Ten-Mile Drain Superfund Site

St. Clair Shores, Michigan

Record of Decision

September 2018

Prepared by
U.S. Environmental Protection Agency
Region 5

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

FIGURES

TABLES

APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

Algo	Algo Tool Company
AR	Administrative Record
ARARs	Applicable or Relevant and Appropriate Requirements
bgs	below ground surface
CDI	Chronic Daily Intake
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIP	Community Involvement Plan
CIPP	Cured-In-Place Pipe
COC	Contaminant of Concern
CSM	Conceptual Site Model
DDC	Direct Contact Criterion
DTE	DTE Energy
ELCR	Excess Lifetime Cancer Risk
EPA	U.S. Environmental Protection Agency
ESD	Explanation of Significant Differences
FS	Feasibility Study
HHRA	Human Health Risk Assessment
HI	Hazard Index
HQ	Hazard Quotient
ICs	Institutional Controls
IRIS	Integrated Risk Information System
MCPW	Macomb County Public Works Office
MDEQ	Michigan Department of Environmental Quality
MDHHS	Michigan Department of Health and Human Services (formerly Michigan Department of Community Health)
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
NRCS	Natural Resources Conservation Service
O&M	Operation and Maintenance
PCBs	Polychlorinated Biphenyls

ppm	parts per million
PRGs	Preliminary Remediation Goals
PRPs	Potentially Responsible Parties
RAOs	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RfD	reference dose
RI	Remedial Investigation
ROD	Record of Decision
SLERA	Screening-Level Ecological Risk Assessment
TCRA	Time-Critical Removal Action
TDS	Triangle Development Services, LLC
TMD	Ten-Mile Drain
TMD System	Ten Mile Drain Storm Sewer System
TSCA	Toxic Substances Control Act
UU/UE	Unlimited Use and Unrestricted Exposure

This Record of Decision (ROD) documents the third remedy selected for the Ten-Mile Drain (TMD) site in St. Clair Shores, Macomb County, Michigan. The ROD is organized in three sections: Part I contains the *Declaration* for the ROD, Part II contains the *Decision Summary*, and Part III contains the *Responsiveness Summary*.

PART I: DECLARATION

This section summarizes the information presented in the ROD and includes the authorizing signature of the U.S. Environmental Protection Agency (EPA) Region 5 Superfund Division Director.

SITE NAME AND LOCATION

The TMD site (CERCLIS ID MIN000510063) is located northeast of the City of Detroit on the western shores of Lake St. Clair in St. Clair Shores, Macomb County, Michigan. The site includes a mixed commercial/residential area near the intersection of Bon Brae Street and Harper Avenue. The site also includes a portion of the Ten Mile drain storm sewer system (TMD system), which consists of concrete storm sewer pipes and backfill material surrounding the pipes in a utility corridor as deep as fifteen feet below ground surface (bgs). The site encompasses several blocks where polychlorinated biphenyls (PCBs) from a historical release have been found in the TMD system in significant concentrations, as well as areas to which the PCBs are known to have migrated. The historical release is believed to have migrated from a commercial parking lot by surficial track-out onto adjacent properties. The release also entered and migrated through the TMD system, and PCBs were discharged into the Lange and Revere Street canals connected to Lake St. Clair. There is not an ongoing release of PCBs from the commercial property to the TMD system. The Lange and Revere Street canals, which provide recreational boating access to Lake St. Clair for approximately 125 homes, are private property and are used for recreational boating, swimming, and fishing.

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedy for the near-surface soils at the TMD site. The near-surface soils portion of the site addressed by this ROD includes residential and commercial properties located in a mixed commercial/residential area surrounding the commercial property at the corner of Harper Avenue and Lakeland Street, as well as properties along the Lange and Revere Street canals.

The remedy was chosen in accordance with the Comprehensive Environmental, Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, 42 U.S.C. § 9601 *et seq.* and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. This decision is based on the Administrative Record (AR) file for this site. The AR Index, included as Appendix A, identifies each of the items comprising the AR upon which the selection of the remedial action is based.

The State of Michigan has concurred with the Selected Remedy. The State's concurrence letter is included in Appendix B.

ASSESSMENT OF SITE

The response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

DESCRIPTION OF SELECTED REMEDY

The remedy selected in this third ROD for the site addresses PCB-contaminated near-surface soils on residential yards, parkways/utility corridors and commercial properties that pose an unacceptable risk to human health and the environment. The major components of the Selected Remedy include the following:

- Pre-design sampling to determine the actual number of decision units requiring cleanup and the vertical extent of contamination;
- Excavating contaminated near-surface soils exceeding selected cleanup levels to maximum depths of 2.5 feet bgs at residential and commercial properties and 6 feet bgs within utility corridors (see Section 9.0 for the rationale for these excavation depths);
- Transporting and disposing of excavated soils at a permitted Resource Conservation and Recovery Act (RCRA) Subtitle D landfill (for soils less than 50 parts per million (ppm) PCBs) or Toxic Substances Control Act (TSCA) landfill (for soils greater than 50 ppm PCBs);
- Backfilling excavated areas with uncontaminated off-site backfill soil and topsoil;
- Restoring areas impacted by the cleanup work to original conditions, to the extent practicable;
- Providing watering services for up to 4 weeks to ensure successful restoration of remediated properties; and
- Implementing institutional controls (ICs) and/or a visual barrier, if deemed necessary, for properties where PCB concentrations exceed selected cleanup levels in soil deeper than the maximum excavation depths described above. In some cases, limited additional soil may be excavated if determined to be more cost-effective than implementing ICs, installing a visual barrier, and/or needing to conduct five-year reviews at the properties in question.

The TMD site is being addressed through a phased approach as a single operable unit. The Selected Remedy in this ROD is the third remedial action at the site. EPA selected two earlier source control interim remedial actions at the site, as follows:

- September 2011 ROD – requires monthly monitoring and removal of materials from behind weirs within the TMD system, to mitigate additional PCB contamination from reaching the nearby canals until a final cleanup plan is selected and implemented. This interim remedial action is ongoing.
- May 2014 ROD and September 2016 Explanation of Significant Differences (ESD) – required the excavation, removal and replacement of two specific vaulted manholes within the TMD system, the storm sewer pipe between the two manholes, and the surrounding impacted bedding and backfill materials. This interim remedial action permanently removed from the TMD system the most highly-contaminated source materials that had been found. This interim remedial action is complete.

The remedial action selected in this ROD is intended to be the final response action for near-surface soils at the site. This response action does not address source materials constituting principal threats because no such materials have been identified in the residential, commercial, and/or parkway/utility corridor near-surface soils addressed by this ROD.

This response action does not address the PCB contamination remaining within the TMD system (including backfill materials) or in the sediments of the Lange and Revere Street canals. A separate site-wide feasibility study (FS) is currently underway to evaluate remedial alternatives for these remaining areas of the site. When the site-wide FS is complete, EPA intends to develop a Proposed Plan and ROD to select a final remedy for those areas of the site.

