February 24, 2016 Reference No. 007878

Ms. Liz Theile
Michigan Department of Environmental Quality
Water Resources Division
401 Ketchum Street, Suite B
Bay City, Michigan
U.S.A. 48708

Dear Ms. Theile:

Re: Joint Permit Application
EPA ID #MID 005 356 698
RACER Malleable Iron Industrial Land – Saginaw, Michigan

GHD on behalf of Revitalizing Auto Communities Environmental Response (RACER) has prepared the following cover letter to support the Joint Permit Application for the work proposed at RACER's Malleable Iron Industrial Land (Site) in Saginaw, Michigan. The following Attachments are included as part of RACER's application.

Attachment A – Fully executed Joint Permit Application
Attachment B – Maps and Drawings
Attachment C – Photograph Log of the area of the proposed work
Attachment D – Receipt of payment for Joint Permit Application
Attachment E – Easements and Other Permits/Approvals
Attachment F – Design Brief – Fill Volume Calculations
Attachment G – Analytical Data for Proposed Compensating Cut Area

Additional information has been provided for the following sections of the Joint Permit Application to provide additional detail where there is insufficient space in the application.

Section 10A – Projects Requiring Fill

With regards to the source of clean fill, three separate sources will be used for the proposed cover over the concrete floor slab of the former Saginaw Malleable Iron facility:

- The layer immediately above the concrete floor slab will consist of a minimum of 10-inches of clay. One potential source of the clay is the clay pile at RACER's Nodular Iron Industrial Land Site also located in Saginaw, MI. The clay material was stockpiled from the construction of the nearby landfill and therefore is considered virgin material. If a different source of clay is to be used, details will be provided prior to placement.

GHD Services Inc.
14496 Sheldon Road Suite 200 Plymouth Michigan 48170 USA
T 734 453 5123 **F** 734 453 5201 **W** www.ghd.com

- Material excavated from the area west of the secondary pond as compensating cut below the floodplain (see Figure 5 in Attachment B), will be used to transition between the cover above the concrete floor slab and the existing ground surface. The material will be placed around the north edge of the concrete floor slab above the floodplain. Characterization samples were collected in 2007. The data were compared to the current MDEQ criteria as presented in Attachment G. There were no exceedances of applicable soil criteria, with the exception of minor exceedances of GSI criteria for naphthalene and selenium in one sample.
- Two inches of topsoil will form the final layer of the cover. The source for this material has yet to be identified as a contractor has yet to be selected to complete the work. The source of topsoil will be provided to MDEQ once the contractor has been selected and identified the source topsoil.

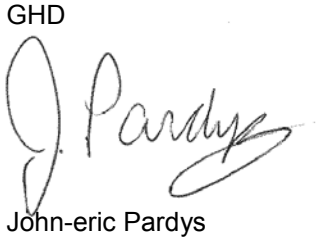
Section 13 – Floodplain Activities

Please refer to Attachment F, which includes a design brief describing how the cut/fill volumes below the 100-year floodplain elevation were calculated.

Should you have any questions on the information provided or require additional information, please do not hesitate to call.

Sincerely,

GHD



John-eric Pardys

JP/kf/1

Encl.

cc: Dave Favero, RACER
Michael Tomka, GHD

Attachment A
Fully Executed Joint Permit Application

U.S. Army Corps of Engineers
Detroit District Office
Phone: 313-226-2218, Fax: 313-226-6763
Website: www.lre.usace.army.mil

Michigan Department of Environmental Quality
Water Resources Division
See staff map on page iii for contact information
Website: www.mi.gov/jointpermit

Joint Permit Application

For Work in Inland Lakes and Streams, Great Lakes, Wetlands, Floodplains, Dams, High Risk Erosion Areas and Critical Dune Areas

www.mi.gov/jointpermit

What is the purpose of the Joint Permit Application?	This Joint Permit Application was developed to facilitate the state and federal permit application process administered by the Michigan Department of Environmental Quality (DEQ) and the U.S. Army Corps of Engineers (USACE). The Joint Permit Application is a multi-purpose application used to describe and quantify proposed activities regulated by the DEQ and/or the USACE. This application is for those activities regulated by the following Parts of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended by the State of Michigan. • Part 301, Inland Lakes and Streams • Part 325, Great Lakes Submerged Lands • Part 303, Wetlands Protection • Floodplain Regulatory Authority found in Part 31, Water Resources Protection • Part 315, Dam Safety • Part 323, Shorelands Protection and Management (High Risk Erosion Areas) • Part 353, Sand Dunes Protection and Management (Critical Dune Areas) The regulated activities are summarized in Appendix D. The statutes and rules are available at www.mi.gov/jointpermit. This application is also for those activities regulated by the USACE within the waters of the United States under Section 10, Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404, Clean Water Act of 1977 (33 U.S.C. 1344). Preapplication Meeting: This is an optional service available for activities proposed in inland lakes and streams (Part 301), wetlands (Part 303), and critical dune areas (Part 353). A preapplication meeting can answer many questions regarding whether or not a permit is required and the review process. The application form and fee schedule are available at www.mi.gov/jointpermit.
How do I complete the Joint Permit Application? *An accurate and complete application package is required for processing; inaccurate or missing information will delay processing.*	**There are three parts to a complete Joint Permit Application package:** 1. Application Form 2. Maps and Drawings 3. Fee Follow the checklists on the following page for each part of the application package. **When you have questions or need assistance in completing the application package refer to the following information on our website www.mi.gov/jointpermit or you may contact the appropriate district office, page iii, or through the website link "Who to Contact."** • Joint Permit Application Training Manual • EZ Guides for small projects • Acronyms in Appendix A • Sample drawings in Appendix B • Minor Project and General Permit Categories in Appendix C • Fee schedule in Appendix C • State and Federal Authority and Penalties in Appendix D • Glossary in Appendix E

Application Checklist

The following website will provide township, range, section, latitude and longitude information:

www.mcgi.state.mi.us /wetlands/

www.geocoder.us

In each section check all boxes that apply to your project.

Show and label property lines on the site plan.

Label existing and proposed contours, dimensions, excavation and/or fill on the site plans and cross sections.

Provide tables for multiple impact areas.

1. Application Form

- [x] Complete Sections 1 through 9 of the application form.
- [na] An authorization letter from the property owner if someone other than the property owner is signing the application.
- [x] Complete those Sections 10 through 20 that apply to your project. Follow the instructions at the beginning of each section. For additional information, the instructions for each sample drawing in Appendix B indicate the application sections you will most likely need to complete. Complete the application form as much as possible before adding attachments. Label each attachment with the applicant's name.
- [na] Stake or flag the area for site inspection including the property corners, proposed road or driveway centerlines, and areas of proposed impacts. The site must be flagged when the application is submitted.

2. Maps and Drawings *(See Attachment B)*

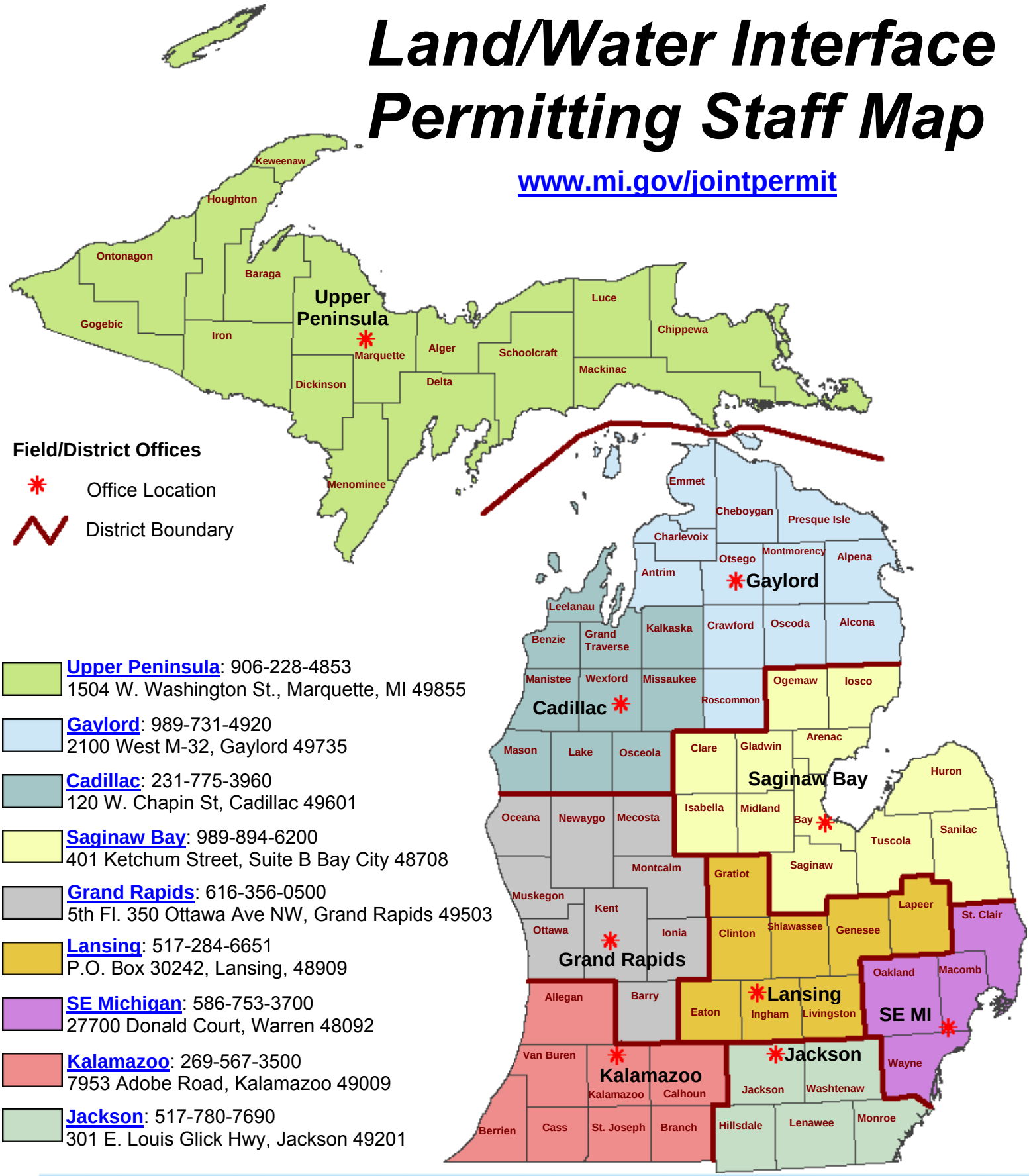
- [x] All maps and drawings must be black and white, legible, reproducible, and sized to 8.5" x 11". Aerial photographs do not substitute for site plans. If larger drawings or blueprints are required to show adequate detail for review, you may also submit one full size copy.
- [x] Vicinity Map: A map to the proposed project location that includes ALL streets, roads, intersections, highways, or cross-roads to the project. Do not assume review staff knows your project location.
- [x] Project Site Plan: Overhead drawings to scale or with dimensions, length and width, of the proposed project are required. Show and label property lines on the site plan.
- [x] Cross-section drawings are required. Provide the cross-sections and profile views to scale or with dimensions, length, width, and height.
- [x] Elevation data must include a description of the reference point or benchmark used and its corresponding elevation. For projects on the Great Lakes or Section 10 Waters, elevations must be provided in IGLD 85. For observed Great Lake water elevations in IGLD, visit the USACE website under "water levels". If elevations are from still water, provide the observation date and water elevation. On inland sites, elevations can use NGVD 29, NAVD 88, a local datum or an assumed bench mark.
- [x] Provide descriptive photographs of the proposed work site showing vegetation if wetlands are involved or the shoreline for shore protection projects. All photographs must be labeled with your name and the date of the photograph, indicate what they show, and be referenced to the site plan. Proposed activities or structure(s) may be indicated directly on the photographs using indelible markers or ink pens. Provide aerial photographs 1:400 or larger for major projects. *(See Attachment C)*

3. Fee *(See Attachment D)*

- [x] Payment to the **State of Michigan**. Fees typically range from $50 to $4,000 depending on the type of project. Refer to Appendix C of the application and/or visit www.mi.gov/jointpermit to determine the appropriate fee for your project and for directions to pay by credit card or electronic fund transfer payment.
- [x] Applications should be sent directly to the district offices. Please refer to page iii, or refer to www.mi.gov/jointpermit "who to contact" for address and/or phone number. Applications that cross county boundaries should be sent to the district containing the primary work effort.
- [ ] Applications for dams regulated under Part 315 or from public agencies eligible to receive federal and/or state transportation funding for a project involving public roadways, non-motorized paths, airports, or related facilities should be mailed to: DEQ, WRD, P.O. BOX 30458, LANSING, MI 48909-7958.

Land/Water Interface Permitting Staff Map

www.mi.gov/jointpermit



Upper Peninsula: 906-228-4853
1504 W. Washington St., Marquette, MI 49855

Gaylord: 989-731-4920
2100 West M-32, Gaylord 49735

Cadillac: 231-775-3960
120 W. Chapin St, Cadillac 49601

Saginaw Bay: 989-894-6200
401 Ketchum Street, Suite B Bay City 48708

Grand Rapids: 616-356-0500
5th Fl. 350 Ottawa Ave NW, Grand Rapids 49503

Lansing: 517-284-6651
P.O. Box 30242, Lansing, 48909

SE Michigan: 586-753-3700
27700 Donald Court, Warren 48092

Kalamazoo: 269-567-3500
7953 Adobe Road, Kalamazoo 49009

Jackson: 517-780-7690
301 E. Louis Glick Hwy, Jackson 49201

DEQ Water Resources Division 517-284-5567

APPENDICES

Application status can be viewed on the Water Resources Division (WRD) website at www.deq.state.mi.us/CIWPIS. During the application period, if any information is missing from the application or if any clarification is needed regarding materials provided, the application is incomplete and staff will request the information from the applicant/agent by letter, email, fax or phone call. If a complete response is not provided within 30 days, the application will be closed. Some regulatory parts allow extensions if requested within the 30 day time frame. Once the WRD has received the information necessary for review of the project, including a thoroughly completed application, consistent drawings that have adequate detail for review and the full application fee, the file will be reviewed for final processing. A mailed postcard or a public notice will provide the file number and the telephone number of the office where the application is being processed. The review time to determine if an application is complete for processing ranges from 15 to 30 days. Technical processing times, after the application is administratively complete, may range from 60 to 90 days. Processing times will be longer if a public hearing is held. Staff from your local District/Field Office may visit the project site and may request additional information prior to a decision on the application. Application fees are not refundable or transferable.

If a federal permit will also be required, a copy of the permit application will be sent to the Detroit District Office, USACE, for processing at the federal level. Additional copies of this application form can be downloaded from the WRD website at www.mi.gov/jointpermit or can be photocopied from the original. If you have any questions about the permitting process or if you need to modify your application, you can contact the WRD by phone or fax at the addresses on the previous page, or email at DEQ-WRD-jointpermit@michigan.gov.

AGENCY USE	Previous USACE File Number	Date Received	DEQ File Number
	USACE File Number		Fee received $

Validate that all parts of this checklist are submitted with the application package. Fill out application and additional pages as needed.

☒ All items in Sections 1 through 9 are completed.
☒ Project-specific Sections 10 through 20 are completed.
☒ Dimensions, volumes, and calculations are provided for all impact areas.
☒ All information contained in the headings for the appropriate Sections (1-20) are addressed, and identified attachments (➡) are included.
☒ Map, site plan(s), cross sections; one set must be black and white on 8 ½ by 11 inch paper; photographs.
☒ Application fee is attached.

1 Project Location Information *For Latitude, Longitude, and TRS info anywhere in Michigan see www.mcgi.state.mi.us/wetlands/*

Project Address (road, if no street address)	Zip Code	Municipality (Township/Village/City)	County
77 West Center Street	*48602*	*Saginaw*	*Saginaw*

Property Tax Identification Number(s)	Latitude	Township/Range/Section (TRS)
19 2231 00000	*43.4044* N	T *12* N or S; R *4* E or W;
Subdivision/Plat and Lot Number	Longitude - *83.972835* W	Sec *34 and 35*
		OR Private Claim # _____

2 Applicant and Agent Information

Owner/Applicant (individual or corporate name)	Agent/Contractor (firm name and contact person)
RACER Properties LLC, c/o Dave Favero	*GHD Servoces, Inc. c/o John-eric Pardys*
Mailing Address *500 Woodward Avenue, Suite 2650*	Mailing Address *651 Colby Drive*
City *Detroit* State *MI* Zip Code *48226*	City *Waterloo* State *ON* Zip Code *N2V 1C2*
Contact Phone Number *734-879-9525* Fax	Contact Phone Number *519-884-0510* Fax *519-884-0525*
Email *dfavero@racertrust.org*	E-mail *John-eric.Pardys@ghd.com*

☐ No ☒ Yes Is the applicant the sole owner of all property on which this project is to be constructed and all property involved or impacted by this project? ➡ If no, attach letter(s) of authorization from all property owners including the owner of the disposal site.

Property Owner's Name (If different from applicant)	Mailing Address
Contact Phone Number	City State Zip Code

3 Project Description

Project Name *Malleable Iron Industrial Land - Cover concrete floor slab*	Preapplication File Number – – –P
Name of Water body *Saginaw River*	Date project staked/flagged *NA*

The proposed project is on, within, or involves (check all that apply)

☐ an inland lake (5 acres or more)
☐ a pond (less than 5 acres)
☐ a stream, river, ditch or drain
☐ a legally established County Drain
Date Drain was established
☐ a channel/canal
☐ 500 feet of an existing water body
☐ a Great Lake or Section 10 Waters
☐ a wetland
☒ a 100-year floodplain
☐ a dam
☐ a designated high risk erosion area
☐ a designated critical dune area
☐ a designated environmental area

Project Use
☒ private
☐ commercial
☐ public/government
☐ project is receiving federal/state transportation funds
☐ Wetland Restoration
☒ other Non-residential

Indicate the type of permit being applied for: ☐ General Permit ☒ Minor Project ☐ Individual (All other projects.) ➡ See Appendix C.

