1502.00 FEET ALONG THE EAST SECTION LINE TO THE POINT OF BEGINNING. ALSO EXCEPT COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION; THENCE N88°37'30"W 1196.19 FEET; THENCE S32°06'00"W 1825.38 FEET TO THE POINT OF BEGINNING; THENCE S57°54'00"E 504.68 FEET; THENCE S40°53'30"W 368.16 FEET; THENCE N57°54'00"W 448.41 FEET; THENCE N32°06'00"E 363.84 FEET TO THE POINT OF BEGINNING. CONTAINING 124.5 ACRES.

EXHIBIT B

Legal Description of Grantee Properties

LEGAL DESCRIPTION OF GM LLC's Saginaw Landfill and Clay Cap Storage Parcels respectively:

Land situated in the Township of Buena Vista, in the County of Saginaw, State of Michigan described as follows:

PART OF THE NORTHEAST QUARTER OF SECTION 5, TOWN 12 NORTH, RANGE 5 EAST, BUENA VISTA TOWNSHIP, SAGINAW COUNTY, MICHIGAN; DESCRIBED AS COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION; THENCE N00°02'00"W 313.43 FEET TO THE POINT OF BEGINNING; THENCE S40°49'28"W 406.25 FEET; THENCE N88°42'22"W 1397.64 FEET; THENCE N19°49'03"W 1729.07 FEET; THENCE N71°48'13"E 384.20 FEET; THENCE N82°11'16"E 203.32 FEET; THENCE N89°00'10"E 967.66 FEET; THENCE S75°52'26"E 130.59 FEET; THENCE S45°59'32"E 160.63 FEET; THENCE S35°52'45"E 287.47 FEET; THENCE S53°09'33"E 139.38 FEET; THENCE S82°25'28"E 194.04 FEET; THENCE S00°02'00"E 1029.72 FEET TO THE POINT OF BEGINNING. CONTAINING 75.63 ACRES.

and

PART OF THE NORTHEAST QUARTER OF SECTION 8, TOWN 12 NORTH, RANGE 5 EAST, BUENA VISTA TOWNSHIP, SAGINAW COUNTY, MICHIGAN; DESCRIBED AS BEGINNING AT THE EAST QUARTER CORNER OF SAID SECTION; THENCE S89°44'00"W 530.01 FEET ALONG THE EAST WEST QUARTER LINE; THENCE N00°00'00"E 1502.00 FEET; THENCE N89°44'00"E 530.01 FEET; THENCE S00°00'00"W 1502.00 FEET ALONG THE EAST SECTION LINE TO THE POINT OF BEGINNING. CONTAINING 18.28 ACRES.

EXHIBIT C

Legal Description of Easement Area

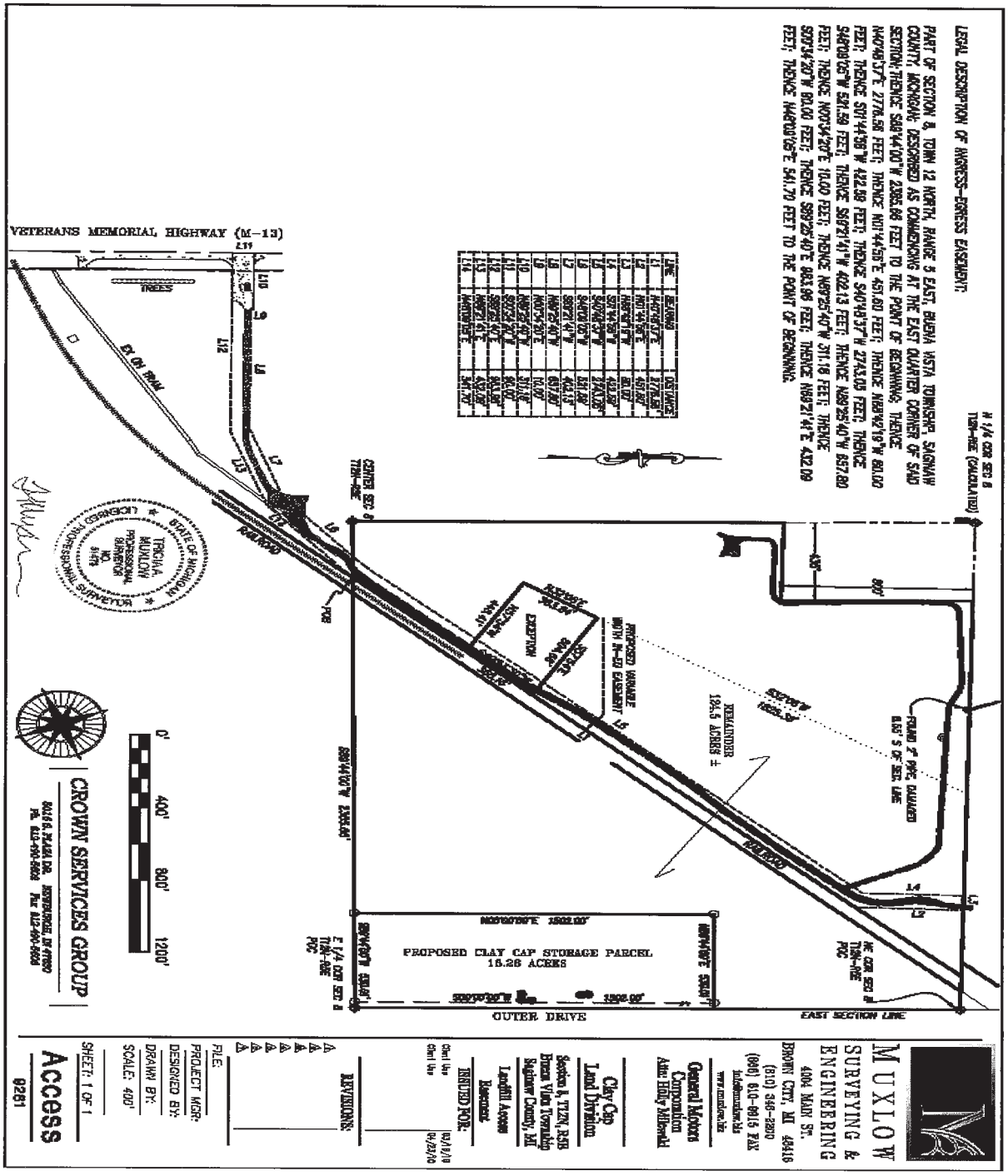
LEGAL DESCRIPTION OF Ingress/Egress Access Easement - roadway to access GM LLC's Saginaw Landfill and Clay Cap Storage Parcels:

Land situated in the Township of Buena Vista, in the County of Saginaw, State of Michigan described as follows:

PART OF SECTION 8, TOWN 12 NORTH, RANGE 5 EAST, BUENA VISTA TOWNSHIP, SAGINAW COUNTY, MICHIGAN; DESCRIBED AS COMMENCING AT THE EAST QUARTER CORNER OF SAID SECTION;THENCE S89°44'00"W 2385.66 FEET TO THE POINT OF BEGINNING; THENCE N40°48'37"E 2776.56 FEET; THENCE N01°44'56"E 451.60 FEET; THENCE N88°42'19"W 80.00 FEET; THENCE S01°44'56"W 422.59 FEET; THENCE S40°48'37"W 2743.05 FEET; THENCE S48°09'05"W 521.59 FEET; THENCE S69°21'41"W 402.13 FEET; THENCE N89°25'40"W 657.80 FEET; THENCE N00°34'20"E 10.00 FEET; THENCE N89°25'40"W 311.18 FEET; THENCE S00°34'20"W 90.00 FEET; THENCE S89°25'40"E 983.96 FEET; THENCE N69°21'41"E 432.09 FEET; THENCE N48°09'05"E 541.70 FEET TO THE POINT OF BEGINNING.

EXHIBIT D

Depiction of Easement Area



ATTACHMENT 4

Site Stabilization Work Plan
for Closure of Four Primary Settling Basins, CRA, July 2012

SITE STABILIZATION WORK PLAN FOR CLOSURE OF FOUR PRIMARY SETTLING BASINS

FORMER NODULAR INDUSTRIAL LAND
SAGINAW, MICHIGAN

Prepared For:

Revitalizing Auto Communities
Environmental Response Trust

Prepared by:
Conestoga-Rovers & Associates

651 Colby Drive
Waterloo, Ontario
Canada N2V 1C2

Office: (519) 884-0510
Fax: (519) 884-0525

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JULY 2012
REF. NO. 058502 (5)

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LIST OF FIGURES
(Following Text)

LIST OF APPENDICES

1.0 INTRODUCTION

This report presents the proposed closure of the four primary settling basins (PSBs) by Revitalizing Auto Communities Environmental Response Trust (RACER) at the Former Nodular Industrial Lands in Saginaw, Michigan (Site) in order to help stabilize Site stormwater management (Work Plan). The Site location is presented on Figure 1.1 and the Site Plan is presented on Figure 1.2. The Site is undergoing Resource Conservation and Recovery Act (RCRA) Corrective Action under Administrative Order on Consent RCRA-05-2011-0023.

1.1 BACKGROUND

The four PSBs are part of the former wastewater treatment plant (WWTP) which was built in 1976 to treat the effluent water from the former Grey Iron Plant. Operation of the WWTP ceased in 2010, upon completion of the new treatment facility at the General Motors (GM) Saginaw Metal Casting Operations (SMCO) facility.

Operation of the PSBs began in 1977. The PSBs were built on low permeability glaciolacustrine clays that underlie the area. The clay is encountered at approximately 5 to 10 feet below ground surface (bgs) and extends to a depth of approximately 68 to 95 feet bgs. The clays are fine-grained and water does not enter readily or move freely within them as observed during extensive investigations at the Site. A thin veneer (up to 15 feet thick) of fill material comprises a majority of the surficial materials above the clay at the Site. The water table is generally encountered within 5 feet of the ground surface.

The PSBs consist of four nearly identical clay lined settling basins. Each PSB has a total volume of approximately 7 million gallons (35,000 cubic yards). The lagoons were previously used two at a time (in parallel) to settle solids from the WWTP (flocculation/coagulation) effluent. The PSBs were constructed by excavating into the underlying clay and using a combination of excavated clay and landfill clay to construct the sidewalls. The sediment in these PSBs was dredged one basin at a time, and approximately five to six total dredging events were completed per year during regular operations.

The dredged sediment from the PSBs consisted of very fine, silty material, generated from the foundry operations. The PSBs were cycled as they became filled with material. PSBs 1 and 2 (as presented on Figure 1.2) were most recently excavated in 2005 and 2004, respectively and currently contain a large amount of sediment material. The bottoms of

PSBs 1 and 2 contain varying amounts of sediment along with pooled water and vegetation. PSBs 3 and 4 were most recently excavated in June 2012 by GM LLC (the generator and owner of the waste) and contain no material.

A cross-section of the PSBs is presented on Figure 1.3. An inlet structure exists at the southwest end of each of the PSBs and an outlet structure is present at the northeast end of each of the PSBs. Surrounding the PSBs are compacted gravel paths.

This Work Plan presents the proposed closure activities for the PSBs.

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS

2.1 PRIMARY SETTLING BASIN SEDIMENT

The Description of Current Conditions (DOCC), (EMCON, 1995), presented the analysis performed on the PSBs sediment for samples collected between 1983 and 1993. The historical analytical results of the sediment from the PSBs are presented in Appendix A. Samples were analyzed for metals, volatile organic compounds (VOCs), full base neutral extractables (BNE), formaldehyde, polychlorinated biphenyls (PCBs), and asbestos. In addition, the following tests were performed on the samples: ASTM Leaching Test, TCLP Analysis, and EP Toxicity.

The DOCC concluded that based on the data collected from 1983 to 1993 from the PSBs, low levels of metals and inorganics were present in the sediment (with the exception of beryllium, mercury, and nitrate which were not detected). Although the variety of metals and inorganics analyzed were present in the compositional analysis, only isolated occurrences or consistently low levels were identified in the ASTM leaching, TCLP and SPLP analyses. The data indicated that even under test conditions (which are typically more rigorous than real world leaching conditions) the metals and inorganics present did not pose a threat due to leaching.

Additional characterization of the PSBs sediment was completed by GMC in 2002 and 2005. Sixteen samples were collected and were analyzed for VOC, VOC-SPLP, semi-volatile organic compounds (SVOCs), SVOC-SPLP, metals, metals-TCLP, metals-SPLP, PCBs, general chemistry, general chemistry-TCLP (2002 event only), and general chemistry-SPLP. A summary of the analytical results of these samples are presented in Appendix A.

The sediment samples were screened against groundwater contact protection criteria and groundwater surface water interface protection criteria (GSI). The SPLP and TCLP results were screened against non-residential drinking water criteria.

The 2002 sampling event reported exceedances of three SVOCs, five metals, and one general chemistry parameter as compared to GSI Criteria. The 2002 exceedances are as follows:

- SVOCs: 2-methylphenol (4 samples), naphthalene (4 samples), and phenol (4 samples)
- Metals: arsenic (4 samples), chromium (4 samples), mercury (2 samples), selenium (4 samples), and silver (4 samples)
- General Chemistry: formaldehyde (8 samples)

The 2002 sampling event also reported exceedances of one SPLP-VOC, four SPLP-metals, and three TCLP-metals as compared to Non-residential drinking water criteria. The 2002 SPLP/TCLP exceedances are as follows:

- SPLP-VOC: benzene (7 samples)
- SPLP-Metals: aluminum (2 samples), iron (1 sample), lead (7 samples), and manganese (8 samples)
- TCLP-Metals: arsenic (4 samples), cadmium (3 samples), and lead (4 samples)

The manufacturing operations changed from cast iron to using only aluminum in December 2004, and as a result decreased metal concentrations in the sediment were observed. The 2005 sampling event reported exceedances of the criteria for one VOC, two SVOCs, three metals, and one general chemistry parameter. The 2005 exceedances are as follows:

- VOC: toluene (4 samples)
- SVOCs: 3&4-methylphenol (1 sample) and phenol (1 sample)
- Metals: arsenic (4 samples), chromium (4 samples), and selenium (4 samples)
- General Chemistry: formaldehyde (4 samples)

The 2005 sampling event also reported exceedances of five SPLP-metals, and three TCLP-metals as compared to Non-residential drinking water criteria. The 2005 SPLP/TCLP exceedances are as follows:

- SPLP-Metals: aluminum (6 samples), antimony (4 samples), iron (3 samples), lead (7 samples), and manganese (12 samples)
- TCLP-Metals: aluminum (4 samples), iron (3 samples), and manganese (4 samples)

The results of the 2002 and 2005 sampling events confirm the findings of the DOCC.

2.2 CLASSIFIED SAND

The classified sand staging area, located in Investigative Unit I (IU-I), contains sand and heavy particulate from the Grey Iron Plant (and previously the Former Nodular Iron Plant) foundry operations, recovered from the primary classifiers (i.e., separation of suspended particles by size). Influent water passes through one of the two classifier

units and large particles are permitted to drop out. Large particles are then raked from the classified and transported to the classified sands piles. The classifiers were designed to remove material that would not generally pass through a 150 mesh sieve. The classified sand consists predominantly of foundry molding and core sand, grit from the scrap cleaning operations, and coarse grit and metallic fines from the cupola emission control systems. The classified sand piles have been in existence since 1983 and the most recent approximations estimate a volume of 68,400 cubic yards. The classified sand piles are located on the RACER portion of IU-I. Analysis was performed on this material as part of the DOCC. The analytical results presented in the DOCC are provided in Appendix B. Additional sampling of the classified sands was completed in 2002. Samples were analyzed for VOCs, VOC-SPLPs, SVOCs, SVOC-SPLPs, metals, metals-TCLP, metals-SPLP, PCBs, Polynuclear Aromatic Hydrocarbons (PAHs), general chemistry, and general chemistry-SPLP. The results of these samples are presented in Appendix B.

Twelve samples were collected during the 2002 sampling event. The results were screened against groundwater contact protection criteria and GSI protection criteria. The SPLP and TCLP results were screened against non-residential drinking water protection criteria.

Exceedances of the criteria for one metal and one general chemistry parameter were reported. The 2002 exceedances are as follows:

- Metals: chromium (4 samples)
- General Chemistry: formaldehyde (2 samples)

The 2002 sampling event also reported exceedances of three SPLP-metals as compared to Non-residential drinking water criteria. The 2005 SPLP/TCLP exceedances are as follows:

- SPLP-Metals: aluminum (4 samples), iron (1 sample), and manganese (1 sample)

The manufacturing operations changed from cast iron to using only aluminum in December 2004 and metal concentrations in the classified sands decreased as presented in Appendix B.

2.3 RFI GROUNDWATER

As part of the RCRA Facility Investigation (RFI), groundwater sampling was conducted in the vicinity of the primary lagoons and the classified sand areas. Groundwater samples have been collected using both high-flow and low-flow purging techniques. Use of low-flow purging techniques commenced in 2001; however, the first full round of low-flow sampling was conducted in 2005, resulting in a significant reduction for reported concentrations of inorganics. A copy of the groundwater databox figures for IU H and IU I from the RFI – Phase 1C Report – Revised (CRA, March 2007) are provided in Appendix C.

2.4 DATA ANALYSIS

The results of the 2002 and 2005 PSB sediment and classified sand samples were screened against groundwater contact protection criteria. No exceedances of the groundwater contact protection criteria were reported. In addition, based on the design of the PSBs as observed during sediment excavation (i.e., clay bottom and sides) there is minimal likelihood of leachate, if any, from the sediments and sands coming into contact with the shallow or deep groundwater the area. When constructed the PSBs were excavated into a thick layer of native clay. This impermeable clay layer extends well below the bottom of the PSBs and creates a barrier between the PSBs and the underlying bedrock aquifer. In addition, groundwater samples collected in the vicinity of the PSBs as part of the RFI have not reported the constituents observed in the sediments.

The 2002 and 2005 sediment samples were also screened against GSI protection criteria. Eleven exceedances were reported as described in Section 2.1 and Section 2.2. Based on the proposed containment, no complete pathway will exist for the sediments and sands to come into contact with any surface water. The classified sands will be used as backfill in the clay lined PSBs and a minimum 2-foot thick layer of clay will be placed over top of the entire area. The clay will be graded to direct stormwater away from the area. The clay layer will also create a relatively impermeable layer which will prevent surface water from coming into contact with the classified sands and sediments. Furthermore, any water within the contained area will be removed prior to placement of the clay cover.

The SPLP and TCLP results from the 2002 and 2005 sediment sampling events were screened against non-residential drinking water protection criteria. Eight exceedances were reported as described in Section 2.1 and Section 2.2. To prevent the possibility of

groundwater on site being used for drinking water purposes, deed restrictions will be placed on the property to prevent the installation of drinking water wells.

Finally, the groundwater results were screened against MDEQ Industrial commercial II, III, and IV Drinking Water Criteria, MDEQ Groundwater Contact Criteria, MDEQ Industrial commercial II, III, and IV Groundwater Volatilization to Indoor Air Criteria, and MDEQ GSI criteria. Exceedances identified were not found in the classified sands or PSBs sediment/soil data with the exception of antimony at one location. Therefore, the classified sands and PSBs are not leaching into the groundwater.

The combination of a competent clay bottom, installation of a relatively impermeable 2-foot thick clay cover, and placing deed restrictions on the property ensures that the proposed closure for the PSBs is protective.

The following sections provide additional details on the proposed closure.

3.0 PROPOSED CLOSURE

The closure of the PSBs will consist of:

- Removal of the existing structures (inlet, outlet, plumbing, etc.)
- Backfill depression with classified sand from IU-I
- Placing a minimum 2 feet of clay over area
- Re-grading to direct water away from the area

The closure will serve two purposes: help stabilize stormwater management at the site by decreasing precipitation ponding and seepage into the secondary ponds and to utilize all of the sediment remaining in Lagoons 1 and 2 and classified sands stored in IU-I.

3.1 SCOPE OF WORK AND SCHEDULE

The following sections describe the cleanup activities related to on-Site work to be conducted under this Work Plan:

3.1.1 Contractor Procurement (15 Days)

3.1.2 Contractor Preparation of Health and Safety Plan (5 Days)

3.1.3 Soil Erosion Control Permitting (5 days, completed in conjunction with 3.1.2)

3.1.4 Mobilization/Site Preparation (30 days to complete 3.1.4 to 3.1.6)

3.1.5 Implementation

3.1.6 Site Restoration and Demobilization

3.1.1 PREPARATION OF HEALTH AND SAFETY PLAN

To ensure that all on-Site work is completed safely, a Site-specific Health and Safety Plan (HASP) will be prepared. A Site health and safety officer will complete a hazard analysis for all activities. The hazard analysis will identify the potential hazards, evaluate the level of personal protective equipment that will be used during the cleanup activities, and describe the personnel decontamination procedures required to control any potential personal exposures during implementation of this Work Plan.

The HASP will be prepared and implemented consistent with Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120.

3.1.2 CONTRACTOR PROCUREMENT

A qualified, OSHA 29 CFR 1910.120-trained contractor will be procured for closure of the PSBs. The contractor will be responsible for all activities described in Section 3.1.4.

3.1.3 MOBILIZATION/SITE PREPARATION

Upon mobilization of the contractor to the Site, the contractor will establish security controls and designate work zones by installing a temporary orange safety fence or caution tape, with warning signs, as necessary.

3.1.4 CLOSURE APPROACH

The closure of the PSBs will be completed in stages. The first stage will involve dewatering the PSBs. Water from the PSBs will be pumped into the secondary basin.

The second stage will involve removal of materials from the PSBs for off-Site recycling/disposal at appropriate disposal facilities. The following materials are to be removed:

- Concrete and steel inlet and outlet structures
- Steel railings
- All utilities including electrical and plumbing lines
- Vegetation located in and around the PSBs

Stage 3 will involve backfilling of the PSBs to grade with roughly 65,000 cubic yards of material from the classified sands piled located in IU-I. A 2-foot thick layer of clay from the clay pile in IU-I will be placed and compacted over the entire area. The area will be graded in such a manner that storm water is directed away from the area (see drawing in Appendix D). Finally, a layer of topsoil will be placed on top of the clay and the area will be hydroseeded.

3.1.5 PERMITTING

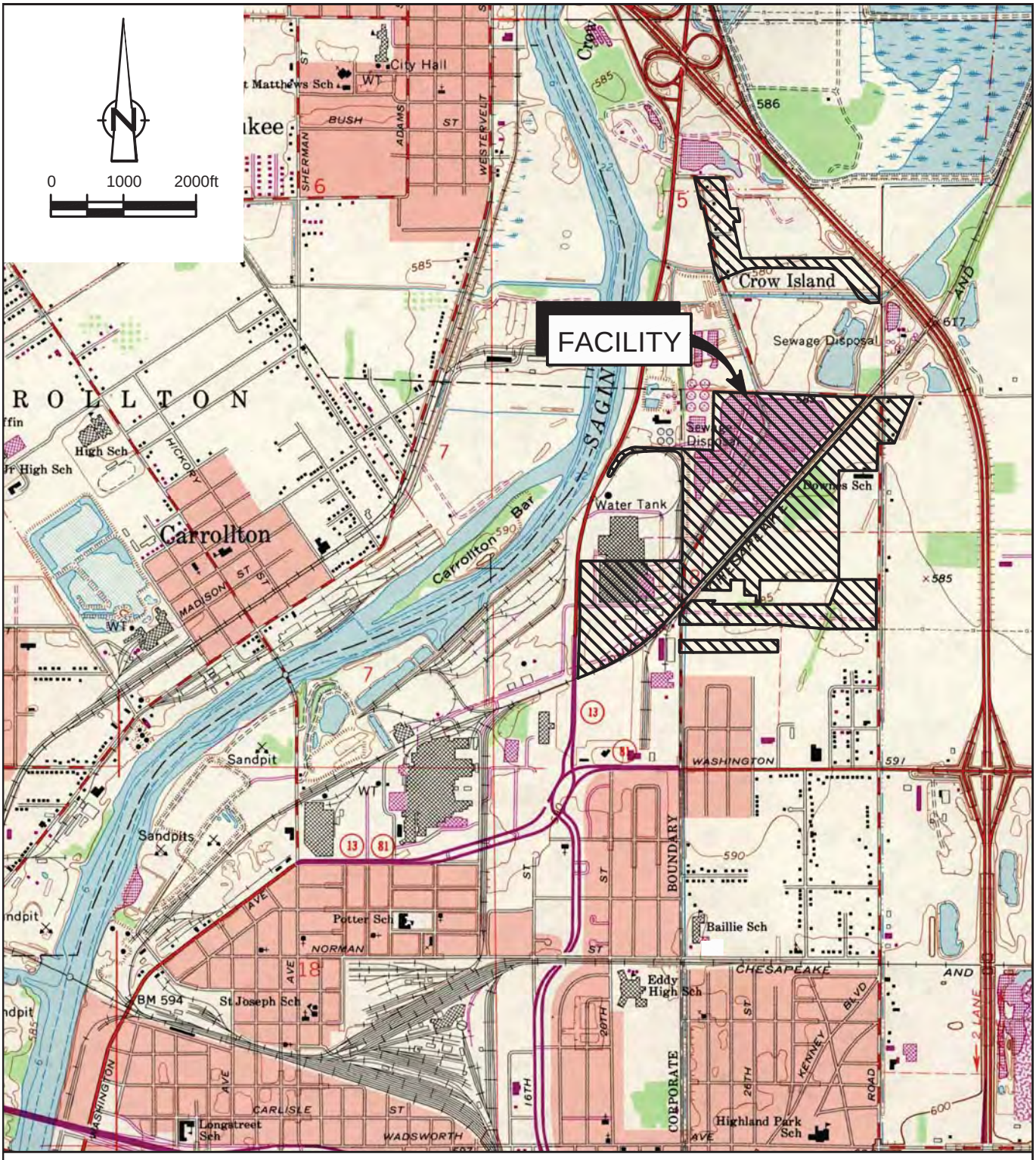
A City of Saginaw Soil erosion control permit will be obtained.