STATUTORY DETERMINATIONS

The Selected Remedy is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to the remedial action (unless justified by a waiver), and is cost effective. The Selected Remedy represents the maximum extent to which permanent solutions and alternative treatment (or resource recovery) technologies can be utilized in a practicable manner at the site. The Selected Remedy does not satisfy the statutory preference for treatment as a principal element of the remedy because the low-level PCB contamination in near-surface soils at the site does not lend itself to any cost-effective treatment.

The first interim remedy selected in September 2011 resulted in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure (UU/UE), thereby triggering statutory five-year reviews to evaluate whether the remedy is, or will be, protective of human health and the environment. The first five-year review was completed in April 2017. Because this remedy will also result in hazardous substances remaining on-site above levels that allow for UU/UE, statutory five-year reviews are still required.

ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this ROD. Additional information can be found in the AR for the TMD site.

- Contaminants of concern (COCs) and their respective concentrations: *See Section 5.0.*
- Baseline risk represented by the COCs: *See Section 7.0.*
- Cleanup levels established for the COCs and the basis for these levels: *See Sections 8.0 and 12.0.*
- How source materials constituting principal threats are addressed: *See Section 11.0.*
- Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of groundwater used in the baseline risk assessment and ROD: *See Section 7.0 for land use assumptions; groundwater is not addressed in this ROD.*
- Potential land and groundwater use that will be available at the site as a result of the Selected Remedy: *See Section 12.0 for potential land use; groundwater is not addressed in this ROD.*
- Estimated capital, annual operation and maintenance (O&M), and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected: *See Section 12.0 and Table 2*.
- Key factors that led to selecting the remedy: *See Sections 10.0 and 12.0*.

SUPPORT AGENCY ACCEPTANCE

The State of Michigan has concurred with the Selected Remedy. The State's concurrence letter is included in Appendix B.

AUTHORIZING SIGNATURE

9/24/2018

X 

Douglas Ballotti
Acting Director, Superfund Director
Signed by: DOUGLAS BALLOTTI

PART II: DECISION SUMMARY

1.0 Site Name, Location, and Description

The TMD site (CERCLIS ID MIN000510063) is located northeast of the City of Detroit and on the western shores of Lake St. Clair in St. Clair Shores, Macomb County, Michigan (see Figure 1). As of 2016, St. Clair Shores had an estimated total population of 59,775.

The site includes a mixed commercial/residential area near the intersection of Bon Brae Street and Harper Avenue. The site also includes a portion of the TMD system (see Figure 2), which consists of concrete storm sewer pipes and backfill material surrounding the pipes in a utility corridor as deep as fifteen feet bgs. The site is known to encompass several blocks where PCBs from a historical release have been found in the TMD system in significant concentrations, as well as areas to which the PCBs are known to have migrated. The historical release is believed to have migrated from a commercial parking lot by surficial track-out onto adjacent properties. The release also entered and migrated through the TMD system, and PCBs were discharged into the Lange and Revere Street canals connected to Lake St. Clair. There is not an ongoing release of PCBs from the commercial property to the TMD system. The Lange and Revere Street canals, which provide recreational boating access to Lake St. Clair (see Figure 3) for approximately 125 homes, are private property and are used for recreational boating, swimming, and fishing.

In September 2010, EPA placed the TMD site on the National Priorities List (NPL). EPA is the lead agency for the site and the Michigan Department of Environmental Quality (MDEQ) is the support agency. To date, EPA has not identified any potentially responsible parties (PRPs), so EPA is conducting the investigation and cleanup work on a fund-lead basis.

2.0 Site History and Enforcement Activities

Several removal actions, interim remedial actions and associated investigations have taken place since PCBs were first discovered at the TMD site. This section of the ROD summarizes the site history, with a focus on investigations and actions related to PCB-impacted near-surface soils. Documents contained in the AR file for the site contain greater detail regarding previous actions that focused on the TMD system and the Lange and Revere Street canals.

EPA Removal Program Activities (2002-2014)

In July 2001, sediment samples were collected by the Macomb County Public Works Office (MCPW) as part of a permit application process for a proposed dredging project in the Lange and Revere Street canals. The analytical results were submitted to the U.S. Army Corps of Engineers, who then notified MDEQ based on the elevated levels of

PCBs in the sediment. In December 2001, MDEQ investigated the TMD system and confirmed there was an upstream source of PCB contamination in the drain. As a result of MDEQ's investigation, MCPW sampled and confirmed the presence of PCBs in both the Lange and Revere Street canals and TMD system.

EPA's removal program initiated a time-critical removal action (TCRA) at the site in August 2002 and completed the work in July 2004. During the removal action, high concentrations of PCB-contaminated sediments were removed from inside the TMD system, along with PCB-contaminated sediments ranging from 10 ppm to 4,900 ppm in a portion of both the Lange and Revere Street canals and the connecting channel between these canals. All waste was transported for disposal at approved off-site facilities, and any areas damaged due to EPA's actions were restored. In total, EPA disposed of approximately 5,900 tons of PCB-contaminated materials and 18,000 tons of non-hazardous materials. An on-site water treatment plant was also constructed to treat contaminated water removed from the sediment. Supplemental investigations were conducted in parallel to the removal action activities in order to better characterize the site. EPA sampled 15 residential properties along the Lange and Revere Street canals to assess whether using water from the canals for irrigation of lawns or gardens may have caused yards to be contaminated with PCBs. For each residence sampled, five-point composite surface soil samples were collected from each different area (i.e., front yard, back yard, garden) at each property. PCBs were detected in only one composite soil sample (0.86 ppm) from a residential yard, which was below the removal program's cleanup goal for soil of 1 ppm. (*Federal On-Scene Coordinator's Report - TCRA 2002-2004, EPA 2004.*)

In 2004, MCPW conducted quarterly post-removal sampling of the TMD system. After three rounds of quarterly sampling, PCB concentrations as high as 17,000 ppm were detected in the drain. MCPW then initiated soil sampling of the backfill materials surrounding the drain to attempt to determine if a source of PCB-contaminated oil was re-contaminating the drain. Results indicated that PCBs were present in backfill surrounding the drain at levels as high as 41,000 ppm. In January 2005, MCPW collected sediment samples from inside the drain near the intersection of Harper Avenue and Bon Brae Street and detected PCBs concentrations as high as 200,000 ppm.

In May 2005, EPA's removal program and MDEQ installed 64 additional soil borings in the suspected source area to better define the extent of PCB contamination. *(April-May 2005 Site Investigation Report, Weston 2005.*) PCBs were detected in the sand and gravel backfill surrounding the TMD system pipe and appeared centered in the area near the intersection of Harper Avenue and Bon Brae Street. This investigation also revealed one surface soil sample contaminated with PCBs at approximately 800 ppm.