Written Summary of All Proposed Activities ***Remove PCB impacted soil and concrete and restore to pre-excavation conditions. Place one foot of soil over the entire concrete floor slab.***

Construction Sequence and Methods ***PCBs have been horizontally and vertically delineated to 10ppm in concrete and in soil. PCB impacted concrete above 10ppm will be removed to the clean boundaries. PCB impacted soil above 100ppm will be removed to a depth of 5ft or the water table, whichever is shallower. The soil excavated will be replaced with clean backfill and the concrete floor slab removed will be restored with a minimum of 6-inches of concrete. A 1-ft cover will then be placed on the entire concrete floor slab of the former SMI Plant. For additional information refer to the Risk-Based Disposal Work Plan for PCB-Impacted Material (CRA, May '15)***

4 Project Purpose, Use and Alternatives *Attach additional sheets as necessary.*

Describe the purpose of the project and its intended use; include any new development or expansion of an existing land use.

Purpose of the work is to reduce potential exposures to PCB impacted materials.

Describe the alternatives considered to avoid or minimize resource impacts. Include factors such as, but to limited to, alternative locations, project layout and design, and construction technologies. For utility crossings include alternative routes and construction methods.

Not applicable.

5 Locating Your Project Site *Attach a legible black and white map with a North arrow.*

Names of roads of closest intersection ***Salt Street and Vermont Street***

Directions from main intersection to the project site, with distances from the best and nearest visible landmark and water body ***Site work is located approximately 0.8 miles north of the closest intersection (third driveway on the right)***

Description of buildings on the site *(color; 1 or 2 story, other)*	Description of adjacent landmarks or buildings *(address; color; etc)*
1 small semi-portable building which houses a LNAPL extraction system (skimmer pump, totes for NAPL storage, old equipment, historical documents in banker boxes)	***Site is immediately adjacent to the Saginaw River, just north of the confluence of the Tittabawassee River and the Shiawassee River*** ***Site is immediately east of the former Delphi property (also vacant)***

How can your site be identified if there is no visible address? ***See figure 1***

6 Easements and Other Permits

☐ No ☒ Yes Is there a conservation easement or other easement, deed restriction, lease, or other encumbrance upon the property?

➡ If yes, attach a copy. Provide copies of court orders and legal lake levels if applicable. ***See Attachment E***

List all other federal, interstate, state, or local agency authorizations including required assurances for Critical Dune Area projects.

Agency	Type of Approval	Number	Date Applied	Date approved /denied	Reason for denial
MDEQ/U.S. EPA	***Coordinated approval***	***TBD***	***May 18, 2015***	***TBD***	
City of Saginaw	***Floodplain permit***	***TBD***	***To be completed***	***TBD***	

7 Compliance

If a permit is issued, when will the activity begin? (M/D/Y) ***Summer 2016*** Proposed completion date (M/D/Y) ***Fall 2016***

☒ No ☐ Yes Has any construction activity commenced or been completed in a regulated area?

➡ If Yes, identify the portion(s) underway or completed on drawings or attach project specifications and give completion date(s).

☐ No ☐ Yes Were the regulated activities conducted under a DEQ and/or USACE permit?

➡ If Yes, list the permit numbers

☒ No ☐ Yes Are you aware of any unresolved violations of environmental law or litigation involving the property?

➡ If Yes, attach explanation.

8 Adjoining Property Owners *Provide current mailing addresses. Attach additional sheets/labels for long lists.*

☐ Established Lake Board ☐ Lake Association	Contact Person	Mailing Address	City	State and Zip Code

List all adjoining property owners.

If you own the adjoining lot, provide the requested information for the first adjoining parcel that is not owned by you.

Property Owner's Name	Mailing Address	City	State and Zip Code
Department of Natural Resources	***3303 Gabriel Rd. (south of Site)***	***Saginaw***	***MI, 48602***
Czymbor Timber LLC	***3300 and 2900 Gabriel Rd. (south of Site)*** ***2750 Salt St. (west of Site)***	***Saginaw***	***MI, 48602***
Rose, David, & John & Frederick E	***2746 Salt St. (west of Site)***	***Saginaw***	***MI, 48602***
Le Petomane XXVIII Inc.	***1401 Holmes St. (west of Site)***	***Saginaw***	***MI, 48602***
CSX Transportation Inc.	***107 and 137 Florence St. (north of Site)***	***Saginaw***	***MI, 48602***
Florence Event Hall LLC	***110 Florence St. (north of Site)***	***Saginaw***	***MI 48602***
Dennis Eugene Veltre	***1821 and 1815 Salt St. (north of Site)***	***Saginaw***	***MI, 48602***
Alex and Julia Hernandez	***1811 Salt St. (north of Site)***	***Saginaw***	***MI, 48602***
Everett C & Ray, Bobbi J Duby	***1807 Salt St. (north of Site)***	***Saginaw***	***MI, 48602***
Robert W & Donna K Wesson	***1803 Salt St. (north of Site)***	***Saginaw***	***MI, 48602***

Saginaw County Land Bank Authority	*1604 and 1723 Salt St. (north of Site)*	*Saginaw*	*MI, 48602*
Gerald & Emily Holcomb	*1717 Salt St. (north of Site)*	*Saginaw*	*MI, 48602*
Everett C & Carchow, Charlotte Duby Amalgamated Credit Union	*109 Vermont St. (north of Site)*	*Saginaw*	*MI, 48602*
	1606 King St. (north of Site)	*Saginaw*	*MI, 48602*
Chadwick, Eggers	*1518 Queen St. (north of Site)*	*Saginaw*	*MI, 48602*
Eggers Excavating LLC	*70, 72, and 76 W. Center St. (east of Site)*	*Saginaw*	*MI, 48602*
Consumers Energy	*102 Florence St. (east of Site)*	*Saginaw*	*MI, 48602*

9 Applicant's Certification *Read carefully before signing.*

I am applying for a permit(s) to authorize the activities described herein. I certify that I am familiar with the information contained in this application; that it is true and accurate; and, to the best of my knowledge, that it is in compliance with the State Coastal Zone Management Program. I understand that there are penalties for submitting false information and that any permit issued pursuant to this application may be revoked if information on this application is untrue. I certify that I have the authority to undertake the activities proposed in this application. By signing this application, I agree to allow representatives of the DEQ, USACE, and/or their agents or contractors to enter upon said property in order to inspect the proposed activity site before and during construction and after the completion of the project. I understand that I must obtain all other necessary local, county, state, or federal permits and that the granting of other permits by local, county, state, or federal agencies does not release me from the requirements of obtaining the permit requested herein before commencing the activity. I understand that the payment of the application fee does not guarantee the issuance of a permit.

	Printed Name	Signature	Date
☒ Property Owner ☐ Agent/Contractor ☐ Corp. or Public Agency / Title	*Dave Favero*		

10 Projects Impacting Inland Lakes, Streams, Great Lakes, Wetlands or Floodplains

- Complete only those sections A through M applicable to your project.
- If your project impacts wetlands also complete Section 12. If your project impacts regulated floodplains also complete Section 13.
- To calculate volume in cubic yards (cu yd), multiply the average length in feet (ft) times the average width (ft) times the average depth (ft) and divide by 27. Example: (25 ft long x 10 ft wide x 2 feet deep) / 27 = 18.5 cubic yards
- Some projects on the Great Lakes require an application for conveyance prior to Joint Permit Application completeness.

➡Provide a black and white overall site plan, with cross-section and profile drawings. Show existing lakes, streams, wetlands, and other water features; existing structures; and the location of all proposed structures, land change activities and soil erosion and sedimentation control measures. Review Appendix B and EZ Guides for aid in providing complete site-specific drawings.

➡Provide tables for multiple impact areas or multiple activities such as multiple fill areas or multiple culverts. Include your calculations.

Water Level Elevation

On inland waters ☒ NGVD 29 ☐ NAVD 88 ☐ other Observed water elevation (ft) ***580.048*** ***in the Saginaw River*** date of observation (M/D/Y) ***12/22/15***

On a Great Lake ☐ IGLD 85 ☒ surveyed ☐ converted from observed still water elevation.

☒ **A. PROJECTS REQUIRING FILL** (See All Sample Drawings)

➡Attach a site plan and cross-section views to scale showing maximum and average fill dimensions with calculations.
➡ For multiple impact areas on a site provide a table with location, dimensions and volumes for each fill area.

Purpose ☐ bioengineered shore protection ☐ boat ramp ☐ boat well ☐ bridge or culvert ☐ crib dock ☐ riprap ☐ seawall ☐ swim area ☒ other ***cover over concrete slab***

Dimensions of fill (ft)	Total volume (cubic yards)	Volume below OHWM (cubic yards)
Length ***1,000ft*** Width ***1,000ft*** Maximum Depth ***1ft***	***~40,000***	***~2,700***
Maximum water depth in fill area (ft) ***NA***	Area filled (sq ft) ***1,050,000***	Will filter fabric be used under proposed fill? ☒ No ☐ Yes (If Yes, type)

Fill will extend ***NA*** feet into the water from the shoreline and upland NA feet out of the water.

Type of clean fill ☐ peastone % ☐ sand % ☐ gravel % ☒ other ***clay 85% and topsoil 15%***

Source of clean fill ☐ commercial ☐ on-site ☒ other ➡ If on-site, show location on site plan. ➡ If other, attach description of location.

☐ **B. PROJECTS REQUIRING DREDGING OR EXCAVATION** (See Sample Drawings)

- Refer to www.mi.gov/jointpermit for spoils disposal and authorization requirements.

➡Attach a site plan and cross-section views to scale showing maximum and average dredge or excavation dimensions with calculations.
➡For multiple impact areas on a site provide a table with location, dimensions and volumes for each dredge/excavation area.

Purpose ☐ boat ramp ☐ boat well ☐ bridge or culvert ☐ maintenance dredge ☐ navigation ☐ pond/basin ☐ other

Dimensions (ft) Length Width Maximum Depth	Total volume (cu yds)	Volume below OHWM (cu yds)

Has this same area been previously dredged?	☐ No ☐ Yes	If Yes, provide date and permit number:
Will the previously dredged area be enlarged?	☐ No ☐ Yes	If Yes, when and how much?
Is long-term maintenance dredging planned?	☐ No ☐ Yes	If Yes, how often?

Dredge or Excavation Method ☐ Hydraulic ☐ Mechanical ☐ other

Spoils Disposal

Dredged or excavated spoils will be placed ☐ on-site ☐ landfill ☐ USACE confined disposal facility ☐ other upland off-site
For disposal, provide a ➡Detailed spoils disposal area location map and site plan with property lines.
➡Letter of authorization from property owner of spoils disposal site, if disposed off-site.

For volumes less than 5,000 cu yards, has proposed dredge material been tested for contaminants within the past 10 years?
☐ No ☐ Yes ➡If Yes, provide test results with a map of sampling locations.

☐ **C. PROJECTS REQUIRING RIPRAP** (See Sample Drawings 2, 3, 8, 12, 14, 22, and 23)

Riprap water ward of the ordinary high water mark: dimensions (ft) length width depth	Volume(cu yd)
Riprap landward of the ordinary high water mark: dimensions (ft) length width depth	Volume(cu yd)

Type and size of riprap (inches)	Will filter fabric or pea stone be used under proposed riprap?
☐ field stone ☐ angular rock ☐ other	☐ No ☐ Yes, Type

☐ **D. SHORE PROTECTION PROJECTS** (See EZ Guides and Sample Drawings 2, 3, and 17. Complete Sections 10A, B, and/or C.)
➡ For bioengineering projects include the list of native plants/seeds, if available.

Type and length (ft) ☐ bioengineering (ft) ☐ revetment (ft) ☐ riprap (ft) ☐ seawall/bulkhead (ft)	
Structure is ☐ new ☐ repair ☐ replacement of an existing structure	Will the existing structure be removed? ☐ No ☐ Yes
Proposed Toe Stone (linear feet)	Distance of project from adjacent property lines (ft)
Distance of project from an obvious fixed structure (example - 50 ft from SW corner of house)	
For bioengineering projects indicate the structure type ☐ brush bundles ☐ coir log ☐ live stakes ☐ tree revetment ☐ other	

☐ **E. DOCK - PIER – MOORING PILINGS** (See Sample Drawing 10)
➡ Attach a copy of the property legal description, mortgage survey, or a property boundary survey report.

Dock Type ☐ open pile ☐ filled ☐ crib ☐ floating ☐ cantilevered ☐ spring piles ☐ piling clusters ☐ other	
Is the structure within the applicant's riparian area interest area? ☐ No ☐ Yes ➡ Show parcel property lines on the site plan.	
Proposed structure dimensions (ft) length width	Use ☐ private ☐ public ☐ commercial
Dimensions of nearest adjacent structures (ft) length width	Distance of dock from adjacent property lines (ft)

☐ **F. BOAT WELL** (See EZ Guide. Complete Sections 10A and 10B)

Dimensions (ft) length width depth	Number of boats
Type of sidewall stabilization ☐ concrete ☐ riprap ☐ steel ☐ vinyl ☐ wood ☐ other	
Volume of backfill behind sidewall stabilization (cu yd)	Distance of boat well from adjacent property lines (ft)

☐ **G. BOAT RAMP** (See EZ Guide. Complete sections 10A, 10B, and 10C for mattress and pavement fill, dredge, and riprap)

Type ☐ new ☐ existing ☐ maintenance/improvement		Use ☐ private ☐ public ☐ commercial
Existing overall boat ramp dimensions (ft) length width depth		Type of construction material ☐ concrete ☐ wood ☐ stone ☐ other
Proposed overall ramp dimensions (ft) length width depth		Proposed ramp dimensions (ft) below ordinary high water mark length width depth
Number of proposed skid piers	Proposed skid pier dimensions (ft) length width	Distance of ramp from adjacent property lines (ft)

☐ **H. BOAT HOIST – ROOFS** (See EZ Guide)

Type ☐ cradle ☐ side lifter ☐ other	Located on ☐ seawall ☐ dock ☐ bottomlands
Hoist dimensions, including catwalks (ft) length width	
Area occupied, including cat walks (sq ft)	Distance of hoist from adjacent property lines (ft)
Permanent Roof ☐ No ☐ Yes ➡ If Yes, how is the roof supported?	Maximum Roof Dimensions (ft): length width height

☐ **I. BOARDWALKS and DECKS in WETLANDS or FLOODPLAINS** (See Sample Drawings 5 and 6. Complete Sections 12 and/or 13)
➡ Provide a table for multiple boardwalks and decks proposed in one project; include locations and dimensions.

Wetlands		**Floodplains**	
Boardwalk ☐ on pilings ☐ on fill Dimensions (ft) length width	Deck ☐ on pilings ☐ on fill Dimensions (ft) length width	Boardwalk ☐ on pilings ☐ on fill Dimensions (ft) length width	Deck ☐ on pilings ☐ on fill Dimensions (ft) length width

☐ **J. INTAKE PIPES** (See Sample Drawing 16) or **OUTLET PIPES** (See Sample Drawing 22)

If outlet pipe, discharge is to ☐ inland lake ☐ stream, drain or river ☐ overland flow ☐ Great Lake ☐ wetland ☐ other			
Number of pipes	Pipe diameters and invert elevations	Does pipe discharge below the OHWM?	☐ No ☐ Yes
		Is the water treated before discharge?	☐ No ☐ Yes
Type ☐ headwall ☐ end section ☐ other		Dimensions of headwall OR end section (ft) length width height	

☐ **K. MOORING and NAVIGATION BUOYS** (See EZ Guide for Sample Drawing)
➡Provide a site plan showing the distances between each buoy and from the shore to each buoy, and depth (ft) of water at each location.
➡Provide cross-section drawing(s) showing anchoring system(s) and dimensions.

Purpose of buoy ☐ mooring ☐ navigation ☐ scientific structures ☐ swimming ☐ other

Number of buoys	Dimensions of buoys (ft) width height swing radius chain length	Boat Lengths	Type of anchor system

Buoy Location: Latitude . N Longitude -- . W. ➡ Provide a table for multiple buoys.

Do you own the property along the shoreline?	☐ No ☐ Yes	➡ If No, attach an authorization letter from the property owner(s).
Do you own the bottomlands?	☐ No ☐ Yes	➡ If No, attach an authorization letter from the property owner(s).

☐ **L. FENCES**
➡Provide an overall site plan showing the proposed fencing through streams, wetlands or floodplains.
➡Provide a drawing of fence profile showing the design, dimension, post spacing, mesh, and distance from ground to bottom of fence.

Purpose of fence ☐ Airport ☐ Cervidae ☐ Livestock ☐ Residential ☐ Security ☐ Other

Total length (ft) of fence through streams wetlands floodplains	Fence height (ft)	Fence type and material

☐ **M. OTHER** - e.g., structure removal, maintenance or repair, aerator, dry fire hydrant, gold prospecting, habitat structures, scientific measuring devices, soil borings, or survey activities.

Structure description, dimensions and volumes. Complete Sections 10A-C as applicable.

11 Expansion of an Existing or Construction of a New Lake or Pond (See Sample Drawings 4 and 15)
➡Complete Section 10J for outlets and Section 17 for water control structures.
➡Provide elevations, cross-sections and profiles of outlets, dams, dikes, water control structures and emergency spillways to nearest water bodies.

Which best describes your proposed water body use (check all that apply)
☐ mining ☐ recreation ☐ storm water retention basin ☐ wastewater basin ☐ wildlife ☐ other

Water source for lake/pond
☐ groundwater ☐ natural springs ☐ Inland Lake or Stream ☐ storm water runoff ☐ pump ☐ sewage ☐ other

Location of the lake/basin/pond ☐ floodplain ☐ wetland ☐ stream (inline) ☐ upland

Maximum dimensions (ft) length width depth	Maximum Area: ☐ acres ☐ sq ft

Has the there been a hydrologic study performed on the site?	☐ No ☐ Yes	➡ If Yes, provide a copy.
Has the DEQ conducted a wetland assessment for this parcel?	☐ No ☐ Yes	➡ If Yes, provide a copy or WIP number:
Has a professional wetland delineation been conducted for this parcel?	☐ No ☐ Yes	➡ If Yes, provide a copy with data sheets.

Spoils Disposal

Dredged or excavated spoils will be placed ☐ on-site ☐ landfill ☐ USACE confined disposal facility ☐ other upland off-site
For disposal, provide a ➡Detailed spoils disposal area location map and site plan with property lines.
➡Letter of authorization from property owner of spoils disposal site, if disposed off-site.