3.1.6 SITE RESTORATION AND DEMOBILIZATION

Once the work is completed, the contractor will remove any temporary fencing, temporary structures, equipment, and other materials and supplies brought onto the Site for the cleanup activities. The remaining stock pile areas will be graded to address any issues resulting from the excavation of the sand. The classified sand area and former PSBs area will be seeded to promote vegetative growth.

4.0 REPORTING/DOCUMENT PREPARATION

Upon the completion of this plan, a closure report will be prepared to present a summary of the remedial activities. The report will include a summary of the work completed and discuss any relevant observations made during the Site stabilization activities.

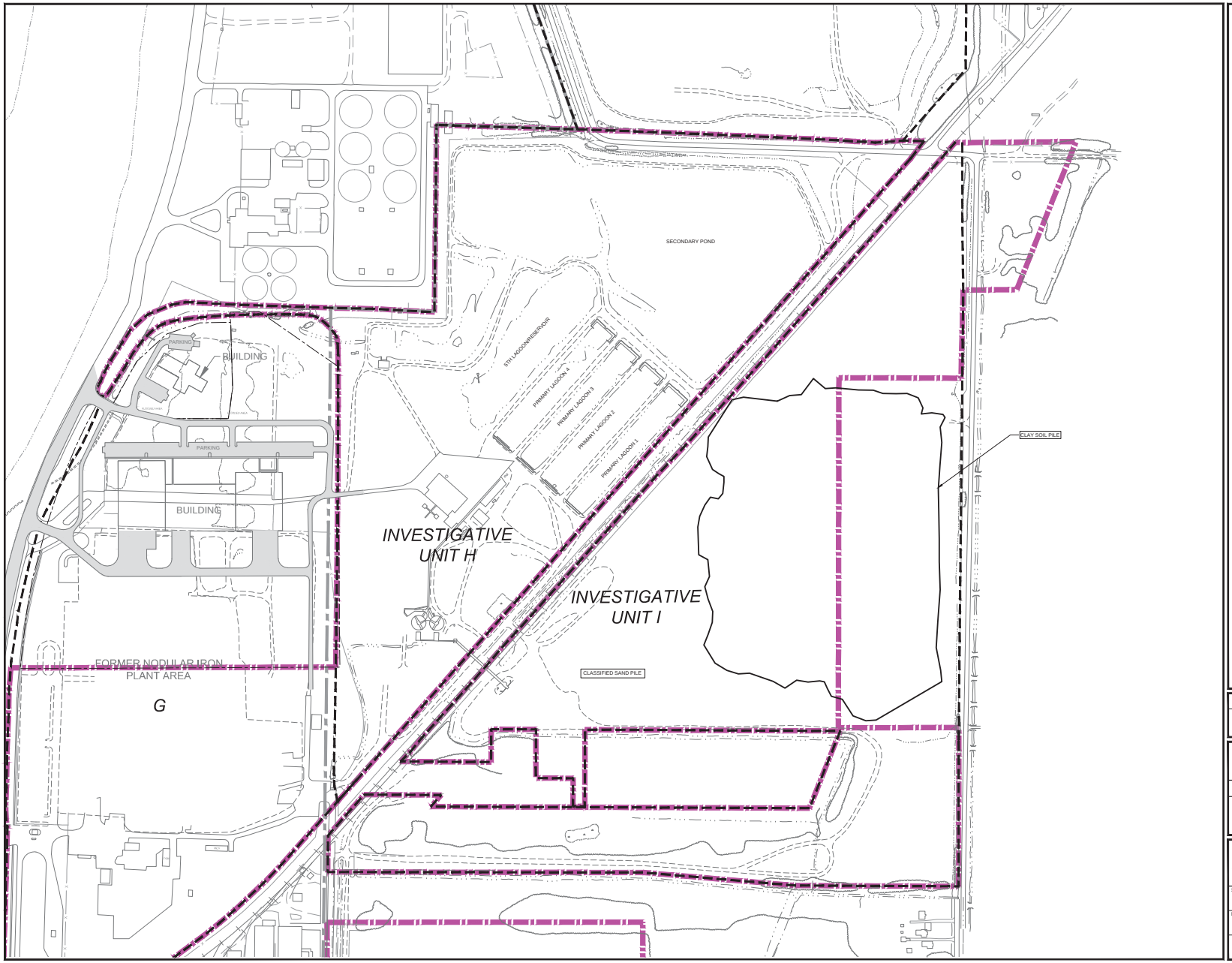


SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE; SAGINAW, MICHIGAN 1967

figure 1.1

SITE LOCATION
FORMER NODULAR INDUSTRIAL LANDS, RACER
Saginaw, Michigan

58502-T02(005)GN-WA004 JUL 9/2012

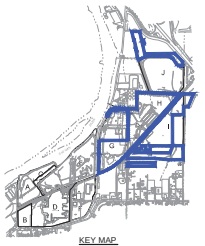


N

0 100 200 ft

LEGEND

- INVESTIGATIVE UNIT BOUNDARY
- LIMIT OF CLAY STOCKPILE (900,000 CUBIC YARDS)
- RACER PROPERTY



KEY MAP

SCALE VERIFICATION

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

REVITALIZING AUTO COMMUNITES ENVIRONMENTAL RESPONSE

SAGINAW, MICHIGAN

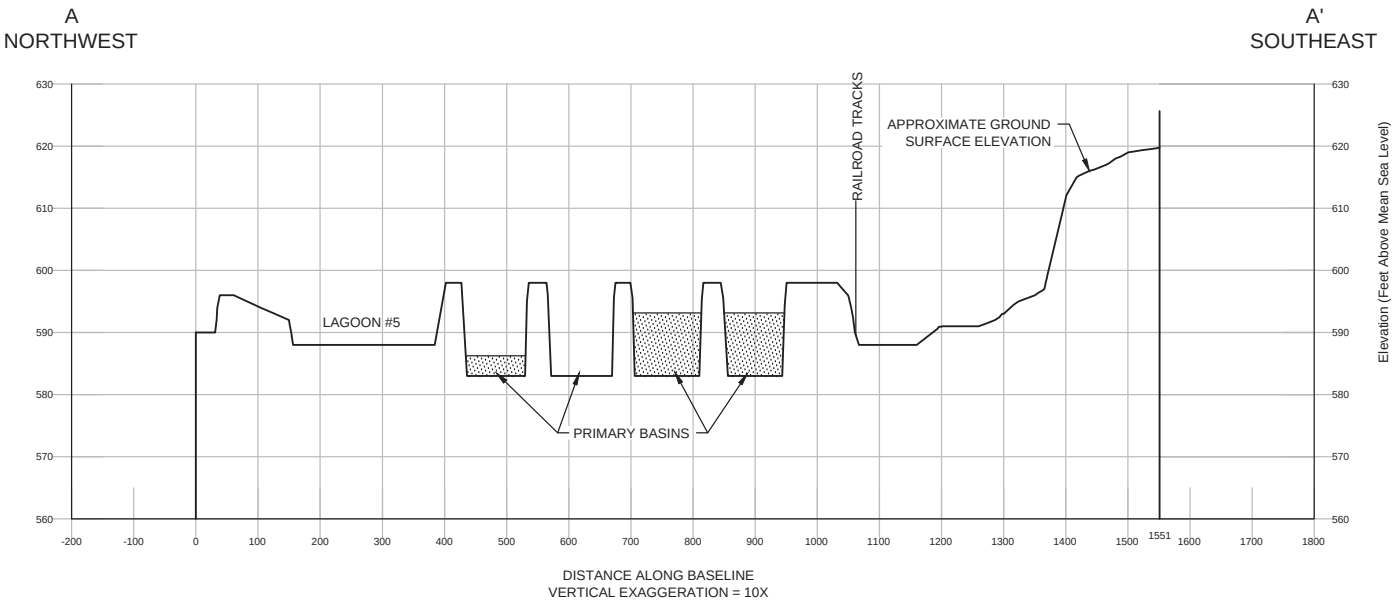
SITE PLAN

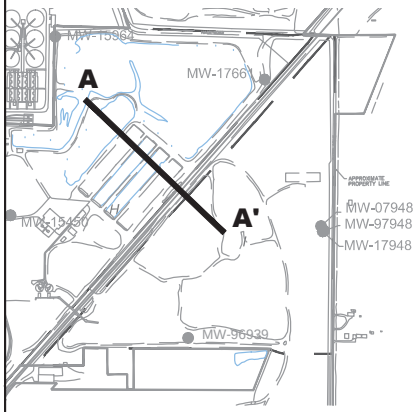
CRA CONESTOGA-ROVERS & ASSOCIATES

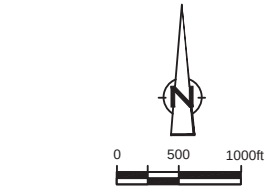
Source Reference:
MICHIGAN STATE PLANE SOUTH, NAD 83 USING INTERNATIONAL FEET, NGVD 88
SPICER SURVEY, OCTOBER 2009.

Project Manager:	Reviewed By:	Date:	
I.R.	M.T.	MARCH 2012	
Scale:	Project N#:	Report N#:	Drawing N#:
1:200	58502-T02	005	figure 1.2

58502-T02(005)GN-WA005 JUL 9/2012







LEGEND

MW-17661 MONITORING WELL LOCATION AND IDENTIFIER

A—A' CROSS SECTION LOCATION

FINE SAND

figure 1.3

CROSS SECTION A - A'
PRIMARY SETTING BASIN
NODULAR FACILITY, RACER
Saginaw, Michigan

58502-T02(005)GN-WA003 JUL 27/2012

APPENDIX A

PRIMARY SETTLING BASIN SEDIMENT DATA

APPENDIX A-1

DOCC PRIMARY SETTLING BASIN SEDIMENT ANALYTICAL RESULTS SUMMARY

PRIMARY SETTLING BASIN SEDIMENT

Compositional Analysis

Parameter mg/kg	10/12/88[1]			10\90[2]	1991[3]	11\16\92[4]				10/8/93[5]			
	1	2	3			1	2	3	4	1	2	3	4
Antimony		< 12		< 50	2.9								
Arsenic	9.7	8.6	9.2	6.3	5.1	0.88	1.4	1.8	2.2	3	3.4	3.7	2.4
Barium	150	150	170	150	110	51	55	48	52	84	84	95	67
Beryllium		< 1		< 1.1	< 1								
Cadmium	6.6	6.8	5.3	30	10	8.8	4	4	4	3.3	4	3.9	3.8
Chloride		270		420	130								
Chromium	160	150	200	180	130	50	58	51	55	77	78	83	58
Cobalt		6.8		< 11	< 10	1	2	2	2	3	3	4	2
Copper	120	100	130	120	110	40	44	4	47	60	14	75	43
Cyanide		7		< 5.7	< 5.2	< 0.5	< 0.5	1.1	1.2	1.3	1.2	1.4	1.4
Flouride		250		110	200								
Lead	1400	1200	910	1100	770	380	400	370	380	640	760	720	610
Lithium		10		< 10	< 10	< 5	< 5	< 5		< 5	< 5	< 5	< 5
Mercury	< 0.17	< 0.17	< 0.18	<0.23	< 0.21	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Molybdenum						< 5	6	6	5				
Nickel		33		30	32	10	10	10	10	20	21	23	10
Phenols		86		100	69								
Selenuim	< 1.5	< 1.6	< 1.4	1.4	< 1.2	0.2	0.3	0.3	0.3	0.9	1	1	0.7
Silver	< 2	< 2	< 2	< 2	< 2.1	0.48	0.67	0.57	0.75	1	1	1	1
Solids (%)	53	50	57	44	48.2	47	44	43	44	65	60	70	57
Zinc	29000	34000	27000	28000	30000	8300	10000	8000	7500	14000	16000	15000	9200
BOD				4600	3577								
Calcium				20000	18000	8200	8100	7200	7500	12000	11000	12000	13000
Corrosivity(pH)				9.7	10					7.6	8.6	8.9	8.8
Magnesium				3900	3800	1100	1500	1200	1500	2100	2000	2100	1500
Manganese				5700	4900	1700	1800	1800	1900	2700	2800	2700	2500
Nitrate				< 1.1	< 0.5								
Nitrite				< 0.45									
Nitrogen				3700	2900								
Phosphorous				3000	4200	4.9	24	3.7	< 2.5	11	2.5	3.4	3.4
Potassium				1900	1800	730	750	750	850	890	900	880	650
Sodium				1500	1400	550	540	530	600	700	880	590	410
Aluminum										5600	4600	5000	3300
Iron										28000	30000	32000	17000
Ammonia					150								

(1) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designation," February 1989. Verified with laboratory data.
(2) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designation," October 1990. No record of sampling date. No laboratory data.
(3) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of solid Wastes," January 1992. No record of Sampling date. No laboratory data.
(4) Results taken from laboratory data of samples collected 11/16/92.
(5) Results taken from laboratory data of samples collected 10/8/93.

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TABLE 13.1

PRIMARY SETTLING BASIN SEDIMENT

ASTM Leaching Test

Parameter mg/L	11/28/83[1] #2	11/28/83[1] #3	2/14/85[2] #3	2/23/87[3]	10/20/87[4]	10/8/93[5] 1	10/8/93[5] 2	10/8/93[5] 3	10/8/93[5] 4
Arsenic	0.023	0.011	0.018	0.016	0.054				
Berium	< 0.2	< 0.2	0.8	< 0.02	0.02				
Cadmium	< 0.01	< 0.01	< 0.01	< 0.005	< 0.004				
Chromium	< 0.05	< 0.05	< 0.05	< 0.005	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05
Cyanide	< 0.02	< 0.02	0.03	< 0.04	< 0.01				
Copper	< 0.02	< 0.02	< 0.02	< 0.02	< 0.1				
Fluoride	27.5	30	19.7	4	1.6	2.6	2.1	2.1	2.1
Lead	0.01	0.011	< 0.005	0.031	0.025				
Mercury	< 0.0002	< 0.002	< 0.0002	0.004	< 0.0002				
Selenium	0.009	< 0.001	0.006	0.003	0.01				
Silver	< 0.02	< 0.02	< 0.02	< 0.02	< 0.01				
Zinc	0.08	0.12	0.03	0.25	0.17				
pH	9.6	9.4	9.9	9.9	10.1				
Phenols	0.292	0.24	0.729	1.21	1.4				
Ammonia						1.2	0.5	0.4	0.1
BOD						< 3	< 3	< 3	< 3
Nitrate						< 1	1.2	2.2	1.4
TOC			35.2	21	25				
COD			92	60	83				

(1) Results taken from "Waste Characterization Study for Foundry Process Solid Wastes," January 1984. Revised February 1984. No laboratory data.
(2) Results taken from "Waste Characterization Study of Foundry Process Solid Wastes," January 1986. Verified with laboratory data.
(3) Results taken from "Summary Report: Sampling and Analysis of Foundry Process Solid Wastes," July 1987. Verified with laboratory data.
(4) Results taken from "Summary Report: Sampling and Analysis of Foundry Process Solid Wastes," January 1988. No laboratory data available.
(5) Results taken from laboratory data of samples collected 10/8/93.

TABLE 13.2

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PRIMARY SETTLING BASIN SEDIMENT

TCLP Analysis

SPLP results

Parameter mg/L	10\90[1]	1991[2]			11\16\92[3]				10/8/93[4]				12/18/93[5]			
		1	2	3	1	2	3	4	1	2	3	4	1	2	3	4
Arsenic	< 0.003	0.016	0.008	< 0.006					< 0.002	< 0.002	< 0.002	< 0.002	0.003	0.004	0.01	0.007
Barium	0.11	0.15	< 0.055	< 0.053	< 1	< 1	< 1	< 1	0.22	0.19	0.18	0.19	0.34	0.31	0.37	0.38
Cadmium	0.007	0.0035	< 0.0006	0.00079	< 0.1	< 0.1	< 0.1	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	0.05	0.07	0.08	< 0.02
Copper	< 0.02	< 0.02	< 0.021	< 0.02	< 0.2	< 0.2	< 0.2	< 0.2	< 0.02	< 0.02	< 0.02	< 0.02	0.08	0.07	0.05	< 0.02
Chromium	0.02	0.079	< 0.01	< 0.01	< 0.2	< 0.2	< 0.2	< 0.2	< 0.025	0.03	< 0.025	0.1	< 0.025	< 0.025	< 0.025	< 0.025
Cyanide																
Lead	< 0.01	0.12	< 0.006	< 0.006	< 1	< 1	< 1	< 1	< 0.01	< 0.01	< 0.01	< 0.01	0.089	0.076	0.077	0.064
Mercury	0.0002	< 0.0004	< 0.0004	< 0.0004					< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Selenium	< 0.003	< 0.012	< 0.012	< 0.012	< 0.04	< 0.04	< 0.04	< 0.04	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Silver	< 0.02	< 0.002	0.002	< 0.002					< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Zinc	150	420	160	130	130	120	160	140	0.26	0.11	0.67	1.5	140	170	180	41
pH																
Flouride	1.9	1.2	2.2	2.5												
Total Phenols	0.57	0.17	0.18	0.16												
Phosphorous	1.3	19	10	6.5												
Formaldehyde	1.3	2.272	1.667	1.675												
Benzene	< 0.1	0.006	0.007	0.0071												
Toluene	< 0.1	0.0021	0.0015	0.0017												
Xylene	< 0.1	< 0.003	< 0.003	< 0.003												
Phenol		0.022	0.018	0.014												
2,4-Dimethyl phenol		0.006	0.008	< 0.025												
Total Cresols		0.22	0.22	0.21												
Iron													0.3	< 0.04	< 0.04	20
Manganese													9.4	11	14	14
Tetrachloroethylene		< 0.002	0.0051	0.0048												

(1) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designation," October 1990. No record of sampling date. No laboratory data.
(2) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes," January 1992. No record of sampling date. No laboratory data.
(3) Results taken from laboratory data of samples collected 11/16/92.
(4) Results taken from laboratory data of samples collected 10/8/93.
(5) Results taken from laboratory data of samples collected 12/18/93.

TABLE 13.3

PRIMARY SETTLING BASIN SEDIMENT

EP Toxicity Test

Parameter mg/L	11/28/83[1] #2 & #3	2/4/85[2] Composite	2/23/87[3]	10/20/87[4]	10/12/88[5] 1	2	3	1991[6] 1	2	3
Arsenic	0.003	< 0.001	< 0.001	< 0.003	< 0.004	< 0.004	< 0.004	< 0.006	< 0.006	< 0.006
Barium	< 0.2	0.8	1	0.68	0.86	0.84	0.89	0.22	< 0.05	0.085
Cadmium	< 0.01	0.1	0.02	0.017	0.065	0.099	0.075	0.056	0.0086	0.023
Copper	< 0.02	0.02	< 0.02	< 0.01	0.09	0.09	0.11	< 0.02	< 0.02	< 0.02
Chromium	< 0.05	< 0.05	0.13	0.01	0.03	0.02	0.02	< 0.1	0.011	0.011
Cyanide	< 0.02	< 0.02								
Lead	< 0.8	0.2	0.5	1.3	2.3	3	3.2	0.08	0.02	0.066
Mercury	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0002	0.0004	< 0.004	< 0.0004	< 0.0004
Selenium	< 0.001	< 0.001	< 0.002	< 0.003	< 0.02	< 0.02	< 0.02	< 0.006	< 0.006	< 0.006
Silver	< 0.02	< 0.02	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.002	< 0.002	< 0.002
Zinc	235	264	0.25	300	240	270	330	220	200	140
pH	5		10	9.9	9.2	8.9	9			

(1) Results taken from "Waste Characterization Study for Foundry Process Solid Wastes," February 1984. Revised February 1984. No laboratory data.
(2) Results taken from "Waste Characterization Study of Foundry Process Solid Wastes," January 1986. Verified with laboratory data.
(3) Results taken from "Summary Report: Sampling and Analysis of Foundry Process Solid Wastes," July 1987. Verified with laboratory data.
(4) Results taken from "Summary Report: Sampling and Analysis of Foundry Process Solid Wastes," January 1988. No laboratory data available.
(5) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes fro Michigan Public Act 641 Disposal Designation," February 1989. Verified with laboratory data.
(6) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes," January 1992. No record of sampling date. No laboratory data.

TABLE 13.4

PRIMARY SETTLING BASIN SEDIMENT

VOCs/BNEs/Formaldehyde

Parameter ug/kg	10/12/88[1]	10\90[2]	1991[3]	11\16\92[4]				10/8/93[5]			
				1	2	3	4	1	2	3	4
Methylene Chloride	< 5	3	< 10	< 5	< 5	< 5	< 5	14	14	10	< 5
Chloroform	< 2.5	< 1	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,1-TCA	< 10	< 1	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	6
Benzene	2600	64	48	50	58	63	91	< 5	< 5	< 5	< 5
Toluene	1600	44	22	19	24	29	64	< 5	< 5	< 5	< 5
Xylene			22	22	30	34	59	< 5	< 5	< 5	< 5
Carbon Tetrachloride			< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene			< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene				< 5	< 5	< 5	7	< 5	< 5	< 5	< 5
mg/kg											
B(2-E)P	< 10	0.15	< 6.4								
Butyl P	< 2.5										
Di-n-P	< 2.5										
Dieth P	< 2.5										
Dimeth P	< 2.5										
Di-n-octyl P	< 15										
Phenol				27	29	20	26	20	20	18	9.5
2,4 Dimethyl phenol				3.5	3.6	2.6	3.2	3.1	3.5	3.7	2.3
Triaryl Phosphate Esters				0.86	0.89	0.78	1.9	5.3	7	5.5	5
mg/kg											
Formaldehyde	< 5	< 12.2	3.577					6	2	2.7	38
mg/kg											
Triphenol Phosphate		< 0.2	ND								
Tricesrsol Phosphate		< 1.3	ND								

(1) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designations," Februarty 1989. Verified with laboratory data.

(2) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designation," October 1990. No record of sampling date. No laboratory data.

(3) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes," January 1992. No record of sampling date. No laboratory data.

(4) Results taken from laboratory data of samples collected 11/16/92

(5) Results taken from laboratory data of samples collected 10/8/93.