Based on these findings, EPA conducted another time-critical removal action from May through July 2006. The major activities during the removal action focused on seawall repairs, installing a cured-in place pipe (CIPP) lining inside a portion of the TMD system, installing monitoring wells, and excavating and restoring areas with PCB-contaminated near-surface soils. EPA obtained access at eight residential properties to excavate near-

surface soils that contained total PCB concentrations above MDEQ's Part 201 Direct Contact Criterion (DCC) for residential properties of 4 ppm. Excavated soil was loaded directly into dump trucks and transported to a staging area for waste characterization analysis prior to transportation for disposal. Soil excavation from residential yards and rights-of-way occurred to a depth of 8 to 12 inches bgs, followed by confirmation sample collection. Excavation continued deeper when confirmation sampling results indicated PCB concentrations still exceeded 4 ppm. (*St. Clair Shores PCB Site - TCRA 2006* and *EPA Final Report July 9, 2007).*

The City of St. Clair Shores performed environmental sampling and installed two temporary weirs structures inside the drainage pipe to serve as sediment collection points. In late 2009 discovered oil inside the CIPP-lined portion of the TMD system located at the Bon Brae Street and Harper Avenue intersection that contained more than 80 percent PCBs (i.e., more than 800,000 ppm). EPA and the city identified immediate and time-critical concerns for the need to eliminate the potential for PCBs to migrate down the storm sewer and threaten the Lange and Revere Street canals. In March 2010, EPA initiated another TCRA, which included the following activities: high-pressure jet-vacuuming of the storm sewer system to remove PCB oil and sediment; off-site disposal of the PCB-contaminated materials; and installation of 15 additional weir structures at selected manhole locations for a total of 17 weirs inside the drain. In addition, EPA conducted a geophysical survey of the area, which flagged properties for follow-up soil boring investigations in suspected source areas. A total of 43 soil borings were installed at eleven properties (seven residential and four commercial). Of the 98 soil samples collected, a commercial property on the corner of Lakeland Street and Harper Avenue had two soil samples that exceeded the TSCA limit of 50 ppm and four that exceeded MDEQ's residential DCC of 4 ppm. *(Bon Brae/Harper Site Removal Action - TCRA 2010, Weston 2010.)*

After the 2010 removal action, the City of St. Clair Shores continued to conduct environmental sampling to monitor the conditions behind the 17 weirs inside the drain. Sampling results indicated that high levels of PCB contamination continued to infiltrate into the drain and accumulate behind the weirs. To serve as a stop-gap measure until issuance of the first interim ROD for the site, EPA conducted an emergency removal action in late February 2011 to remove PCB oil from inside the drain. Absorbent snares were used to swipe and soak up the oil that had collected behind the weirs. A total of six of the 17 weir locations required cleanout and one 55-gallon drum of soiled absorbent snares was collected for disposal. Clean snares were then attached to weighted chains and left directly upgradient of selected weirs to allow any new incoming oil to collect on them and to support future sample collection and removal efforts.

During the remedial investigation (RI), EPA discovered elevated levels of PCB contamination in public rights-of-way (also known as parkways) and residential yards near the corner of Harper Avenue and Lakeland Street. Based on these soil sample results, EPA conducted a TCRA at 10 properties, including 8 parkways, 1 residential yard, and part of a commercial property, to prevent human exposure to elevated levels of PCBs in near-surface soil. The concentration of PCBs in one parkway was 3,500 ppm.

The removal action began in May 2014 and was completed in July 2014 and addressed properties with soil concentrations exceeding EPA's Removal Management Level of 22 ppm. Approximately 1,504 tons of contaminated soil (1,087 tons of TSCA soil and 417 tons of non-TSCA soil) were disposed of off-site. The removal action included the following activities:

- Site perimeter air samples were collected during active excavation activities;
- Impacted properties were excavated to various depths ranging from 6 to 40 inches;
- Excavations were backfilled with clean fill or topsoil;
- Yards were regraded to original or improved grades; and
- Yards were sodded and excavated trees were replaced.

The removal action is described in detail in a document in the AR. (*Removal Letter Report for St. Clair Shores PCB Drain Removal #2 - TCRA 2014, Tetra Tech 2014.*)

Remedial Program Activities (2008 to Present)

MDEQ conducted a Site Investigation in July 2008 to document and obtain sufficient data to support listing the TMD site on the NPL. EPA proposed the site for the NPL in March 2010 and finalized the site on the NPL in September 2010.

In April 2011, EPA began its source area investigation fieldwork in an attempt to find the source of the high PCB concentrations that were continuing to infiltrate the TMD system. The investigation focused on the sanitary sewer, gas, and water main utility corridors that crossed the TMD system utility corridor, which potentially could provide preferential pathways for PCB contamination to migrate into the TMD pipe. Utility lines are typically set in corridors backfilled with stone and other "loose" materials through which contamination could easily migrate. The source area investigation also included additional sampling within the TMD system utility corridor.

In August 2011, EPA designed and conducted a sediment sampling project in the Lange and Revere Street canals. Approximately 100 samples collected from the surface of the sediments and 40 samples collected from deeper sediments were analyzed for PCBs by an EPA mobile laboratory to characterize the contamination in the canals and provide information to explain the elevated PCB levels found in fish caught in the canals. Based on the findings of the 2011 sediment sampling event, the highest PCB concentrations were found near the TMD system outfall and ranged from 100 ppm to 570 ppm. The PCB concentrations decreased with depth and distance from the outfall.

In September 2011, EPA issued the first interim ROD for the TMD site to address the high concentrations of PCB-contaminated oil and sediments that continued to accumulate behind the weirs inside the TMD system. This interim action consists of monthly monitoring and removal of materials from behind the weirs, and is intended to mitigate additional PCB contamination from reaching the nearby canals until a final cleanup plan

is selected and implemented for the site. These interim source control activities are ongoing and will continue for as long as necessary until a final remedial action for the site is selected and implemented.

EPA finalized its Source Area Investigation Report in January 2012. The results of the extensive investigation found significant concentrations of PCB-contaminated oil within the TMD system utility corridor backfill materials adjacent to four vaulted manhole locations: J01, M7179, M4335, and M7183. Importantly, only very low PCB concentrations were found in the backfill materials of the other utility corridors, ruling out the sanitary sewer, gas, and water main utility corridors as a source or conduit for the high PCB concentrations found at the TMD site. Additionally, PCBs were found in all depth intervals of the backfill materials near the intersection of Bon Brae Street and Harper Avenue, between Bon Brae and Lakeland Streets.

Based on the information obtained during the source area investigation, EPA issued the second interim ROD for the TMD site in May 2014. This interim remedial action addressed the PCB contamination in the bedding and backfill materials at the base of two vaulted manholes – M7179 and J01 – in the TMD system. The second interim action included the excavation, removal, and replacement of M7179 and J01 and the surrounding impacted backfill materials, proper off-site disposal of contaminated materials, installation of monitoring and recovery wells adjacent to the newly installed manhole vaults, and ICs to prevent actions that could compromise the remedy. The remedy components selected in the 2014 interim ROD were intended to address the highly-impacted backfill and bedding materials at the two manholes that EPA believed were serving as a continued source of PCBs to the rest of the TMD system and the Lange and Revere Street canals.

EPA implemented the second interim remedial action from June through December 2015, and conducted site restoration activities in May and June 2016. The TMD system was dewatered during implementation of the interim remedy, and at the end of the construction work a total 2,241.57 tons of TSCA soil and 36,000 gallons of TSCA water had been removed from the system and transported off site for disposal. During the removal of the vaulted manhole at location M7179, PCB-containing oil was observed flowing from the storm sewer pipe – specifically from the space between the pipe and the CIPP liner – into the M7179 excavation area. This prompted EPA to expand the remedial action to include the removal and replacement of the entire 120-foot length of pipe beneath Harper Avenue between the two manhole vaults, to remove any additional PCB-contaminated oil contained within and beneath that length of pipe. EPA documented this change and others in a September 2016 ESD.