12 Activities That May Impact Wetlands (See Sample Drawings 8 & 9). Complete other Sections as applicable.

- Locate your site and wetland information with the DEQ Wetlands Map Viewer at www.mcgi.state.mi.us/wetlands/
- For information on the DEQ's Wetland Identification Program (WIP) visit www.mi.gov/wetlands.
  - ➡ Provide a detailed site plan with labeled property lines, upland and wetland areas, and dimensions and volumes of wetland impacts.
  - ➡ Complete the wetland dredge and wetland fill dimension information below for each impacted wetland area.
  - ➡ Attach tables for multiple impact areas or activities.
  - ➡ Attach at least one cross-section for each wetland dredge and/or fill area; show wetland and upland boundaries on the cross-section.

Has the DEQ conducted a wetland assessment for this parcel?	☐ No ☐ Yes	➡ If Yes, provide a copy or WIP number:
Has a professional wetland delineation been conducted for this parcel?	☐ No ☐ Yes	➡ If Yes, provide a copy with data sheets
Is there a recorded DEQ easement on the property?	☐ No ☐ Yes	➡ If Yes, provide the easement number
Did the applicant purchase the property before October 1, 1980?	☐ No ☐ Yes	➡ If Yes, provide documentation.
Is any grading or mechanized land clearing proposed?	☐ No ☐ Yes	➡ If Yes, label the locations on the site plan.
Has any of the proposed grading or mechanized land clearing been completed?	☐ No ☐ Yes	➡ If Yes, label the locations on the site plan

Proposed Activity

☐ boardwalk or deck (Section 10I)	☐ bridges and culverts (Section 14)	☐ designated environmental area
☐ dewatering	☐ draining surface water	☐ driveway / road
☐ fences (Section 10L)	☐ fill or dredge	☐ restoration
☐ septic system	☐ stormwater discharge (Section 10J)	☐ other

FILL	Dimensions maximum length (ft) maximum width (ft)	Area ☐ acres ☐ sq ft	Average depth (ft)	Volume (cu yd)
DREDGE	Dimensions maximum length (ft) maximum width (ft)	Area ☐ acres ☐ sq ft	Average depth (ft)	Volume (cu yd)

Spoils Disposal

Dredged or excavated spoils will be placed ☐ on-site ☐ landfill ☐ USACE confined disposal facility ☐ other upland off-site

For disposal, provide a
- ➡ Detailed spoils disposal area location map and site plan with property lines.
- ➡ Letter of authorization from property owner of spoils disposal site, if disposed off-site.

Septic System

The proposed project will be serviced by:
☐ public sewer ☐ private septic system
➡ Show system on plans.

If a private septic system is proposed, has an application for a permit been made to the County Health Department? ☐ No ☐ Yes
If Yes, has a permit been issued? ☐ No ☐ Yes ➡ Provide a copy of the permit.

Describe the wetland impacts, the proposed use or development, and the alternatives considered:

Does the project impact more than 1/3 acre of wetland? ☐ No ☐ Yes
➡ If Yes, submit a Mitigation Plan with the type and amount of mitigation proposed. For more information go to www.mi.gov/wetlands

Describe how impacts to waters of the United States will be avoided and minimized:

Describe how the impact to waters of the United States will be compensated. OR Explain why compensatory mitigation should not be required for the proposed impacts.

13 Floodplain Activities (See Sample Drawing 5 and others. Complete other applicable sections.)

- For more information go to www.mi.gov/floodplainmanagement. This site also lists the projects and requirements for an expedited floodplain review under "Expedited Review Information for Minor Floodplain Projects."
- Examples of projects proposed within the non-floodway portions of the 100-year-floodplain which may qualify for an expedited review: Open pile decks and boardwalks; residences, commercial/industrial facilities, garages and accessory structures; parking lots; pavilions, gazebos, large community playground structures; residential swimming pools
- Examples of projects proposed within the floodway portions of the floodplain which may qualify for an expedited review: Open pile decks and boardwalks, (non-enclosed) that are anchored to prevent floatation and that do not extend over the bed and bank of a watercourse; parking lots constructed at grade or resurfacing that is no more than 4 inches above the existing grade; dry hydrants that do not require fill placement; scientific structure such as staff gauges, water monitoring devices, water quality testing devices, and core sampling devices which meet specific design criteria and fish structures that meet specific design criteria.
- For expedited review include:
  - ➡ Photographs of the work site labeled to identify what is being shown and with the direction of the photo clearly indicated. Include photographs of any river or stream adjacent to the project.
  - ➡ A letter or statement from the local unit of government acknowledging your proposed application. See the website for sample wording.
- A hydraulic analysis or hydrologic analysis may be required to fully assess floodplain impacts.
- The state building code requires an Elevation Certificate for any building construction or addition in a floodplain. A sample form can be found at www.fema.gov/nfip/elvinst.shtm.
  - ➡Attach additional sheets or tables for multiple proposed floodplain activities and provide hydraulic calculations.
  - ➡Show reference datum used on plans.

Proposed Activity ☒ fill ☐ excavation or cut ☐ other	100-year floodplain elevation (ft) (if known) ***593.3*** Datum ☒ NGVD 29 ☐ NAVD 88 ☐ other
Site is 13 feet above ☐ ordinary high water mark (OHWM) OR ☒ observed water level. Date of observation (M/D/Y) ***12/22/15***	
Fill volume below the 100-year floodplain elevation (cu yds) ***2,700***	Compensating cut volume below the 100-year floodplain elevation (cu yds) ***2,800***

Buildings and/or Additions

Type of construction is ☐ residential ☐ garage/pole barn ☐ non residential ☐ other

Construction is ☐ new ☐ addition AND Serviced by ☐ public sewer ☐ private septic ☐ other

Lowest adjacent grade (ft): existing proposed

datum ☐ NGVD 29 ☐ NAVD 88 ☐ other

Existing Structure Information	Proposed Structure Information
Foundation type ☐ basement ☐ concrete slab on grade ☐ pilings ☐ crawl space ☐ other	Foundation type ☐ basement ☐ concrete slab on grade ☐ pilings ☐ crawl space ☐ other
Foundation floor elevation (ft)	Foundation floor elevation (ft)
Height of crawl space/basement from finished foundation floor to bottom of floor joists (ft)	Height of crawl space/basement from finished foundation floor to bottom of floor joists (ft)
Elevation of 1st floor above basement floor/crawl space (ft)	Elevation of 1st floor above basement floor/crawl space (ft)

For enclosed areas below the flood elevation, such as a crawl space, garages and accessory structures:

Area of proposed foundation (sq ft)

Elevation of proposed enclosed area (ft) datum ☐ NGVD 29 ☐ NAVD 88 ☐ other

Number of flood vents net opening of each vent (sq inches) lowest elevation of flood vents (ft)

14 Bridges and Culverts Including Foot and Cart Bridges. (See EZ Guides and Sample Drawings 5, 14A, 14B, 14C, 14D.)

- Complete other applicable Sections, including 10A-C.
- A hydraulic analysis or hydrologic analysis may be required to fully assess impacts. ➡Attach hydraulic calculations.
- High Water Elevation - describe reference point and highest known water level above or below reference point and date of observation.

➡Attach additional sheets for multiple bridges and/or culverts.

➡Provide detailed site-specific drawings of existing and proposed Plan and Elevation View at a scale adequate for detailed review.

➡Provide all information in the boxes below; do not write in a reference to plan sheets. Show reference datum used on plans.

Stream Information

The site has a high water elevation (ft) ☐ above or ☐ below the Reference Point of Date observed		
Reference datum used ☐ NGVD 29 ☐ NAVD 88 ☐ IGLD 85 (Great Lakes coastal areas) ☐ other		
Average stream width (ft) at the ordinary high water mark (OHWM) outside the influence of any ponding or scour holes around the structure	Upstream	
	Downstream	
Cross-sectional area of primary channel (sq ft) (See Sample Drawing 14C for more information)		
The width of the stream where the water begins to overflow its banks. Bankfull width (ft)		
The invert of the stream 100-feet from structure (ft)	Upstream	
	Downstream	
Is the existing culvert perched? ☐ No ☐ Yes If Yes, provide a profile of the channel bottom at the high and low points for a distance of 200 feet upstream and downstream of the culvert.		

Complete this form for each bridge / culvert location.		Existing	Proposed
Bridge			
Number of bridge spans			
Bridge type (concrete box beam, concrete I-beam, timber, etc.)			
Bridge span (length perpendicular to stream) (ft)			
Bridge width (parallel to stream) (ft)			
Bottom of bridge beam (ft)	Upstream		
	Downstream		
Stream invert elevation at bridge (ft)	Upstream		
	Downstream		
Bridge rise from bottom of beam to streambed (ft)			
Culvert			
Number of culverts			
Culvert type (arch, bottomless, box, circular, elliptical, etc.)			
Culvert material (concrete, corrugated metal, plastic, etc.)			
Culvert length (ft)			
Culvert ☐ width ☐ diameter (ft)			
Culvert height prior to any burying (ft)			
Depth culvert will be buried (ft)			
Elevation of culvert crown (ft)	Upstream		
	Downstream		
Higher elevation of ☐ culvert invert OR ☐ streambed within culvert (ft)	Upstream		
	Downstream		
Complete for both Bridges and Culverts			
Entrance design (mitered, projecting, wingwalls, etc.) Total structure waterway opening above streambed (sq ft)			
Total structure waterway area below the 100-year elevation (sq ft) (if known)			
Elevation of road grade at structure (ft)			
Elevation of low point in road (ft)			
Distance from low point of road to mid-point of bridge crossing (ft)			
Length of approach fill from edge of bridge/culvert to existing grade (ft)			

A Licensed Professional Engineer may certify that your project will not cause a harmful interference for a range of flood discharges up to and including the 100-year flood discharge. The "Required Certification Language" is found under "forms" on the "maps, forms and documents" link from the www.mi.gov/jointpermit page or a copy may be requested by phone, email, or mail. A hydraulic report supporting this certification may also be required.

Is Certification Language attached? ☐ No ☐ Yes

15 Stream, River, or Drain Construction , Relocation and Enclosure Activities

- Complete Section 10C for riprap activities.
- If side casting or other proposed activities will impact wetlands or floodplains, complete Sections 12 and 13, respectively.

➡Provide a scaled overall site plan showing existing lakes, streams, wetlands, and other water features; existing structures; and the location of all proposed structures and land change activities.

➡Provide scaled cross-section (elevation) drawings necessary to clearly show existing and proposed conditions.

➡For activities on legally established county drains, provide original design and proposed dimensions and elevations.

Stream Information

Water elevation (ft) datum ☐ NGVD 29 ☐ NAVD 88 ☐ IGLD 85 (Great Lakes coastal areas) ☐ other
➡ Show elevation on plans with description.

Dimensions (ft) of existing stream/drain channel (ft) length width depth

Existing channel average water depth in a normal year (ft)

Proposed Activity ☐ enclosure ☐ improvement ☐ maintenance ☐ new drain ☐ relocation ☐ wetlands ☐ other

If an enclosed structure is proposed, check material type ☐ concrete ☐ corrugated metal ☐ plastic ☐ other

Dimensions (ft) of the structure: diameter length	Volume of fill (cu yds)

Will old/enclosed stream channel be backfilled to top of bank grade? ☐ No ☐ Yes

Length of channel to be abandoned (ft)	Volume of fill (cu yds)
Dimensions (ft) of improved, maintained, new, relocated or wetland stream/drain channel. length width depth	Volume of dredge/excavation (cu yds)
How will slopes and bottom be stabilized?	Proposed side slopes (vertical / horizontal)

Spoils Disposal

Dredged or excavated spoils will be placed ☐ on-site ☐ landfill ☐ USACE confined disposal facility ☐ other upland off-site

For disposal, provide a ➡ Detailed spoils disposal area location map and site plan with property lines.
➡ Letter of authorization from property owner of spoils disposal site, if disposed off-site.

16 Drawdown of an Impoundment

- If wetlands will be impacted, complete Section 12.

Type of drawdown ☐ over winter ☐ temporary ☐ one-time event ☐ annual event ☐ permanent (dam removal) ☐ other

Reason for drawdown

Has there been a previous drawdown? ☐ No ☐ Yes If Yes, provide date (M/D/Y)		Previous DEQ permit number, if known
Does waterbody have established legal lake level? ☐ No ☐ Yes ☐ Not Sure		Dam ID Number, if known
Extent of vertical drawdown (ft)	Impoundment design head (ft)	Number of adjoining or impacted property owners
Date drawdown would start (M/D/Y)	Date drawdown would stop (M/D/Y)	Rate of drawdown (ft/day)
Date refilling would start (M/D/Y)	Date refill would end (M/D/Y)	Rate of refill (ft/day)
Type of outlet discharge structure to be used ☐ surface ☐ bottom ☐ mid-depth	Impoundment area at normal water level (acres)	Sediment depth behind impoundment discharge structure (ft)

17 Dam, Embankment, Dike, Spillway, or Control Structure Activities (See Sample Drawing 15)

- For more information go to www.mi.gov/damsafety. If wetlands will be impacted, complete Section 12.
- Information on removing a dam is available at www.mi.gov/damsafety and following the Related Link –Dam Management.

➡➡Attach detailed signed and sealed engineering plans for a Part 315 dam repair, dam alteration, dam abandonment, or dam removal.
➡Part 315 Dam Safety application fees are added to all other application fees.
➡Mail applications for dams regulated under Part 315 to DEQ, WRD, P.O. BOX 30458, LANSING, MI 48909-7958, attention Dam Safety.

Proposed Activity	☐ abandonment	☐ alteration	☐ enlargement of an existing dam
	☐ removal	☐ repair	☐ reconstruction of a failed dam
	☐ new dam construction	☐ other	

Dam ID Number, if known	Type of outlet discharge structure ☐ surface ☐ bottom ☐ mid-depth

Will proposed activities require a drawdown of the waterbody to complete the work? ☐ No ☐ Yes ➡ If Yes, complete Section 16.

Structural height (difference between embankment top elevation and streambed elevation at downstream embankment toe) (ft) _____

Hydraulic Height (difference between design flood elevation and streambed elevation at downstream embankment toe) (ft) _____	Impoundment size at design flood elevation (acres)

Does dam meet the criteria for regulation under Part 315? (i.e. hydraulic height of 6 feet or more and an impoundment size at the design flood of 5 surface acres or more) ☐ No ☐ Yes

Dredging/excavation volume (cu yd)	Fill volume (cu yd)	Riprap volume (cu yd)

Will a water diversion during construction be required? ☐ No ☐ Yes

If Yes, describe how the stream flow will be controlled through the dam construction area during the proposed project activities:

Complete the following for a new dam, reconstruction of a failed dam or enlargement of an existing dam

For Part 315 regulated dams, the following must be attached:
➡ Site-specific conceptual plans of the dam for resource impact review (An engineering report and detailed engineering plans are not required until the project has been determined to be permitable).
➡ A description and evaluation of the loss of natural resources associated with the project.
➡ A description of the natural resources that are associated with or created by the impoundment and how they offset the natural resources lost by the creation of the impoundment.
➡ An assessment of all known existing and potential adverse effects within the scope of the project.

Embankment dimensions	length (ft)	top width (ft)	bottom width (ft)	slopes (vertical / horizontal)	Upstream Downstream

Have soil borings been taken at dam location?	☐ No ☐ Yes	➡ If Yes, attach results.
Do you have flowage rights to all proposed flooded property at the design flood elevation?	☐ No ☐ Yes	➡ If No, provide a letter of authorization from the property owner.

Applications for Part 315 regulated dam removal projects must also include the following:

An evaluation of the capacity of the remaining structure to pass flood flows.
An evaluation of the quantity and quality of the sediments behind the impoundment.
A description of the methods to be employed to control sediments.
An assessment of all known existing and potential adverse impacts within the scope of the project.

18 Utility Crossings (See Sample Drawings 12 and 13, and EZ Guide)

- If side casting is proposed, complete Sections 10A and 10B. If spoils will be placed in or impact wetlands, complete Section 12.
  - ➡Attach additional sheets or tables with the requested information as needed for multiple crossings.
  - ➡For wetland crossings using the open trench method show clay plugs at the wetland/upland boundaries on the plans.

Crossing of ☐ Inland Lake or Stream ☐floodplain ☐ Great Lake ☐ wetlands (also complete Section 12)

What method will be used to construct the crossings? ☐ directional boring ☐ jack and bore ☐ open trench ☐ plow / knife ☐ flume

Utility Type	Number of lake or stream crossings	Number of wetland crossings	Pipe diameter with casing (in)	Pipe length per crossing (ft)	Distance below streambed or wetland (in)	Trench width (ft)
☐ sanitary sewer						
☐ storm sewer						
☐ watermain						
☐ cable						
☐ electric						
☐ fiber optic cable						
☐ oil/gas pipeline						

19 Marina Construction, Expansion and Reconfiguration (See Sample Drawing 21)

- For more information go to www.mi.gov/marinas
- Marinas located on the Great Lakes, including Lake St. Clair, may be required to secure leases or conveyances from the state of Michigan to place structures on the bottomlands. If a conveyance is necessary, an application must be submitted before the Joint Permit Application can be determined complete.
  - ➡Fully complete Section 10 E. For multiple structures provide a table with the requested information.
  - ➡Enclose a copy of any current pump-out agreement with another marina facility, if on-site sanitary pump out facilities are not available.
  - ➡Attach a copy of the property legal description, mortgage survey, or a property boundary survey to your application.
  - ➡ The WRD may require a riparian interest area (RIA) estimate survey, sealed by a licensed surveyor, in order to determine whether the proposed project will adversely impact riparian rights. Include any available sealed RIA estimate survey and/or written authorizations from affected adjoining riparian owners with your application.

Proposed Marina Activity ☐ New construction ☐ Expansion ☐ Reconfiguration

Do you have an existing Great Lake Conveyance? ☐ No ☐ Yes For more information visit www.mi.gov/deqgreatlakes.

Are sanitary pump-out facilities available? ☐ No ☐ Yes | Is there a pump out agreement? ☐ No ☐ Yes If Yes, provide a copy.