TABLE 13.5

PRIMARY SETTLING BASIN SEDIMENT

PCBS

Parameter mg/L	11/28/83[1] #2	11/28/83[1] #3	2/4/85[2]	2/23/87[3]	10/20/86[4]	10/12/88[5]	10/90[6]	1991[7]	11/16/92[8] 1	11/16/92[8] 2	11/16/92[8] 3	11/16/92[8] 4
PCB Total												
PCB Constituants												
A1242	0.54	0.45	0.32	< 0.75	< 0.02	< 0.5	< 0.18		< 0.033	< 0.033	< 0.033	< 0.033
A1016				< 0.08	< 0.02	< 0.5	< 0.18		< 0.033	< 0.033	< 0.033	< 0.033
A1221				< 0.08	< 0.02	< 0.5	< 0.18		< 0.033	< 0.033	< 0.033	< 0.033
A1232				< 0.08	< 0.02	< 0.5	< 0.18		< 0.033	< 0.033	< 0.033	< 0.033
A1248				< 0.08	< 0.02	< 0.5	< 0.18	0.96	< 0.033	< 0.033	< 0.033	< 0.033
A1254				< 0.16	< 0.02	< 0.5	< 0.36		< 0.033	< 0.033	< 0.033	< 0.033
A1260				< 0.16	< 0.02	< 0.5	< 0.36		< 0.033	< 0.033	< 0.033	< 0.033

10/8/93[9] 1	2	3	4
0.11	0.075	0.088	0.11
< 0.016	< 0.016	< 0.016	< 0.016
< 0.016	< 0.016	< 0.016	< 0.016
< 0.016	< 0.016	< 0.016	< 0.016
< 0.016	< 0.016	< 0.016	< 0.016
< 0.033	< 0.033	< 0.033	< 0.033
< 0.033	< 0.033	< 0.033	< 0.033

(1) Results taken from "Waste Characterization Study for Foundry Process Solid Wastes," January 1984. Revised February 1984. No laboratory data.

(2) Results taken from "Waste Characterization Study of Foundry Process Solid Wastes," January 1986. Verified with laboratory data.

(3) Results taken from "Summary Report: Sampling and Analysis of Foundry Process Solid Wastes," July 1987. Verified with laboratory data.

(4) Results taken from "Summary Report: Sampling and Analysis of Foundry Process Solid Wastes," January 1988. No laboratory data available.

(5) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designation," February 1989. Verified with laboratory data.

(6) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Desgnation," October 1990. No record of sampling date. No laboratory data.

(7) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes," January 1992. No record of sampling date. No laboratory data.

(8) Results taken from laboratory data of samples collected 11/16/92.

(9) Results taken from laboratory data of samples collected 10/8/93.

TABLE 13.6

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PRIMARY SETTLING BASIN SEDIMENT

Asbestos

Parameter	10\12\88[1]	10\90[2]	1991[3]	11\16\92[4]				10/8/93[5]			
				1	2	3	4	1	2	3	4
Asbestos			0	0	0	0	0	< 1	< 1	< 1	< 1
Chrysotile	0	0									
Amosite	0	0									
Croc	0										

(1) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designation," February 1989. Verified with laboratory data.

(2) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designation," October 1990. No record of sampling date. No laboratory data.

(3) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes," January 1992. No record of sampling date. No laboratory data.

(4) Results taken from laboratory data of samples collected 11/16/92.

(5) Results taken from laboratory data of samples collected 10/8/93.

TABLE 13.7

TABLE 13.8
05/26/89 SEDIMENT SAMPLING

Parameter	Station I.D. Sediment Sampling Results (mg/kg)									Water (mg/L)			
	A	B	C	D	E	F	G	H	I	J*	1	2	3
VOCs													
Chlorobenzene	3.5	<1.0	<1.0	140,000	6200	<1.0	3500	130,000	580	8.2	1.2	<1.0	<1.0
Benzene	<1.0	<1.0	<1.0	4700	<100	2.3	560	4900	<100	<1.0	<1.0	<1.0	<1.0
Toluene	41	<1.0	4.3	<7000	1600	<1.0	88	<6100	<1000	<1.0	<1.0	<1.0	<1.0
PCBs													
A1260	0.4	<0.5	<0.5	45.0	48.0	<0.5	0.8	120.0	7.1	15.0	75.0	57.0	170.0

Note: * J was a water sample

APPENDIX A-2

2002/2005 PRIMARY SETTLING BASIN SEDIMENT ANALYTICAL RESULTS SUMMARY

APPENDIX A-2

2002/2005 PRIMARY SETTLING BASIN SEDIMENT ANALYTICAL RESULTS SUMMARY
NODULAR FACILITY
SAGINAW, MICHIGAN

Sample Location:					*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*
Sample ID:					*1*	*1*	*1*	*2*	*2*	*2*	*3*	*3*	*3*	*4*	*4*	
lab_sample_id					*3020806/7*	*3020808/9*	*3020811*	*3020806/7*	*3020808/9*	*3020811*	*3020806/7*	*3020808/9*	*3020811*	*3020806/7*	*3020808/9*	
Sample Date:					*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	
Parameters:	*Units*	*Res/Non_Res/GW Prot_GW SW Interface Prot* a	*Res/Non_Res/GW Prot_GW Contact Prot* b	*Res/Non_Res/Non Res Drinking Water* c												
Volatile Organic Compounds																
2-Butanone (Methyl ethyl ketone) (MEK)	mg/kg	44	27000	-	6.8 U	-	-	6.8 U	-	-	6.8 U	-	-	6.8 U	-	
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/kg	-	2700	-	6.8 U	-	-	6.8 U	-	-	6.8 U	-	-	6.8 U	-	
Benzene	mg/kg	4	220	-	1.1	-	-	1.2	-	-	1.4	-	-	1.4	-	
Chloromethane (Methyl chloride)	mg/kg	-	1100	-	0.68 U	-	-	0.68 U	-	-	0.68 U	-	-	0.68 U	-	
Ethylbenzene	mg/kg	0.36	140	-	0.14 U	-	-	0.14 U	-	-	0.14 U	-	-	0.14 U	-	
Methyl isoamyl ketone	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Styrene	mg/kg	2.1	270	-	0.14 U	-	-	0.14 U	-	-	0.14 U	-	-	0.14 U	-	
Toluene	mg/kg	5.4	250	-	0.47	-	-	0.54	-	-	0.63	-	-	0.66	-	
Trichloroethene	mg/kg	4	440	-	0.14 U	-	-	0.14 U	-	-	0.14 U	-	-	0.14 U	-	
Xylenes (total)	mg/kg	0.82	150	-	0.205 U	-	-	0.23	-	-	0.28	-	-	0.28	-	
Volatile Organic Compounds - SPLP																
2-Butanone (Methyl ethyl ketone) (MEK)	mg/L	-	-	38	-	-	0.013	-	-	0.005 U	-	-	0.0054	-	-	
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/L	-	-	5.2	-	-	0.011	-	-	0.005 U	-	-	0.005 U	-	-	
Benzene	mg/L	-	-	0.005	-	-	0.0073[c]	-	-	0.001 U	-	-	0.0091[c]	-	-	
Chloromethane (Methyl chloride)	mg/L	-	-	1.1	-	-	0.001 U	-	-	0.001 U	-	-	0.001 U	-	-	
Ethylbenzene	mg/L	-	-	0.074	-	-	0.001 U	-	-	0.001 U	-	-	0.001 U	-	-	
Methyl isoamyl ketone	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Styrene	mg/L	-	-	0.1	-	-	0.001 U	-	-	0.001 U	-	-	0.001 U	-	-	
Toluene	mg/L	-	-	0.79	-	-	0.0053	-	-	0.0023	-	-	0.0051	-	-	
Trichloroethene	mg/L	-	-	0.005	-	-	0.001 U	-	-	0.001 U	-	-	0.001 U	-	-	
Xylenes (total)	mg/L	-	-	0.28	-	-	0.003 U	-	-	0.003 U	-	-	0.003 U	-	-	
Semi-volatile Organic Compounds																
2,4-Dimethylphenol	mg/kg	7.6	10000	-	2.05	-	-	3.36	-	-	2.62	-	-	2.8	-	
2-Methylphenol	mg/kg	1	16000	-	6.6[a]	-	-	12.3[a]	-	-	8.21[a]	-	-	9.78[a]	-	
3&4-Methylphenol	mg/kg	1	16000	-	-	-	-	-	-	-	-	-	-	-	-	
3,4-Dichlorophenol	mg/kg	-	-	-	6.36	-	-	11.9	-	-	7.34	-	-	6.51	-	
4-Chloro-3-methylphenol	mg/kg	0.28	3000	-	0.47 U	-	-	0.47 U	-	-	0.47 U	-	-	0.47 U	-	
Acenaphthene	mg/kg	8.7	970	-	0.47 U	-	-	0.446	-	-	0.47 U	-	-	0.47 U	-	
Aniline	mg/kg	0.33	2800	-	-	-	-	-	-	-	-	-	-	-	-	
Anthracene	mg/kg	-	41	-	0.526	-	-	0.777	-	-	0.642	-	-	0.62	-	
Benzyl chloride	mg/kg	-	72	-	0.47 U	-	-	0.47 U	-	-	0.47 U	-	-	0.47 U	-	
Fluoranthene	mg/kg	5.5	730	-	0.24 U	-	-	0.519	-	-	0.459	-	-	0.24 U	-	
Hexachlorobenzene	mg/kg	0.35	8.2	-	0.47 U	-	-	0.47 U	-	-	0.47 U	-	-	0.47 U	-	
Naphthalene	mg/kg	0.73	2100	-	2.06[a]	-	-	3.53[a]	-	-	2.87[a]	-	-	2.56[a]	-	
Nitrobenzene	mg/kg	3.6	220	-	0.47 U	-	-	0.47 U	-	-	0.47 U	-	-	0.47 U	-	
Phenanthrene	mg/kg	2.1	1100	-	1.08	-	-	1.72	-	-	1.55	-	-	1.44	-	
Phenol	mg/kg	9	12000	-	20.1 D[a]	-	-	43.3 D[a]	-	-	29.4 D[a]	-	-	32.2 D[a]	-	

APPENDIX A-2

2002/2005 PRIMARY SETTLING BASIN SEDIMENT ANALYTICAL RESULTS SUMMARY
NODULAR FACILITY
SAGINAW, MICHIGAN

Sample Location:					*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*
Sample ID:					*1*	*1*	*1*	*2*	*2*	*2*	*3*	*3*	*3*	*4*	*4*	
lab_sample_id					*3020806/7*	*3020808/9*	*3020811*	*3020806/7*	*3020808/9*	*3020811*	*3020806/7*	*3020808/9*	*3020811*	*3020806/7*	*3020808/9*	
Sample Date:					*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	
Parameters:	*Units*	*Res/Non_Res/GW Prot_GW SW Interface Prot* a	*Res/Non_Res/GW Prot_GW Contact Prot* b	*Res/Non_Res/Non Res Drinking Water* c												
Semi-volatile Organic Compounds - SPLP																
2,4-Dimethylphenol	mg/L	-	-	1	-	-	0.005 U	-	-	0.005 U	-	-	0.005 U	-	-	
2-Methylphenol	mg/L	-	-	1	-	-	0.005 U	-	-	0.0225	-	-	0.00542	-	-	
3&4-Methylphenol	mg/L	-	-	1	-	-	-	-	-	-	-	-	-	-	-	
3,4-Dichlorophenol	mg/L	-	-	-	-	-	0.01 U	-	-	0.01 U	-	-	0.01 U	-	-	
4-Chloro-3-methylphenol	mg/L	-	-	0.42	-	-	0.005 U	-	-	0.005 U	-	-	0.005 U	-	-	
Acenaphthene	mg/L	-	-	3.8	-	-	0.005 U	-	-	0.005 U	-	-	0.005 U	-	-	
Aniline	mg/L	-	-	0.22	-	-	-	-	-	-	-	-	-	-	-	
Anthracene	mg/L	-	-	0.043	-	-	0.005 U	-	-	0.005 U	-	-	0.005 U	-	-	
Benzyl chloride	mg/L	-	-	0.032	-	-	0.005 U	-	-	0.005 U	-	-	0.005 U	-	-	
Fluoranthene	mg/L	-	-	0.21	-	-	0.005 U	-	-	0.005 U	-	-	0.005 U	-	-	
Hexachlorobenzene	mg/L	-	-	0.001	-	-	0.005 U	-	-	0.005 U	-	-	0.005 U	-	-	
Naphthalene	mg/L	-	-	1.5	-	-	0.00823	-	-	0.005 U	-	-	0.005 U	-	-	
Nitrobenzene	mg/L	-	-	0.0096	-	-	0.005 U	-	-	0.005 U	-	-	0.005 U	-	-	
Phenanthrene	mg/L	-	-	0.15	-	-	0.005 U	-	-	0.005 U	-	-	0.005 U	-	-	
Phenol	mg/L	-	-	13	-	-	0.005 U	-	-	0.005 U	-	-	0.005 U	-	-	
Metals																
Aluminum	mg/kg	-	1000000	-	15000	-	-	11000	-	-	22000	-	-	19000	-	
Antimony	mg/kg	94	49000	-	-	-	-	-	-	-	-	-	-	-	-	
Arsenic	mg/kg	4.6	2000	-	5.3[a]	-	-	4.8[a]	-	-	5.9[a]	-	-	5.8[a]	-	
Barium	mg/kg	-	1000000	-	150	-	-	130	-	-	160	-	-	140	-	
Beryllium	mg/kg	-	1000000	-	-	-	-	-	-	-	-	-	-	-	-	
Boron	mg/kg	100	1000000	-	-	-	-	-	-	-	-	-	-	-	-	
Cadmium	mg/kg	-	230000	-	13	-	-	9.8	-	-	7.5	-	-	10	-	
Chromium	mg/kg	3.3	140000	-	80[a]	-	-	73[a]	-	-	72[a]	-	-	68[a]	-	
Chromium VI (hexavalent)	mg/kg	3.3	140000	-	0.05 U	-	-	0.05 U	-	-	0.48	-	-	0.05 U	-	
Copper	mg/kg	-	1000000	-	120	-	-	110	-	-	110	-	-	120	-	
Iron	mg/kg	-	1000000	-	26000	-	-	25000	-	-	26000	-	-	24000	-	
Lead	mg/kg	-	-	-	1200	-	-	840	-	-	790	-	-	1300	-	
Manganese	mg/kg	-	180000	-	3900	-	-	3200	-	-	3800	-	-	4500	-	
Mercury	mg/kg	0.05	47	-	0.0529[a]	-	-	0.052 U	-	-	0.052 U	-	-	0.0772[a]	-	
Nickel	mg/kg	-	1000000	-	16	-	-	17	-	-	15	-	-	13	-	
Selenium	mg/kg	0.4	78000	-	1.5 J[a]	-	-	1.5 J[a]	-	-	2.3 J[a]	-	-	2.1 J[a]	-	
Silver	mg/kg	0.1	200000	-	3.6[a]	-	-	2.8[a]	-	-	2.9[a]	-	-	3.4[a]	-	
Thallium	mg/kg	4.2	15000	-	-	-	-	-	-	-	-	-	-	-	-	
Vanadium	mg/kg	190	1000000	-	-	-	-	-	-	-	-	-	-	-	-	
Zinc	mg/kg	-	1000000	-	5200	-	-	3000	-	-	2700	-	-	3700	-	

APPENDIX A-2

2002/2005 PRIMARY SETTLING BASIN SEDIMENT ANALYTICAL RESULTS SUMMARY
NODULAR FACILITY
SAGINAW, MICHIGAN

Sample Location:					*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*
Sample ID:					*1*	*1*	*1*	*2*	*2*	*2*	*3*	*3*	*3*	*4*	*4*	*4*
lab_sample_id					*3020806/7*	*3020808/9*	*3020811*	*3020806/7*	*3020808/9*	*3020811*	*3020806/7*	*3020808/9*	*3020811*	*3020806/7*	*3020808/9*	*3020811*
Sample Date:					*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*
Parameters:	*Units*	*Res/Non_Res/GW Prot_GW SW Interface Prot* a	*Res/Non_Res/GW Prot_GW Contact Prot* b	*Res/Non_Res/Non Res Drinking Water* c												
Metals - TCLP																
Aluminum	mg/L	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-
Antimony	mg/L	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	mg/L	-	-	0.01	-	0.012 J[c]	-	-	0.015 J[c]	-	-	0.012 J[c]	-	-	0.018 J[c]	
Barium	mg/L	-	-	2	-	0.79	-	-	1.1	-	-	0.65	-	-	0.42	
Beryllium	mg/L	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	
Boron	mg/L	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	
Cadmium	mg/L	-	-	0.005	-	0.0099 J[c]	-	-	0.0055 J[c]	-	-	0.0039 J	-	-	0.0053 J[c]	
Chromium	mg/L	-	-	0.1	-	0.02 U	-	-	0.02 U	-	-	0.02 U	-	-	0.02 U	
Copper	mg/L	-	-	1	-	-	-	-	-	-	-	-	-	-	-	
Iron	mg/L	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	
Lead	mg/L	-	-	0.004	-	0.59[c]	-	-	0.31[c]	-	-	0.18[c]	-	-	0.087[c]	
Manganese	mg/L	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	
Mercury	mg/L	-	-	0.002	-	0.0002 U	-	-	0.0002 U	-	-	0.0002 U	-	-	0.0002 U	
Nickel	mg/L	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	
Selenium	mg/L	-	-	0.05	-	0.04 U	-	-	0.04 U	-	-	0.04 U	-	-	0.04 U	
Silver	mg/L	-	-	0.098	-	0.004 U	-	-	0.004 U	-	-	0.004 U	-	-	0.004 U	
Thallium	mg/L	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	
Vanadium	mg/L	-	-	0.062	-	-	-	-	-	-	-	-	-	-	-	
Zinc	mg/L	-	-	5	-	-	-	-	-	-	-	-	-	-	-	
Metals - SPLP																
Aluminum	mg/L	-	-	0.05	-	-	0.1 U	-	-	0.16[c]	-	-	0.1 U	-	-	
Antimony	mg/L	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	
Arsenic	mg/L	-	-	0.01	-	0.0045 J	0.0054 J	-	0.0036 J	0.0037 J	-	0.0037 J	0.0038 J	-	0.004 J	
Barium	mg/L	-	-	2	-	0.081	0.079	-	0.3	0.26	-	0.22	0.25	-	0.26	
Beryllium	mg/L	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	
Boron	mg/L	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	
Cadmium	mg/L	-	-	0.005	-	0.00028 J	0.00028 J	-	0.0026 J	0.0021 J	-	0.00028 J	0.00032 J	-	0.00086 J	
Chromium	mg/L	-	-	0.1	-	0.002 U	0.002 U	-	0.0062	0.0048	-	0.002 U	0.002 U	-	0.0023	
Copper	mg/L	-	-	1	-	-	-	-	-	-	-	-	-	-	-	
Iron	mg/L	-	-	0.3	-	-	0.2 U	-	-	0.61[c]	-	-	0.2 U	-	-	
Lead	mg/L	-	-	0.004	-	0.008[c]	0.0081[c]	-	0.14[c]	0.12[c]	-	0.002 U	0.002 U	-	0.034[c]	
Manganese	mg/L	-	-	0.05	-	-	0.21[c]	-	-	0.68[c]	-	-	0.8[c]	-	-	
Mercury	mg/L	-	-	0.002	-	0.0002 U	-	-	0.0002 U	-	-	0.0002 U	-	-	0.0002 U	
Nickel	mg/L	-	-	0.1	-	-	0.002 U	-	-	0.0033	-	-	0.0049	-	-	
Selenium	mg/L	-	-	0.05	-	0.004 U	0.004 U	-	0.004 U	0.004 U	-	0.004 U	0.004 U	-	0.004 U	
Silver	mg/L	-	-	0.098	-	0.00068	0.0004 U	-	0.00087	0.00049 J	-	0.0004 U	0.00051 J	-	0.0004 U	
Thallium	mg/L	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	
Vanadium	mg/L	-	-	0.062	-	-	-	-	-	-	-	-	-	-	-	
Zinc	mg/L	-	-	5	-	-	0.041	-	-	0.41	-	-	0.087	-	-	

APPENDIX A-2

2002/2005 PRIMARY SETTLING BASIN SEDIMENT ANALYTICAL RESULTS SUMMARY
NODULAR FACILITY
SAGINAW, MICHIGAN

Sample Location:					*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*
Sample ID:					*1*	*1*	*1*	*2*	*2*	*2*	*3*	*3*	*3*	*4*	*4*
lab_sample_id					*3020806/7*	*3020808/9*	*3020811*	*3020806/7*	*3020808/9*	*3020811*	*3020806/7*	*3020808/9*	*3020811*	*3020806/7*	*3020808/9*
Sample Date:					*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*
Parameters:	*Units*	*Res/Non_Res/GW Prot_GW SW Interface Prot* a	*Res/Non_Res/GW Prot_GW Contact Prot* b	*Res/Non_Res/Non Res Drinking Water* c											
Polychlorinated Biphenyls															
Aroclor-1016 (PCB-1016)	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-
Aroclor-1221 (PCB-1221)	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-
Aroclor-1232 (PCB-1232)	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-
Aroclor-1242 (PCB-1242)	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-
Aroclor-1248 (PCB-1248)	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-
Aroclor-1254 (PCB-1254)	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-
Aroclor-1260 (PCB-1260)	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-
Total PCBs	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-
Miscellaneous															
Chloride	mg/L	-	-	250	-	-	-	-	-	-	-	-	-	-	-
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
General Chemistry															
Ammonia-N	mg/L	-	-	-	3.7 D	-	-	6.2 D	-	-	3.7 D	-	-	2.9 D	-
Biochemical oxygen demand (BOD)	mg/L	-	-	-	42	-	-	50	-	-	23	-	-	39	-
Chemical oxygen demand (COD)	mg/kg	-	-	-	33	-	-	39	-	-	39	-	-	45	-
Formaldehyde	mg/kg	2.4	60000	-	44.3[a]	-	-	36.5[a]	-	-	41[a]	-	-	34.8[a]	-
Percent solids	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH, lab	s.u.	-	-	-	8.16	-	-	7.79	-	-	7.54	-	-	7.23	-
Phosphorus	mg/L	-	-	240	20 D	-	-	19 D	-	-	51 D	-	-	41 D	-
Specific gravity	sg	-	-	-	1.31	-	-	1.38	-	-	1.27	-	-	1.25	-
Total solids	%	-	-	-	42.9	-	-	50.9	-	-	38.7	-	-	36.4	-
General Chemistry - TCLP															
Chloride	mg/L	-	-	250	-	23	-	-	24	-	-	25	-	-	22
Fluoride	mg/L	-	-	-	-	2	-	-	4.5	-	-	6.9	-	-	5.6
General Chemistry - SPLP															
Chloride	mg/L	-	-	250	-	16	-	-	14	-	-	17	-	-	17
Fluoride	mg/L	-	-	-	-	3.8	-	-	4.7	-	-	8.8	-	-	9.9
Formaldehyde	mg/L	-	-	3.8	-	-	0.461	-	-	0.1 U	-	-	0.1 U	-	-

Notes:

D Compounds at secondary dilution factor.
J Estimated concentration.
U Not present at or above the associated value.
- Not analyzed.
Exceeds Criteria.