Both interim remedial actions were intended to serve as source control measures to reduce infiltration of PCB-contaminated oil and contaminated utility trench water into the TMD storm sewer pipe, thereby preventing high concentrations of PCBs from moving through the TMD system to the canals. Periodic removal of PCB contamination from inside the TMD system continues to achieve the objective of mitigating the discharge of PCB contamination into the canals and the environment and preventing further

environmental degradation. The removal and replacement of the bedding and backfill materials at locations M7179 and J01, along with the length of pipe between those two manholes, permanently removed from the TMD system the most highly-contaminated source materials that had been found during the RI.

In August 2015, additional RI sampling was conducted focusing on the former Martin Drain (also known as the Old Martin Drain). The Martin Drain was an open, above-ground storm water drain. Historical Macomb County drain maps indicate that the former Martin Drain had flowed through the investigation area (see Figure 4) and discharged at the Rio Vista Canal located approximately three-quarters of a mile northeast of the Lange and Revere Street canals. Based on historical information, it appears that the former Martin Drain was backfilled after the TMD storm sewer was constructed in the mid-1960s. The objective of the sampling was to determine if the former Martin Drain was previously a migration pathway for PCB contamination. EPA completed approximately 34 borings within the former Martin Drain pathway on Bon Brae Street, B Street, and Jefferson Avenue. A total of 72 samples were analyzed for PCBs. Nineteen of the 34 cores sampled contained no detectable concentrations of PCBs. Out of the remaining cores, the majority were below 3.5 ppm, with one sample result above 50 ppm. Based on the overall sample results, EPA determined that the former Martin Drain was likely a limited historical pathway for PCB migration.

It is important to note that, in addition to the data collected during the RI, near-surface soil data were collected during previous removal actions and investigations, a majority of which were discrete soil borings. The following is a list of documents containing near-surface soil data that were used to help delineate the nature and extent of near-surface soil contamination. The data in these reports were carried forward and addressed in the *Near-Surface Soils FS Report*.

- Federal On-Scene Coordinator's Report - TCRA 2002-2004 (EPA 2004);
- April-May 2005 Site Investigation Report (Weston 2005);
- St. Clair Shores PCB Site - TCRA 2006 (Weston 2007) and EPA Final Report July 9, 2007;
- Bon Brae/Harper Site Removal Action - TCRA 2010 (Weston 2010);
- 2011 Source Area Investigation (CH2M 2011); and
- Removal Letter Report for St. Clair Shores PCB Drain Removal #2 - TCRA 2014 (Tetra Tech 2014).

Enforcement Activities

To date, EPA has not identified any PRPs linked to the PCB contamination at the site, but continues to follow all leads that arise. Between 2002 and 2005, EPA conducted a civil investigation jointly with the Federal Bureau of Investigation and the Macomb County Sheriff's Department. The investigation included comprehensive door-to-door interviews of businesses and residences in the area. In addition, city and county building and zoning records were analyzed for any mention of a business entity that might have used PCBs in

or near the contaminated area. Neither effort produced any evidence linking a PRP to the PCB contamination.

As part of its PRP search activities, EPA sent an information request letter to DTE Energy (DTE) in October 2003. EPA sent a follow-up information request letter to DTE in May 2011. Based on DTE's responses, along with the results of the 2011 source area investigation which focused on a DTE transformer station just north of the intersection of Bon Brae Street and Harper Avenue, EPA has ruled out DTE property as the location of the release into the TMD system.

Based on the results of the source area investigation and other RI activities, EPA determined that the commercial property previously mentioned, located near the intersection of Harper Avenue and Lakeland Street, was the likely area where the historical PCB release occurred. EPA performed a title search to determine which commercial businesses operated there from 1940 to the present. The following is a summary of the companies that operated or owned the commercial property:

- In the 1940s, C&G Electrical Maintenance Services owned and operated the property.
- From 1973 to 1983, Henry's Cleaners was located on a portion of property.
- In the 1970s, the property was also operated by Algo Tool Co. (Algo) and G&D Tool & Automation Company, Inc., known as G&D Tool, which produced specialty dies and tools, die sets, jigs and fixtures, and industrial molds. Algo was incorporated in Michigan in October 1965 and dissolved in March 1980. The owners of Algo are both deceased.
- From 1989 to 2009, J.M Olson and Trustees, a construction and development company, owned the commercial property and also used the building on that property as office space.
- Since 2009, the commercial property is owned by Triangle Development Services, LLC (TDS) and currently occupied by a multi-tenant medical building.

In 2014, EPA sent information request letters to Algo and G&D Tool's former owner, employees, president, and program manager inquiring about the use of PCBs at this property. In 2017, EPA sent information request letters to J.M. Olson and TDS, the most recent commercial property owners, inquiring about business operations, building and parking lot renovations, and any historic PCB release(s). None of the responses provided information about leaks, spills, mishandling of materials or the use or presence of PCBs at the property.

3.0 Community Participation

EPA has worked with the community prior to and during the RI, FS, and various remedial actions to ensure that interested parties are kept informed and given an opportunity to provide input on EPA's activities at the site. This has been accomplished

through a variety of methods, including website postings, direct mailings, door-to-door visits, telephone conversations, community interviews, stakeholder meetings, newspaper notices, informal "open house" availability sessions, public meetings, and through recordings/tapings for the local cable access channel.

In July 2010, EPA conducted interviews with local residents and city officials to gather information to better understand the concerns and information needs of the community. EPA used several information sources, including research and information received from community interviews, to develop a Community Involvement Plan (CIP), which was released in April 2011. The CIP describes EPA's plan for addressing concerns and keeping residents informed and involved in site activities. It also provides information on the Superfund process, site background information, and a profile of the City of St. Clair Shores.

The Proposed Plan and other relevant and supporting documents for this ROD, including the RI and FS Reports for near-surface soils, were made available to the public in April 2018. Copies of all the documents supporting the near-surface soils remedy outlined in the Proposed Plan and contained in the AR file were made available to the public at the St. Clair Shores Library, where an information repository has been set up. A notice of the availability of these documents and of a 30-day public comment period on the Proposed Plan was published in the St. Clair Shores Sentinel, a weekly newspaper, on April 25, 2018. During the public comment period EPA received a timely request for an extension to the public comment period. EPA therefore extended the public comment period an additional 30 days. The public comment period on the Proposed Plan ran from April 23 to June 22, 2018. EPA held a public meeting on May 10, 2018, to present the Proposed Plan to community members. At this meeting, EPA representatives presented information and answered questions about the remedial alternatives and solicited community input on the proposed action. EPA's responses to the comments received during the public comment period are included in the Responsiveness Summary, which is included as Part III of this ROD.