Marina Description	Current Count	Final Count
Number of boat slips/wells (do not include broadside dockage or mooring buoys)		
Lineal feet of broadside dockage		
Maximum number of boats at broadside dockage		
Number of mooring buoys		
Number of launch ramps/lanes		

20 Critical Dune Areas and High Risk Erosion Areas (See Sample Drawings 19 and 20)

Critical Dune Areas (See Sample Drawing 20)

- **Although not required, submitting PHOTOGRAPHS of the site may provide for a faster application review.**
- For more information go to www.mi.gov/jointpermit, select "Sand Dune Protection" under "Related Links."
- All property boundaries and proposed structure corners, including decks, septic systems, water wells, driveways, grading, and terrain alteration locations must be staked before the WRD site inspection.
- Scaled overhead and cross-section plans must include all property boundaries, locations, and dimensions of all existing structures and impacted areas, and all proposed structures, terrain alterations, and construction access. Cross-sections must show existing and proposed grades, including foundations.
- Construction in critical dune areas on slopes greater than 33 percent (1 vertical: 3 horizontal) is prohibited without a special exception.
- Construction in critical dune areas on slopes that measure from 25 percent (1 vertical: 4 horizontal) to less than 33 percent requires sealed plans prepared by a registered architect or licensed professional engineer.

High Risk Erosion Areas (See Sample Drawing 19)

- For more information go to www.mi.gov/jointpermit, select "HREA" under "Related Links."
- All property boundaries, proposed structure corners, and septic system locations must be staked before the WRD site inspection.
- Scaled overhead plans must include all property boundaries, and the location and dimensions of all structures and septic systems must be included.
- Additional information, including the building construction plans, may be required to complete the application review.

Critical Dune Areas

Parcel dimensions (ft) width depth	Date project staked (M/D/Y)
Property is a ☐ platted lot ☐ unplatted parcel	Year current property boundaries created

Dune habitat present in Building Site and access route (check all that apply): ☐Wooded ☐Open Dune ☐Shrubs ☐Bare Sand ☐Lakefront Lot ☐MNFI Community if known:_____

Type of construction activities ☐ addition ☐ driveway ☐ garage ☐ new home ☐ renovation ☐ septic ☐ deck(s) ☐ other

☐ Provide a sand relocation plan with location and dimensions of disposal area. Indicate ☐ on-site OR ☐ off-site
If on-site show location and how the disposal site will be accessed on the plans. Indicate the depth of the disposed sand on the plans.

☐ Provide the permit or letter from the County Enforcing Agent stating the project complies with Part 91 (Soil Erosion and Sedimentation Control).

The proposed project will be serviced by ☐ public sewer ☐ private septic system.
➡ On the plans, show the location and dimensions of the private septic system.
If a private septic system is proposed, has a permit been issued by the health department? ☐ No ☐ Yes
➡ If Yes, provide a copy of the permit for all Critical Dune Area projects.

☐ Provide a copy of the vegetation assurance letter.
☐ Provide a re-vegetation plan, including #_____ of trees to be removed and #_____ of trees to be replanted.

Proposed Utility Installation	Proposed New Construction
Utility Installation Method ☐ directional bore ☐ plowing in ☐ open trench ☐ other	Foundation type ☐ basement ☐ concrete slab ☐ pilings ☐ crawl space ☐ other
➡Show utility locations and dimensions on the site plan.	Area of existing structure (sq ft)
➡Show construction access route on the site plan.	Area of proposed structure (sq ft)
➡Show existing and proposed grades on the cross-section.	Area of existing deck (sq ft)
➡Show locations of vegetation to be removed on the site plan.	Area of proposed deck (sq ft)

Provide the following information for special use projects:
(a) Lot size, width, density, and front and side setbacks.
(b) Storm water drainage that provides for disposal of drainage water without serious erosion.
(c) Methods for controlling erosion from wind and water.
(d) Re-stabilization plan.
(e) Environmental Impact Statement.

High Risk Erosion Areas

Parcel dimensions (ft) width depth | Date project staked (M/D/Y)

Existing Structure Information	Proposed New Construction
Foundation type ☐ basement ☐ concrete slab ☐ pilings ☐ crawl space ☐ other	Foundation type ☐ basement ☐ concrete slab ☐ pilings ☐ crawl space ☐ other
Material above foundation wall ☐ block ☐ log ☐ stud frame ☐ other	Material above foundation wall ☐ block ☐ log ☐ stud frame ☐ other
Siding material ☐ block ☐ vinyl ☐ wood ☐ other	Siding material ☐ block ☐ vinyl ☐ wood ☐ other
Area of the foundation, excluding attached garage (sq ft)	Area of the foundation, excluding attached garage (sq ft)
Area of the garage foundation (sq ft)	Area of the garage foundation (sq ft)

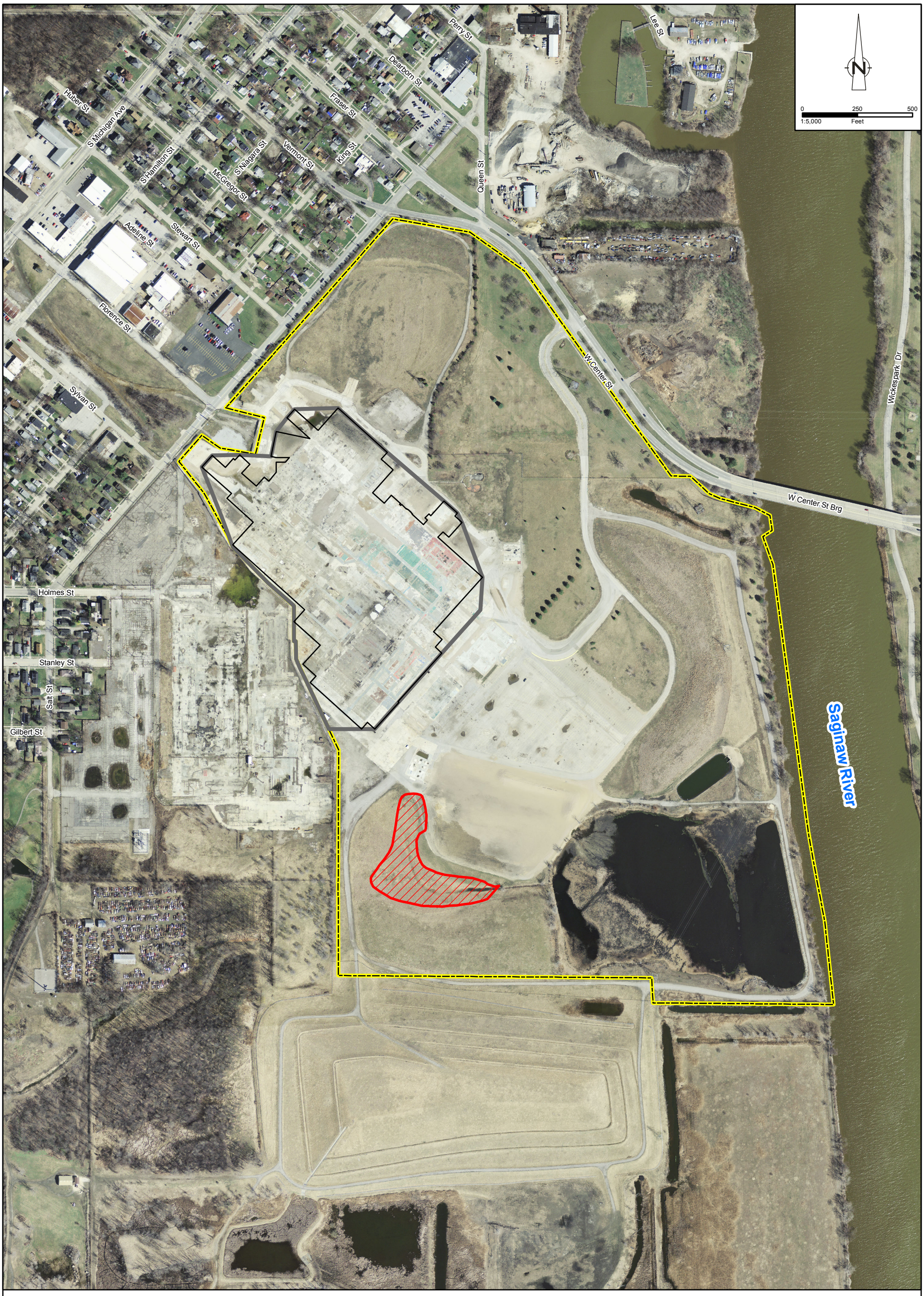
If renovating or restoring an existing structure, indicate the renovation or restoration cost $

Current structure replacement value $

Tax assessed value of existing structure excluding land value $ Assessment Year

Provide the number of individual living units in the proposed building

Attachment B
Maps and Drawings



Aerial Image: 2010 USGS High Resolution Orthoimagery for Saginaw County, MI.
Streets: Processed TIGER 2010 Streets, U.S. Census Bureau.
Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet

LEGEND

- Approximate Limits of RACER Property
- Concrete Floor Slab Area To Be Covered With 1-ft of Material (~24.8 ac)
- Proposed Compensating Cut Area Below Floodplain (~2.64 ac)

figure 1

SITE VICINITY MAP
Saginaw, Michigan

007878-T01(THEI001)GIS-WA003 February 17, 2016

SOURCE:
BBL DRAWING 27608B04 DATED 9/23/05; (10' CONTOURS).
BBL DRAWING 6589S2 RECEIVED OCTOBER 2006; (2' CONTOURS).

MICHIGAN SPC, NAD 83, NGVD29.

Nº	Revision	Date	Initial

SCALE VERIFICATION

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

Approved

RACER - SAGINAW
MALLEABLE INDUSTRIAL LAND

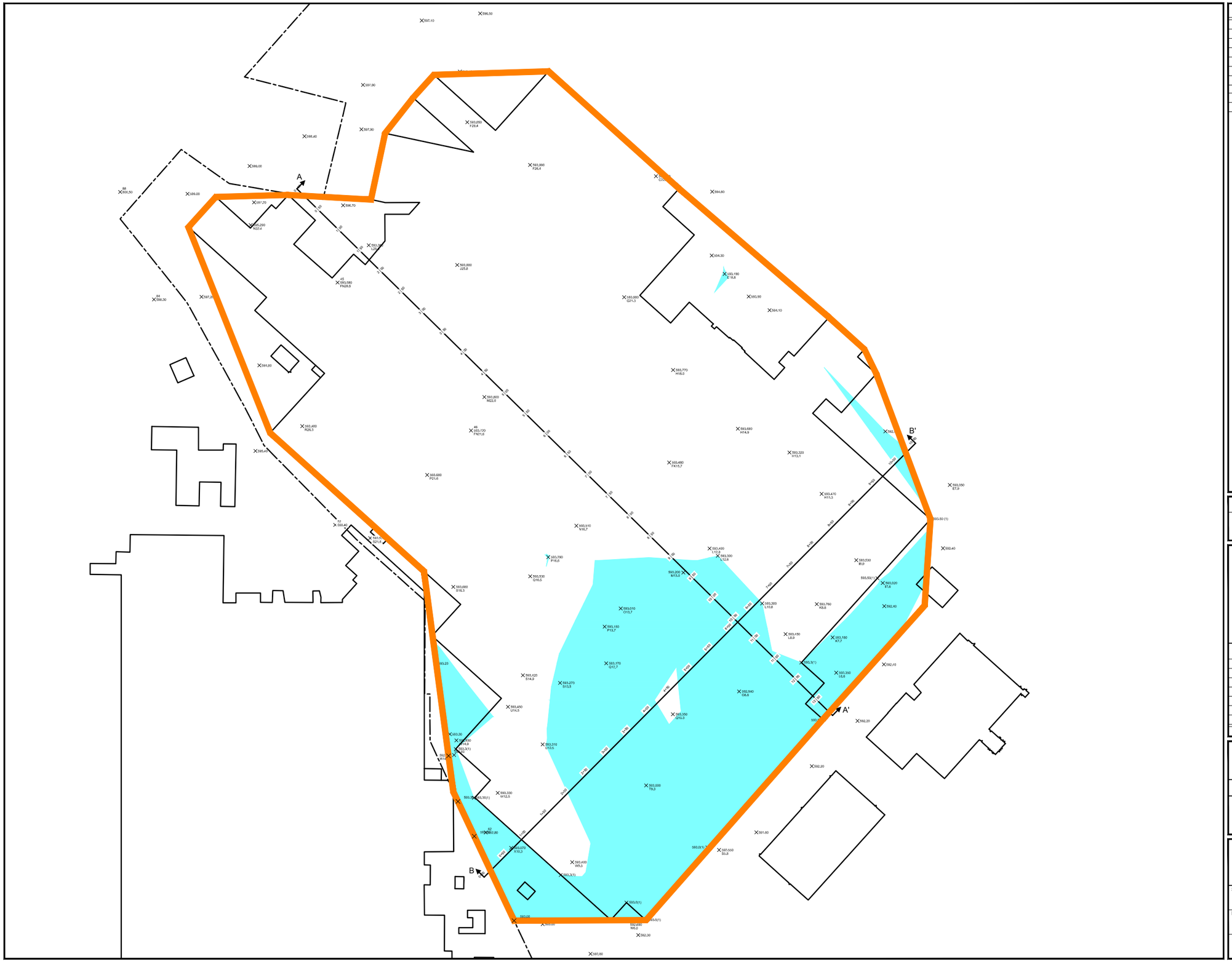
SAGINAW, MICHIGAN

FLOOD ZONE MAP

GHD

Source Reference:

Project Manager:	Reviewed By:	Date:	
M.T.	J.P.	JANUARY 2016	
Scale: 1" = 150'	Project Nº: 07878-00	Report Nº: THIE001	Drawing Nº: figure 2



Nº	Revision	Date	Initial

LEGEND

- PROPOSED FILL BELOW FLOOD PLAIN ELEVATION OF 593.3 ft AMSL (NGDV 29)
- (1) ESTIMATED POINT ELEVATION
- PROPOSED 1-FT COVER AREA
- RACER MALLEABLE PROPERTY BOUNDARY (APPROX.)

NOTE:
A MINIMUM 1-FT OF COVER IS TO BE PLACED ABOVE THE CONCRETE FLOOR SLAB. AT THE EDGE OF THE CONCRETE FLOOR SLAB, COVER IS TO TRANSITION TO MATCH EXISTING GRADES (MAX. 3:1 SLOPE).

SEDIMENT AND EROSION CONTROL NOTES:
1. THE SELECTED CONTRACTOR WILL OBTAIN A SOIL EROSION AND SEDIMENTATION CONTROL (SESC) PERMIT THROUGH THE COUNTY OF SAGINAW AND COMPLETE THE WORK IN ACCORDANCE WITH THE SESC PERMIT. THE SESC MEASURES INCLUDED ON THIS DRAWING ARE EXPECTED TO MEET THE REQUIREMENTS OF THE COUNTY OF SAGINAW, HOWEVER, THE SPECIFIC DETAILS WILL BE INCLUDED IN THE PERMIT.
2. SESC MEASURES WILL BE INSTALLED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. SESC MEASURES WILL BE INSPECTED AND MAINTAINED THROUGHOUT THE DURATION OF THE CONSTRUCTION ACTIVITIES AND UNTIL THE SITE IS FULLY STABILIZED.

PARAMETER	UNIT	QUANTITY
TOTAL AREA OF 1-FT COVER PLACEMENT	ACRES	24.7
AREA TO BE FILLED BELOW FLOODPLAIN	ACRES	5.8
AREA TO BE FILLED ABOVE FLOODPLAIN	ACRES	18.9
TOTAL VOLUME OF FILL TO BE PLACED	CUBIC YARDS	39927
VOLUME OF FILL TO BE PLACED BELOW FLOODPLAIN	CUBIC YARDS	2680
VOLUME OF FILL TO BE PLACED ABOVE FLOODPLAIN	CUBIC YARDS	37247

SOURCE OF POINTS:
- PLANT SEWER SURVEY, SPICER, 1996;
- TOPOGRAPHIC SURVEY, BBL, 1994.