APPENDIX A-2

2002/2005 PRIMARY SETTLING BASIN SEDIMENT ANALYTICAL RESULTS SUMMARY
NODULAR FACILITY
SAGINAW, MICHIGAN

Sample Location:				*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*
Sample ID:				*4*	*5*	*6*	*7*	*8*	*A5E240221-1*	*A5E240221-2*	*A5E240221-3*	*A5E240221-4*	*A5E240225-1*	*A5E240225-2*
lab_sample_id				*3020811*	*3020811*	*3020811*	*3020811*	*3020811*	*A5E240221-1*	*A5E240221-2*	*A5E240221-3*	*A5E240221-4*	*A5E240225-1*	*A5E240225-2*
Sample Date:				*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*
Parameters:	*Units*	*Res/Non_Res/GW Prot_GW SW Interface Prot* a	*Res/Non_Res/GW Prot_GW Contact Prot* b	*Res/Non_Res/Non Res Drinking Water* c										
Volatile Organic Compounds														
2-Butanone (Methyl ethyl ketone) (MEK)	mg/kg	44	27000	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/kg	-	2700	-	-	-	-	-	-	-	-	-	-	-
Benzene	mg/kg	4	220	-	-	-	-	-	-	-	-	-	-	-
Chloromethane (Methyl chloride)	mg/kg	-	1100	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	0.36	140	-	-	-	-	-	-	-	-	-	-	-
Methyl isoamyl ketone	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	mg/kg	2.1	270	-	-	-	-	-	-	-	-	-	-	-
Toluene	mg/kg	5.4	250	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	mg/kg	4	440	-	-	-	-	-	-	-	-	-	-	-
Xylenes (total)	mg/kg	0.82	150	-	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds - SPLP														
2-Butanone (Methyl ethyl ketone) (MEK)	mg/L	-	-	38	0.0052	0.0091	0.005 U	0.014	0.0051	-	-	-	-	0.01 U	0.01 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/L	-	-	5.2	0.005 U	0.0059	0.005 U	0.005 U	0.005 U	-	-	-	-	-	-
Benzene	mg/L	-	-	0.005	0.01[c]	0.0076[c]	0.0089[c]	0.008[c]	0.011[c]	-	-	-	-	0.0013	0.001 U
Chloromethane (Methyl chloride)	mg/L	-	-	1.1	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U	0.001 U
Ethylbenzene	mg/L	-	-	0.074	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U	0.001 U
Methyl isoamyl ketone	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	0.01 U	0.01 U
Styrene	mg/L	-	-	0.1	0.0043	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U	0.001 U
Toluene	mg/L	-	-	0.79	0.0069	0.0057	0.003	0.0054	0.0043	-	-	-	-	0.001 U	0.001 U
Trichloroethene	mg/L	-	-	0.005	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	-	0.001 U	0.001 U
Xylenes (total)	mg/L	-	-	0.28	0.0043	0.004	0.003 U	0.003 U	0.0047	-	-	-	-	0.002 U	0.002 U
Semi-volatile Organic Compounds														
2,4-Dimethylphenol	mg/kg	7.6	10000	-	-	-	-	-	-	-	-	-	-	-	-
2-Methylphenol	mg/kg	1	16000	-	-	-	-	-	-	-	-	-	-	-	-
3&4-Methylphenol	mg/kg	1	16000	-	-	-	-	-	-	-	-	-	-	-	-
3,4-Dichlorophenol	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.28	3000	-	-	-	-	-	-	-	-	-	-	-	-
Acenaphthene	mg/kg	8.7	970	-	-	-	-	-	-	-	-	-	-	-	-
Aniline	mg/kg	0.33	2800	-	-	-	-	-	-	-	-	-	-	-	-
Anthracene	mg/kg	-	41	-	-	-	-	-	-	-	-	-	-	-	-
Benzyl chloride	mg/kg	-	72	-	-	-	-	-	-	-	-	-	-	-	-
Fluoranthene	mg/kg	5.5	730	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.35	8.2	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	0.73	2100	-	-	-	-	-	-	-	-	-	-	-	-
Nitrobenzene	mg/kg	3.6	220	-	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene	mg/kg	2.1	1100	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	mg/kg	9	12000	-	-	-	-	-	-	-	-	-	-	-	-

APPENDIX A-2

2002/2005 PRIMARY SETTLING BASIN SEDIMENT ANALYTICAL RESULTS SUMMARY
NODULAR FACILITY
SAGINAW, MICHIGAN

Sample Location:				*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*
Sample ID:				*4*	*5*	*6*	*7*	*8*	*A5E240221-1*	*A5E240221-2*	*A5E240221-3*	*A5E240221-4*	*A5E240225-1*	*A5E240225-2*
lab_sample_id				*3020811*	*3020811*	*3020811*	*3020811*	*3020811*	*A5E240221-1*	*A5E240221-2*	*A5E240221-3*	*A5E240221-4*	*A5E240225-1*	*A5E240225-2*
Sample Date:				*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*
Parameters:	*Units*	*Res/Non_Res/GW Prot_GW SW Interface Prot*	*Res/Non_Res/GW Prot_GW Contact Prot*	*Res/Non_Res/Non Res Drinking Water*										
		a	b	c										
Semi-volatile Organic Compounds - SPLP														
2,4-Dimethylphenol	mg/L	-	-	1	0.005 U	0.0198	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U	0.005 U
2-Methylphenol	mg/L	-	-	1	0.005 U	0.044	0.0237	0.005 U	0.005 U	-	-	-	-	0.005 U	0.005 U
3&4-Methylphenol	mg/L	-	-	1	-	-	-	-	-	-	-	-	-	0.005 U	0.005 U
3,4-Dichlorophenol	mg/L	-	-	-	0.01 U	0.0147	0.01 U	0.01 U	0.01 U	-	-	-	-	-	-
4-Chloro-3-methylphenol	mg/L	-	-	0.42	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U	0.005 U
Acenaphthene	mg/L	-	-	3.8	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U	0.005 U
Aniline	mg/L	-	-	0.22	-	-	-	-	-	-	-	-	-	0.01 U	0.01 U
Anthracene	mg/L	-	-	0.043	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U	0.005 U
Benzyl chloride	mg/L	-	-	0.032	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U	0.005 U
Fluoranthene	mg/L	-	-	0.21	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U	0.005 U
Hexachlorobenzene	mg/L	-	-	0.001	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U	0.005 U
Naphthalene	mg/L	-	-	1.5	0.005 U	0.011	0.0076	0.00845	0.005 U	-	-	-	-	0.005 U	0.005 U
Nitrobenzene	mg/L	-	-	0.0096	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-	0.002 U	0.002 U
Phenanthrene	mg/L	-	-	0.15	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U	0.005 U
Phenol	mg/L	-	-	13	0.005 U	0.0479	0.005 U	0.005 U	0.005 U	-	-	-	-	0.005 U	0.005 U
Metals														
Aluminum	mg/kg	-	1000000	-	-	-	-	-	-	-	-	-	-	-	-
Antimony	mg/kg	94	49000	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	mg/kg	4.6	2000	-	-	-	-	-	-	-	-	-	-	-	-
Barium	mg/kg	-	1000000	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium	mg/kg	-	1000000	-	-	-	-	-	-	-	-	-	-	-	-
Boron	mg/kg	100	1000000	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	-	230000	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/kg	3.3	140000	-	-	-	-	-	-	-	-	-	-	-	-
Chromium VI (hexavalent)	mg/kg	3.3	140000	-	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/kg	-	1000000	-	-	-	-	-	-	-	-	-	-	-	-
Iron	mg/kg	-	1000000	-	-	-	-	-	-	-	-	-	-	-	-
Lead	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese	mg/kg	-	180000	-	-	-	-	-	-	-	-	-	-	-	-
Mercury	mg/kg	0.05	47	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	mg/kg	-	1000000	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	mg/kg	0.4	78000	-	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/kg	0.1	200000	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	mg/kg	4.2	15000	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	mg/kg	190	1000000	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/kg	-	1000000	-	-	-	-	-	-	-	-	-	-	-	-

APPENDIX A-2

2002/2005 PRIMARY SETTLING BASIN SEDIMENT ANALYTICAL RESULTS SUMMARY
NODULAR FACILITY
SAGINAW, MICHIGAN

Sample Location:					*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*
Sample ID:					*4*	*5*	*6*	*7*	*8*	*A5E240221-1*	*A5E240221-2*	*A5E240221-3*	*A5E240221-4*	*A5E240225-1*	*A5E240225-2*
lab_sample_id					*3020811*	*3020811*	*3020811*	*3020811*	*3020811*	*A5E240221-1*	*A5E240221-2*	*A5E240221-3*	*A5E240221-4*	*A5E240225-1*	*A5E240225-2*
Sample Date:					*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*
Parameters:	*Units*	*Res/Non_Res/GW Prot_GW SW Interface Prot* a	*Res/Non_Res/GW Prot_GW Contact Prot* b	*Res/Non_Res/Non Res Drinking Water* c											
Metals - TCLP															
Aluminum	mg/L	-	-	0.05	-	-	-	-	-	4[c]	2.7[c]	1.6[c]	3.2[c]	-	-
Antimony	mg/L	-	-	0.006	-	-	-	-	-	0.3 U	0.3 U	0.3 U	0.3 U	-	-
Arsenic	mg/L	-	-	0.01	-	-	-	-	-	0.5 U	0.5 U	0.5 U	0.5 U	-	-
Barium	mg/L	-	-	2	-	-	-	-	-	10 U	10 U	10 U	10 U	-	-
Beryllium	mg/L	-	-	0.004	-	-	-	-	-	0.005 U	0.005 U	0.005 U	0.005 U	-	-
Boron	mg/L	-	-	0.5	-	-	-	-	-	0.2 U	0.2 U	0.2 U	0.2 U	-	-
Cadmium	mg/L	-	-	0.005	-	-	-	-	-	0.1 U	0.1 U	0.1 U	0.1 U	-	-
Chromium	mg/L	-	-	0.1	-	-	-	-	-	0.5 U	0.5 U	0.5 U	0.5 U	-	-
Copper	mg/L	-	-	1	-	-	-	-	-	1 U	1 U	1 U	1 U	-	-
Iron	mg/L	-	-	0.3	-	-	-	-	-	40[c]	75.3[c]	32.9[c]	44.7[c]	-	-
Lead	mg/L	-	-	0.004	-	-	-	-	-	0.5 U	0.5 U	0.5 U	0.5 U	-	-
Manganese	mg/L	-	-	0.05	-	-	-	-	-	5[c]	5.1[c]	6.2[c]	5.3[c]	-	-
Mercury	mg/L	-	-	0.002	-	-	-	-	-	0.002 U	0.002 U	0.002 U	0.002 U	-	-
Nickel	mg/L	-	-	0.1	-	-	-	-	-	0.04 U	0.078	0.047	0.052	-	-
Selenium	mg/L	-	-	0.05	-	-	-	-	-	0.25 U	0.25 U	0.25 U	0.25 U	-	-
Silver	mg/L	-	-	0.098	-	-	-	-	-	0.5 U	0.5 U	0.5 U	0.5 U	-	-
Thallium	mg/L	-	-	0.002	-	-	-	-	-	2 U	2 U	2 U	2 U	-	-
Vanadium	mg/L	-	-	0.062	-	-	-	-	-	0.05 U	0.05 U	0.05 U	0.05 U	-	-
Zinc	mg/L	-	-	5	-	-	-	-	-	1 U	1 U	1.2	1 U	-	-
Metals - SPLP															
Aluminum	mg/L	-	-	0.05	0.1[c]	0.1 U	0.1 U	0.1 U	0.1 U	0.072[c]	0.079[c]	0.174[c]	0.0774[c]	0.142[c]	0.05 U
Antimony	mg/L	-	-	0.006	-	-	-	-	-	0.0049	0.0034	0.0089[c]	0.0052	0.0112[c]	0.005
Arsenic	mg/L	-	-	0.01	0.0034 J	0.0046 J	0.0064 J	0.003 J	0.0083 J	0.002 U	0.002 U	0.0027	0.002 U	0.002 U	0.002 U
Barium	mg/L	-	-	2	0.23	0.11	0.11	0.23	0.12	0.0095	0.0094	0.0094	0.0093	0.0072	0.0115
Beryllium	mg/L	-	-	0.004	-	-	-	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Boron	mg/L	-	-	0.5	-	-	-	-	-	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Cadmium	mg/L	-	-	0.005	0.00074 J	0.00023 J	0.00031 J	0.00025 J	0.00039 J	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
Chromium	mg/L	-	-	0.1	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.0023	0.002 U	0.002 U	0.002 U
Copper	mg/L	-	-	1	-	-	-	-	-	0.002 U	0.002	0.0062	0.002	-	-
Iron	mg/L	-	-	0.3	0.26	0.2 U	0.2 U	0.2 U	0.2 U	0.234	0.226	0.455[c]	0.249	0.274	0.153
Lead	mg/L	-	-	0.004	0.029[c]	0.0031	0.0077[c]	0.002 U	0.003	0.0085[c]	0.0075[c]	0.0523[c]	0.0152[c]	0.0308[c]	0.0042[c]
Manganese	mg/L	-	-	0.05	1[c]	0.14[c]	0.17[c]	0.56[c]	0.92[c]	0.669[c]	0.51[c]	0.362[c]	0.503[c]	0.253[c]	0.218[c]
Mercury	mg/L	-	-	0.002	-	-	-	-	-	0.0002 U	0.0002 U	0.0002 U	0.0002 U	-	-
Nickel	mg/L	-	-	0.1	0.0048	0.0021	0.0033	0.0031	0.0042	0.0037	0.0064	0.0026	0.0032	0.002 U	0.0021
Selenium	mg/L	-	-	0.05	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.002 U	0.002	0.002 U	0.002 U	0.002 U
Silver	mg/L	-	-	0.098	0.0004 U	0.0004 U	0.0004 U	0.0004 U	0.00069 J	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
Thallium	mg/L	-	-	0.002	-	-	-	-	-	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vanadium	mg/L	-	-	0.062	-	-	-	-	-	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Zinc	mg/L	-	-	5	0.16	0.025	0.034	0.043	0.069	0.0167	0.0147	0.0791	0.0294	0.064	0.0134

APPENDIX A-2

2002/2005 PRIMARY SETTLING BASIN SEDIMENT ANALYTICAL RESULTS SUMMARY
NODULAR FACILITY
SAGINAW, MICHIGAN

Sample Location:					*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*
Sample ID:					*4*	*5*	*6*	*7*	*8*	*A5E240221-1*	*A5E240221-2*	*A5E240221-3*	*A5E240221-4*	*A5E240225-1*	*A5E240225-2*
lab_sample_id					*3020811*	*3020811*	*3020811*	*3020811*	*3020811*	*A5E240221-1*	*A5E240221-2*	*A5E240221-3*	*A5E240221-4*	*A5E240225-1*	*A5E240225-2*
Sample Date:					*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*2/28/2002*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*
Parameters:	*Units*	*Res/Non_Res/GW Prot_GW SW Interface Prot*	*Res/Non_Res/GW Prot_GW Contact Prot*	*Res/Non_Res/Non Res Drinking Water*											
		a	b	c											
Polychlorinated Biphenyls															
Aroclor-1016 (PCB-1016)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor-1221 (PCB-1221)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor-1232 (PCB-1232)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor-1242 (PCB-1242)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor-1248 (PCB-1248)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor-1254 (PCB-1254)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor-1260 (PCB-1260)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PCBs	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Miscellaneous															
Chloride	mg/L	-	-	250	-	-	-	-	-	14.5	14.3	13.8	13.9	-	-
Fluoride	mg/L	-	-	-	-	-	-	-	-	1 U	1	3.2	1.2	-	-
General Chemistry															
Ammonia-N	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biochemical oxygen demand (BOD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chemical oxygen demand (COD)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Formaldehyde	mg/kg	2.4	60000	-	-	-	-	-	-	-	-	-	-	-	-
Percent solids	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH, lab	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	-	-	240	-	-	-	-	-	-	-	-	-	-	-
Specific gravity	sg	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total solids	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-
General Chemistry - TCLP															
Chloride	mg/L	-	-	250	-	-	-	-	-	-	-	-	-	-	-
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
General Chemistry - SPLP															
Chloride	mg/L	-	-	250	-	-	-	-	-	-	-	-	-	-	-
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Formaldehyde	mg/L	-	-	3.8	0.209	0.535	0.103	0.108	0.1 U	-	-	-	-	0.1 U	0.11

Notes:

D	Compounds at secondary dilution factor.
J	Estimated concentration.
U	Not present at or above the associated value.
-	Not analyzed.
	Exceeds Criteria.

APPENDIX A-2

2002/2005 PRIMARY SETTLING BASIN SEDIMENT ANALYTICAL RESULTS SUMMARY
NODULAR FACILITY
SAGINAW, MICHIGAN

Sample Location:					*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*
Sample ID:					*A5E240225-3*	*A5E240225-4*	*A5E240225-5*	*A5E240225-6*	*A5E240225-7*	*A5E240225-8*	*A5E240213-1*	*A5E240213-2*	*A5E240213-3*	*A5E240213-4*
lab_sample_id					*A5E240225-3*	*A5E240225-4*	*A5E240225-5*	*A5E240225-6*	*A5E240225-7*	*A5E240225-8*	*A5E240213-1*	*A5E240213-2*	*A5E240213-3*	*A5E240213-4*
Sample Date:					*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/20/2005*	*5/20/2005*	*5/20/2005*	*5/20/2005*
Parameters:	*Units*	*Res/Non_Res/GW Prot_GW SW Interface Prot* a	*Res/Non_Res/GW Prot_GW Contact Prot* b	*Res/Non_Res/Non Res Drinking Water* c										
Volatile Organic Compounds														
2-Butanone (Methyl ethyl ketone) (MEK)	mg/kg	44	27000	-	-	-	-	-	-	-	6.4 UD	6.4 UD	6.4 UD	6.4 UD
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/kg	-	2700	-	-	-	-	-	-	-	-	-	-	-
Benzene	mg/kg	4	220	-	-	-	-	-	-	-	0.42 UD	0.78 D	0.42 UD	0.42 UD
Chloromethane (Methyl chloride)	mg/kg	-	1100	-	-	-	-	-	-	-	2.1 UD	2.1 UD	2.1 UD	2.1 UD
Ethylbenzene	mg/kg	0.36	140	-	-	-	-	-	-	-	0.42 UD	0.42 UD	0.42 UD	0.42 UD
Methyl isoamyl ketone	mg/kg	-	-	-	-	-	-	-	-	-	21 UD	21 UD	21 UD	21 UD
Styrene	mg/kg	2.1	270	-	-	-	-	-	-	-	0.42 UD	0.42 UD	0.42 UD	0.42 UD
Toluene	mg/kg	5.4	250	-	-	-	-	-	-	-	17 D[a]	7.2 D[a]	7.4 D[a]	16 D[a]
Trichloroethene	mg/kg	4	440	-	-	-	-	-	-	-	0.42 UD	0.42 UD	0.42 UD	0.42 UD
Xylenes (total)	mg/kg	0.82	150	-	-	-	-	-	-	-	1.3 UD	1.3 UD	1.3 UD	1.3 UD
Volatile Organic Compounds - SPLP														
2-Butanone (Methyl ethyl ketone) (MEK)	mg/L	-	-	38	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	-	-	-	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/L	-	-	5.2	-	-	-	-	-	-	-	-	-	-
Benzene	mg/L	-	-	0.005	0.001 U	0.0031	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	-
Chloromethane (Methyl chloride)	mg/L	-	-	1.1	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	-
Ethylbenzene	mg/L	-	-	0.074	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	-
Methyl isoamyl ketone	mg/L	-	-	-	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	-	-	-	-
Styrene	mg/L	-	-	0.1	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	-
Toluene	mg/L	-	-	0.79	0.001 U	0.001 U	0.001 U	0.048	0.023	0.001 U	-	-	-	-
Trichloroethene	mg/L	-	-	0.005	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	-
Xylenes (total)	mg/L	-	-	0.28	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	-	-	-	-
Semi-volatile Organic Compounds														
2,4-Dimethylphenol	mg/kg	7.6	10000	-	-	-	-	-	-	-	12 UD	12 UD	12 UD	12 UD
2-Methylphenol	mg/kg	1	16000	-	-	-	-	-	-	-	12 UD	12 UD	12 UD	12 UD
3&4-Methylphenol	mg/kg	1	16000	-	-	-	-	-	-	-	12 UD	12 D[a]	12 UD	12 UD
3,4-Dichlorophenol	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.28	3000	-	-	-	-	-	-	-	12 UD	12 UD	12 UD	12 UD
Acenaphthene	mg/kg	8.7	970	-	-	-	-	-	-	-	12 UD	12 UD	12 UD	12 UD
Aniline	mg/kg	0.33	2800	-	-	-	-	-	-	-	12 UD	12 UD	12 UD	12 UD
Anthracene	mg/kg	-	41	-	-	-	-	-	-	-	12 UD	12 UD	12 UD	12 UD
Benzyl chloride	mg/kg	-	72	-	-	-	-	-	-	-	12 UD	12 UD	12 UD	12 UD
Fluoranthene	mg/kg	5.5	730	-	-	-	-	-	-	-	12 UD	12 UD	12 UD	12 UD
Hexachlorobenzene	mg/kg	0.35	8.2	-	-	-	-	-	-	-	12 UD	12 UD	12 UD	12 UD
Naphthalene	mg/kg	0.73	2100	-	-	-	-	-	-	-	12 UD	12 UD	12 UD	12 UD
Nitrobenzene	mg/kg	3.6	220	-	-	-	-	-	-	-	7.5 UD	7.5 UD	7.5 UD	7.5 UD
Phenanthrene	mg/kg	2.1	1100	-	-	-	-	-	-	-	12 UD	12 UD	12 UD	12 UD
Phenol	mg/kg	9	12000	-	-	-	-	-	-	-	12 UD	32 D[a]	12 UD	12 UD

APPENDIX A-2

2002/2005 PRIMARY SETTLING BASIN SEDIMENT ANALYTICAL RESULTS SUMMARY
NODULAR FACILITY
SAGINAW, MICHIGAN

Sample Location:					*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*
Sample ID:					*A5E240225-3*	*A5E240225-4*	*A5E240225-5*	*A5E240225-6*	*A5E240225-7*	*A5E240225-8*	*A5E240213-1*	*A5E240213-2*	*A5E240213-3*	*A5E240213-4*
lab_sample_id					*A5E240225-3*	*A5E240225-4*	*A5E240225-5*	*A5E240225-6*	*A5E240225-7*	*A5E240225-8*	*A5E240213-1*	*A5E240213-2*	*A5E240213-3*	*A5E240213-4*
Sample Date:					*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/20/2005*	*5/20/2005*	*5/20/2005*	*5/20/2005*
Parameters:	*Units*	*Res/Non_Res/GW Prot_GW SW Interface Prot*	*Res/Non_Res/GW Prot_GW Contact Prot*	*Res/Non_Res/Non Res Drinking Water*										
		a	b	c										
Semi-volatile Organic Compounds - SPLP														
2,4-Dimethylphenol	mg/L	-	-	1	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-
2-Methylphenol	mg/L	-	-	1	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-
3&4-Methylphenol	mg/L	-	-	1	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-
3,4-Dichlorophenol	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	mg/L	-	-	0.42	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-
Acenaphthene	mg/L	-	-	3.8	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-
Aniline	mg/L	-	-	0.22	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	-	-	-	-
Anthracene	mg/L	-	-	0.043	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-
Benzyl chloride	mg/L	-	-	0.032	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-
Fluoranthene	mg/L	-	-	0.21	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-
Hexachlorobenzene	mg/L	-	-	0.001	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-
Naphthalene	mg/L	-	-	1.5	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-
Nitrobenzene	mg/L	-	-	0.0096	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	-	-	-	-
Phenanthrene	mg/L	-	-	0.15	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-
Phenol	mg/L	-	-	13	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-
Metals														
Aluminum	mg/kg	-	1000000	-	-	-	-	-	-	-	27500	20300	27600	28500
Antimony	mg/kg	94	49000	-	-	-	-	-	-	-	2.8 U	2.8 U	2.8 U	2.8 U
Arsenic	mg/kg	4.6	2000	-	-	-	-	-	-	-	**6.8[a]**	**7.9[a]**	**7.1[a]**	**7.3[a]**
Barium	mg/kg	-	1000000	-	-	-	-	-	-	-	86.4	134	114	125
Beryllium	mg/kg	-	1000000	-	-	-	-	-	-	-	0.89 U	1.1	0.89 U	0.89 U
Boron	mg/kg	100	1000000	-	-	-	-	-	-	-	44.6 U	44.6 U	44.6 U	44.6 U
Cadmium	mg/kg	-	230000	-	-	-	-	-	-	-	1.8	3.8	2.2	2.8
Chromium	mg/kg	3.3	140000	-	-	-	-	-	-	-	**43.2[a]**	**65.9[a]**	**60.8[a]**	**63.4[a]**
Chromium VI (hexavalent)	mg/kg	3.3	140000	-	-	-	-	-	-	-	2.8 U	2.8 U	2.8 U	2.8 U
Copper	mg/kg	-	1000000	-	-	-	-	-	-	-	55.7	137	96.4	128
Iron	mg/kg	-	1000000	-	-	-	-	-	-	-	12200	20600	17100	18500
Lead	mg/kg	-	-	-	-	-	-	-	-	-	124	506	312	335
Manganese	mg/kg	-	180000	-	-	-	-	-	-	-	959	2430	1790	1890
Mercury	mg/kg	0.05	47	-	-	-	-	-	-	-	0.45 U	0.45 U	0.45 U	0.45 U
Nickel	mg/kg	-	1000000	-	-	-	-	-	-	-	10	15.6	14.7	13.8
Selenium	mg/kg	0.4	78000	-	-	-	-	-	-	-	**1.8[a]**	**1.8[a]**	**1.2[a]**	**2.5[a]**
Silver	mg/kg	0.1	200000	-	-	-	-	-	-	-	2.2 U	2.2 U	2.2 U	2.2 U
Thallium	mg/kg	4.2	15000	-	-	-	-	-	-	-	0.45 U	0.45 U	0.45 U	0.45
Vanadium	mg/kg	190	1000000	-	-	-	-	-	-	-	14.6	14.8	15.4	18.2
Zinc	mg/kg	-	1000000	-	-	-	-	-	-	-	383	1100	613	711