4.0 Scope and Role of Operable Unit or Response Action

EPA is managing the contamination at the TMD site through a phased approach. A phased approach to site cleanup is appropriate when site characterization is not yet completed, or when site data are not sufficient to develop and evaluate cleanup alternatives to address risks posed by the entire site, but when action clearly needs to be taken to protect human health and the environment at a portion of the site or to prevent further migration of contaminants or further environmental degradation.

EPA issued interim RODs in September 2011 and May 2014 which addressed the removal of source materials from the TMD system. These interim source control measures were selected to mitigate the further migration of PCB contamination to the canals, while EPA continues the remedial process to select and implement final long-term

remedial actions at the site. To date, the TMD site has not been divided into separate operable units.

This ROD selects the third remedial action at the site and is intended to address the site-related PCB contamination in near-surface soils at residential yards, parkway/utility corridors, and commercial properties at the site. This action is intended to be the final response action for the near-surface soils portion of the site. This response action does not address the PCB contamination remaining within the TMD system (including backfill materials) or in the sediments of the Lange and Revere Street canals. A separate site-wide FS is currently underway to evaluate remedial alternatives for these remaining areas of the site. When the site-wide FS is complete, EPA intends to develop a Proposed Plan and ROD to select a final remedy for those areas of the site.

5.0 Site Characteristics

This section of the ROD summarizes the current information available about site characteristics with an emphasis on near-surface soils. A Human Health Risk Assessment (HHRA) and a Screening-Level Ecological Risk Assessment (SLERA) were conducted as part of the RI. These investigations identified PCBs as the COC that poses potential risks to human health and environment. The significant findings and conclusions from the site characterization activities completed during the RI are summarized below, and additional details are provided in the Final RI Report.

The near-surface soils investigation areas, known as Investigation Areas 1 and 2 as displayed on Figure 4, were based on the results of soil samples collected during the RI as well as soil samples collected during previous removal actions and investigation activities. The residential and commercial near-surface soils investigation areas include properties surrounding the commercial property at the corner of Harper Avenue and Lakeland Street as well as properties located along the Lange and Revere Street canals.

Near-Surface Soils Characteristics

The TMD site is located in an area classified by the Natural Resources Conservation Service (NRCS) as containing approximately 85 percent (by area) Lenawee clay, 10 percent Toledo silty clay loam, and 5 percent Del Ray loam soils. These soils are typical of clayey glaciolacustrine deposits that formed on flats of till-floored lake planes. Soil samples collected during the RI from surface to 5 feet bgs were typically characterized as topsoil (0 to 6 inches bgs) and dense clay underlying the topsoil to 5 feet bgs, consistent with the NRCS classifications. The native soils of the site are characterized as having very low transmissivity rates. No water-bearing seams have been identified at the site from 0 to 20 feet bgs.

Surface Water Hydrology

Based on the 2011 source area investigation and other RI results, no groundwater aquifer is present within 20 feet of the ground surface at the site. The site is located within the Lake St. Clair watershed. Historical Macomb County drain maps indicate that the former Martin Drain had formerly flowed through Investigation Area 1 (see Figures 4 and 5) and discharged at the Rio Vista Canal located northeast of the site. Based on historical information, it appears that the Martin Drain was backfilled after the TMD system was constructed in the mid-1960s. There is minimal topographical relief at the site. Residential and commercial properties near the site are contoured to direct storm water runoff towards the street or parking lots where the storm water enters catch basins that connect to the TMD system. Water entering the TMD system discharges into the Lange and Revere Street canals and subsequently into Lake St. Clair.

Contaminants of Concern

PCBs are the only COC in soil and sediment at the site. PCBs are a group of fabricated chemicals originally used in industrial processes and products such as coolants and lubricants. In 1977, PCB production was banned in the United States, but PCB mixtures remain in old electrical equipment and other items, and there is also substantial PCB contamination in landfills and rivers. EPA considers PCBs as possible cancer-causing chemicals. These chemicals can pose potential health risks through eating PCB-contaminated food, directly contacting PCB-contaminated soil or water, or breathing PCB-contaminated air or airborne particles. One of the main exposure pathways of concern at sites with PCB contamination in sediments is human ingestion of PCB-contaminated fish.

Investigation Findings

This section discusses the sampling strategy used to develop the RI and summarizes data collected during the RI as well as a number of earlier site investigations. This section also summarizes key conclusions regarding the nature and extent of contamination for near-surface soils at the site.

For purposes of evaluating the potential nature and extent of contamination in near-surface soils, EPA initially used MDEQ's human health risk-based DCCs of 4 ppm for residential properties and 16 ppm for commercial properties as screening levels during the RI. However, while these DCCs are the current state-promulgated criteria in MDEQ's Part 201, MDEQ has indicated that the Part 201 cleanup criteria are in the process of being revised, and that it is likely the new residential and commercial DCC for PCBs will be 1.9 ppm and 20 ppm, respectively. It is not currently known when the MDEQ Part 201 changes may occur. Given this uncertainty, EPA decided to use more conservative screening criteria: EPA used 1 ppm for residential properties and 10 ppm for non-residential (i.e., commercial) properties, based on TSCA cleanup levels found at 40 CFR 761.61(a)(4), for screening purposes. Additionally, EPA used a screening criterion of 10 ppm for soils within utility trenches that might be encountered by utility workers.

Decision Units[1] and Geostatistical Sampling

During the RI, EPA divided properties being investigated into different "decision units," such as a front yard, back yard, or parkway. EPA conducted geostatistical sampling between 2011 and 2015 by advancing a minimum of eight borings in each decision unit. Larger decision units had more than eight borings advanced, with the number of borings based on the size of the decision unit. Geostatistical sampling treats a specific decision unit as an individual area, and the concentration is based on a representative value for that decision unit, not an individual sample point.

The soil borings were advanced to a maximum depth of 3 feet bgs. Soil was collected from each boring at the following intervals:

- 0 to 0.5 foot bgs;
- 0.5 to 1 foot bgs;
- 1.0 to 1.5 feet bgs;
- 1.5 to 2.0 feet bgs;
- 2.0 to 2.5 feet bgs; and
- 2.5 to 3.0 feet bgs.

Soil samples within a decision unit were homogenized into a composite sample for each interval. EPA's mobile laboratory conducted the PCB analytical work out in the field. Initially, the laboratory analyzed the samples for the 0 to 0.5 foot bgs, 1.0 to 1.5 feet bgs, and 2.5 to 3.0 feet bgs intervals. If the analytical results were above 2 ppm for an analyzed interval, then the next deepest interval was submitted to the laboratory for analysis.

During the RI, 84 residential decision units were geostatistically sampled. Forty-one of the residential decision units had PCB concentrations above the 1 ppm screening criterion. The 2014 TCRA remediated 10 properties that had soil concentrations exceeding 22 ppm, including 8 residential parkways, one residential property, and part of a commercial property. In light of that TCRA, currently 32 known residential decision units (i.e., front yard, back yard, and/or parkway) have PCB concentrations exceeding 1 ppm in the near-surface soils. This information is summarized below.

[1] In the 2017 *Near-Surface Soils Feasibility Study*, the term "Exposure Unit" was used in the discussion of the geostastical sampling method. The April 2018 Proposed Plan and this ROD use the term "Decision Unit" instead of "Exposure Unit."