SCALE VERIFICATION

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

Approved

DRAWING STATUS

Status	Date	Initial

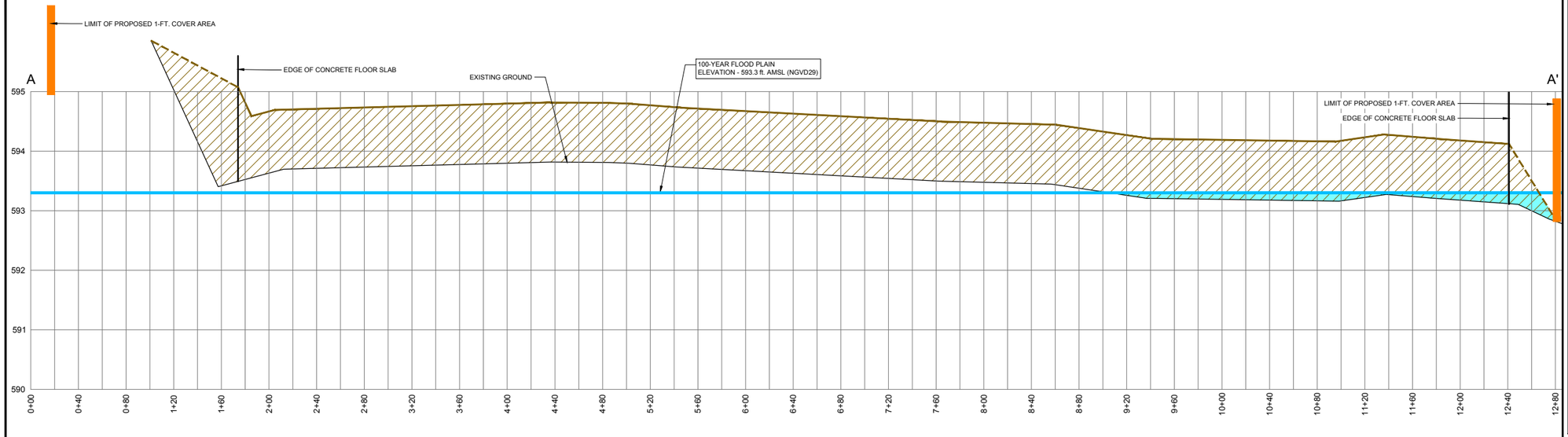
REVITALIZING AUTO COMMUNITIES ENVIRONMENTAL RESPONSE TRUST

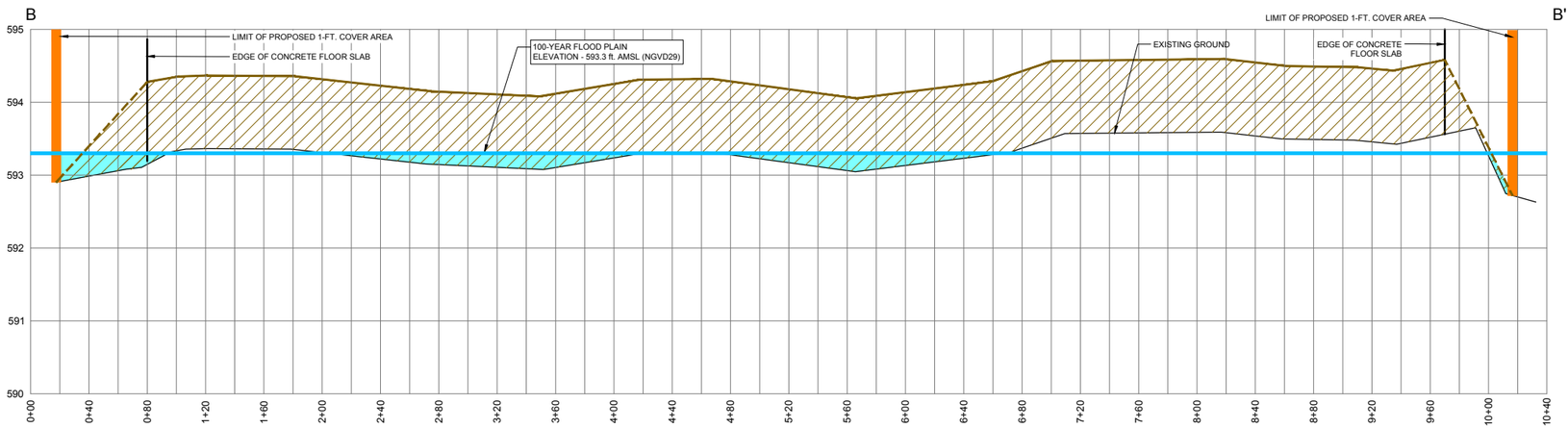
SAGINAW, MICHIGAN

AREA OF PROPOSED 1-FT COVER BELOW FLOOD PLAIN

GHD

Source Reference: 07878-T01(C3D-PRES016)GN-WA001			
Project Manager: MT	Reviewed By: JEP	Date: FEBRUARY 2016	
Scale: AS SHOWN	Project Nº: 07878-00	Report Nº: THIE001	Drawing Nº: figure 3





SCALES:
1"=50' HORIZONTAL
1"=1' VERTICAL
50X VERTICAL EXAGGERATION

Nº	Revision	Date	Initial

LEGEND

- FILL TO BE PLACED BELOW FLOOD PLAIN ELEVATION OF 593.3 ft AMSL (NGDV 29)
- 1-FT OF FILL TO BE PLACED ABOVE CONCRETE FLOOR SLAB
- FILL BEYOND CONCRETE FLOOR SLAB TO TRANSITION TO EXISTING GRADES (MAX. 3:1 SLOPE)

SCALE VERIFICATION

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

Approved

DRAWING STATUS

Status	Date	Initial

REVITALIZING AUTO COMMUNITIES ENVIRONMENTAL RESPONSE TRUST

SAGINAW, MICHIGAN

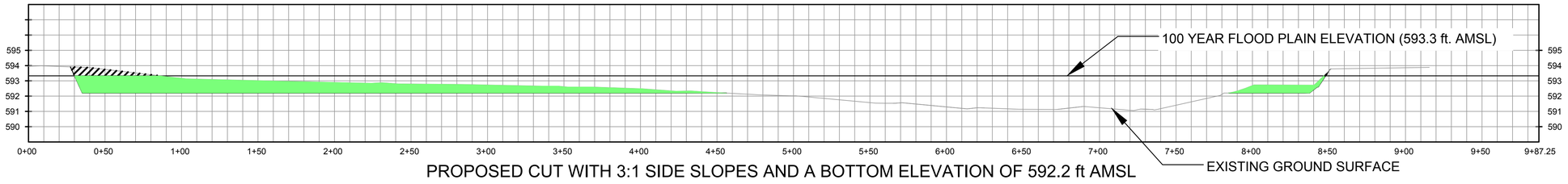
CROSS-SECTIONS

GHD

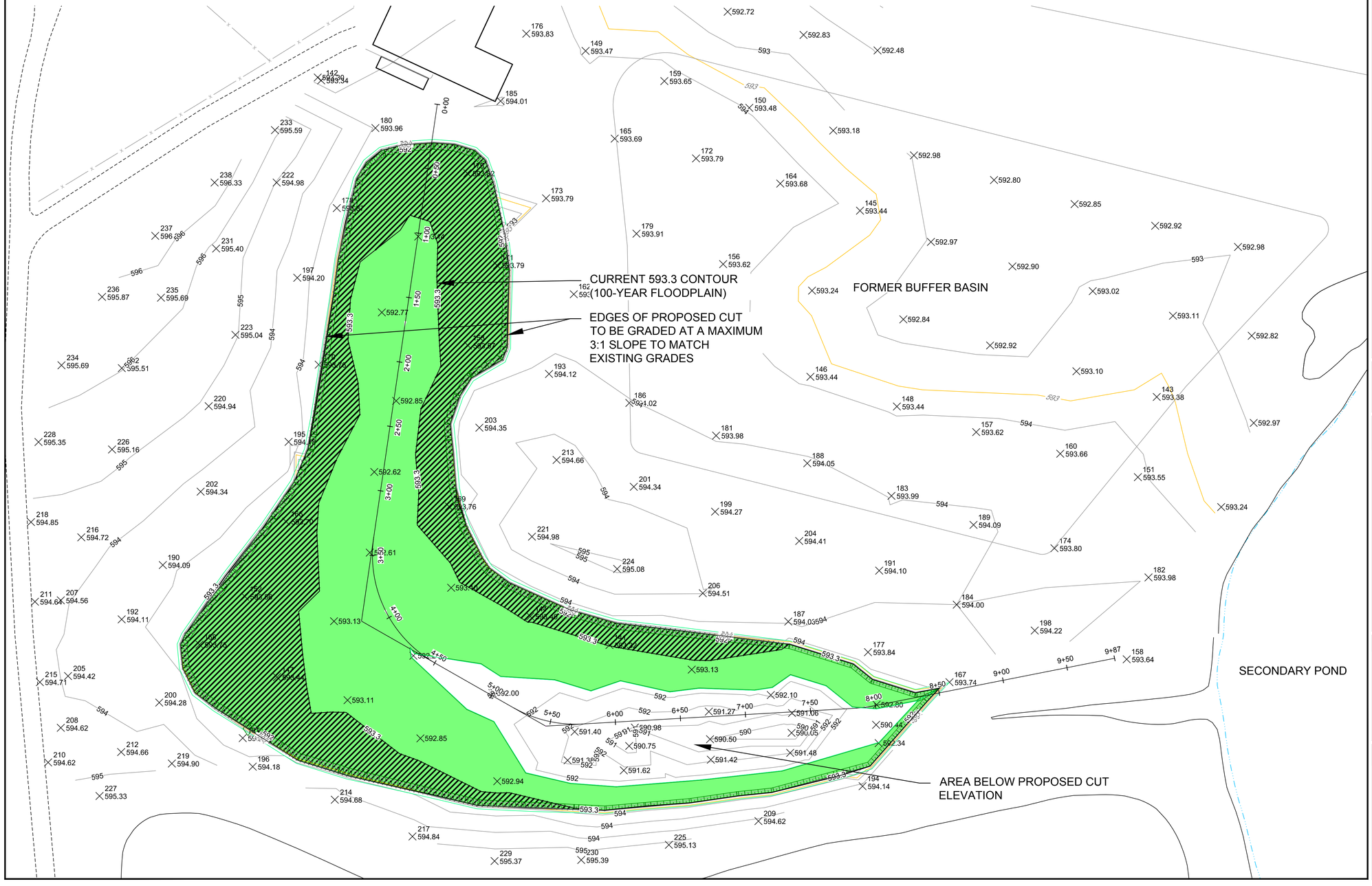
Source Reference: 07878-T01(C3D-PRES016)GN-WA001

Project Manager:	Reviewed By:	Date:	
MT	JEP	FEBRUARY 2016	
Scale: AS SHOWN	Project Nº: 07878-00	Report Nº: THIE001	Drawing Nº: figure 4

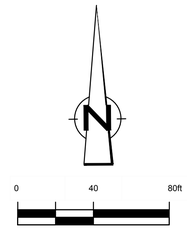
07878-00(THIE001)GN-WA003 FEB 12, 2016



PROPOSED CUT WITH 3:1 SIDE SLOPES AND A BOTTOM ELEVATION OF 592.2 ft AMSL



Nº	Revision	Date	Initial



LEGEND

PROPOSED CUT BELOW FLOOD PLAIN ELEVATION OF 593.3 ft. AMSL (NGDV 29)

PROPOSED CUT ABOVE FLOOD PLAIN ELEVATION OF 593.3 ft. AMSL (NGDV 29)

+ 593.918 SPICER SURVEY POINT (DECEMBER 2015)

NOTES:

- A COMPENSATING CUT APPROXIMATELY 3,380 CY WAS CALCULATED BY VARYING THE CUT DEPTH OF THE AREA IDENTIFIED BELOW THE 100-YR FLOOD PLAIN
- THE CUT DEPTH IS 592.2 FT AMSL

PARAMETER	UNIT	QUANTITY
AREA TO BE CUT BELOW FLOODPLAIN	ACRES	2.27
VOLUME TO BE CUT FROM BELOW FLOODPLAIN	CUBIC YARDS	2803
VOLUME TO BE CUT FROM ABOVE FLOODPLAIN	CUBIC YARDS	576
TOTAL CUT VOLUME	CUBIC YARDS	3380

SCALE VERIFICATION

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

Approved

DRAWING STATUS

Status	Date	Initial

REVITALIZING AUTO COMMUNITIES ENVIRONMENTAL RESPONSE TRUST

SAGINAW, MICHIGAN

COMPENSATING CUT AREA FOR FILL TO BE PLACED BELOW FLOOD PLAIN

GHD

Source Reference:		
07878-T01(C3D-THIE001)GN-WA001		
Project Manager: MT	Reviewed By: JEP	Date: FEBRUARY 2016
Scale: 1"=40'	Project Nº: 07878	Report Nº: THIE001 / Drawing Nº: figure 5

I:\drawings\07000s\07878\07878-SOURCE\07878-T01(C3D-THIE001)GN-WA001 - cut-calc-pres.dwg

Attachment C
Photograph Log of the Area of the Proposed Work

Photo 1 – Concrete Floor Slab From Green Point Landfill (9/20/12)

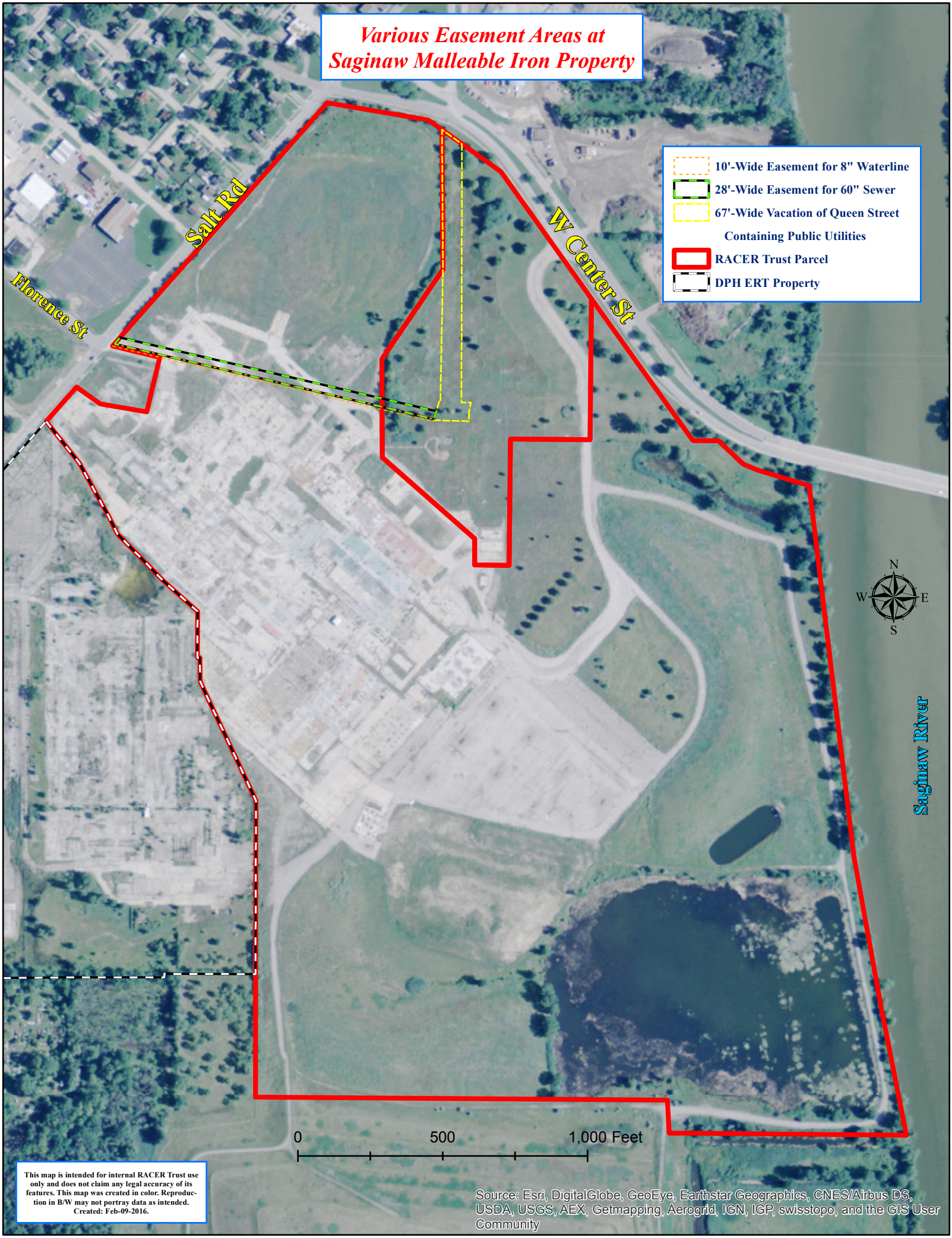
Photo 2 – Concrete Floor Slab (8/15/2014)

Photo 3 – Concrete Floor Slab (8/15/2014)

Photo 4 – Concrete Floor Slab and Brick flooring (8/15/2014)

Attachment D
Receipt of Payment for Joint Permit Application

Attachment E
Easements and Other Permits/Approvals


Various Easement Areas at
Saginaw Malleable Iron Property
10'-Wide Easement for 8" Waterline
28'-Wide Easement for 60" Sewer
67'-Wide Vacation of Queen Street
Containing Public Utilities
RACER Trust Parcel
DPH ERT Property
Salt Rd
W Center St
Florence St
Saginaw River
N
W
E
S
0
500
1,000 Feet
This map is intended for internal RACER Trust use only and does not claim any legal accuracy of its features. This map was created in color. Reproduction in B/W may not portray data as intended.
Created: Feb-09-2016.
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

NO. D-836 LIBER 1269 PAGE 348

AN ORDINANCE TO VACATE A PORTION OF FLORENCE STREET SUBJECT TO RESERVATION OF CERTAIN EASEMENTS

THE CITY OF SAGINAW ORDAINS:

Section 1. That the portion of Florence Street lying between the westerly line of Queen Street and the easterly line of Salt Street be, and the same is hereby vacated subject to the easements hereinafter reserved.

Section 2. That there is hereby reserved in the vacated portion of Florence Street an easement for the existing 60 inch sewer, said easement to be 28 feet wide and located 8 feet north of and 20 feet south of the centerline of the sewer.

Section 3. That there is hereby reserved in the vacated portion of Florence Street an easement for the existing 8 inch watermain, said easement to be 10 feet wide and located 5 feet either side of the centerline of the watermain.

Section 4. That the official Map of the City of Saginaw is hereby amended accordingly.

Section 5. That this ordinance shall take effect August 22, 1968.

Enacted: August 12, 1968.

HENRY G. MARSH
MAYOR

RECORDED
AUG 22 10 07 AM '68

F. B. NIEDERSTADT
CITY CLERK

I, F. B. NIEDERSTADT, Do hereby certify that the above is a true and correct copy of Ordinance No. D-836 which was enacted by the Council of the City of Saginaw at a regular meeting held August 12, 1968.

F. B. NIEDERSTADT, City Clerk

LIBER 1269 PAGE 348

REC'D AUG. 22, 1968

Inc'd 1-9-87 8
1981 O
1988 C

B2#7

LIBER 1353 PAGE 733

D-1007

AN ORDINANCE TO VACATE PORTIONS OF QUEEN AND FLORENCE STREETS AND TO RESERVE EASEMENTS THEREIN FOR PUBLIC UTILITIES

The City of Saginaw Ordains:

Section 1: That that portion of Florence Street right-of-way lying easterly of the west line of Queen Street and that portion of Queen Street right-of way lying northerly of Florence Street being a part of the North ½ of Fractional Section 35, Town 12 North Range 4 East, City of Saginaw, Saginaw County, Michigan, and described as follows: Commencing on the centerline of Florence Street at a point 67.01 feet, South 88°47'44" East, from the intersection of the centerlines of Florence Street and Queen Street; thence South 00°14'46" West, parallel to and 67.00 feet, measured at right angles, east of the centerline of Queen Street, 33.00 feet; thence North 88°47'44" West, on the south line of Florence Street right-of-way, being 33.00 feet, measured at right angles, south of the centerline of Florence Street, 121.41 feet to the westerly line of a parcel conveyed Hardin to Malcolm by a deed recorded in Liber 209, page 473; thence North 16°02'38" East, on said westerly line; 68.28 feet to the north line of Florence Street right-of-way; thence South 88°47'44" East, on said north line of Florence Street, 2.81 feet; thence North 00°14'46" East, on the west line of Queen Street right-of-way, being 33.00 feet, measured at right angles, west of the centerline of Queen Street, 937.03 feet to the westerly extension of the southwesterly line of West Center Street as established east of and adjacent to Queen Street thence South 53°08'40" East, on said westerly extension of the southwesterly line of West Center Street, 82.22 feet to a point on the east line of Queen Street right-of-way which is 162.00 feet, South 00°14'46" West of the intersection of the east line of Queen Street and the easterly extension of the south line of Block 95, H. L. Miller's Addition to the City of Saginaw; thence South 00°14'46" West, on the east line of Queen Street right-of-way, being 33.00 feet, measured at right angles, east of the centerline of Queen Street, 899.10 feet; thence South 88°47'44" East, parallel to and 23.00 feet, measured at right angles, north of the centerline of Florence Street, 34.00 feet; thence South 00°14'46" West, parallel to and 67.00 feet, measured at right angles, east of the centerline of Queen Street, 23.00 feet to the point of beginning, containing 1.54 acres of land, be and the same are hereby vacated, subject to the easement hereinafter reserved.