APPENDIX A-2

2002/2005 PRIMARY SETTLING BASIN SEDIMENT ANALYTICAL RESULTS SUMMARY
NODULAR FACILITY
SAGINAW, MICHIGAN

Sample Location:					*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*
Sample ID:					*A5E240225-3*	*A5E240225-4*	*A5E240225-5*	*A5E240225-6*	*A5E240225-7*	*A5E240225-8*	*A5E240213-1*	*A5E240213-2*	*A5E240213-3*	*A5E240213-4*
lab_sample_id					*A5E240225-3*	*A5E240225-4*	*A5E240225-5*	*A5E240225-6*	*A5E240225-7*	*A5E240225-8*	*A5E240213-1*	*A5E240213-2*	*A5E240213-3*	*A5E240213-4*
Sample Date:					*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/20/2005*	*5/20/2005*	*5/20/2005*	*5/20/2005*
Parameters:	*Units*	*Res/Non_Res/GW Prot_GW SW Interface Prot* a	*Res/Non_Res/GW Prot_GW Contact Prot* b	*Res/Non_Res/Non Res Drinking Water* c										
Metals - TCLP														
Aluminum	mg/L	-	-	0.05	-	-	-	-	-	-	-	-	-	-
Antimony	mg/L	-	-	0.006	-	-	-	-	-	-	-	-	-	-
Arsenic	mg/L	-	-	0.01	-	-	-	-	-	-	-	-	-	-
Barium	mg/L	-	-	2	-	-	-	-	-	-	-	-	-	-
Beryllium	mg/L	-	-	0.004	-	-	-	-	-	-	-	-	-	-
Boron	mg/L	-	-	0.5	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/L	-	-	0.005	-	-	-	-	-	-	-	-	-	-
Chromium	mg/L	-	-	0.1	-	-	-	-	-	-	-	-	-	-
Copper	mg/L	-	-	1	-	-	-	-	-	-	-	-	-	-
Iron	mg/L	-	-	0.3	-	-	-	-	-	-	-	-	-	-
Lead	mg/L	-	-	0.004	-	-	-	-	-	-	-	-	-	-
Manganese	mg/L	-	-	0.05	-	-	-	-	-	-	-	-	-	-
Mercury	mg/L	-	-	0.002	-	-	-	-	-	-	-	-	-	-
Nickel	mg/L	-	-	0.1	-	-	-	-	-	-	-	-	-	-
Selenium	mg/L	-	-	0.05	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	-	-	0.098	-	-	-	-	-	-	-	-	-	-
Thallium	mg/L	-	-	0.002	-	-	-	-	-	-	-	-	-	-
Vanadium	mg/L	-	-	0.062	-	-	-	-	-	-	-	-	-	-
Zinc	mg/L	-	-	5	-	-	-	-	-	-	-	-	-	-
Metals - SPLP														
Aluminum	mg/L	-	-	0.05	0.05 U	0.05 U	0.0615[c]	0.05 U	0.05 U	0.05 U	-	-	-	-
Antimony	mg/L	-	-	0.006	0.002 U	0.0243[c]	0.0103[c]	0.0028	0.0023	0.002 U	-	-	-	-
Arsenic	mg/L	-	-	0.01	0.002 U	0.0068	0.0021	0.0029	0.0025	0.002 U	-	-	-	-
Barium	mg/L	-	-	2	0.0027	0.0032	0.0105	0.0076	0.0111	0.0027	-	-	-	-
Beryllium	mg/L	-	-	0.004	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	-
Boron	mg/L	-	-	0.5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	-	-	-	-
Cadmium	mg/L	-	-	0.005	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	-	-	-	-
Chromium	mg/L	-	-	0.1	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	-	-	-	-
Copper	mg/L	-	-	1	-	-	-	-	-	-	-	-	-	-
Iron	mg/L	-	-	0.3	0.0433	0.0782	0.184	1.03[c]	0.362[c]	0.0521	-	-	-	-
Lead	mg/L	-	-	0.004	0.001 U	0.001 U	0.0207[c]	0.001 U	0.001 U	0.001 U	-	-	-	-
Manganese	mg/L	-	-	0.05	0.0652[c]	0.0564[c]	0.291[c]	0.569[c]	0.366[c]	0.0523[c]	-	-	-	-
Mercury	mg/L	-	-	0.002	-	-	-	-	-	-	-	-	-	-
Nickel	mg/L	-	-	0.1	0.002 U	0.002 U	0.0022	0.0031	0.0027	0.002 U	-	-	-	-
Selenium	mg/L	-	-	0.05	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	-	-	-	-
Silver	mg/L	-	-	0.098	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	-	-	-	-
Thallium	mg/L	-	-	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	-	-	-
Vanadium	mg/L	-	-	0.062	0.005 U	0.007	0.005 U	0.005 U	0.005 U	0.005 U	-	-	-	-
Zinc	mg/L	-	-	5	0.01 U	0.01 U	0.0142	0.01 U	0.01 U	0.01 U	-	-	-	-

APPENDIX A-2

2002/2005 PRIMARY SETTLING BASIN SEDIMENT ANALYTICAL RESULTS SUMMARY
NODULAR FACILITY
SAGINAW, MICHIGAN

Sample Location:					*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*	*Lagoon Sludge*
Sample ID:					*A5E240225-3*	*A5E240225-4*	*A5E240225-5*	*A5E240225-6*	*A5E240225-7*	*A5E240225-8*	*A5E240213-1*	*A5E240213-2*	*A5E240213-3*	*A5E240213-4*
lab_sample_id					*A5E240225-3*	*A5E240225-4*	*A5E240225-5*	*A5E240225-6*	*A5E240225-7*	*A5E240225-8*	*A5E240213-1*	*A5E240213-2*	*A5E240213-3*	*A5E240213-4*
Sample Date:					*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/19/2005*	*5/20/2005*	*5/20/2005*	*5/20/2005*	*5/20/2005*
Parameters:	*Units*	*Res/Non_Res/GW Prot_GW SW Interface Prot*	*Res/Non_Res/GW Prot_GW Contact Prot*	*Res/Non_Res/Non Res Drinking Water*										
		a	b	c										
Polychlorinated Biphenyls														
Aroclor-1016 (PCB-1016)	mg/kg	-	-	-	-	-	-	-	-	-	1.8 U	1.8 U	1.8 U	1.8 U
Aroclor-1221 (PCB-1221)	mg/kg	-	-	-	-	-	-	-	-	-	1.8 U	1.8 U	1.8 U	1.8 U
Aroclor-1232 (PCB-1232)	mg/kg	-	-	-	-	-	-	-	-	-	1.8 U	1.8 U	1.8 U	1.8 U
Aroclor-1242 (PCB-1242)	mg/kg	-	-	-	-	-	-	-	-	-	1.8 U	1.8 U	1.8 U	1.8 U
Aroclor-1248 (PCB-1248)	mg/kg	-	-	-	-	-	-	-	-	-	1.8 U	1.8 U	1.8 U	1.8 U
Aroclor-1254 (PCB-1254)	mg/kg	-	-	-	-	-	-	-	-	-	1.8 U	1.8 U	1.8 U	1.8 U
Aroclor-1260 (PCB-1260)	mg/kg	-	-	-	-	-	-	-	-	-	1.8 U	1.8 U	1.8 U	1.8 U
Total PCBs	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-
Miscellaneous														
Chloride	mg/L	-	-	250	-	-	-	-	-	-	-	-	-	-
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
General Chemistry														
Ammonia-N	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Biochemical oxygen demand (BOD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Chemical oxygen demand (COD)	mg/kg	-	-	-	-	-	-	-	-	-	-	-	-	-
Formaldehyde	mg/kg	2.4	60000	-	-	-	-	-	-	-	28[a]	22[a]	16[a]	31[a]
Percent solids	%	-	-	-	-	-	-	-	-	-	17.9	26.5	22.5	21.3
pH	s.u.	-	-	-	-	-	-	-	-	-	8	-	-	-
pH, lab	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	-	-	240	-	-	-	-	-	-	-	-	-	-
Specific gravity	sg	-	-	-	-	-	-	-	-	-	-	-	-	-
Total solids	%	-	-	-	-	-	-	-	-	-	-	-	-	-
General Chemistry - TCLP														
Chloride	mg/L	-	-	250	-	-	-	-	-	-	-	-	-	-
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
General Chemistry - SPLP														
Chloride	mg/L	-	-	250	-	-	-	-	-	-	-	-	-	-
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Formaldehyde	mg/L	-	-	3.8	0.1 U	0.1 U	0.22	0.21	0.12	0.1 U	-	-	-	-

Notes:

D Compounds at secondary dilution factor.
J Estimated concentration.
U Not present at or above the associated value.
- Not analyzed.
Exceeds Criteria.

APPENDIX B

CLASSIFIED SAND DATA

APPENDIX B-1

DOCC CLASSIFIED SAND ANALYTICAL RESULTS SUMMARY

CLASSIFIED SAND

Compositional Analysis

Parameter mg/kg	10/13/88[1]			10\90[2]	1991[3]	11\16\92[4]				10/8/93[5]			
	1	2	3			1	2	3	4	1	2	3	4
Antimony	< 6			< 20	< 1.1								
Arsenic	1.4	1	0.84	0.8	0.71	0.8	0.74	0.79	1.1	0.8	1	1	1
Barium	47	31	65	49	60	120	100	67	65	41	100	95	38
Beryllium	< 0.5			< 0.5	< 0.52								
Cadmium	< 0.5	0.52	0.73	< 0.5	< 0.52	0.04	0.05	0.04	0.04	0.025	0.1	0.06	< 0.025
Chloride	430			80	41								
Chromium	54	52	75	57	83	130	100	69	64	45	91	110	37
Cobalt	< 2			< 5	< 5.2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Copper	15	16	8.2	15	14	11	9	9	7	6	12	19	5
Cyanide	4.2			< 2.6	< 2.6	1.6	2.2	< 0.5	1.7	1.1	2	1.4	1.3
Flouride	290			< 21	53								
Lead	< 11	< 10	< 10	< 10	< 21	7	9	6	6	4.3	9.5	13	9.3
Lithium	< 5.3			< 5	< 5.2	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Mercury	< 0.096	< 0.1	< 0.1	< 0.1	< 0.1	< 0.25	< 0.25	< 0.25	< 0.25	0.25	< 0.25	< 0.25	< 0.25
Molybdenum						< 5	< 5	< 5	< 5				
Nickel	12			< 4	6	8	5	8	6	4	500	7	5
Phenols	< 1.3			< 2.6	< 2.6								
Selenuim	< 0.84	< 0.83	< 0.83	< 0.6	< 0.63	0.3	0.3	< 0.2	< 0.2	0.2	0.3	0.3	< 0.2
Silver	< 1	< 1	< 1	< 1	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Solids (%)	95	96	96	96	95.3	95	96	95	95	86	98	96	93
Zinc	380	560	540	410	440	240	360	380	290	240	420	370	440
BOD				13	< 52					240			
Calcium				15000	25000	51000	37000	23000	27000	17000	33000	3600	7000
Corrosivity(pH)				8.9	9.7					8.7	8.8	8.2	7.5
Magnesium				690	980	1500	1200	1100	930	660	1100	1200	520
Manganese				1300	3000	4800	3800	2200	2400	1500	300	3800	640
Nitrate				0.94	1.6								
Nitrite				< 0.21									
Nitrogen				260	210								
Phosphorous				64	72	< 2.5	< 2.5	< 2.5	< 2.5	6.4	6.3	3.3	< 2.5
Potassium				230	410	500	400	300	300	220	500	400	200
Sodium				150	240	280	250	200	200	200	290	260	100
Iron										6000	9000	10000	8100
Aluminum										2200	4800	5200	1700
Ammonia					< 26								

(1) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes from Michigan Public Act 641 Disposal Designations." February 1989. Verified with laboratory data.
(2) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designation," October 1990. No record of sampling date. No laboratory data.
(3) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes," January 1992. No record of sampling date. No laboratory data.
(4) Results taken from laboratory data of samples 11/16/92
(5) Results taken from laboratory data of samples 10/8/93.

TABLE 14.1

CLASSIFIED SAND
ASTM Leaching Test

Parameter mg/L	11/28/83[1]	2/4/85[2]			2/4/85[3]	6/24/86[4]		2/23/87[5]	10/20/87[6]	10/8/93[7]			
		Pile 1	Pile 2	Pile 3	Surface Sample	New	Existing			1	2	3	4
Arsenic	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001		0.002	0.003				
Barium	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.02		0.12	0.02				
Cadmium	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.005	< 0.004				
Chromium	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.005	0.01	< 0.05	< 0.05	< 0.05	< 0.05
Cyanide	< 0.02	< 0.02	< 0.02	< 0.02	< 0.025	< 0.02		< 0.2	< 0.1				
Copper	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02		< 0.02	< 0.01				
Fluoride	8.9	1.28	0.6	0.58	9.8	0.5	0.58	0.7	0.32	< 0.05	< 0.05	< 0.05	< 0.05
Lead	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	< 0.005				
Mercury	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002		< 0.0002	< 0.0002				
Selenium	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002		< 0.002	< 0.003				
Silver	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02		< 0.02	0.01				
Zinc	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	< 0.005				
pH	9.8	8.4	8.3	8.3	9.2	9.8	9	9.9	9.5				
Phenols	< 0.025	< 0.01	< 0.01	0.016	< 0.01	< 0.01		0.15	0.012				
Ammonia										0.2	0.2	0.1	0.1
BOD										< 3	< 3	< 3	< 3
Nitrate										< 1	1.1	< 1	< 1
TOC		2	1.8	7.6	2	6.6		7.4	12				
COD		< 20	< 20	< 20	< 20	< 20		< 20	110				

(1) Results taken from "Waste Characterization Study for Foundry Process Solid Wastes," January 1984. Revised February 1984. No laboratory data.
(2) Results taken from "Request for Classification of Foundry Process Materials," June 1985. No laboratory data. And from "Waste Characterization Study of Foundry Process Solid Wastes," January 1986. Verified with laboratory data.
(3) Results taken from "Waste Characterization Study of Foundry Process Solid Wastes," January 1986. Verified with laboratory data.
(4) Results taken from "Annual Retest of Waste materials for GM-CFD Saginaw Nodular Iron," August 1986. Verified with laboratory data
(5) Reusits taken from "Summary Report: Sampling and Analysis of Foundry Process Solid Wastes," July 1987. Verified with laboratory data.
(6) Results taken from "Summary Report: Sampling and Analysis of Foundry Process Solid Wastes," January 1988. No laboratory data available.
(7) Results taken from laboratory data of samples collected 10/8/95.

CLASSIFIED SAND
TCLP ANALYSIS

Parameter mg/L	10\90[1]	1991[2]			11\16\92[3]				10/8/95[4]							
		1	2	3	1	2	3	4	1	2	3	4	5	6	7	8
Arsenic	< 0.003	< 0.006	< 0.006	< 0.006					< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Barium	0.28	0.32	0.28	0.32	< 1	< 1	< 1	< 1	0.17	0.18	0.17	0.16	0.2	0.23	0.18	0.2
Cadmium	0.005	< 0.0006	< 0.0006	< 0.0006	< 0.1	< 0.1	< 0.1	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Copper	0.03	0.022	0.034	< 0.022	< 0.2	< 0.2	< 0.2	< 0.2								
Chromium	0.05	0.13	0.098	0.084	< 0.2	< 0.2	< 0.2	< 0.2	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.2
Lead	< 0.1	< 0.006	< 0.006	0.006	< 1	< 1	< 1	< 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Mercury	< 0.0002	< 0.0004	< 0.0004	< 0.0004												
Selenium	< 0.003	< 0.006	< 0.006	< 0.006	< 0.04	< 0.04	< 0.04	< 0.04	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Silver	< 0.02	< 0.002	< 0.002	< 0.002												
Zinc	11	13	14	14	5.1	8	9.7	9.7	0.21	0.21	0.32	0.36	0.35	0.14	0.23	0.05
Fluoride	0.16	0.26														
Phenol	0.23	< 0.05														
Phosphorous	< 0.1	< 0.1														
Formaldehyde	< 0.25	0.41			0.13	0.17	0.07	0.2	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02			
Benzene	< 0.1	< 0.001														
Toluene	< 0.1	< 0.001														
Xylene	< 0.1	0.003														
Manganese									0.07	0.11	0.17	0.16	0.14	0.04	0.05	< 0.01
Iron									2.5	4.6	4.7	4.5	4.7	2	2.3	0.4

(1) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designations," October 1990. No record of sampling date. No laboratory data.
(2) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes," January 1992. No record of sampling date. No laboratory data.
(3) Results taken from laboratory data of samples collected 11/16/92.
(4) Results taken from laboratory data of samples collected 10/8/93.

TABLE 14.3

CLASSIFIED SAND

EP Toxicity Test

Parameter mg/L	11/28/83[1]	2/4/85[2] Composite	6/24/86[3]	2/23/87[4]	10/20/87[5]	10/12/88[6] 1	10/12/88[6] 2	10/12/88[6] 3	1991[7] 1	1991[7] 2	1991[7] 3
Arsenic	0.001	< 0.001	0.001	< 0.001	< 0.003	< 0.004	< 0.004	< 0.004	< 0.006	< 0.006	< 0.006
Barium	< 0.2	< 0.2	0.4	< 0.2	0.07	0.035	0.04	0.081	0.088	0.059	0.055
Cadmium	< 0.01	< 0.01	< 0.01	< 0.01	< 0.004	< 0.005	< 0.005	< 0.005	< 0.0006	< 0.0006	< 0.0006
Copper	< 0.02	< 0.02	< 0.02	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.02	0.038	< 0.02
Chromium	< 0.05	< 0.05	0.06	0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cyanide	< 0.02	< 0.02	< 0.02								
Lead	< 0.1	< 0.1	0.3	< 0.1	< 0.06	< 0.1	0.3	< 0.1	< 0.006	< 0.006	< 0.006
Mercury	< 0.0002	< 0.0002	< 0.002	< 0.0002	< 0.0002	< 0.001	< 0.001	0.002	< 0.0004	< 0.0004	< 0.0004
Selenium	< 0.001	< 0.001	< 0.002	< 0.002	< 0.003	< 0.02	< 0.02	< 0.02	< 0.006	< 0.006	< 0.006
Silver	< 0.02	< 0.02	< 0.02	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.002	< 0.002	< 0.002
Zinc	14.2	9.8	8.6	< 0.01	5.3	6.9	5.9	8.4	13	13	15
pH	5.1			9.3	7.5	9	8.9	8			

(1) Results taken from "Waste Characterization Study for Foundry Process Solid Wastes," January 1984. Revised February 1984. No laboratory data.
(2) Results taken from "Request for Classification of Foundry Process Materials," June 1985. No laboratory data. And January 1986, Verified with laboratory data.
(3) Results taken from "Annual Retest of Waste Materials for GM-CFD Saginaw Nodular Iron," August 1986. Verified with laboratory data.
(4) Results taken from "Summary Report: Sampling and Analysis of Foundry Process Solid Wastes," July 1987. Verified with laboratory data.
(5) Results taken from "Summary Report: Sampling and Analysis of Foundry Process Solid Wastes," January 1988. No laboratory data available.
(6) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designation," February 1989. Verified with Laboratory data.
(7) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes," January 1992. No record of sampling date. No laboratory data.

TABLE 14.4

CLASSIFIED SAND

VOCs/BNEs/Formaldehyde

Parameter	10/30/88[1]	10\90[2]	1991[3]	11\16\92[4]				10/8/93[5]			
ug/kg				1	2	3	4	1	2	3	4
Methylene Chloride	< 1	3.7	2	45	55	39	83	< 5	< 5	< 5	< 5
Chloroform	< 0.5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,1-TCA	< 2	1.4	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Benzene	< 1	< 1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Toluene	< 1	< 1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Xylene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon Tetrachloride			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene			< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
mg/kg											
B(2-E)P	< 2	< 0.07	< 0.35								
Butyl Benzyl P	< 0.5										
Di-n-Butyl P	< 0.5										
Dieth P	< 0.5										
Dimeth P	< 0.5										
Di-n-octyl P	< 3										
Phenols								0.28	0.2	0.2	0.3
mg/kg											
Formaldehyde	< 5	< 6.2	4.824					7.8	1.9	2	2.4
mg/kg											
Triphenol Phosphate		< 0.2	ND								
Tricersol Phosphate		< 1.3	ND								

(1) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designations." February 1989. Verified with laboratory data.
(2) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designation," October 1990. No record of sampling date. No laboratory data.
(3) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes." January 1992. No record of sampling date. No laboratory data.
(4) Results taken from laboratory data of samples collected 11/16/92.
(5) Results taken from laboratory data of samples collected 10/8/93.

TABLE 14.5

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CLASSIFIED SAND
TOTAL PCBs

Parameter mg/L	11/28/83[1]	2/3/85[2]	6/24/86[3]	2/23/87[4]	10/20/87[5]	10/12/88[6]	10/90[7]	1991[8]	11\16\92[9]				10/8/93[10]			
									1	2	3	4	1	2	3	4
Total PCB			0.17													
PCB Constituent																
A1242	< 0.1	0.1	0.17	< 0.08	< 0.02	< 0.1	< 0.08	< 0.08	< 0.033	< 0.033	< 0.033	< 0.033	< 0.016	< 0.016	< 0.016	< 0.016
A1016			< 0.08	< 0.08	< 0.02	< 0.1	< 0.08	< 0.08	< 0.033	< 0.033	< 0.033	< 0.033	< 0.016	< 0.016	< 0.016	< 0.016
A1221			< 0.08	< 0.08	< 0.02	< 0.1	< 0.08	< 0.08	< 0.033	< 0.033	< 0.033	< 0.033	< 0.016	< 0.016	< 0.016	< 0.016
A1232			< 0.08	< 0.08	< 0.02	< 0.1	< 0.08	< 0.08	< 0.033	< 0.033	< 0.033	< 0.033	< 0.016	< 0.016	< 0.016	< 0.016
A1248			< 0.08	< 0.08	< 0.02	< 0.1	< 0.08	< 0.08	< 0.033	< 0.033	< 0.033	< 0.033	< 0.016	< 0.016	< 0.016	< 0.016
A1254			< 0.16	< 0.16	< 0.02	< 0.1	< 0.17	< 0.17	< 0.033	< 0.033	< 0.033	< 0.033	< 0.033	< 0.033	< 0.033	< 0.033
A1260			< 0.16	< 0.16	< 0.02	< 0.1	< 0.17	< 0.17	< 0.033	< 0.033	< 0.033	< 0.033	< 0.033	< 0.033	< 0.033	< 0.033

(1) Result taken from "Waste Characterization Study of Foundry Process Solid Wastes," January 1984. Revised February 1984. No laboratory data.
(2) Results taken from "Request for Classification of Foundry Process Materials," June 1985. No laboratory data.
(3) Results taken from "Annual Retest of Waste Materials for GM-CFD Saginaw Nodular Iron," August 1986. Verified with laboratory data.
(4) Results taken from "Summary Report: Sampling and Analysis of Foundry Process Solid Wastes," July 1987. Verifed with laboratory data.
(5) Results taken from "Summary Report: Sampling and Analysis of Foundry Process Solid Wastes," January 1988. No laboratory data available.
(6) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designation," February 1989. Verified with laboratory data.
(7) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designation," October 1990. No record of sampling date. No laboratory data.
(8) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes." January 1992. No record of sampling date. No laboratory data.
(9) Results taken from laboratory data of samples collected 11/16/3.
(10) Results taken from laboratory data of samples collected 10/8/93.