Current Residential Decision Units with Total PCB Concentrations Exceeding 1 ppm			
Residential Investigation Areas	**Number of Decision Units Sampled**	**Number of Decision Units Exceeding 1 ppm**	**Highest Concentration (ppm)**
Parkway	21	10	14
Front Yard	30	11	8.0
Back Yard	33	11	9.4
Total Decision Units	84	32	
Total Properties*	57	25	

*A property may include more than 1 decision unit.

Based on the geostatistical sampling results, key conclusions regarding the nature and extent of contamination for near-surface soils are summarized as follows:

- The PCB concentrations in near-surface soils along Lakeland Street, Harper Avenue, and Bon Brae Street generally decrease with distance from the commercial property at the corner of Harper Avenue and Lakeland Street.
- The PCB concentrations in the Lange and Revere Street canal sediments generally decrease with distance from the TMD outfall. However, the PCB concentrations in the yards along the canals are more randomly distributed. It is unknown whether or to what extent the property owners' use of canal water (for watering yards and/or gardens or for other activities) has contributed to soil contamination in residential yards.
- PCB concentrations generally decrease with depth at both residential and commercial properties. The highest concentrations are typically found within 2.5 feet bgs. The bullet points below discuss the 41 residential decision units that were found during the RI (i.e., pre-2014 TCRA) to have PCB concentrations above 1 ppm.
    - At 33 of the 41 decision units, the highest PCB concentrations were located in the 0-to-0.5-foot interval.
    - PCB concentrations were vertically delineated to less than 1 ppm within 2.5 feet bgs at 31 of the 41 decision units. Additional delineation is necessary at 9 other decision units. (One of the 41 decision units was addressed during the 2014 TCRA.)

Discrete Samples

All discrete soil samples collected during previous investigations that had results exceeding current screening levels (1 ppm for residential properties, 10 ppm for non-residential properties and utility trench soils) will require pre-design geostatistical sampling to confirm that the decision unit (and not just a discreet sample) exceeds the

soil cleanup level(s) selected in this ROD. Discrete soil samples were collected on residential and commercial properties, as well as in the TMD, sanitary, and water main utility corridors. It is important to note that the water main lines on Bon Brae Street and Lakeland Street run along the parkway in front of residential and commercial properties.

Eighteen properties (17 residential and 1 commercial) had discreet sample results exceeding current screening levels during previous investigations and therefore require pre-design sampling. Discrete sample results on the residential properties ranged from 1.1 ppm to 169 ppm. Discrete sample results on the commercial property ranged from 45 ppm to 530 ppm. Discrete sample results from the utility corridors located along Bon Brae Street and Lakeland Street ranged from 14 ppm to 2,100 ppm. The maximum concentration of 2,100 ppm was collected 4 to 5 feet bgs in the parkway of a commercial property on the corner of Bon Brae Street and Harper Avenue.

Former Martin Drain

In 2015, EPA investigated the former Martin Drain and collected a total of 80 samples from 45 borings. These were discrete samples intended to target the former Martin Drain pathway. Twenty-five of the 80 samples were collected within 2.5 feet bgs. The low-level near-surface PCB contamination related to the former Martin Drain generally decreases with distance from the commercial property at the corner of Harper Avenue and Lakeland Street. Three of the 25 near-surface samples had concentrations above 1 ppm. None of the 46 samples collected from the 25 borings installed from B Street (at the eastern edge of Investigation Area 1) to Jefferson Avenue contained PCB concentrations above 1 ppm, as depicted by the dashed line on Figure 4. In fact, PCBs were not detected in the samples from the former Martin Drain east of B Street. This means that the former Martin Drain is not a significant PCB migration pathway to Lake St. Clair. The results from the soil borings targeting the former Martin Drain showed that 7 properties had discrete samples with PCB concentrations exceeding 1 ppm.

As noted earlier, the water line utility corridors on Bon Brae Street and Lakeland Street are located in the space between the sidewalk and street also referred to as the parkway or right of way. During the former Martin Drain investigation, discrete samples were collected from areas where the former Martin Drain crossed these parkways. Some of the samples collected within the water line utility corridor exceeded the 10 ppm screening criterion, including the following:

- Bon Brae Street parkway – 169 ppm at 3.4 feet bgs at one location; 48 ppm at 3.4 feet bgs at another location; and 13 ppm at 4 to 4.5 feet bgs at another location.
- Lakeland Street parkway – 19 ppm at 4 to 4.5 bgs at one location.

Roads

Twenty-four borings were advanced through Bon Brae Street during the RI. Four samples collected within 3 feet of the road surface (all located near vaulted manhole J01) had

PCB concentrations above 10 ppm. The remaining 21 soil samples collected beneath Bon Brae Street within 3 feet of the road surface had PCB concentrations below 10 ppm.

Groundwater

Soil borings advanced at the site to a depth of 35 feet bgs did not encounter groundwater. The shallowest aquifer in the vicinity of the site is located approximately 80 feet bgs. Therefore, groundwater is not a medium of concern at the site.

Conceptual Site Model

A Conceptual Site Model (CSM) has been developed for the TMD site based on site characteristics and the results of multiple investigations conducted between 2002 and 2015. A CSM tells a story of how contamination at a site has moved and what impacts such movement may have had. The overall CSM for the TMD site suggests that the PCB-contaminated oil originated from a historical release at the commercial property (discussed earlier) located at the corner of Lakeland Street and Harper Avenue. It appears that PCB-contaminated oil was dumped or used for dust control on a former dirt parking lot on the eastern side of the building that was on that property at that time. The PCB contamination from the parking lot migrated, tracked out, and/or was transported by the following mechanisms:

- PCB contamination was likely tracked out of the parking lot and onto adjacent properties down Lakeland and Bon Brae Streets, as depicted in Figure 6.
- PCB contamination likely entered the TMD system during storm events, as depicted on Figure 7, and subsequently discharged into the Lange and Revere Street canals, where it adhered to the canal sediments.
- Residents along the Lange and Revere Street canals often placed pumps in the canals to water their yards, gardens, or clean boats. The pumps may have pulled water containing suspended sediment particles, and this may have deposited PCB-contaminated sediment particles onto yards, as depicted in Figure 8.
- Investigations targeting the former Martin Drain identified PCBs in the area where the former Martin Drain crossed the parking lot of the commercial property. Figure 5 depicts where PCB contamination likely entered into the former Martin Drain and subsequently migrated along the open drain, depositing trace amounts of PCB contamination.

As noted earlier, this ROD addresses only near-surface soils. The PCB contamination within the TMD storm sewer system (including backfill materials) and in the canal sediments will be addressed in future decision documents.

6.0 Current and Potential Future Land and Resource Uses

The near-surface soils portion of the site addressed by this ROD includes properties located in a mixed commercial/residential area near Harper Avenue and Bon Brae Street (Investigation Area 1) as well as properties along the Lange and Revere Street canals (Investigation Area 2), as depicted on Figure 4. It is anticipated that the land usage in these areas will remain unchanged for the foreseeable future. As noted earlier, groundwater is not a medium of concern at the site and is not addressed in this ROD.