Section 2. That there is hereby reserved in the portions of the streets vacated hereby an easement for public utilities to the same extent as though said streets had not been vacated.

Section 3. That the official Map of the City of Saginaw is hereby amended accordingly.

Section 4. That this ordinance shall take effect December 9, 1971.

Adopted unanimously.

I, E. A. DONALDSON, Clerk of the City of Saginaw, do hereby certify that the above is a true and correct copy of Ord. No. D-1007, vacating portions of Queen and Florence Streets in H. L. Miller's Addition to the City of Saginaw and enacted by the Council of the City of Saginaw November 29, 1971.

E. A. DONALDSON, City Clerk

RECORDED

DEC 8 12 12 PM '71

REGISTER OF DEEDS
SAGINAW COUNTY, MICHIGAN

LIBER 1353 PAGE 733 REC'D DEC 8 1971

Attachment F
Design Brief – Fill Volume Calculations

Memorandum

To:	MDEQ	Ref. No.:	007878
From:	J.E.P. John-eric Pardys/jp/158	Date:	February 18, 2016

Re: Design Brief – Fill Volume Calculations
Former SMI Plant – Placement of 1-ft of soil on remaining concrete floor slab area
Malleable Iron Industrial Land, Saginaw, MI

GHD has prepared the following memorandum to provide supplemental information for the cut and fill volumes below the 100-year floodplain included in Sections 10 and 13 of the Joint Permit Application associated with the work proposed at RACER's Saginaw Malleable Industrial Land (Site) in Saginaw, Michigan.

Placement of Fill Below the 100-year Floodplain

An initial estimate of the fill proposed for placement on the Former SMI Plant concrete floor slab area below the 100-year floodplain (593.3 ft AMSL NGDV 29) was calculated by multiplying the area of the concrete floor slab (252,648 sq.ft.) below the 100-year floodplain (based on manhole elevations from the Plant Sewer Survey [SPICER Engineering Company, February 1996] and existing spot elevations) by the average depth of fill for each manhole and existing spot elevation (0.31 ft) below the 100-year floodplain elevation. The approximate fill volume calculated is 2,630 cu.yd as presented in Table 1.

A more accurate determination of the amount of fill proposed for placement on the Former SMI Plant concrete floor slab area below the 100-year floodplain was estimated by creating an existing surface and a proposed surface in AutoCAD Civil 3D 2014 using available survey data and proposed elevations. The existing surface was generated utilizing surveyed manhole elevations and existing spot elevations as presented on Drawing 1.

The proposed surface was the 100-year floodplain elevation (593.3 ft) as determined through review of the FEMA mapping for the Site which is included in Attachment 1. The total cut/fill volume was calculated by comparing the existing and proposed surfaces in AutoCAD Civil 3D 2014.

GHD Services Inc.
14496 Sheldon Road Suite 200 Plymouth Michigan 48170 USA
T 734 453 5123 **F** 734 453 5201 **W** www.ghd.com

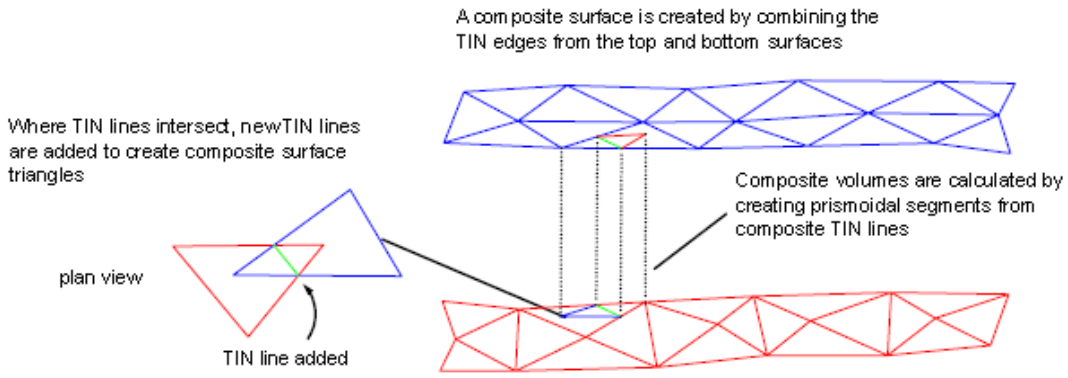
The following excerpt is from the AutoCAD Civil 3D 2014 program which states how composite volumes are created:

About Composite Volumes

The composite method triangulates a new surface, based on points from both surfaces.

This method uses the points from both surfaces, as well as any location where the edges of the triangles between the two surfaces intersect to create prismoidal segments from composite TIN lines.

The new composite surface elevations are calculated based on the difference between the elevations of the two surfaces, as follows:



This method gives accurate volume measurements between the two surface definitions.

Composite surface triangles for the volumes generated between the existing and proposed surfaces is presented on Drawing 1. The volume of fill below the 100-year floodplain elevation calculated by the AutoCAD Civil 3D 2014 program is 2,680 cubic yard (cu.yd).

Compensating Cut Below the 100-year Floodplain

Different areas of the Site were evaluated for use as the compensating cut area for the proposed fill to be placed below the 100-year floodplain. An area west of the secondary pond was selected as the location for the compensating cut as environmental sampling identified only minor impacts in soil and surveyed elevations of the ground surface were near or below the 100-year floodplain. To estimate the depth of cut below the 100-year floodplain required to compensate for the 2,680 cu.yd of fill being placed below the 100-year floodplain the following steps were completed:

Step 1 – Calculate Total Cut Volume

- Calculate average spot elevations within the proposed cut area (593.16 ft)

- Calculate volume of cut by varying the depth of cut and multiplying by the proposed cut area (1-ft, 3,660 cu.yd). Please note that a greater cut was selected since there is a portion of the cut area that is above the 100-year floodplain that cannot be included in the cut volume.

Step 2 – Calculate Cut Volume Above the 100-year Floodplain

- Average the cut depths for the spot elevations above the floodplain level (0.31 ft).
- Calculate percentage of spot elevations above the floodplain level (43.5 percent).
- Calculate volume of cut above the floodplain by multiplying the average cut depth above the floodplain by the percentage of the total area above the 100-year floodplain (495 cu.yd).

Step 3 – Calculate Cut Volume Below the 100-year Floodplain

- Subtract total cut volume by cut volume below the 100-year floodplain (3,165 cu.yd).

Table 2 summarizes the calculations for the cut volume below the 100-year floodplain.

A more accurate determination of the depth of cut below the 100-year floodplain required to compensate the 2,680 cu.yd of fill being placed below the 100-year floodplain was completed by constructing a proposed surface (2:1 side slopes with a flat bottom) in AutoCAD Civil 3D, calculating the volume between the existing and proposed surfaces (less the cut volume above the 100-year floodplain), and adjusting the elevation of the flat bottom of the proposed surface until the proposed cut volume was approximately 2,680 cu.yd. A flat bottom elevation of the proposed cut of 592.2 ft AMSL generates approximately 2,800 cu.yd of cut.

Table 1

Estimate Volume of Fill to be Placed Below the 100-Year Floodplain
Saginaw Malleable Industrial Land
Saginaw, MI

Manhole ID	Elevation (ft AMSL)	Distanc from Floodplain Level (ft)
P16.6	593.29	0.01
P13.7	593.15	0.15
S13.5	593.27	0.03
Q12.7	593.17	0.13
O13.7	593.01	0.29
M13.0	593.2	0.1
O8.8	592.94	0.36
T9.3	593	0.3
Spot Elev	593.18	0.12
Spot Elev	592.35	0.95
Spot Elev	592.4	0.9
Spot Elev	593.02	0.28
Spot Elev	593	0.3
Spot Elev	593.07	0.23
Spot Elev	592.8	0.5
Spot Elev	592.93	0.37

Average level below floodplain	0.31	ft
Area of concrete floor slab below 100-year floodplain	226512	sq.ft.
Volume of fill below the 100-year floodplain	2630	cu.yd.

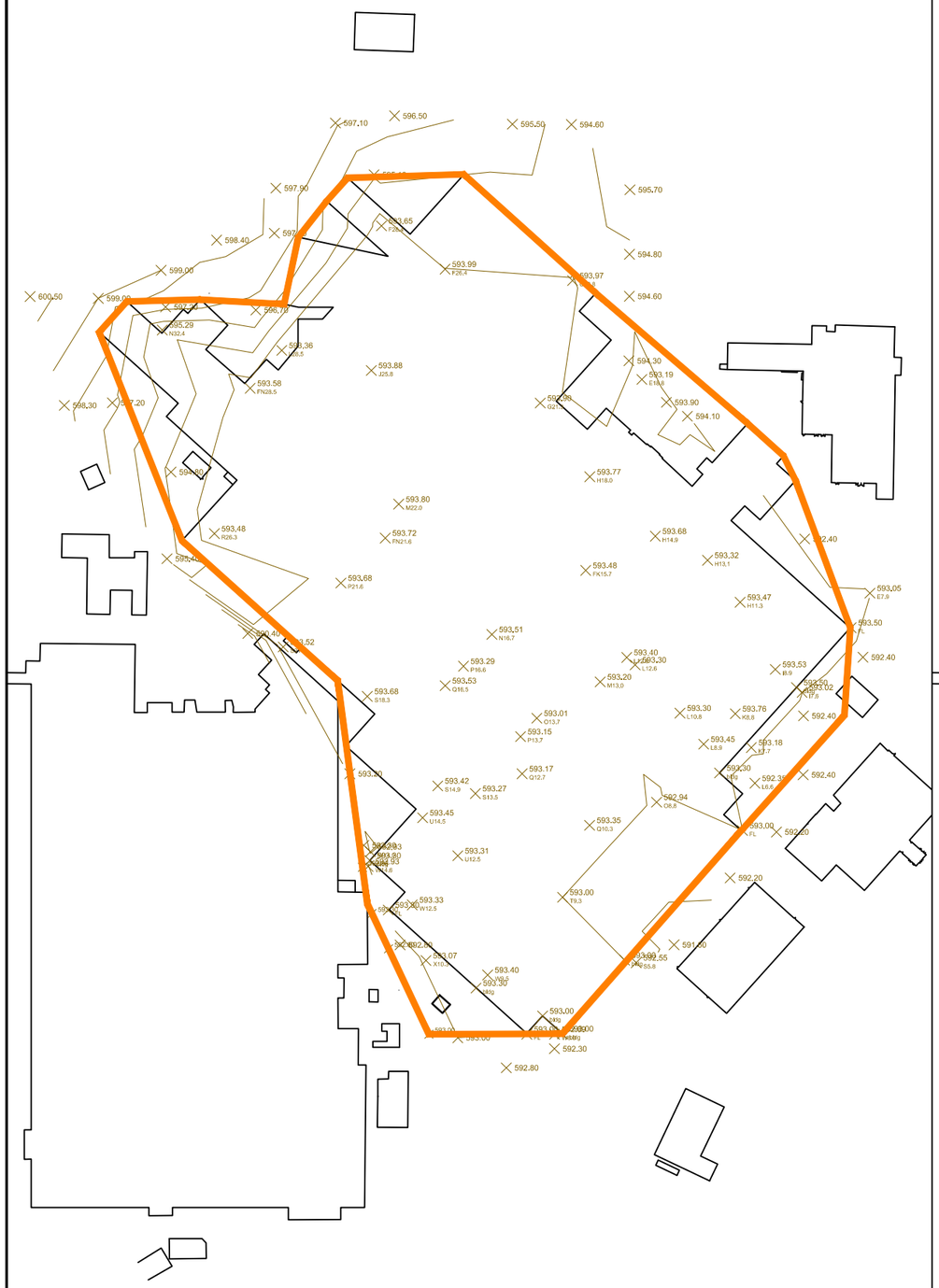
Table 2

Estimate Cut Volume Below the 100-Year Floodplain
Saginaw Malleable Industrial Land
Saginaw, MI

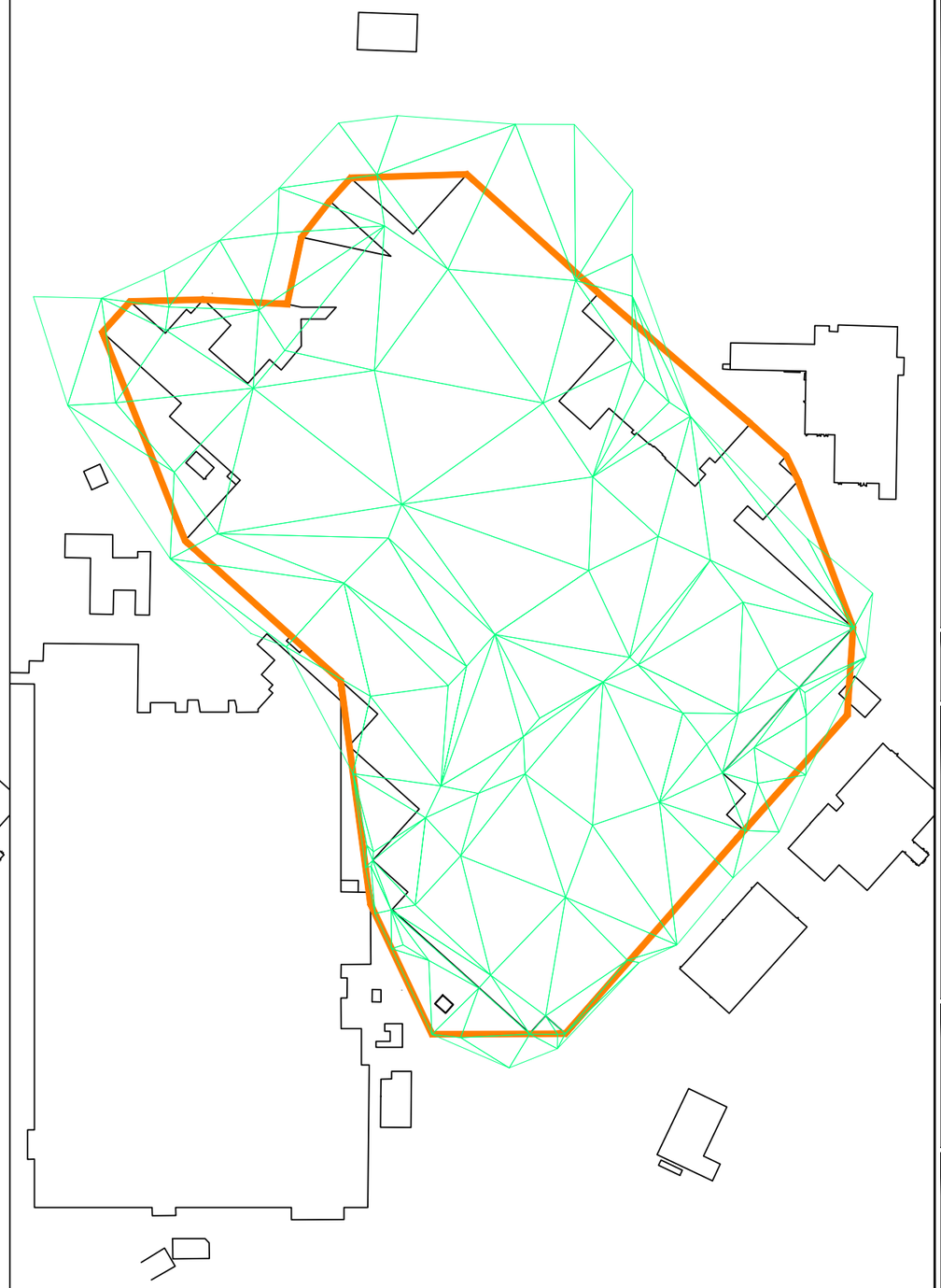
Spot Elevations within Proposed Cut Area (ft AMSL)	Depth above Floodplain Level (ft)	Locations above Floodplain Elevation
STEP 1 - Calculate Total Cut Volume		
593.82	0.52	x
593.14	-0.16	
593.79	0.49	x
593.57	0.27	x
592.77	-0.53	
592.85	-0.45	
592.62	-0.68	
593.76	0.46	x
592.61	-0.69	
593.70	0.40	x
593.56	0.26	x
593.75	0.45	x
593.44	0.14	x
593.11	-0.19	
592.85	-0.45	
593.19	-0.11	
592.28	-1.02	
593.40	0.10	x
592.94	-0.36	
592.34	-0.96	
592.80	-0.50	
593.13	-0.17	
593.32	0.02	x
Average Spot Elevation:	593.16	ft
Area of proposed cut:	98778	sq.ft.

Proposed Cut Depth (ft)	Proposed Cut Elevation (ft)	Volume of fill below the 100-year floodplain (cu. yd.)
0.25	592.91	910
0.50	592.66	1830
0.75	592.41	2740
1.00	592.16	3660
1.25	591.91	4570

STEP 2 - Calculate Cut Volume Above the 100-year Floodplain	
Average Depth above Floodplain (ft):	0.31
% of Proposed Cut Area above Floodplain:	43.5%
Approximate cut volume above Floodplain (cu.yd.):	495
STEP 3 - Calculate Cut Volume Below the 100-year Floodplain	
Total Cut Volume below Floodplain (cu.yd.):	3165

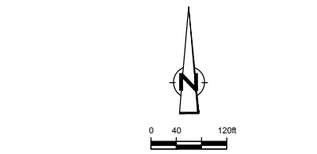


EXISTING CONDITIONS



VOLUME CALCULATION

No	Revision	Date	Initial



LEGEND

- 590 — EXISTING GROUND CONTOUR
- X 596.712 XYZ — TOPO SURVEY POINT
- RACER PROPERTY BOUNDARY
- PROPOSED 1-FT COVER AREA
- TIN LINE

SCALE VERIFICATION

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

Approved

DRAWING STATUS

Status	Date	Initial

REVITALIZING AUTO COMMUNITIES ENVIRONMENTAL RESPONSE TRUST

SAGINAW, MICHIGAN

1-FT COVER ABOVE CONCRETE FLOOR SLAB AREA FILL VOLUME SUPPORTING INFORMATION

GHD

Source Reference:

Project Manager:	Reviewed By:	Date:	
MT	JEP	FEBRUARY 2016	
Scale: 1"=120'	Project No: 07878-T01	Report No: MEMO158	Drawing No: Dwg1

Attachment 1

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas. The community map repository should be consulted for possible updated flood hazard information prior to use of this map for property purchase or construction purposes.