TABLE 14.6

CLASSIFIED SAND

Asbestos

Parameter	10\13\88[1]	10\90[2]	1991[3]	11\16\92[4]				10/8/93[5]			
				1	2	3	4	1	2	3	4
Asbestos				0	0	0	0	< 1	< 1	< 1	< 1
Chrysotile	0	0									
Amosite	0	0									
Croc	0										

(1) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designation," February 1989. Verfied with laboratory data.
(2) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes for Michigan Public Act 641 Disposal Designation," October 1990.
No record of sampling date. No laboratory data.
(3) Results taken from "General Motors Corporation Saginaw Grey Iron Foundry Annual Sampling of Solid Wastes," January 1992. No record of sampling date. No laboratory data.
(4) Results taken from laboratory data of samples collected 11/16/92.
(5) Results taken from laboratory data of samples collected 10/8/93.

TABLE 14.7

NODULAR IRON METALS RECLAMATION PILE
ASTM Leaching Test

Parameter mg/L	2/4/85[1]
Arsenic	0.014
Barium	< 0.02
Cadmium	< 0.01
Chromium	< 0.05
Copper	< 0.02
Cyanide	< 0.02
Flouride	0.74
Lead	< 0.005
Mercury	< 0.0002
Phenols	4.9
Selenium	0.002
Silver	< 0.02
TOC	34
COD	95
Zinc	< 0.01
pH	10.7

(1) Results taken from "Waste Characterization Study of Foundry Process Solid Wastes," January 1986. Verified with laboratory data.

TABLE 14.8

APPENDIX B-2

2002/2005 CLASSIFIED SAND ANALYTICAL RESULTS SUMMARY

APPENDIX B-2

2002/2005 CLASSIFIED SAND ANALYTICAL RESULTS SUMMARY
NODULAR FACILITY
SAGINAW, MICHIGAN

Sample Location:					*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*
Sample ID:					*1*	*8*	*8*	*1*	*8*	*8*	*1*	*8*	*8*	*1*	*8*	*8*
lab_sample_id					*3023109*	*3023110*	*3023111*	*3023158*	*3023159*	*3023160*	*3023188*	*3023189*	*3023190*	*3023218*	*3023219*	*3023220*
Sample Date:					*7/15/2002*	*7/15/2002*	*7/15/2002*	*7/16/2002*	*7/16/2002*	*7/16/2002*	*7/17/2002*	*7/17/2002*	*7/17/2002*	*7/18/2002*	*7/18/2002*	*7/18/2002*
Parameters:	*Units*	*Res/Non_Res/GW Prot_GW SW Interface Prot* a	*Res/Non_Res/GW Prot_GW Contact Prot* b	*Res/Non_Res/NonRes Drinking Water* c												
Volatile Organic Compounds																
2-Butanone (Methyl ethyl ketone) (MEK)	mg/kg	44	27000	-	2.6 U	-	-	2.6 U	-	-	2.6 U	-	-	2.6 U	-	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/kg	-	2700	-	2.6 U	-	-	2.6 U	-	-	2.6 U	-	-	2.6 U	-	-
Benzene	mg/kg	4	220	-	0.051 U	-	-	0.2	-	-	0.051 U	-	-	0.094	-	-
Chloromethane (Methyl chloride)	mg/kg	-	1100	-	0.26 U	-	-	0.26 U	-	-	0.26 U	-	-	0.26 U	-	-
Ethylbenzene	mg/kg	0.36	140	-	0.051 U	-	-	0.051 U	-	-	0.051 U	-	-	0.051 U	-	-
Styrene	mg/kg	2.1	270	-	0.051 U	-	-	0.051 U	-	-	0.051 U	-	-	0.051 U	-	-
Toluene	mg/kg	5.4	250	-	0.1 U	-	-	0.15	-	-	0.1 U	-	-	0.1 U	-	-
Trichloroethene	mg/kg	4	440	-	0.051 U	-	-	0.051 U	-	-	0.051 U	-	-	0.051 U	-	-
Xylenes (total)	mg/kg	0.82	150	-	0.151 U	-	-	0.25	-	-	0.151 U	-	-	0.151 U	-	-
Volatile Organic Compounds - SPLP																
2-Butanone (Methyl ethyl ketone) (MEK)	mg/L	-	-	38	-	0.05 U	0.05 U	-	0.05 U	0.05 U	-	0.05 U	0.05 U	-	0.05 U	0.05 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/L	-	-	5.2	-	0.05 U	0.05 U	-	0.05 U	0.05 U	-	0.05 U	0.05 U	-	0.05 U	0.05 U
Benzene	mg/L	-	-	0.005	-	0.001 U	0.001 U	-	0.001 U	0.001 U	-	0.001 U	0.001 U	-	0.001 U	0.001 U
Chloromethane (Methyl chloride)	mg/L	-	-	1.1	-	0.001 U	0.001 U	-	0.001 U	0.001 U	-	0.001 U	0.001 U	-	0.001 U	0.001 U
Ethylbenzene	mg/L	-	-	0.074	-	0.001 U	0.001 U	-	0.001 U	0.001 U	-	0.001 U	0.001 U	-	0.001 U	0.001 U
Styrene	mg/L	-	-	0.1	-	0.001 U	0.001 U	-	0.001 U	0.001 U	-	0.001 U	0.001 U	-	0.001 U	0.001 U
Toluene	mg/L	-	-	0.79	-	0.0021	0.0037	-	0.0017	0.001 U	-	0.001 U	0.001 U	-	0.001 U	0.001 U
Trichloroethene	mg/L	-	-	0.005	-	0.001 U	0.001 U	-	0.001 U	0.001 U	-	0.001 U	0.001 U	-	0.001 U	0.001 U
Xylenes (total)	mg/L	-	-	0.28	-	0.003 U	0.003 U	-	0.003 U	0.003 U	-	0.003 U	0.003 U	-	0.003 U	0.003 U
Semi-volatile Organic Compounds																
2,4-Dimethylphenol	mg/kg	7.6	10000	-	0.17 U	-	-	0.17 U	-	-	0.17 U	-	-	0.17 U	-	-
2-Methylphenol	mg/kg	1	16000	-	0.17 U	-	-	0.282	-	-	0.17 U	-	-	0.479	-	-
3&4-Methylphenol	mg/kg	1	16000	-	-	-	-	-	-	-	-	-	-	-	-	-
3,4-Dichlorophenol	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-
4-Chloro-3-methylphenol	mg/kg	0.28	3000	-	0.17 U	-	-	0.17 U	-	-	0.17 U	-	-	0.17 U	-	-
Acenaphthene	mg/kg	8.7	970	-	0.17 U	-	-	0.17 U	-	-	0.17 U	-	-	0.17 U	-	-
Aniline	mg/kg	0.33	2800	-	-	-	-	-	-	-	-	-	-	-	-	-
Anthracene	mg/kg	-	41	-	0.17 U	-	-	0.17 U	-	-	0.17 U	-	-	0.17 U	-	-
Benzyl chloride	mg/kg	-	72	-	0.17 U	-	-	0.17 U	-	-	0.17 U	-	-	0.17 U	-	-
Fluoranthene	mg/kg	5.5	730	-	0.17 U	-	-	0.17 U	-	-	0.17 U	-	-	0.17 U	-	-
Hexachlorobenzene	mg/kg	0.35	8.2	-	0.17 U	-	-	0.17 U	-	-	0.17 U	-	-	0.17 U	-	-
Naphthalene	mg/kg	0.73	2100	-	0.17 U	-	-	0.423	-	-	0.17 U	-	-	0.524	-	-
Nitrobenzene	mg/kg	3.6	220	-	0.17 U	-	-	0.17 U	-	-	0.17 U	-	-	0.17 U	-	-
Phenanthrene	mg/kg	2.1	1100	-	0.17 U	-	-	0.202	-	-	0.17 U	-	-	0.254	-	-
Phenol	mg/kg	9	12000	-	0.25	-	-	0.813	-	-	0.172	-	-	1.23	-	-

APPENDIX B-2

2002/2005 CLASSIFIED SAND ANALYTICAL RESULTS SUMMARY
NODULAR FACILITY
SAGINAW, MICHIGAN

Sample Location:					*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*
Sample ID:					*1*	*8*	*8*	*1*	*8*	*8*	*1*	*8*	*8*	*1*	*8*	*8*
lab_sample_id					*3023109*	*3023110*	*3023111*	*3023158*	*3023159*	*3023160*	*3023188*	*3023189*	*3023190*	*3023218*	*3023219*	*3023220*
Sample Date:					*7/15/2002*	*7/15/2002*	*7/15/2002*	*7/16/2002*	*7/16/2002*	*7/16/2002*	*7/17/2002*	*7/17/2002*	*7/17/2002*	*7/18/2002*	*7/18/2002*	*7/18/2002*
Parameters:	*Units*	*Res/Non_Res/GW Prot_GW SW Interface Prot* a	*Res/Non_Res/GW Prot_GW Contact Prot* b	*Res/Non_Res/NonRes Drinking Water* c												
Volatile Organic Compounds																
Semi-volatile Organic Compounds - SPLP																
2,4-Dimethylphenol	mg/L	-	-	1	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U
2-Methylphenol	mg/L	-	-	1	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U
3,4-Dichlorophenol	mg/L	-	-	-	-	0.01 U	0.01 U	-	0.01 U	0.01 U	-	0.01 U	0.01 U	-	0.01 U	0.01 U
4-Chloro-3-methylphenol	mg/L	-	-	0.42	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U
Acenaphthene	mg/L	-	-	3.8	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U
Anthracene	mg/L	-	-	0.043	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U
Benzyl chloride	mg/L	-	-	0.032	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U
Fluoranthene	mg/L	-	-	0.21	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U
Hexachlorobenzene	mg/L	-	-	0.001	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U
Naphthalene	mg/L	-	-	1.5	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U
Nitrobenzene	mg/L	-	-	0.0096	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U
Phenanthrene	mg/L	-	-	0.15	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U
Phenol	mg/L	-	-	13	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U	-	0.005 U	0.005 U
Metals																
Aluminum	mg/kg	-	1000000	-	700	-	-	970	-	-	970	-	-	1400	-	-
Antimony	mg/kg	94	49000	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	mg/kg	4.6	2000	-	0.71	-	-	0.79	-	-	0.82	-	-	0.74	-	-
Barium	mg/kg	-	1000000	-	4.6	-	-	13	-	-	5.9	-	-	17	-	-
Beryllium	mg/kg	-	1000000	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron	mg/kg	100	1000000	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	-	230000	-	0.08	-	-	0.2	-	-	0.096	-	-	0.11	-	-
Chromium	mg/kg	3.3	140000	-	6.1[a]	-	-	9.7[a]	-	-	23[a]	-	-	18[a]	-	-
Chromium VI (hexavalent)	mg/kg	3.3	140000	-	0.02 U	-	-	0.02 U	-	-	0.02 U	-	-	0.02 U	-	-
Copper	mg/kg	-	1000000	-	28	-	-	14	-	-	23	-	-	13	-	-
Iron	mg/kg	-	1000000	-	3100	-	-	4000	-	-	9000	-	-	5900	-	-
Lead	mg/kg	-	-	-	2.2	-	-	18	-	-	3.9	-	-	9.3	-	-
Manganese	mg/kg	-	180000	-	52	-	-	120	-	-	120	-	-	190	-	-
Mercury	mg/kg	0.05	47	-	0.02 U	-	-	0.02 U	-	-	0.02 U	-	-	0.02 U	-	-
Nickel	mg/kg	-	1000000	-	2.2	-	-	3.5	-	-	6.9	-	-	5.2	-	-
Selenium	mg/kg	0.4	78000	-	0.2 U	-	-	0.2 U	-	-	0.2 U	-	-	0.2 U	-	-
Silver	mg/kg	0.1	200000	-	0.5 U	-	-	0.5 U	-	-	0.5 U	-	-	0.5 U	-	-
Thallium	mg/kg	4.2	15000	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	mg/kg	190	1000000	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/kg	-	1000000	-	18	-	-	110	-	-	25	-	-	68	-	-

APPENDIX B-2

2002/2005 CLASSIFIED SAND ANALYTICAL RESULTS SUMMARY
NODULAR FACILITY
SAGINAW, MICHIGAN

Sample Location:					*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*
Sample ID:					*1*	*8*	*8*	*1*	*8*	*8*	*1*	*8*	*8*	*1*	*8*	*8*
lab_sample_id					*3023109*	*3023110*	*3023111*	*3023158*	*3023159*	*3023160*	*3023188*	*3023189*	*3023190*	*3023218*	*3023219*	*3023220*
Sample Date:					*7/15/2002*	*7/15/2002*	*7/15/2002*	*7/16/2002*	*7/16/2002*	*7/16/2002*	*7/17/2002*	*7/17/2002*	*7/17/2002*	*7/18/2002*	*7/18/2002*	*7/18/2002*
Parameters:	*Units*	*Res/Non_Res/GW Prot_GW SW Interface Prot* a	*Res/Non_Res/GW Prot_GW Contact Prot* b	*Res/Non_Res/NonRes Drinking Water* c												
Volatile Organic Compounds																
Metals - TCLP																
Aluminum	mg/L	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-
Antimony	mg/L	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	mg/L	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-
Barium	mg/L	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium	mg/L	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-
Boron	mg/L	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/L	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/L	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/L	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Iron	mg/L	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-
Lead	mg/L	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-
Manganese	mg/L	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-
Mercury	mg/L	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	mg/L	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	mg/L	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	-	-	0.098	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	mg/L	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	mg/L	-	-	0.062	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/L	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-
Metals - SPLP																
Aluminum	mg/L	-	-	0.05	-	0.1 U	0.15[c]	-	0.24[c]	0.1 U	-	0.19[c]	0.19[c]	-	0.1 U	0.1 U
Antimony	mg/L	-	-	0.006	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	mg/L	-	-	0.01	-	0.001 U	0.001 U	-	0.001 U	0.001 U	-	0.001 U	0.001 U	-	0.001 U	0.001 U
Barium	mg/L	-	-	2	-	0.24	0.2	-	0.17	0.22	-	0.15	0.17	-	0.15	0.16
Beryllium	mg/L	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-
Boron	mg/L	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/L	-	-	0.005	-	0.0002 U	0.0002 U	-	0.0002 U	0.0002 U	-	0.0002 U	0.0002 U	-	0.0002 U	0.0002 U
Chromium	mg/L	-	-	0.1	-	0.002 U	0.002 U	-	0.002 U	0.002 U	-	0.002 U	0.002 U	-	0.002 U	0.002 U
Copper	mg/L	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Iron	mg/L	-	-	0.3	-	0.2 U	0.72[c]	-	0.2 U	0.2 U	-	0.2 U	0.2 U	-	0.2 U	0.2 U
Lead	mg/L	-	-	0.004	-	0.002 U	0.002 U	-	0.002 U	0.002 U	-	0.002 U	0.002 U	-	0.002 U	0.002 U
Manganese	mg/L	-	-	0.05	-	0.14[c]	0.0035	-	0.002 U	0.002 U	-	0.0039	0.002 U	-	0.0029	0.0061
Mercury	mg/L	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	mg/L	-	-	0.1	-	0.0022	0.002 U	-	0.002 U	0.002 U	-	0.002 U	0.002 U	-	0.002 U	0.002 U
Selenium	mg/L	-	-	0.05	-	0.004 U	0.004 U	-	0.004 U	0.004 U	-	0.004 U	0.004 U	-	0.004 U	0.004 U
Silver	mg/L	-	-	0.098	-	0.00049	0.0004 U	-	0.0004 U	0.0004 U	-	0.0004 U	0.0004 U	-	0.0004 U	0.0004 U
Thallium	mg/L	-	-	0.002	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	mg/L	-	-	0.062	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/L	-	-	5	-	0.093	0.0083	-	0.039	0.006 U	-	0.006 U	0.006 U	-	0.0066	0.0071

APPENDIX B-2

2002/2005 CLASSIFIED SAND ANALYTICAL RESULTS SUMMARY
NODULAR FACILITY
SAGINAW, MICHIGAN

Sample Location:			*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*	*Classified Sand*
Sample ID:			*1*	*8*	*8*	*1*	*8*	*8*	*1*	*8*	*8*	*1*	*8*	*8*
lab_sample_id			*3023109*	*3023110*	*3023111*	*3023158*	*3023159*	*3023160*	*3023188*	*3023189*	*3023190*	*3023218*	*3023219*	*3023220*
Sample Date:			*7/15/2002*	*7/15/2002*	*7/15/2002*	*7/16/2002*	*7/16/2002*	*7/16/2002*	*7/17/2002*	*7/17/2002*	*7/17/2002*	*7/18/2002*	*7/18/2002*	*7/18/2002*
Parameters:	*Units*	*Res/Non_Res/GW Prot_GW SW Interface Prot* a	*Res/Non_Res/GW Prot_GW Contact Prot* b	*Res/Non_Res/No nRes Drinking Water* c												
Volatile Organic Compounds																
Polychlorinated Biphenyls																
Aroclor-1016 (PCB-1016)	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-
Aroclor-1221 (PCB-1221)	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-
Aroclor-1232 (PCB-1232)	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-
Aroclor-1242 (PCB-1242)	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-
Aroclor-1248 (PCB-1248)	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-
Aroclor-1254 (PCB-1254)	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-
Aroclor-1260 (PCB-1260)	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-
Total PCBs	mg/kg	-	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-	0.33 U	-	-
Polynuclear Aromatic Hydrocarbons																
Acenaphthene	mg/kg	8.7	970	-	-	-	-	-	-	-	-	-	-	-	-	-
Anthracene	mg/kg	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluoranthene	mg/kg	5.5	730	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	0.73	2100	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene	mg/kg	2.1	1100	-	-	-	-	-	-	-	-	-	-	-	-	-
General Chemistry																
Formaldehyde	mg/kg	2.4	60000	-	2.01 U	-	-	2.09	-	-	9[a]	-	-	3.34[a]	-	-
Percent solids	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total solids	%	-	-	-	100	-	-	99.3	-	-	99.9	-	-	99.9	-	-
General Chemistry - SPLP																
Chloride	mg/L	-	-	250	-	-	-	-	-	-	-	-	-	-	-	-
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Formaldehyde	mg/L	-	-	3.8	-	0.135	0.1 U	-	0.1 U	0.1 U	-	0.1 U	0.101	-	0.1 U	0.1 U

Notes:

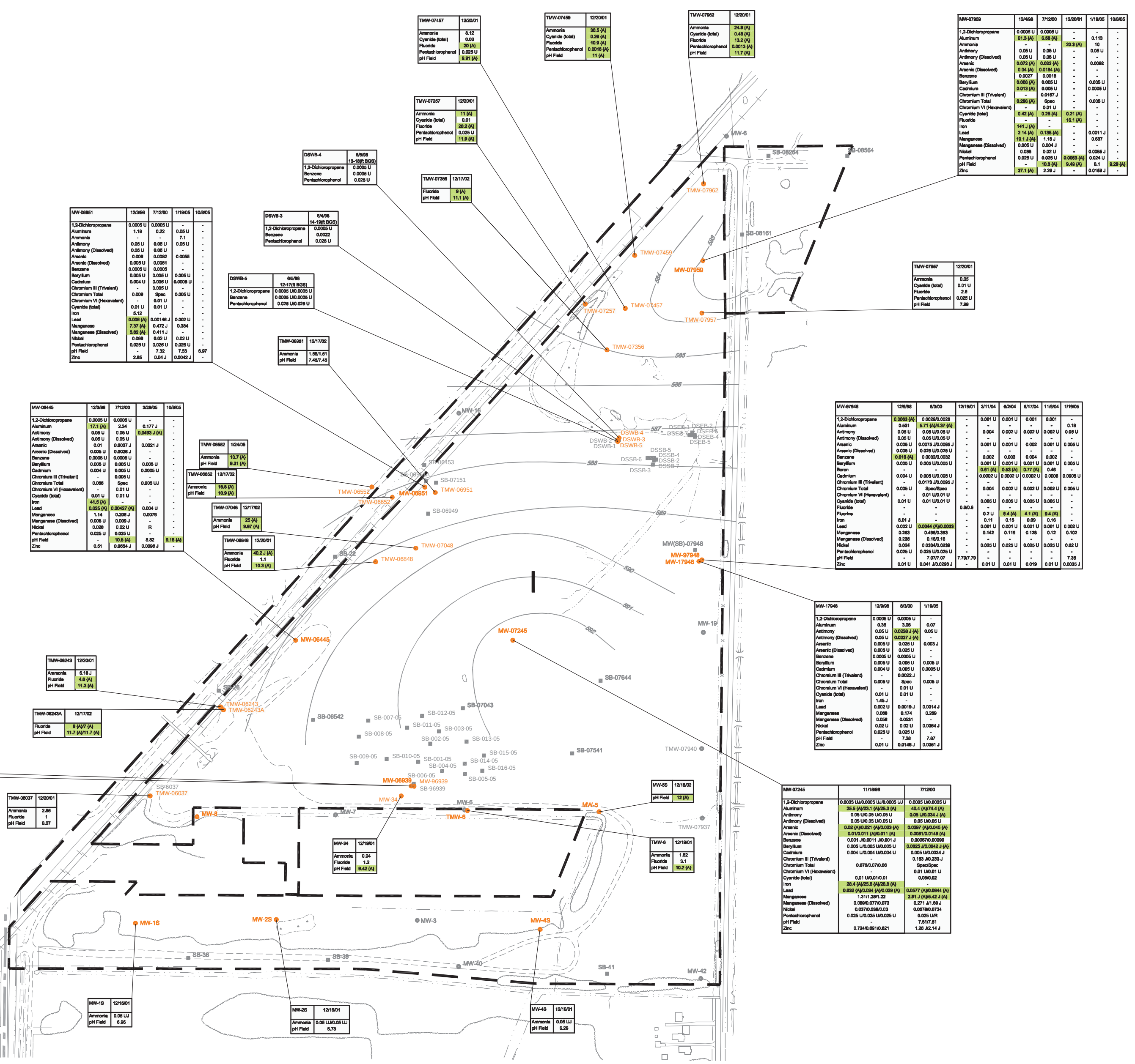
U Not present at or above the associated value.
- Not analyzed.
Exceeds Criteria.