7.0 Summary of Site Risks

The risk assessment provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. As part of the RI, EPA conducted a HHRA and a SLERA that evaluated current and potential risks to human health and the environment posed by all remaining areas of the site, including near-surface soils, the TMD system, and canal sediments. EPA also prepared a separate Technical Memorandum in January 2017 that summarized EPA's evaluation of whether residual PCB concentrations remaining at depth in the residential yards addressed during the 2014 TCRA pose unacceptable risks.

Because this ROD addresses only near-surface soils, the discussion below focuses on the risks posed by those soils. The risks posed by other areas of the site will be discussed and addressed in future decision documents. Additional details regarding the HHRA, SLERA, and Technical Memorandum are available in the AR file for the TMD site.

Human Health Risks

For Superfund sites, EPA evaluates risks to human health due to both carcinogens and non-carcinogens, as discussed below.

Cancer Risks

For carcinogens, risks are generally expressed as the incremental probability of an individual's developing cancer over a lifetime as a result of exposure to the carcinogen. Excess lifetime cancer risk (ELCR) is calculated from the following equation:

ELCR = CDI x SF

where:

ELCR = a unitless probability (e.g., $2x10^{-5}$) of an individual's developing cancer
CDI = chronic daily intake averaged over 70 years (mg/kg-day)
SF = slope factor, expressed as $(mg/kg\text{-}day)^{-1}$

These risks are probabilities that usually are expressed in scientific notation (e.g., $1x10^{-6}$). An ELCR of $1x10^{-6}$ indicates that an individual experiencing the reasonable maximum exposure estimate has a 1 in 1,000,000 chance of developing cancer as a result of site-

related exposure. This is referred to as an "excess lifetime cancer risk" because it would be in addition to the risks of cancer individuals face from other causes such as smoking or exposure to too much sun. The chance of an individual's developing cancer from all other causes has been estimated to be as high as one in three. EPA's generally acceptable risk range for site-related exposures is $1x10^{-4}$ to $1x10^{-6}$.

Non-cancer Hazards

The potential for noncarcinogenic effects is evaluated by comparing an exposure level over a specified time period (e.g., lifetime) with a reference dose (RfD) derived for a similar exposure period. An RfD represents a level that an individual may be exposed to that is not expected to cause any deleterious effect. The ratio of exposure to toxicity is called a hazard quotient (HQ). An HQ<1 indicates that a receptor's dose of a single contaminant is less than the RfD, and that toxic noncarcinogenic effects from that contaminant are unlikely. The hazard index (HI) is generated by adding the HQs for all COCs that affect the same target organ (e.g., liver) or that act through the same mechanism of action within a medium or across all media to which a given individual may reasonably be exposed. An HI<1 indicates that, based on the sum of all HQs from different contaminants and exposure routes, toxic noncarcinogenic effects from all contaminants are unlikely. An HI > 1 indicates that site-related exposures may present a risk to human health. The HQ is calculated as follows:

Non-cancer HQ = CDI/RfD

where:

CDI = chronic daily intake
RfD = reference dose

CDI and RfD are expressed in the same units and represent the same exposure period (i.e., chronic, subchronic, or short-term).

Near-Surface Soils HHRA

HHRA Tables A, B, C, and D that are referenced in the discussion below are provided in Appendix C of this ROD.

The cancer toxicity data used in the HHRA were obtained from EPA's Integrated Risk Information System (IRIS) database and California Environmental Protection Agency's toxicity database, as presented in Table A. EPA considers PCBs to be a probable human carcinogen through the ingestion, dermal contact, and inhalation pathways.

The noncancer oral toxicity data used in the HHRA were obtained from EPA's IRIS database, and are based on developmental effects on unborn children, as well as effects on nails, eyes, the immune system, and testes, as presented in Table B.

The HHRA identified PCBs as the only COC in near-surface soils at the site. The HHRA evaluated potential risks to current and future residents (adults and young children),

commercial property users and utility workers who may be exposed to PCBs in near-surface soils at residential properties, commercial properties and parkways through incidental ingestion, dermal absorption, and inhalation of soil/dust. It is important to note that some level of uncertainty is introduced to the risk assessment process every time an assumption is made. In regulatory risk assessment, the methodology dictates that assumptions err on the side of overestimating potential exposure and risk. For example, for future exposure, the HHRA assumed that future invasive activities may disturb soil in the shallow subsurface and bring current subsurface soil to the ground surface where contact and exposure may occur. Such assumptions may result in overestimates of potential risks to human receptors.

The specific exposure scenarios evaluated and the results of the HHRA for receptors with risk estimates exceeding EPA's acceptable levels are presented in Table C (for carcinogenic effects) and Table D (for non-carcinogenic effects), and are summarized as follows:

Residential soil:

- Resident Adult/Child- Current and Future Exposure Scenarios: Surface Soil (0 to 2 feet) and Total Soil (0 to 3 feet) – Ingestion, dermal contact, and inhalation.
- PCB concentrations above 1.2 ppm pose a potential unacceptable risk to pregnant women and children.
- As noted earlier, geostatistical soil sampling was used to assess the majority of residential yards and divided residential properties into residential decision units (front yard, backyard and parkways). Thirty-two residential decision units at a total of 25 properties were found to exceed the 1 ppm with highest concentration of 14 ppm.

Commercial soil:

- Commercial Worker – Current and Future Exposure Scenarios: Soil (0 to 10 feet) – ingestion, dermal contact, and inhalation exposure pathways.
- PCB concentrations in the uncapped portions of the commercial property at the corner of Harper Avenue and Lakeland Street were less than MDEQ's commercial land-use DCC (16 ppm) and risks were within EPA's acceptable risk range. However, PCB concentrations beneath the parking lot were orders of magnitude higher than MDEQ's DCC for commercial properties and the risks exceed an HI of 1.
- Discrete sample concentrations from beneath the parking lot ranged from 45 ppm to 530 ppm.

Utility corridor/parkway soil:

- Currently, PCB concentrations in three known utility corridors – Bon Brae Street, Lakeland Street, and the TMD utility corridor – exceed an HI of 1. Only the Bon Brae Street and Lakeland Street utility corridors located in parkways (water main lines) are addressed in this ROD. The TMD utility corridor will be addressed in future decision documents.

- Utility Worker – Current and Future Exposure Scenarios: Total Soil (utility corridors in parkways along Bon Brae Street and Lakeland Street) – ingestion, dermal contact, and inhalation exposure pathways.
- Bon Brae Street utility corridor concentrations: 169 ppm at 3.4 feet bgs at one location; 48 ppm at 3.4 feet bgs at another location; and 13 ppm at 4 to 4.5 feet bgs at another location.
- Lakeland Street utility corridor concentration: 19 ppm at 4 to 4.5 bgs at one location.

As noted above in section 6.0, the current land uses (residential, commercial, and utility corridors located in parkways) evaluated in the HHRA are also assumed to be the reasonably anticipated future land uses.