Coastal base flood elevations apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD), and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of special flood hazard (100-year flood) include Zones A, AE, AH, AO, A99, V, and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

Corporate limits shown on this map are based on the best data available. The user should contact appropriate community officials to verify the corporate limits delineations shown on this map.

For community map revision history prior to countywide mapping, see section 6.0 of the Flood Insurance Study Report.

For adjoining map panels see separately printed Map Index.

DIGITAL DATA AVAILABILITY: Digital files containing the thematic floodplain information shown on these maps are published by the Federal Emergency Management Agency in DLG-3 Optional format on CD-ROM. Requests for data should include the full name of the community or county and the Flood Insurance Rate Map panel numbers covered by the request. Contact the Federal Emergency Management Agency, Map Service Center, 6730 Santa Barbara Court, Baltimore, Maryland 21227-5832. Telephone 1-800-358-9616.

NOTE: The coordinate system used for the production of this Flood Insurance Rate Map (FIRM) is Universal Transverse Mercator (UTM), North American Datum of 1927 (NAD27), Clarke 1866 spheroid. Corner coordinates shown on the FIRM are in latitude and longitude referenced to the Universal Transverse Mercator projection, NAD27. Differences in the datum and spheroid used in the production of FIRMs for adjacent counties may result in slight positional differences in map features at the county boundaries. These differences do not affect the accuracy of the information shown on the FIRM.

ATTENTION: Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, contact the National Geodetic Survey at the following address:

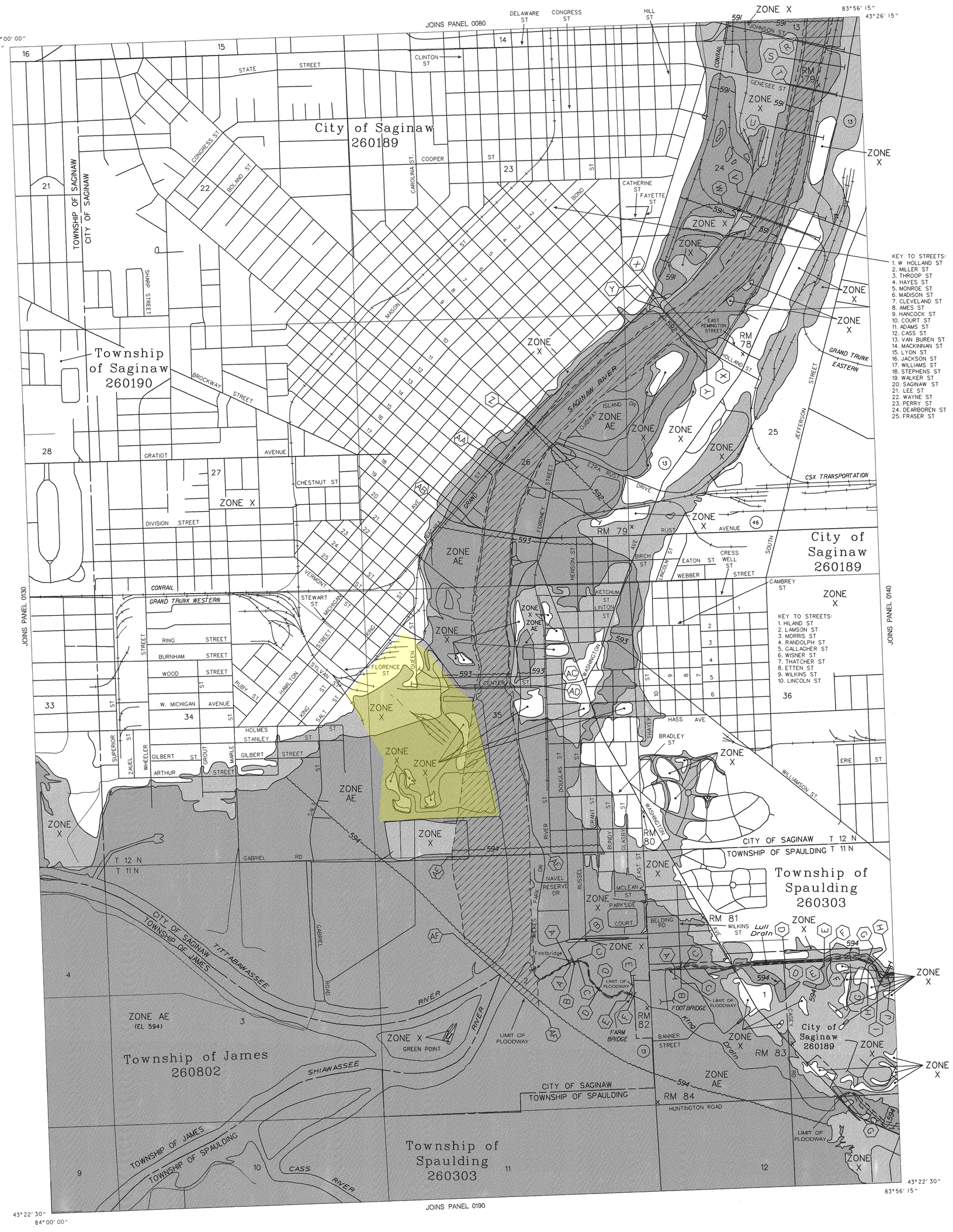
Vertical Network Branch, N/CG13
National Geodetic Survey, NOAA
Silver Spring Metro Center 3
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

BASE MAP SOURCE: Planimetric base map files were provided in digital format by the Detroit District of the U.S. Army Corps of Engineers (USACE). These files were compiled from aerial photographs dated 1982 to 1987 provided by the USACE and digital U.S. Geological Survey 7.5-Minute Series Topographic Maps at a scale of 1:24,000 provided by the Michigan Department of Natural Resources. Additional information may have been derived from other sources. Users of this FIRM should be aware that minor adjustments may have been made to specific base map features.

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION IN FT. (NGVD)[1]	DESCRIPTION OF LOCATION
RM 179	590.48	A Bronze U.S. Lake Survey disk designated "H.L. Mon. 116" located on top of northeast abutment of the Genesee Street bridge over the Saginaw River, approximately 11 feet north of north face of bridge.
RM 78	608.01	A bronze U.S. Lake Survey disk designated "SR 20" set vertically in east hall located at the intersection of East Remington Street and Washington Avenue southwest from corner of building.
RM 79	602.30	A bronze U.S. Lake Survey disk designated "SR 21" set vertically in north face of Saginaw-Waterworks building located at the intersection of Rust Avenue and Washington Avenue, approximately 14 feet southeast of southeast side of entrance.
RM 80	599.08	A U.S. Geological Survey disk designated "60 Mich." located in angle of intersection of East Street and Washington Avenue, approximately 27 feet south of curb point.
RM 81	598.10	A chiseled cross in the top of a bolt on the west side of the hydrant at the southwest corner of the intersection of Washington Avenue and Belding Road.
RM 82	592.51	A chiseled square on center of west concrete guardrail of East Street bridge over King Drain.
RM 83	594.64	A chiseled cross in the top of a bolt on the north side of a hydrant approximately 18 feet north of the centerline of Washington Avenue.
RM 84	589.65	A chiseled cross on a bolt on the northeast side of a hydrant 36 feet east of the centerline of East Street, 36 feet north of the centerline of Huntington Road.

[1]National Geodetic Vertical Datum of 1929



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- ZONE A — No base flood elevations determined.
- ZONE AE — Base flood elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE A99 — To be protected from 100-year flood by Federal flood protection system under construction; no base flood elevations determined.
- ZONE V — Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE — Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- ZONE X — Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 100-year flood.

OTHER AREAS

- ZONE X — Areas determined to be outside 500-year floodplain.
- ZONE D — Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS*

Identified 1983 | Identified 1990 | Otherwise Protected Areas

*Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain Boundary
- Floodway Boundary
- Zone D Boundary
- Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.
- 513 — Base Flood Elevation Line; Elevation in Feet**
- A — A — Cross Section Line
- (EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone**
- RM7x — Elevation Reference Mark
- M1.5 — River Mile

**Referenced to the National Geodetic Vertical Datum of 1929

MAP REPOSITORY

Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

OCTOBER 16, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

Refer to the FLOOD INSURANCE RATE MAP effective date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE

1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

SAGINAW COUNTY, MICHIGAN (ALL JURISDICTIONS)

PANEL 135 OF 360

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
JAMES, TOWNSHIP OF	260802	0135	D
SAGINAW, CITY OF	260189	0135	D
SAGINAW, TOWNSHIP OF	260190	0135	D
SPAULDING, TOWNSHIP OF	260303	0135	D

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
26145C0135 D

EFFECTIVE DATE:
OCTOBER 16, 1997

Federal Emergency Management Agency

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Saginaw River (continued)								
AA	20.287[1]	690	15,073	4.5	592.6	592.6	592.7	0.1
AB	20.514[1]	620	13,228	5.1	592.7	592.7	592.8	0.1
AC	21.059[1]	598	13,502	5.0	593.0	593.0	593.1	0.1
AD	21.093[1]	782	15,125	4.5	593.1	593.1	593.2	0.1
AE	21.722[1]	1,500	21,743	3.1	593.6	593.6	593.6	0.0
AF	22.186[1]	1,900	24,735	2.7	593.8	593.8	593.8	0.0
Shiawassee River								
A	112,851[2]	320	3,245	2.6	615.5	615.5	615.5	0.0
B	114,086[2]	964	4,919	1.7	615.8	615.8	615.9	0.1
C	116,291[2]	537	3,243	2.6	616.2	616.2	616.3	0.1
D	117,836[2]	903	3,392	2.5	616.6	616.6	616.7	0.1
E	119,191[2]	558	2,943	2.9	617.0	617.0	617.1	0.1
F	119,891[2]	307	3,400	2.5	617.3	617.3	617.4	0.1
G	119,934[2]	290	2,932	2.9	619.7	619.7	619.7	0.0
H	119,989[2]	290	4,085	2.1	619.8	619.8	619.8	0.0
I	120,436[2]	135	1,509	5.6	619.8	619.8	619.8	0.0
J	120,697[2]	247	2,147	3.9	620.1	620.1	620.1	0.0
K	121,682[2]	480	2,960	2.8	620.6	620.6	620.6	0.0
L	122,672[2]	455	3,298	2.6	620.9	620.9	620.9	0.0
M	123,767[2]	1,094	3,964	2.1	621.1	621.1	621.1	0.0
N	125,287[2]	975	3,546	2.4	621.4	621.4	621.4	0.0
O	126,257[2]	978	2,489	3.4	621.7	621.7	621.8	0.1

[1]Miles above mouth
[2]Feet above confluence with Saginaw River

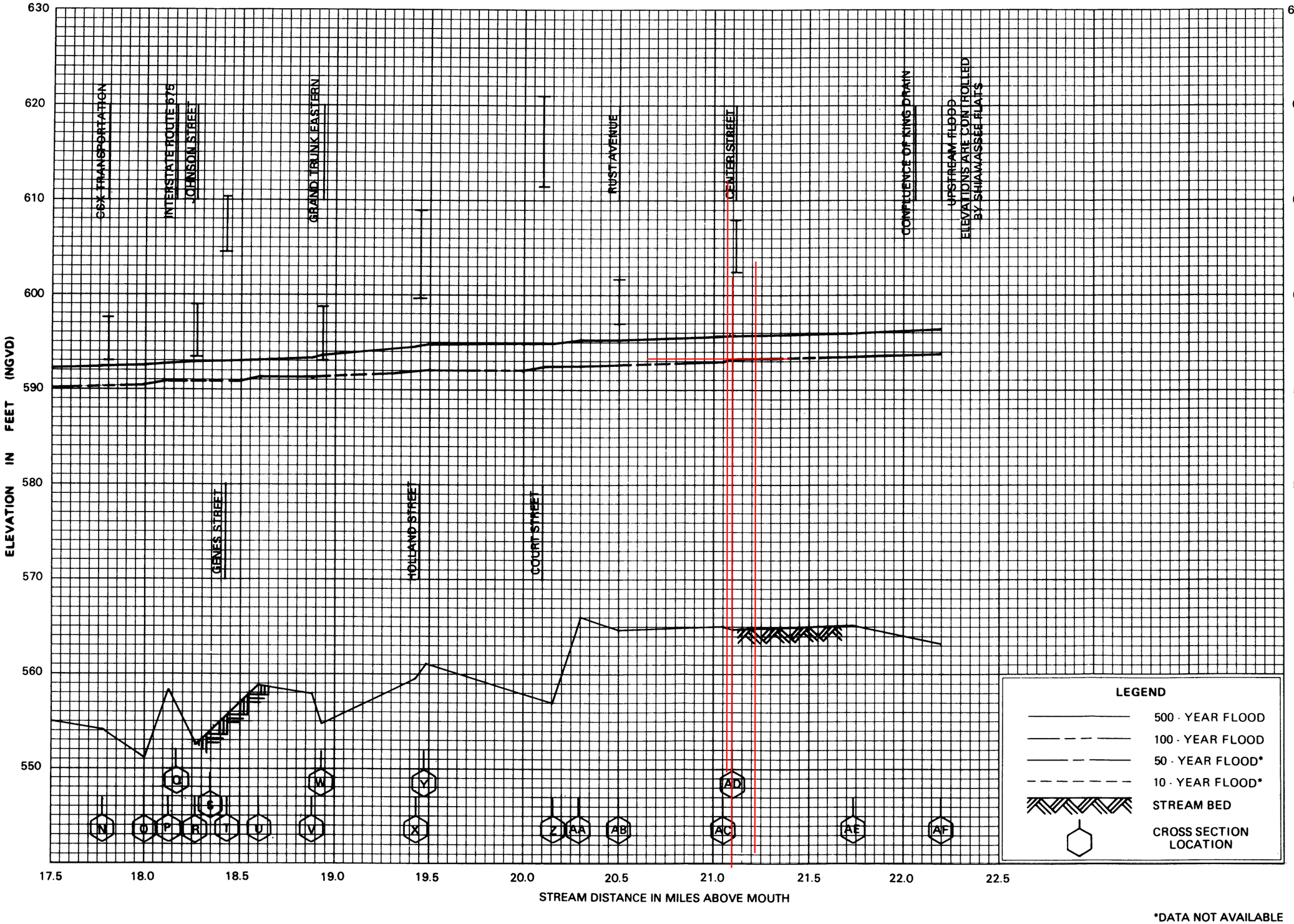
TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAGINAW COUNTY, MI
(ALL JURISDICTIONS)

FLOODWAY DATA

SAGINAW RIVER - SHIAWASSEE RIVER



*DATA NOT AVAILABLE

FLOOD PROFILES

SAGINAW RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAGINAW COUNTY, MI

(ALL JURISDICTIONS)

18P

Attachment G
Analytical Data for Proposed Compensating Cut Area

Attachment G

Analytical Results Summary
For Compensating Cut Material
Malleable Iron Industrial Land
Saginaw, MI