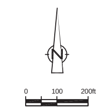
APPENDIX C

RFI GROUNDWATER DATA

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





LEGEND

A — INVESTIGATIVE UNIT BOUNDARY AND IDENTIFIER

585 GROUNDWATER ELEVATION FT. AMSL (JANUARY 2005)

MONITORING WELL LOCATION - RFI

SAMPLE LOCATION - NO REPORTED DATA

SAMPLE LOCATION

TMW-07356	12/17/02
Fluoride	9 {A}
pH Field	11.1 {A}

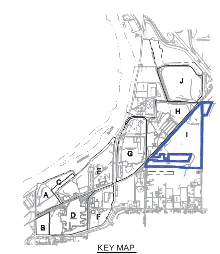
SAMPLE DATE

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 I
RFI PHASE 1C - GROUNDWATER

CONESTOGA-ROVERS & ASSOCIATES

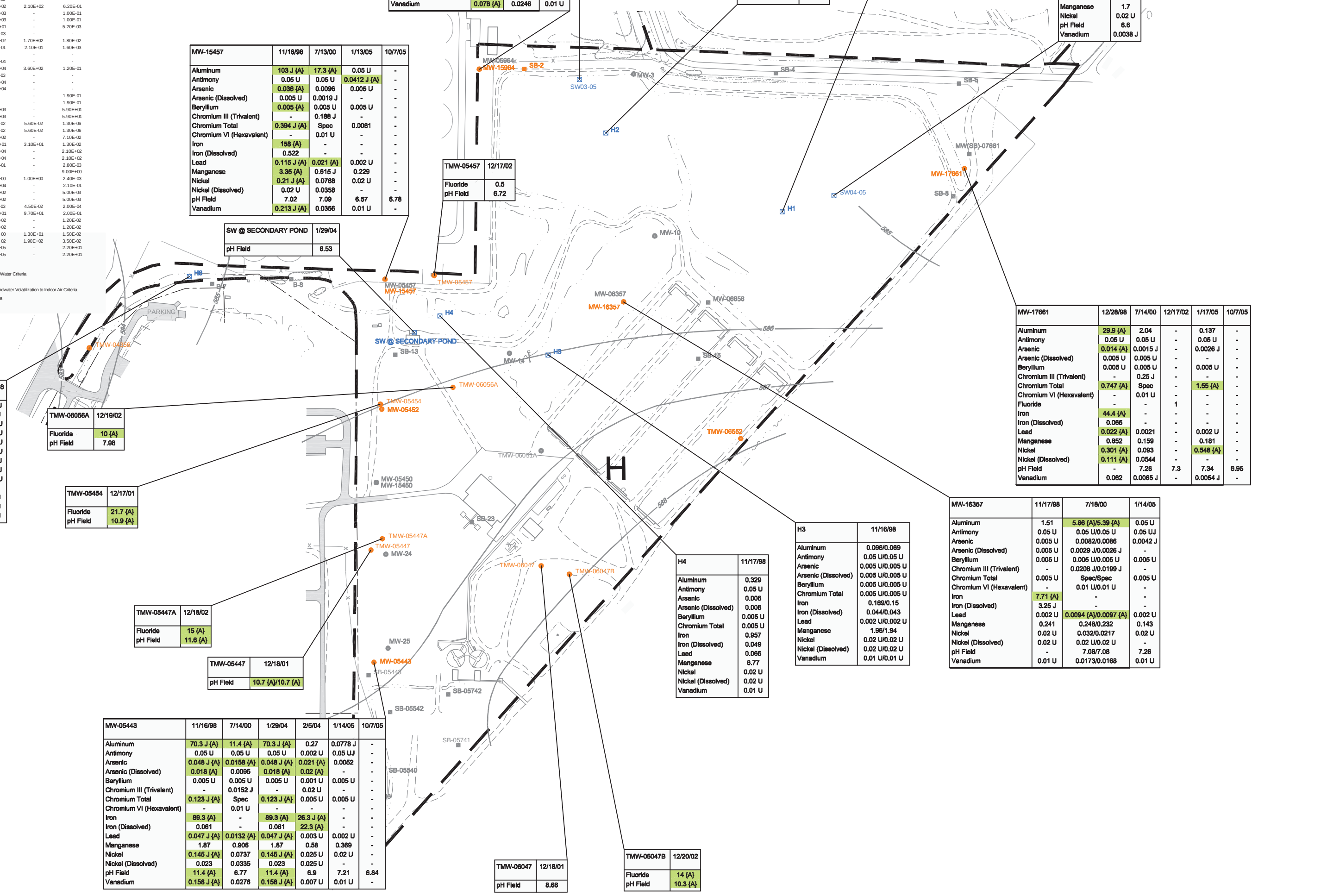
Source Reference:
MICHIGAN STATE PLANE SOUTH, NAD 83 USING INTERNATIONAL FEET, NGVD 88
TOPO - SANBORN, 1996

Project Manager: I.R.	Reviewed By: M.T.	Date: FEBRUARY 2007	
Scale: 1" = 200'	Project Nº: 17075-16	Report Nº: 027	Drawing Nº: figure 15.3

17075-16(027)GN-WA029 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-15964	11/30/98	7/26/00	1/14/05
Aluminum	36.5 {A}	9.67 {A}	0.0722 J
Antimony	0.05 U	0.05 U	0.05 UJ
Arsenic	0.012 {A}	0.0069	0.005 U
Arsenic (Dissolved)	0.005 U	0.002 J	-
Beryllium	0.005 U	0.005 U	0.005 U
Chromium III (Trivalent)	-	0.0135 J	-
Chromium Total	0.062	Spec	0.005 U
Chromium VI (Hexavalent)	-	0.01 U	-
Iron	49.9 {A}	-	-
Iron (Dissolved)	0.022	-	-
Lead	0.014 {A}	0.0089 {A}	0.002 U
Manganese	0.884	0.336	0.0848
Nickel	0.06	0.0427	0.02 U
Nickel (Dissolved)	0.02 U	0.02 U	-
pH Field	-	7.96	7.94
Vanadium	0.078 {A}	0.0246	0.01 U

SW3-05	1/13/05
Aluminum	0.115 J/0.12 J
Antimony	0.05 UJ/0.05 UJ
Arsenic	0.0017 J/0.002 J
Beryllium	0.005 U/0.005 U
Chromium Total	0.005 U/0.005 U
Lead	0.0017 J/0.0015 J
Manganese	0.453/0.462
Nickel	0.02 U/0.02 U
pH Field	6.94/6.87
Vanadium	0.01 U/0.01 U

H2	11/17/98
Aluminum	0.301
Antimony	0.05 U
Arsenic	0.006
Arsenic (Dissolved)	0.006
Beryllium	0.005 U
Chromium Total	0.005 U
Iron	0.883
Iron (Dissolved)	0.051
Lead	0.063
Manganese	6.55
Nickel	0.02 U
Nickel (Dissolved)	0.02 U
Vanadium	0.01 U

H1	11/17/98
Aluminum	0.333/0.29
Antimony	0.05 U/0.05 U
Arsenic	0.006/0.007
Arsenic (Dissolved)	0.007/0.008
Beryllium	0.005 U/0.005 U
Chromium Total	0.005 U/0.005 U
Iron	0.896/0.896
Iron (Dissolved)	0.041/0.058
Lead	0.065/0.065
Manganese	6.91/6.73
Nickel	0.02 U/0.02 U
Nickel (Dissolved)	0.02 U/0.02 U
Vanadium	0.01 U/0.01 U

SW4-05	1/13/05
Aluminum	0.432 J
Antimony	0.05 UJ
Arsenic	0.0048 J
Beryllium	0.005 U
Chromium Total	0.005 U
Lead	0.0027
Manganese	1.7
Nickel	0.02 U
pH Field	6.6
Vanadium	0.0038 J

MW-15457	11/16/98	7/13/00	1/13/05	10/7/05
Aluminum	103 J {A}	17.3 {A}	0.05 U	-
Antimony	0.05 U	0.05 U	0.0412 J {A}	-
Arsenic	0.036 {A}	0.0096	0.005 U	-
Arsenic (Dissolved)	0.005 U	0.0019 J	-	-
Beryllium	0.005 {A}	0.005 U	0.005 U	-
Chromium III (Trivalent)	-	0.188 J	-	-
Chromium Total	0.394 J {A}	Spec	0.0081	-
Chromium VI (Hexavalent)	-	0.01 U	-	-
Iron	158 {A}	-	-	-
Iron (Dissolved)	0.522	-	-	-
Lead	0.115 J {A}	0.021 {A}	0.002 U	-
Manganese	3.35 {A}	0.615 J	0.229	-
Nickel	0.21 J {A}	0.0768	0.02 U	-
Nickel (Dissolved)	0.02 U	0.0358	-	-
pH Field	7.02	7.09	6.57	6.78
Vanadium	0.213 J {A}	0.0356	0.01 U	-

TMW-05457	12/17/02
Fluoride	0.5
pH Field	6.72

SW @ SECONDARY POND	1/29/04
pH Field	6.53

MW-17661	12/28/98	7/14/00	12/17/02	1/17/05	10/7/05
Aluminum	29.9 {A}	2.04	-	0.137	-
Antimony	0.05 U	0.05 U	-	0.05 U	-
Arsenic	0.014 {A}	0.0015 J	-	0.0026 J	-
Arsenic (Dissolved)	0.005 U	0.005 U	-	-	-
Beryllium	0.005 U	0.005 U	-	0.005 U	-
Chromium III (Trivalent)	-	0.25 J	-	-	-
Chromium Total	0.747 {A}	Spec	-	1.55 {A}	-
Chromium VI (Hexavalent)	-	0.01 U	-	-	-
Fluoride	-	-	1	-	-
Iron	44.4 {A}	-	-	-	-
Iron (Dissolved)	0.065	-	-	-	-
Lead	0.022 {A}	0.0021	-	0.002 U	-
Manganese	0.852	0.159	-	0.181	-
Nickel	0.301 {A}	0.093	-	0.548 {A}	-
Nickel (Dissolved)	0.111 {A}	0.0544	-	-	-
pH Field	-	7.28	7.3	7.34	6.95
Vanadium	0.062	0.0065 J	-	0.0054 J	-

MW-16357	11/17/98	7/18/00	1/14/05
Aluminum	1.51	5.86 {A}/5.39 {A}	0.05 U
Antimony	0.05 U	0.05 U/0.05 U	0.05 UJ
Arsenic	0.005 U	0.0082/0.0086	0.0042 J
Arsenic (Dissolved)	0.005 U	0.0029 J/0.0026 J	-
Beryllium	0.005 U	0.005 U/0.005 U	0.005 U
Chromium III (Trivalent)	-	0.0208 J/0.0199 J	-
Chromium Total	0.005 U	Spec/Spec	0.005 U
Chromium VI (Hexavalent)	-	0.01 U/0.01 U	-
Iron	7.71 {A}	-	-
Iron (Dissolved)	3.25 J	-	-
Lead	0.002 U	0.0094 {A}/0.0097 {A}	0.002 U
Manganese	0.241	0.248/0.232	0.143
Nickel	0.02 U	0.032/0.0217	0.02 U
Nickel (Dissolved)	0.02 U	0.02 U/0.02 U	-
pH Field	-	7.08/7.08	7.26
Vanadium	0.01 U	0.0173/0.0168	0.01 U

H3	11/16/98
Aluminum	0.096/0.069
Antimony	0.05 U/0.05 U
Arsenic	0.005 U/0.005 U
Arsenic (Dissolved)	0.005 U/0.005 U
Beryllium	0.005 U/0.005 U
Chromium Total	0.005 U/0.005 U
Iron	0.169/0.15
Iron (Dissolved)	0.044/0.043
Lead	0.002 U/0.002 U
Manganese	1.96/1.94
Nickel	0.02 U/0.02 U
Nickel (Dissolved)	0.02 U/0.02 U
Vanadium	0.01 U/0.01 U

H4	11/17/98
Aluminum	0.329
Antimony	0.05 U
Arsenic	0.006
Arsenic (Dissolved)	0.006
Beryllium	0.005 U
Chromium Total	0.005 U
Iron	0.957
Iron (Dissolved)	0.049
Lead	0.066
Manganese	6.77
Nickel	0.02 U
Nickel (Dissolved)	0.02 U
Vanadium	0.01 U

H6	11/18/98
Aluminum	0.133 J
Antimony	0.05 U
Arsenic	0.005 U
Arsenic (Dissolved)	0.005 U
Beryllium	0.005 U
Chromium Total	0.005 U
Iron	0.583 J
Iron (Dissolved)	0.094 J
Lead	0.002 U
Manganese	0.093
Nickel	0.02 U
Nickel (Dissolved)	0.02 U
Vanadium	0.01 U

TMW-06056A	12/19/02
Fluoride	10 {A}
pH Field	7.98

TMW-05454	12/17/01
Fluoride	21.7 {A}
pH Field	10.9 {A}

TMW-05447A	12/18/02
Fluoride	15 {A}
pH Field	11.6 {A}

TMW-05447	12/18/01
pH Field	10.7 {A}/10.7 {A}

MW-05443	11/16/98	7/14/00	1/29/04	2/5/04	1/14/05	10/7/05
Aluminum	70.3 J {A}	11.4 {A}	70.3 J {A}	0.27	0.0778 J	-
Antimony	0.05 U	0.05 U	0.05 U	0.002 U	0.05 UJ	-
Arsenic	0.048 J {A}	0.0158 {A}	0.048 J {A}	0.021 {A}	0.0052	-
Arsenic (Dissolved)	0.018 {A}	0.0095	0.018 {A}	0.02 {A}	-	-
Beryllium	0.005 U	0.005 U	0.005 U	0.001 U	0.005 U	-
Chromium III (Trivalent)	-	0.0152 J	-	0.02 U	-	-
Chromium Total	0.123 J {A}	Spec	0.123 J {A}	0.005 U	0.005 U	-
Chromium VI (Hexavalent)	-	0.01 U	-	-	-	-
Iron	89.3 {A}	-	89.3 {A}	26.3 J {A}	-	-
Iron (Dissolved)	0.061	-	0.061	22.3 {A}	-	-
Lead	0.047 J {A}	0.0132 {A}	0.047 J {A}	0.003 U	0.002 U	-
Manganese	1.87	0.906	1.87	0.58	0.369	-
Nickel	0.145 J {A}	0.0737	0.145 J {A}	0.025 U	0.02 U	-
Nickel (Dissolved)	0.023	0.0335	0.023	0.025 U	-	-
pH Field	11.4 {A}	6.77	11.4 {A}	6.9	7.21	6.84
Vanadium	0.158 J {A}	0.0276	0.158 J {A}	0.007 U	0.01 U	-

TMW-06047	12/18/01
pH Field	8.66

TMW-06047B	12/20/02
Fluoride	14 {A}
pH Field	10.3 {A}

N

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

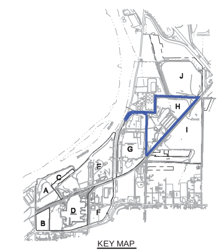
SURFACE WATER SAMPLE LOCATION

TMW-06552	1/24/05
Ammonia	10.7 {A}
pH Field	9.31 {A}

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 H
RFI PHASE 1C - GROUNDWATER
AND SURFACE WATER

CONESTOGA-ROVERS & ASSOCIATES

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

Project Manager: I.R.	Reviewed By: M.T.	Date: FEBRUARY 2007	
Scale: 1" = 200'	Project Nº: 17075-16	Report Nº: 027	Drawing Nº: figure 14.2

17075-16(027)GN-WA026 FEB 08/2007

APPENDIX D

PROPOSED GRADING PLAN

Wilcox

5859 Sherman Rd
Saginaw, MI 48604
989-752-6500
Fax: 989-752-6600
www.wilcox.us

February 20, 2012
RACER TRUST NODULAR – SAGINAW

Potential Outfall 21: Drainage Area = 54.1 Acres
This drainage area is defined by surface runoff generated from Drainage Area 1, as shown in Fig 1 (Attached). Flow from Drainage Area 2 and 3 (Fig 1) will be redirected to separate Outfall. Outfall 21 connects to the Dieckman Drain.

Potential Outfall 22: Drainage Area = 54.1 Acres
This drainage area is defined by surface runoff generated from Drainage Area 1 as shown in Fig 1 (Attached). Discharge from the existing Secondary Lagoon will be directed into the existing drainage swale located between the City of Saginaw Treatment Plant and Nodular Iron, which then is directed to an existing 60" culvert beneath M-13, which is currently bulk-headed. Outfall 22 connects to the Saginaw River.

Potential Outfall 23: Drainage Area = 38.4 Acres
This drainage area is defined by surface runoff generated from Drainage Area 2 + 3, as shown in Fig 1 (Attached). Flow from Drainage Area 1 (Fig 1) will be redirected to separate Outfall. Outfall 23 connects to the Kohler Drain.

Combine all Drainage Areas into One Outfall = 92.5 acres
A possible alternative is to combine Drainage Areas 1, 2 and 3 together and redirect to the Kohler Drain (Outfall 23). This scenario produces one outfall and will not require mechanical pumping of storm water. An outlet control structure will be necessary at the Secondary Lagoon with storm sewer and/or ditching constructed to the Kohler Drain.

(243678 - 10-29-04)

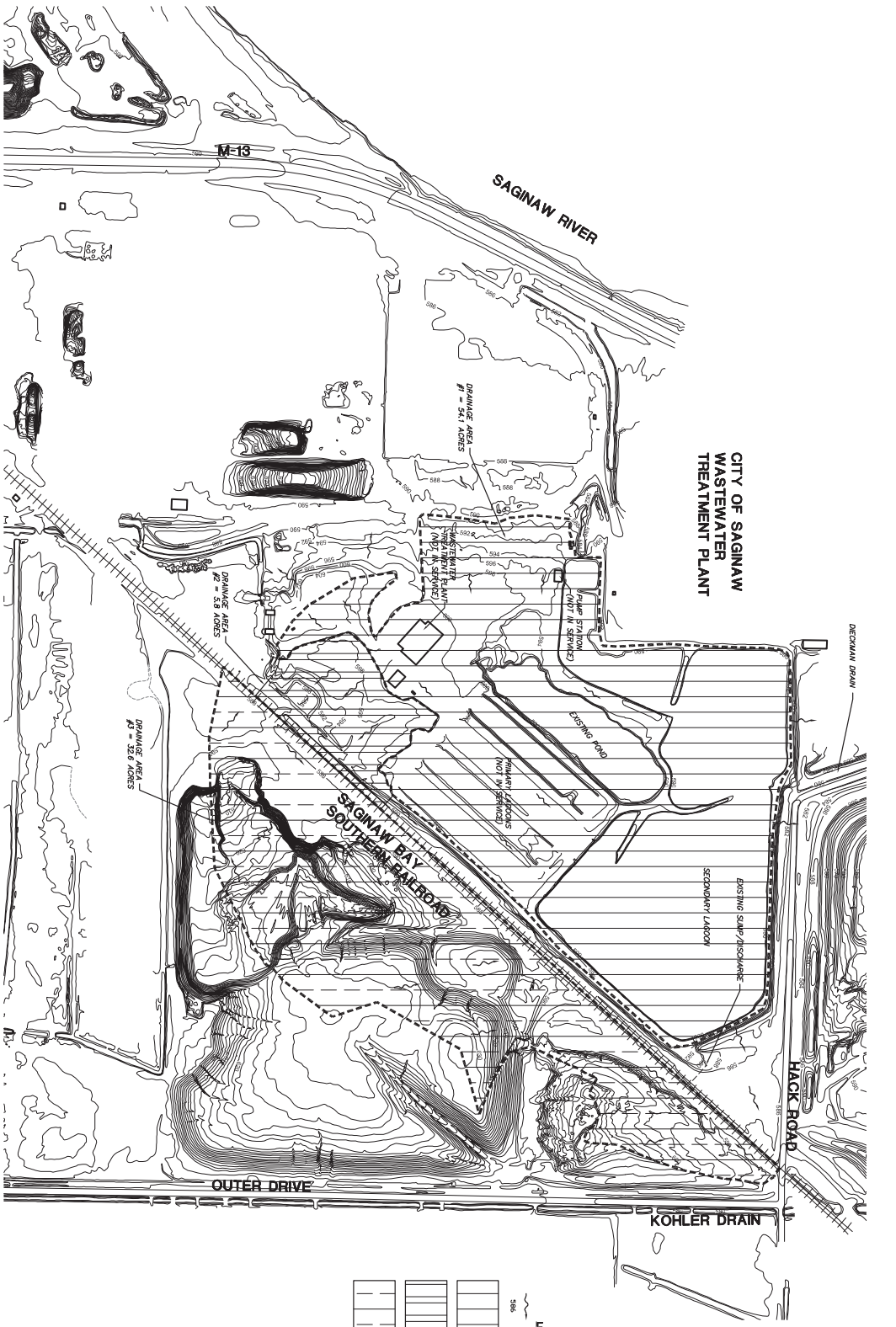


FIG 1

10496.0002

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AN ISO 9001:2000 CERTIFIED COMPANY
WWW.WILCOX.US

RACER NODULAR
SAGINAW NODULAR IRON

DRAINAGE TRIBUTARY MAP

RACER TRUST
401 S. OLD WOODWARD, SUITE 370
BIRMINGHAM, MI 48009
PH: 313-455-2905

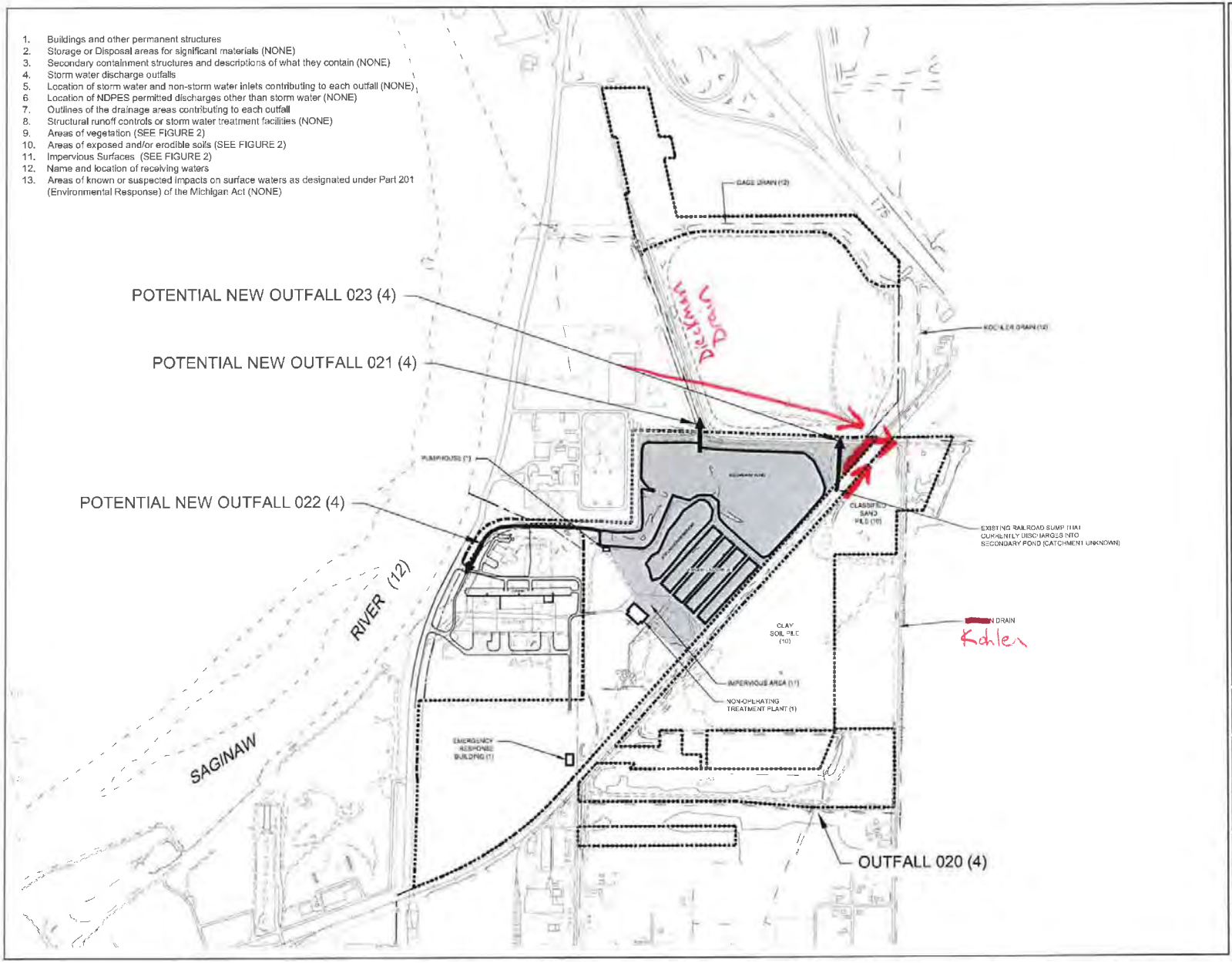
FILE: EX. DRAINAGE INFO.
PROJECT MGR: SLW
DESIGNED BY: SLW
DRAWN BY: AJH
CHECKED BY:
SCALE: NO SCALE
SHEET: OF

PROJECT LOG

CLIENT REVIEW	06/24/11

PREPARED UNDER THE SUPERVISION OF:

1. Buildings and other permanent structures
2. Storage or Disposal areas for significant materials (NONE)
3. Secondary containment structures and descriptions of what they contain (NONE)
4. Storm water discharge outfalls
5. Location of storm water and non-storm water inlets contributing to each outfall (NONE)
6. Location of NDPES permitted discharges other than storm water (NONE)
7. Outlines of the drainage areas contributing to each outfall
8. Structural runoff controls or storm water treatment facilities (NONE)
9. Areas of vegetation (SEE FIGURE 2)
10. Areas of exposed and/or erodible soils (SEE FIGURE 2)
11. Impervious Surfaces (SEE FIGURE 2)
12. Name and location of receiving waters
13. Areas of known or suspected impacts on surface waters as designated under Part 201 (Environmental Response) of the Michigan Act (NONE)



LEGEND

APPROXIMATE PROPERTY BOUNDARY

APPROXIMATE LIMITS OF RACER PROPERTY

APPROXIMATE AREA CONTRIBUTING TO NEW OUTFALLS (21.5)

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY

REVITALIZING AUTO COMMUNITIES ENVIRONMENTAL RESPONSE (RACER)
SAGINAW NODULAR INDUSTRIAL LAND
SAGINAW, MICHIGAN

SITE MAP
FOR SWPPP

CONESTOGA-ROVERS & ASSOCIATES

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

Project Manager	Reviewed By	Date	
M.T.	J.F.P.	JANUARY 2012	
Scale: 1:XXX	Project No.: 58502-T02	Report No.: 007	Drawing No.: 1

ATTACHMENT 5

Construction Completion
Primary Settling Basins, CRA, September 4, 2013

CONESTOGA-ROVERS & ASSOCIATES

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

September 4, 2013 Reference No. 058502

Mr. Nate Nemani
U.S. Environmental Protection Agency, Region 5
Waste Management Division
77 West Jackson Blvd., LU-9J
Chicago, IL 60604-3590

Dear Mr. Nemani:

Re: Construction Completion - Stabilization of the Primary Settling Basins
Saginaw Nodular Industrial Land, 2100 Veterans Memorial Parkway, Saginaw, MI
USEPA ID No. MID 041 793 340

The following letter summarizes the work completed on the stabilization of the primary settling basins (PSBs) at the Saginaw Nodular Industrial Land (Site) in Saginaw, Michigan. The work was completed in accordance with Conestoga-Rovers and Associates (CRA), Site Stabilization Work Plan for Closure of Four Primary Settling Basins, dated July 2012 (Work Plan), which was approved via e-mail by the United States Environment Protection Agency (U.S. EPA) on September 18, 2012.