Sample Location:							**BH7**	**BH7**	**BH8**	**BH8**
Sample ID:							**S-030607-SSH-BS014**	**S-030607-SSH-BS015**	**S-030607-SSH-BS016**	**S-030607-SSH-BS017**
Sample Date:							**3/6/2007**	**3/6/2007**	**3/6/2007**	**3/6/2007**
Sample Depth:							**(0-2) ft BGS**	**(2-4) ft BGS**	**(0-2) ft BGS**	**(2-4) ft BGS**
Parameters	**Units**	**Res/Non_Res/ Statewide Default Bkgd Levels**	**Non_RES/Direct Contact**	**Non_RES/GW Prot _Non_Res Drinking Water Prot**	**Non_RES/ Particulate Soil Inhalation**	**Res/Non_Res/GW Prot_GW SW Interface Prot**				
VOAs		a	b	c	d	e				
1,1,1-Trichloroethane	mg/kg	-	1000000	4	29000000	1.8	0.045 U	0.051 U	0.046 U	0.049 U
1,1,2,2-Tetrachloroethane	mg/kg	-	240	0.7	68000	1.6	0.045 U	0.051 U	0.046 U	0.049 U
1,1,2-Trichloroethane	mg/kg	-	840	0.1	250000	6.6	0.045 U	0.051 U	0.046 U	0.049 U
1,1-Dichloroethane	mg/kg	-	87000	50	15000000	15	0.045 U	0.051 U	0.046 U	0.049 U
1,1-Dichloroethene	mg/kg	-	660	0.14	78000	2.6	0.045 U	0.051 U	0.046 U	0.049 U
1,2,4-Trichlorobenzene	mg/kg	-	5800	4.2	11000000	5.9	0.23 UJ	0.25 UJ	0.23 UJ	0.24 UJ
1,2-Dibromo-3-chloropropane (DBCP)	mg/kg	-	20	0.01	700	-	0.23 UJ	0.25 UJ	0.23 UJ	0.24 UJ
1,2-Dibromoethane (Ethylene dibromide)	mg/kg	-	0.43	0.02	18000	0.11	0.23 U	0.25 U	0.23 U	0.24 U
1,2-Dichlorobenzene	mg/kg	-	63000	14	44000000	0.28	0.09 U	0.1 U	0.092 U	0.097 U
1,2-Dichloroethane	mg/kg	-	420	0.1	150000	7.2	0.045 U	0.051 U	0.046 U	0.049 U
1,2-Dichloropropane	mg/kg	-	660	0.1	120000	4.6	0.045 U	0.051 U	0.046 U	0.049 U
1,3-Dichlorobenzene	mg/kg	-	660	0.48	88000	0.68	0.09 U	0.1 U	0.092 U	0.097 U
1,4-Dichlorobenzene	mg/kg	-	1900	1.7	570000	0.36	0.09 U	0.1 U	0.092 U	0.097 U
2-Butanone (Methyl ethyl ketone) (MEK)	mg/kg	-	700000	760	29000000	44	0.68 U	0.76 U	0.69 U	0.73 U
2-Hexanone	mg/kg	-	100000	58	1200000	-	2.3 U	2.5 U	2.3 U	2.4 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/kg	-	180000	100	60000000	-	2.3 U	2.5 U	2.3 U	2.4 U
Acetone	mg/kg	-	73000	42	170000000	34	0.73	0.81	0.8	0.75
Benzene	mg/kg	-	840	0.1	470000	4	0.045 U	0.051 U	0.046 U	0.029 J
Bromodichloromethane	mg/kg	-	490	1.6	110000	-	0.09 U	0.1 U	0.092 U	0.097 U
Bromoform	mg/kg	-	3800	1.6	3600000	-	0.09 U	0.1 U	0.092 U	0.097 U
Bromomethane (Methyl bromide)	mg/kg	-	1000	0.58	150000	0.7	0.18 U	0.2 U	0.18 U	0.19 U
Carbon disulfide	mg/kg	-	43000	46	21000000	-	0.23 U	0.25 U	0.23 U	0.24 U
Carbon tetrachloride	mg/kg	-	440	0.1	170000	0.9	0.045 U	0.051 U	0.046 U	0.049 U
Chlorobenzene	mg/kg	-	14000	2	2100000	0.5	0.045 U	0.051 U	0.046 U	0.049 U
Chloroethane	mg/kg	-	12000	34	290000000	22	0.23 U	0.25 U	0.23 U	0.24 U
Chloroform (Trichloromethane)	mg/kg	-	5500	1.6	1600000	7	0.045 U	0.051 U	0.046 U	0.049 U
Chloromethane (Methyl chloride)	mg/kg	-	7400	22	2600000	-	0.23 U	0.25 U	0.23 U	0.24 U
cis-1,2-Dichloroethene	mg/kg	-	8000	1.4	1000000	12	0.045 U	0.051 U	0.046 U	0.049 U
cis-1,3-Dichloropropene	mg/kg	-	-	-	-	-	0.045 U	0.051 U	0.046 U	0.049 U
Cyclohexane	mg/kg	-	-	-	-	-	0.051 J	0.062 J	0.063 J	0.09 J
Dibromochloromethane	mg/kg	-	500	1.6	160000	-	0.045 U	0.051 U	0.046 U	0.049 U
Dichlorodifluoromethane (CFC-12)	mg/kg	-	170000	270	1500000000	-	0.09 U	0.1 U	0.092 U	0.097 U
Ethylbenzene	mg/kg	-	71000	1.5	13000000	0.36	0.045 U	0.051 U	0.011 J	0.027 J
Isopropyl benzene	mg/kg	-	80000	260	2600000	3.2	0.23 U	0.25 U	0.23 U	0.06 J
Methyl acetate	mg/kg	-	-	-	-	-	1.1 U	1.2 U	1.1 U	1.2 U
Methyl cyclohexane	mg/kg	-	-	-	-	-	0.082 J	0.1 J	0.14 J	0.19 J
Methyl tert butyl ether (MTBE)	mg/kg	-	7100	0.8	88000000	140	0.23 U	0.25 U	0.23 U	0.24 U
Methylene chloride	mg/kg	-	5800	0.1	8300000	30	0.23 U	0.25 U	0.23 U	0.24 U
Styrene	mg/kg	-	1900	2.7	6900000	2.1	0.045 U	0.051 U	0.046 U	0.049 U
Tetrachloroethene	mg/kg	-	930	0.1	1200000	1.2	0.045 U	0.051 U	0.046 U	0.049 U
Toluene	mg/kg	-	160000	16	12000000	5.4	0.016 J	0.025 J	0.043 J	0.088 J
trans-1,2-Dichloroethene	mg/kg	-	12000	2	2100000	30	0.045 U	0.051 U	0.046 U	0.049 U
trans-1,3-Dichloropropene	mg/kg	-	-	-	-	-	0.045 U	0.051 U	0.046 U	0.049 U
Trichloroethene	mg/kg	-	660	0.1	59000	4	0.045 U	0.051 U	0.046 U	0.049 U
Trichlorofluoromethane (CFC-11)	mg/kg	-	260000	150	1700000000	-	0.09 U	0.1 U	0.092 U	0.097 U
Trifluorotrichloroethane (CFC-113)	mg/kg	-	1000000	9000	2300000000	1.7	0.23 U	0.25 U	0.23 U	0.24 U
Vinyl chloride	mg/kg	-	34	0.04	890000	0.26	0.036 U	0.04 U	0.037 U	0.039 U
Xylenes (total)	mg/kg	-	1000000	5.6	130000000	0.82	0.065 J	0.088 J	0.12 J	0.21

Attachment G

Analytical Results Summary
For Compensating Cut Material
Malleable Iron Industrial Land
Saginaw, MI

Sample Location:							BH7	BH7	BH8	BH8
Sample ID:							S-030607-SSH-BS014	S-030607-SSH-BS015	S-030607-SSH-BS016	S-030607-SSH-BS017
Sample Date:							3/6/2007	3/6/2007	3/6/2007	3/6/2007
Sample Depth:							(0-2) ft BGS	(2-4) ft BGS	(0-2) ft BGS	(2-4) ft BGS
Parameters	**Units**	**Res/Non_Res/ Statewide Default Bkgd Levels**	**Non_RES/Direct Contact**	**Non_RES/GW Prot _Non_Res Drinking Water Prot**	**Non_RES/ Particulate Soil Inhalation**	**Res/Non_Res/GW Prot_GW SW Interface Prot**				
SVOAs										
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	mg/kg	-	-	-	-	-	0.29 U	0.35 U	0.29 U	0.31 U
2,4,5-Trichlorophenol	mg/kg	-	73000	110	10000000	-	0.29 U	0.35 U	0.29 U	0.31 U
2,4,6-Trichlorophenol	mg/kg	-	3300	9.4	1300000	0.33	0.29 U	0.35 U	0.29 U	0.31 U
2,4-Dichlorophenol	mg/kg	-	3900	4.2	2300000	0.33	0.29 U	0.35 U	0.29 U	0.31 U
2,4-Dimethylphenol	mg/kg	-	36000	20	2100000	7.6	0.29 U	0.11 J	0.29 U	0.034 J
2,4-Dinitrophenol	mg/kg	-	-	-	-	-	0.17 U	0.2 U	0.16 U	0.18 U
2,4-Dinitrotoluene	mg/kg	-	220	0.64	20000	-	0.29 U	0.35 U	0.29 U	0.31 U
2,6-Dinitrotoluene	mg/kg	-	-	-	-	-	0.29 U	0.35 U	0.29 U	0.31 U
2-Chloronaphthalene	mg/kg	-	180000	1800	-	-	0.29 U	0.35 U	0.29 U	0.31 U
2-Chlorophenol	mg/kg	-	4500	2.6	530000	0.36	0.29 U	0.35 U	0.29 U	0.31 U
2-Methylnaphthalene	mg/kg	-	26000	170	290000	4.2	0.22 J	1	0.4	0.74
2-Methylphenol	mg/kg	-	36000	20	2900000	1	0.29 U	0.059 J	0.29 U	0.31 U
2-Nitroaniline	mg/kg	-	-	-	-	-	0.22 U	0.27 U	0.22 U	0.24 U
2-Nitrophenol	mg/kg	-	2000	1.2	-	-	0.29 U	0.35 U	0.29 U	0.31 U
3,3'-Dichlorobenzidine	mg/kg	-	30	2	8200	2	1.8 U	2.1 U	1.7 U	1.9 U
3-Nitroaniline	mg/kg	-	-	-	-	-	0.22 U	0.27 U	0.22 U	0.24 U
4,6-Dinitro-2-methylphenol	mg/kg	-	260	0.83	59000	-	0.17 U	0.2 U	0.16 U	0.18 U
4-Bromophenyl phenyl ether	mg/kg	-	-	-	-	-	0.29 U	0.35 U	0.29 U	0.31 U
4-Chloro-3-methylphenol	mg/kg	-	15000	16	-	0.28	0.29 U	0.35 U	0.29 U	0.31 U
4-Chloroaniline	mg/kg	-	-	-	-	-	0.17 U	0.2 U	0.16 U	0.18 U
4-Chlorophenyl phenyl ether	mg/kg	-	-	-	-	-	0.29 U	0.35 U	0.29 U	0.31 U
4-Methylphenol	mg/kg	-	36000	20	2900000	1	0.29 U	0.057 J	0.29 U	0.028 J
4-Nitroaniline	mg/kg	-	-	-	-	-	0.22 U	0.27 U	0.22 U	0.24 U
4-Nitrophenol	mg/kg	-	-	-	-	-	0.37 U	0.44 U	0.36 U	0.39 U
Acenaphthene	mg/kg	-	130000	880	6200000	8.7	0.29 U	0.067 J	0.29 U	0.026 J
Acenaphthylene	mg/kg	-	5200	17	1000000	-	0.29 U	0.018 J	0.29 U	0.31 U
Acetophenone	mg/kg	-	150000	88	14000000	-	0.29 U	0.35 U	0.29 U	0.31 U
Anthracene	mg/kg	-	730000	41	29000000	-	0.016 J	0.099 J	0.016 J	0.036 J
Atrazine	mg/kg	-	330	0.06	-	0.15	0.044 U	0.054 U	0.043 U	0.048 U
Benzaldehyde	mg/kg	-	-	-	-	-	0.29 U	0.35 U	0.29 U	0.31 U
Benzo(a)anthracene	mg/kg	-	80	-	-	-	0.051 J	0.09 J	0.022 J	0.047 J
Benzo(a)pyrene	mg/kg	-	8	-	1900	-	0.068 J	0.064 J	0.29 U	0.31 U
Benzo(b)fluoranthene	mg/kg	-	80	-	-	-	0.065 J	0.052 J	0.019 J	0.026 J
Benzo(g,h,i)perylene	mg/kg	-	7000	-	350000	-	0.029 J	0.35 U	0.29 U	0.31 U
Benzo(k)fluoranthene	mg/kg	-	800	-	-	-	0.037 J	0.041 J	0.01 J	0.022 J
Biphenyl (1,1-Biphenyl)	mg/kg	-	-	-	-	-	0.29 U	0.12 J	0.055 J	0.11 J
bis(2-Chloroethoxy)methane	mg/kg	-	-	-	-	-	0.29 U	0.35 U	0.29 U	0.31 U
bis(2-Chloroethyl)ether	mg/kg	-	58	0.17	12000	0.1	0.089 U	0.11 U	0.087 U	0.095 U
bis(2-Ethylhexyl)phthalate (DEHP)	mg/kg	-	12000	-	890000	-	0.29 U	0.35 U	0.29 U	0.31 U
Butyl benzylphthalate (BBP)	mg/kg	-	120000	5600	21000000	120	0.29 U	0.35 U	0.29 U	0.31 U
Caprolactam	mg/kg	-	310000	340	290000	-	0.29 U	0.35 U	0.29 U	0.31 U
Carbazole	mg/kg	-	2400	39	78000	1.1	0.29 U	0.35 U	0.29 U	0.31 U
Chrysene	mg/kg	-	8000	-	-	-	0.082 J	0.11 J	0.036 J	0.068 J
Dibenz(a,h)anthracene	mg/kg	-	8	-	-	-	0.29 U	0.35 U	0.29 U	0.31 U
Dibenzofuran	mg/kg	-	-	-	2900	1.7	0.041 J	0.24 J	0.09 J	0.16 J
Diethyl phthalate	mg/kg	-	550000	320	1500000	2.2	0.29 U	0.35 U	0.29 U	0.31 U
Dimethyl phthalate	mg/kg	-	1000000	4200	1500000	-	0.29 U	0.35 U	0.29 U	0.31 U
Di-n-butylphthalate (DBP)	mg/kg	-	87000	2700	1500000	11	0.29 U	0.35 U	0.29 U	0.025 J
Di-n-octyl phthalate (DnOP)	mg/kg	-	20000	290000	14000000	-	0.29 U	0.35 U	0.29 U	0.31 U
Fluoranthene	mg/kg	-	130000	730	4100000	5.5	0.081 J	0.16 J	0.051 J	0.084 J
Fluorene	mg/kg	-	87000	890	4100000	5.3	0.01 J	0.14 J	0.016 J	0.042 J

Attachment G

Analytical Results Summary
For Compensating Cut Material
Malleable Iron Industrial Land
Saginaw, MI

Sample Location:							**BH7**	**BH7**	**BH8**	**BH8**
Sample ID:							**S-030607-SSH-BS014**	**S-030607-SSH-BS015**	**S-030607-SSH-BS016**	**S-030607-SSH-BS017**
Sample Date:							**3/6/2007**	**3/6/2007**	**3/6/2007**	**3/6/2007**
Sample Depth:							**(0-2) ft BGS**	**(2-4) ft BGS**	**(0-2) ft BGS**	**(2-4) ft BGS**
Parameters	**Units**	**Res/Non_Res/ Statewide Default Bkgd Levels**	**Non_RES/Direct Contact**	**Non_RES/GW Prot _Non_Res Drinking Water Prot**	**Non_RES/ Particulate Soil Inhalation**	**Res/Non_Res/GW Prot_GW SW Interface Prot**				
Hexachlorobenzene	mg/kg	-	37	1.8	8500	0.35	0.29 U	0.35 U	0.29 U	0.31 U
Hexachlorobutadiene	mg/kg	-	470	72	180000	0.091	0.044 U	0.054 U	0.043 U	0.048 U
Hexachlorocyclopentadiene	mg/kg	-	6700	320	5900	-	0.29 U	0.35 U	0.29 U	0.31 U
Hexachloroethane	mg/kg	-	730	1.2	100000	1.8	0.29 U	0.35 U	0.29 U	0.31 U
Indeno(1,2,3-cd)pyrene	mg/kg	-	80	-	-	-	0.025 J	0.35 U	0.29 U	0.31 U
Isophorone	mg/kg	-	22000	62	8200000	26	0.29 U	0.56	0.29 U	0.31 U
Naphthalene	mg/kg	-	52000	100	88000	0.73	0.12 J	0.74[e]	0.24 J	0.45
Nitrobenzene	mg/kg	-	340	0.33	21000	3.6	0.29 U	0.35 U	0.29 U	0.31 U
N-Nitrosodi-n-propylamine	mg/kg	-	5.4	0.33	2000	-	0.29 U	0.35 U	0.29 U	0.31 U
N-Nitrosodiphenylamine	mg/kg	-	7800	22	2800000	-	0.29 U	0.35 U	0.29 U	0.31 U
Pentachlorophenol	mg/kg	-	320	0.022	130000	-	0.17 U	0.2 U	0.16 U	0.18 U
Phenanthrene	mg/kg	-	5200	160	2900	2.1	0.13 J	0.68	0.2 J	0.33
Phenol	mg/kg	-	230000	260	18000000	9	0.14 J	0.35 U	0.29 U	0.31 U
Pyrene	mg/kg	-	84000	480	2900000	-	0.075 J	0.17 J	0.04 J	0.078 J
Metals										
Antimony	mg/kg	-	670	4.3	5900	94	0.18 UJ	0.21 UJ	0.17 UJ	0.19 UJ
Arsenic	mg/kg	5.8	37	4.6	910	4.6	2.3	2.9	1.4	1.3
Barium	mg/kg	75	130000	1300	150000	-	39.4	49.8	18.2	16.3
Beryllium	mg/kg	-	1600	51	590	-	0.056 J	0.43	0.095 J	0.19 U
Cadmium	mg/kg	1.2	2100	6	2200	-	0.19	0.27	0.15	0.13
Chromium	mg/kg	18	1000000	1000000	150000	-	26.3	13.7	11.9	14.3
Cobalt	mg/kg	6.8	9000	2	5900	2	4.8	3.4	1.3	1.4
Copper	mg/kg	32	73000	5800	59000	-	15.8	13.8	7.0	7.7
Lead	mg/kg	21	900	700	44000	-	8.0	21.4	5.9	4.5
Manganese	mg/kg	440	90000	1	1500	-	388	370	163	160
Mercury	mg/kg	0.13	580	1.7	8800	0.05	0.044 U	0.054 U	0.043 U	0.048 U
Nickel	mg/kg	20	150000	100	16000	-	19.0	10.3	7.8	9.8
Selenium	mg/kg	0.41	9600	4	59000	0.4	0.18 U	0.50[e]	0.25	0.15 J
Silver	mg/kg	1	9000	13	2900	0.1	0.067 J	0.13	0.046 J	0.037 J
Thallium	mg/kg	-	130	2.3	5900	4.2	0.065 J	0.062 J	0.047 J	0.031 J
Vanadium	mg/kg	-	5500	990	-	430	12.7	8.5	4.9	5.1
Zinc	mg/kg	47	630000	5000	-	-	81.9	43.6	255	96.5
PCBs										
Aroclor-1016 (PCB-1016)	mg/kg	-	16	-	6500	-	0.29 U	0.35 U	0.29 U	0.31 U
Aroclor-1221 (PCB-1221)	mg/kg	-	16	-	6500	-	0.29 U	0.35 U	0.29 U	0.31 U
Aroclor-1232 (PCB-1232)	mg/kg	-	16	-	6500	-	0.29 U	0.35 U	0.29 U	0.31 U
Aroclor-1242 (PCB-1242)	mg/kg	-	16	-	6500	-	0.29 U	0.35 U	0.29 U	0.31 U
Aroclor-1248 (PCB-1248)	mg/kg	-	16	-	6500	-	0.29 U	0.35 U	0.29 U	0.31 U
Aroclor-1254 (PCB-1254)	mg/kg	-	16	-	6500	-	0.037 J	0.17 J	0.014 J	0.033 J
Aroclor-1260 (PCB-1260)	mg/kg	-	16	-	6500	-	0.29 U	0.35 U	0.29 U	0.31 U

Notes:

U	Not detected at the associated reporting limit.
J	Estimated concentration.
UJ	Not detected; associated reporting limit is estimated.
0.50[e]	Exceedance of criteria