BACKGROUND

The four PSBs are part of the former wastewater treatment plant (WWTP) which was built in 1976 to treat the effluent water from the former Grey Iron Plant. Operation of the former WWTP ceased in 2010, upon completion of the new treatment facility at the General Motors (GM) Saginaw Metal Casting Operations (SMCO) facility. Figure 1 presents a Site Plan. Each PSB consisted of an inlet structure at the southwest end and an outlet structure at the northeast end.

CLOSURE OF FOUR PRIMARY SETTLING BASINS

The following sections present the details of the work completed to stabilize the PSBs in accordance with the approved Work Plan.

CONTRACTOR PROCUREMENT

A contractor was selected through a competitive bid process. The contractor awarded the contract is OSHA 29 CFR 1910.120 qualified.

HEALTH AND SAFETY PLAN

A Health and Safety Plan (HASP) was prepared by the contractor in accordance with the work plan.

PERMITTING

On November 8, 2012 a Soil Erosion and Sedimentation Control Permit (No. 3196) from the County of Saginaw was obtained (Attachment A).

MOBILIZATION AND SITE PREPARATION

The contractor mobilized to the Site during the week of November 26, 2012 to initiate work.

REMOVAL OF EXISTING STRUCTURES

Water located in the PSBs was pumped and discharged directly into the secondary pond. Dewatering occurred when needed.

Vegetation in the PSBs were cut to ground surface and removed. The vegetation was chipped and stockpiled near the classified sand pile. The vegetation stockpile was later used as cover grading material for the former classified sand area.

The concrete headwall structures were saw- cut at approximately 4 feet (ft) below final grade and left in place. The remaining structures locations are shown on Figure 2. Utilities associated with the primary settling basins were also removed and recycled. Twenty gravel train semi-trailer loads (approximately 50 tons per train load) of broken concrete were hauled to Bond Crushed Concrete, a concrete recycling facility located in Bay City, Michigan. Approximately 18,300 pounds of steel were hauled to Rifkin Scrap Iron and Metal Co., a metal recycling company located in Saginaw, Michigan.

Materials not able to be recycled (fiberglass) were disposed of at Waste Management's Whitefeather disposal facility in accordance with state law. The materials were removed from the PSBs by the week of December 17, 2013.

BACKFILLING

After the PSBs were prepared, they were backfilled with classified sand, which was initiated on December 14, 2012, up to 2 ft below the top of the PBSs. The 2 ft below top of PSBs criteria was verified with the GPS in the dozer at the time of backfilling. The classified sand was excavated and hauled from an existing stockpile located in IU I. The entire stockpile of classified sand which equated to approximately 45,000 cubic yards was used to fill the four PSBs. The movement of classified sand was completed during the week of December 31, 2012.

Clay fill was excavated and hauled from the existing clay stockpile in IU I and placed on top of the classified sand to establish a minimum of 2 ft cover over the classified sand. The minimum of 2 ft cover was verified with the GPS in the dozer at the time of operation. The clay was compacted as it was placed with the bull dozer as well as a minimum of three passes by a sheep's foot compactor. Approximately 23,500 cubic yards of clay was used to cover the classified sand in the PSBs and bring them up to the proposed grades. Excavation, movement and compaction of the clay fill were completed the week of January 7, 2013.

SITE RESTORATION

The source of the topsoil placed over the PSBs and former classified sand area was a former farm field, located at I75 and M81, that has since been developed as a Flying J service station. The topsoil was visually inspected for impacts and deemed acceptable prior to being utilized at the Site. Excavation and movement of topsoil was initiated during the week of February 17, 2013. Approximately 6,250 cubic yards of topsoil was placed over the PSBs and the former classified sand area, which resulted in a minimum of 3 inches of topsoil. The thickness was confirmed by oversight staff a day after the top soil was placed in field. The PSBs were graded to ensure no pooling would occur and runoff water would flow towards the secondary pond. The grades were verified with the GPS in the dozer at the time of final grading.

In order to stabilize and prevent erosion, hydroseed (MDOT roadside seed mix) and straw was placed on the PSBs area, the former classified sand pile area, and the area of the clay pile from which material was removed. Hydroseed was applied the week of June 23, 2013. Attachment B presents a photo log of the construction. To date the soil erosion and sediment control permit is

yet to be closed; however, a Site meeting is being scheduled for September with the County of Saginaw with the goal that the permit can be closed.

CONCLUSION

The stabilization of the PSBs was completed in accordance with the approved Work Plan.

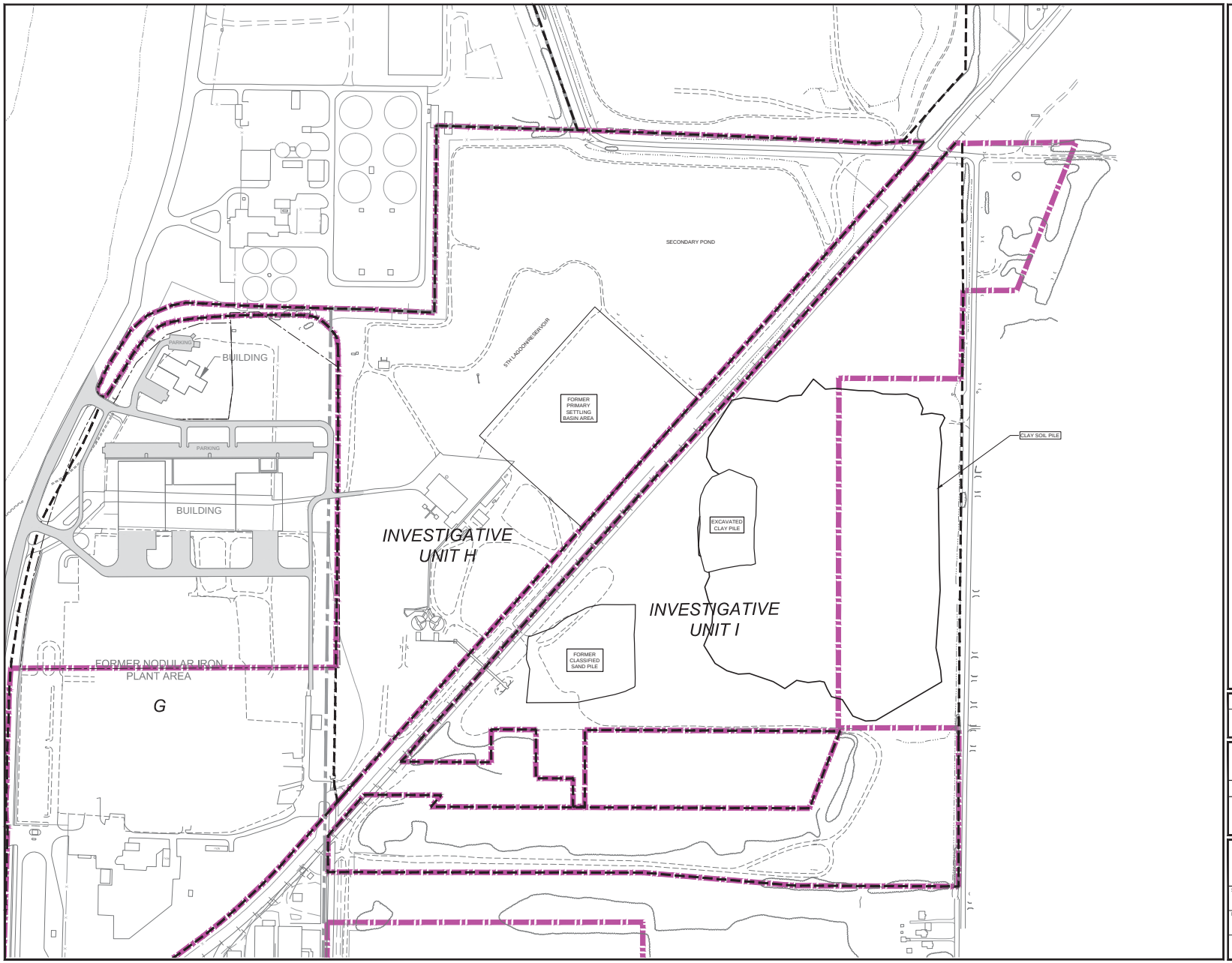
Should you have any questions, please do not hesitate to call.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Michael R. Tomka, P.E.

JEP/kf/15



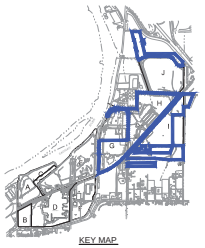
0 100 200 ft

LEGEND

INVESTIGATIVE UNIT BOUNDARY

RACER PROPERTY

APPROXIMATE CONTOUR ELEVATION FOR FORMER LAGOON AREA



KEY MAP

SCALE VERIFICATION

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

REVITALIZING AUTO COMMUNITES ENVIRONMENTAL RESPONSE

SAGINAW, MICHIGAN

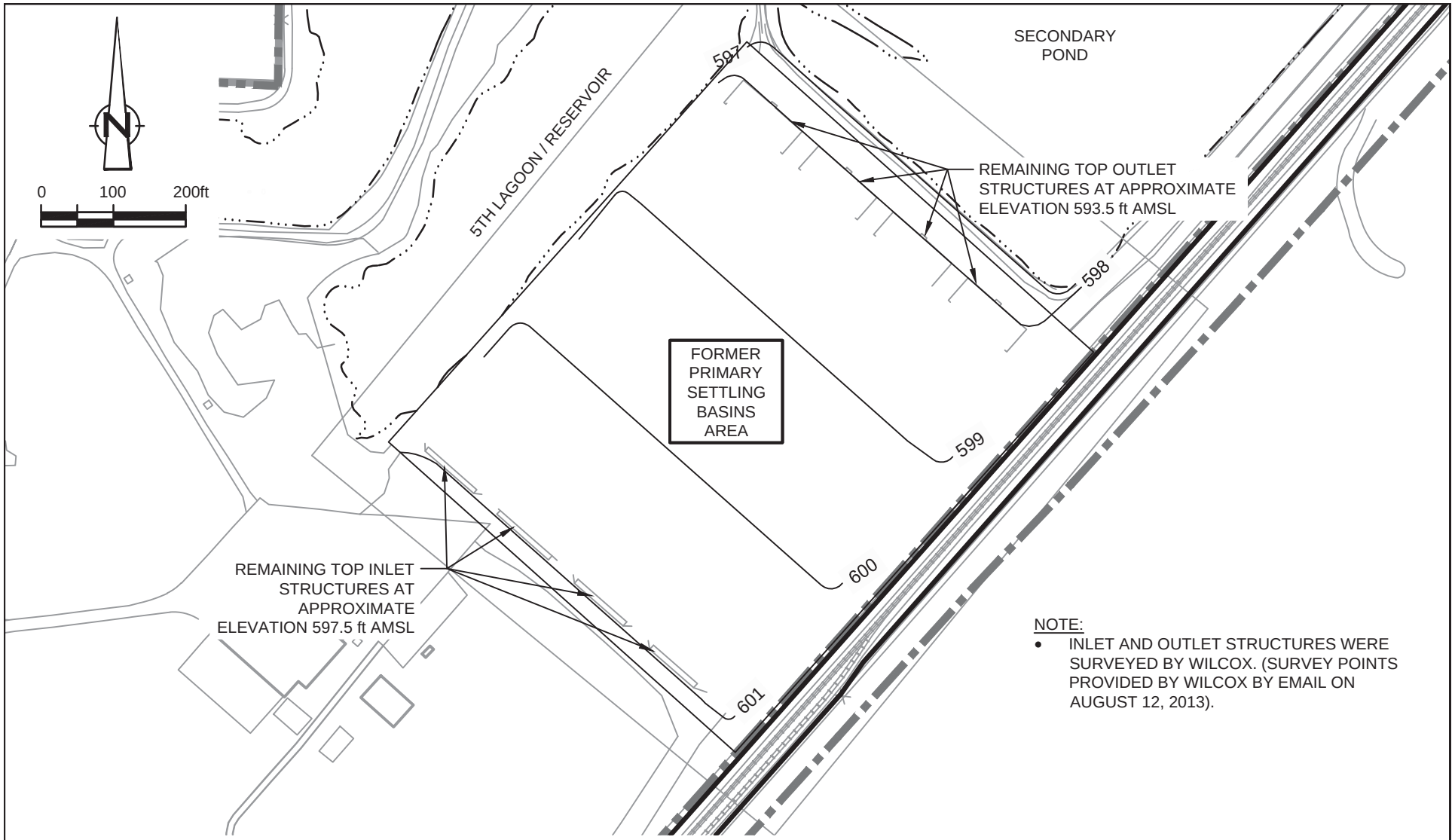
SITE PLAN

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
MICHIGAN STATE PLANE SOUTH, NAD 83 USING INTERNATIONAL FEET, NGVD 88
SPICER SURVEY, OCTOBER 2009; WILCOX, DRAINAGE IMPROVEMENTS.

Project Manager:	Reviewed By:	Date:	
I.R.	M.T.	AUGUST 2013	
Scale: 1:200	Project N#: 58502-T02	Report N#: NEMA015	Drawing N#: figure 1

58502-T02(NEMA015)GN-WA001 AUG 20/2013



NOTE:

- INLET AND OUTLET STRUCTURES WERE SURVEYED BY WILCOX. (SURVEY POINTS PROVIDED BY WILCOX BY EMAIL ON AUGUST 12, 2013).

LEGEND

- RACER PROPERTY
- APPROXIMATE EDGE OF WATER
- 598 — APPROXIMATE CONTOUR ELEVATION FOR FORMER PRIMARY SETTLING BASIN AREA

SOURCE:
MICHIGAN STATE PLANE SOUTH, NAD 83 USING INTERNATIONAL FEET, NGVD 88
SPICER SURVEY, OCTOBER 2009; WILCOX, DRAINAGE IMPROVEMENTS.

figure 2

PRIMARY SETTLING BASINS
REVITALIZING AUTO COMMUNITES ENVIRONMENTAL RESPONSE
Saginaw, Michigan

58502-T02(NEMA015)GN-WA002 AUG 20/2013

ATTACHMENT A

SOIL EROSION AND SEDIMENT CONTROL PERMIT

COUNTY OF SAGINAW

SOIL EROSION AND SEDIMENTATION CONTROL PERMIT

(Issued under the authority of Part 91, Soil Erosion and Sedimentation Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended)

Permittee:	Racer Trust	**Permit No:**	3196
Address:	2930 Ecorse Rd	**Issued:**	November 8, 2012
	Ypsilanti, MI 48198	**Expires:**	November 7, 2013
	(313) 486-2908	**Extended:**	
	Attn: David Favero		
On-Site Responsible Person:	**Michael Yenior**	**Telephone No:**	(989) 835-7771
Company:	Fisher Companies		(989) 615-9789
	614 Jefferson Ave., P.O. Box 1787		
	Midland, MI 48641		

Permitted Activity: All demolition, fill, grading, seeding and above ground construction to fill settling ponds, cap and seed, with appurtenances, at former Nodular Iron Treatment Plant, as shown on plans prepared by applicant. 15.0 Acre(s)

Project Location: **Town:** 13N **Range:** 5E **Sections:** 8

City or Township: Buena Vista Township
Address:

NOV 13 2012

Permit Conditions:

1. The permitted activity shall be completed in accordance with the approved plans and specifications, and the attached general and specific conditions.
2. This permit does not waive the necessity for obtaining all other required federal, state, or local permits.
3. Permittee shall notify the permitting agency within one week after completing the permitted activity or one week prior to the permit expiration date, which ever comes first.

Matthew D. Rappley
Saginaw County Public Works Commissioner

(989) 790-5258
Telephone Number

THIS PERMIT MUST BE POSTED AT THE PROJECT SITE.

GENERAL CONDITIONS

In accordance with Rule 1709 promulgated under the authority of Part 91, Soil Erosion and Sedimentation Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and in addition to the information on the attached plan(s) and special conditions, the following general conditions apply to the earth change authorized by this permit:

X Design, construct, and complete the earth change in a manner that limits the exposed area of disturbed land for the shortest period of time.

X Remove sediment caused by accelerated soil erosion from runoff water before it leaves the site of the earth change.

X Temporary or permanent control measures shall be designed and installed to convey water around, through, or from the earth change at a non-erosive velocity.

X Install temporary soil erosion and sedimentation control measures before or upon commencement of the earth change activity and maintain the measures on a daily basis. Remove temporary soil erosion and sedimentation control measures after permanent soil erosion measures are in place and the area is stabilized. (Stabilized means the establishment of vegetation or the proper placement, grading, or covering of soil to ensure its resistance to soil erosion, sliding, or other earth movement.)

X Complete permanent soil erosion control measures for the earth change within five calendar days after final grading or upon completion of the final earth change. If it is not possible to permanently stabilize the earth change, then maintain temporary soil erosion and sedimentation control measures until permanent soil erosion control measures are in place and the area is stabilized.

SPECIFIC CONDITIONS

- Seeding of disturbed areas.
- Temporary erosion control measures to be maintained by contractor.
- Permanent erosion control measures to be maintained by owner.

ATTACHMENT B

PHOTO LOG

PHOTO 1: PRIMARY SETTLING BASIN 3 - LOOKING SOUTHWEST (7/18/2012)

PHOTO 2: PRIMARY SETTLING BASIN 4 - LOOKING SOUTHWEST (07/18/2012)

SITE PHOTOGRAPHS
PRIMARY SETTLING BASIN CLOSURE – BEFORE BACKFILLING
NODULAR INDUSTRIAL LAND
SAGINAW, MI

PHOTO 3: PRIMARY SETTLING BASIN 3 - LOOKING SOUTHWEST (12/4/2012)

PHOTO 4: PRIMARY SETTLING BASIN 4 - LOOKING SOUTHWEST (12/4/2012)

SITE PHOTOGRAPHS
PRIMARY SETTLING BASIN CLOSURE – PRIOR TO INITIATION OF CLOSURE
NODULAR INDUSTRIAL LAND
SAGINAW, MI

PHOTO 5: PRIMARY SETTLING BASIN 3 - LOOKING SOUTHWEST (12/12/2012)

PHOTO 6: PRIMARY SETTLING BASIN 4 - LOOKING SOUTHWEST (12/12/2012)

PHOTO 7: PRIMARY SETTLING BASIN 3 - LOOKING SOUTHWEST (01/07/2013)

PHOTO 8: PRIMARY SETTLING BASIN 4 - LOOKING SOUTHWEST (01/07/2013)

PHOTO 9: PRIMARY SETTLING BASINS - LOOKING SOUTHWEST (02/06/2013)

PHOTO 10: PRIMARY SETTLING BASINS – TOPSOIL (06/03/2013)

PHOTO 11: PRIMARY SETTLING BASINS - SEEDING (06/20/2013)

PHOTO 12: PRIMARY SETTLING BASINS - VEGETATION (06/20/2013)

PHOTO 13: PRIMARY SETTLING BASINS - VEGETATED (09/04/2013)

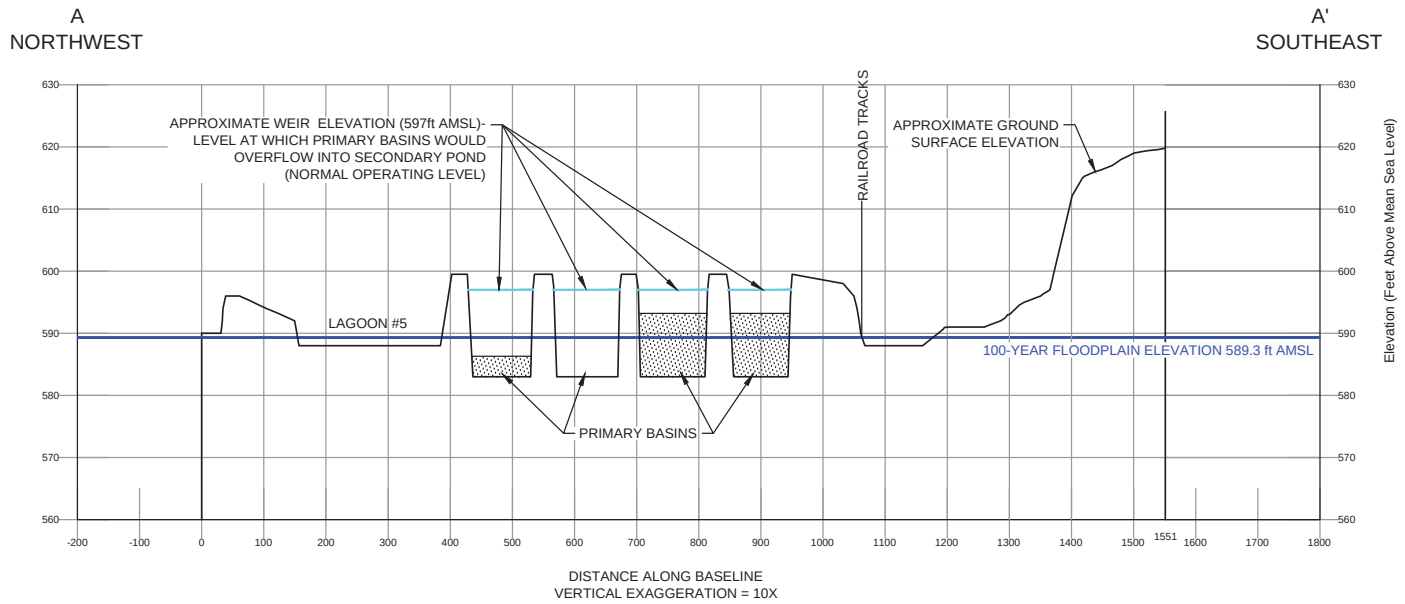
PHOTO 14: CLASSIFIED SAND PILE - VEGETATION (09/04/2013)

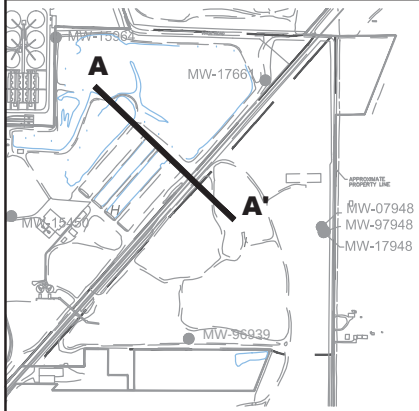
SITE PHOTOGRAPHS
PRIMARY SETTLING BASIN CLOSURE
NODULAR INDUSTRIAL LAND
SAGINAW, MI

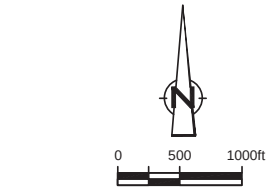
PHOTO 15: CLAY PILE - VEGETATED (09/04/2013)

ATTACHMENT 6

Primary Basins Information







LEGEND

MW-17661 MONITORING WELL LOCATION AND IDENTIFIER

A—A' CROSS SECTION LOCATION

FINE SAND

figure 1.2

CROSS SECTION A - A'
FORMER PRIMARY SETTING BASINS
NODULAR FACILITY, RACER
Saginaw, Michigan

58502-T02(PRES008)GN-WA002 APR 21/2014


Weir height: ~597 ft AMSL
(green fiberglass)
Note: The designed operating level of the primary basins was the height of the weir. This photo was taken December 4, 2012, during basin closure activities.