Evaluation of Residual PCB Concentrations Following 2014 TCRA

As noted earlier, the 2014 TCRA used a cleanup number of 4 ppm PCBs, based upon the current Michigan Part 201 residential DCC. All soils exceeding 4 ppm were removed from the properties addressed by the TCRA, and the properties were then backfilled with clean soil. PCB concentrations less than 4 ppm but above 1 ppm are known to be present at depth, beneath the layer of clean backfill, in 6 residential decision units (5 parkways and 1 back yard) on Lakeland Street.

During the near-surface soils FS, EPA risk assessors conducted a technical review of the PCB concentrations that remain at depth at the TCRA-remediated residential decision units, and prepared a separate Technical Memorandum in January 2017 that summarizes the results of the technical review. The review concluded that, although PCBs above 1 ppm remain at depth, the PCB concentrations are low (less than 4 ppm) and the clean backfill layer on top of the low PCB concentrations provides an adequate direct-contact barrier. Therefore, unacceptable exposures have been effectively mitigated at these residential decision units and they do not need to be re-excavated.

Ecological Risks

The SLERA evaluated potential effects of PCBs on ecological receptors inhabiting near-surface soils. The SLERA was conducted in accordance with EPA guidance for conducting ecological risk assessments. The data generated from the RI activities were used to assess potential risks for both lower trophic-level (direct exposure) and upper trophic-level (food web exposure) risks for a variety of terrestrial receptors using multiple lines of evidence in a weight-of-evidence process, which includes assessing risk estimates in context with the extent, magnitude, and ecological significance of each line of evidence. Based on the weight-of-evidence evaluation, total PCBs were not identified as presenting unacceptable ecological risk in upland terrestrial soils or residential and commercial properties. EPA therefore believes that taking an action to address potential risk to ecological receptors in near-surface soils is not warranted.

Basis for Taking Action

The response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

8.0 Remedial Action Objectives and Cleanup Levels

Remedial action objectives (RAOs) are goals for protecting human health and the environment. RAOs are developed to address the contaminant levels and exposure pathways that present unacceptable current or potential future risk to human health and the environment. During the FS, the development of RAOs and cleanup levels, known as preliminary remediation goals (PRGs) until final cleanup levels are selected in a ROD, is the first step in identifying and screening remedial alternatives for addressing the COCs and media of concern.

RAOs

The following RAOs were developed for near-surface soils at the TMD site based on a consideration of the contaminant levels and exposure pathways found to present potentially unacceptable risk to human health and the environment as determined during the RI:

- Prevent direct human contact with or ingestion and inhalation of PCBs in soils at residential and commercial properties by current and potential future residents during typical residential activities that could result in an unacceptable risk to human health, such as playing in the yard, gardening, and landscaping.
- Prevent direct human contact with or ingestion and inhalation of PCBs in utility corridor soils by current and potential future utility workers during construction activities within parkway utility corridors that could result in an unacceptable risk to human health.

Cleanup Levels

The final cleanup levels for the near-surface soils portion of the TMD site are listed and discussed below and are the same as the PRGs included in the Proposed Plan. The final cleanup levels for residential, commercial and utility corridor (located in the parkway) soils are based on both protective risk-based concentrations (considering the risk range of 10^{-4} to 10^{-6}) and a review of federal and state applicable or relevant and appropriate requirements (ARARs).

- **Residential soil** – cleanup level is 1 ppm.
    - This cleanup level is consistent with TSCA, which was identified as the primary chemical-specific ARAR, and is below a non-cancer HI of 1;

- It is within EPA's acceptable cancer risk range of 10^{-4} to 10^{-6} (which for residential soils equates to concentrations from 23 ppm to 0.23 ppm);
- It meets the cleanup level for "high occupancy areas" under TSCA (see 40 CFR 761.61(a)(4)(i)(A)); and
- It is below the likely future MDEQ residential DCC of 1.9 ppm.

- **Commercial soil** – cleanup level is 10 ppm.
  - This cleanup level is consistent with TSCA, which was identified as the primary chemical-specific ARAR, and is below a non-cancer HI of 1;
  - It is within EPA's acceptable risk range of 10^{-4} to 10^{-6} (which for industrial soil equates to concentrations from 97 ppm to 0.97 ppm);
  - It meets the cleanup level for "low occupancy areas" under TSCA (see 40 CFR 761.61(a)(4)(i)(B)); and
  - It is below the likely future MDEQ commercial DCC of 20 ppm.
- **Utility corridor soil** – cleanup level is 21 ppm for utility workers.
  - This cleanup level is based on a site-specific utility/construction worker exposure scenario, which includes workers in contact with soil beneath the road surface or in utility corridors, and assumes an exposure frequency of 20 days per year and an exposure duration of 5 years;
  - It is based on a target ELCR of 1×10^{-6} and is therefore within EPA's acceptable risk range of 10^{-4} to 10^{-6};
  - It will provide protection that meets the substantive standards for a PCB waste cleanup under 40 C.F.R. 761.61(c) in that the cleanup level does not impose an unreasonable risk of injury to health or the environment; and
  - It is based on a target non-cancer HI of 1.

9.0 Description of Alternatives

The near-surface soils FS identified ICs, containment, and treatment as general response actions for mitigating potential risks posed by PCB-contaminated near-surface soils on affected properties. Ultimately, both containment and treatment remedial technologies were screened out based on an evaluation of three specified criteria: effectiveness, implementability, and relative cost. As a result, those remedial technologies were not carried forward in the FS and were not included in a remedial alternative. For example, thermal treatment, with poor implementability and high cost, would require the installation of a system to increase soil temperatures and a large amount of infrastructure and equipment necessary for multiple areas to be treated. Containment technologies for soil would include caps, which are impracticable to implement at residential and commercial properties. The remedial technologies that remained following the screening process include excavation, appropriate disposal, and ICs. For these reasons, only two remedial alternatives were carried through for full evaluation in the FS.

The two remedial alternatives for the near-surface soils portion of the TMD site are summarized below. Additional details about the alternatives are provided in the 2017 *Near-Surface Soils FS Report* which is included in the AR file for the site.

Remedial Alternatives

Alternative 1: No Action

Regulations governing the Superfund program require that the "no action" alternative be evaluated generally to establish a baseline for comparison. Under this alternative, EPA would take no additional action to prevent exposure to contaminated near-surface soils, and the PCB-impacted soils would remain in place at the site. There would be periodic costs associated with five-year reviews, since the NCP requires five-year reviews as long as hazardous substances remain at the site at concentrations that do not allow for UU/UE.

Estimated Capital Cost: $0
Estimated Annual O&M Cost: $0
Estimated Periodic Cost: $20,000 (every five years)
Estimated Total Present Worth: $95,000
Estimated Remedial Action Construction Timeframe: none – no construction would occur

Alternative 2: Excavation and Off-Site Disposal of Contaminated Near-Surface Soils

Alternative 2 consists of excavating near-surface soils with total PCB concentrations exceeding selected cleanup levels to a specified maximum depth (depending on property type), followed by off-site disposal at an appropriate landfill. It is anticipated that most, if not all, of the excavated soils would go to a RCRA Subtitle D solid waste landfill, but excavated soils from any decision unit with PCB concentrations greater than 50 ppm would go to a TSCA-approved landfill.

Alternative 2 includes the following primary components:

- Pre-design sampling to determine the actual number of decision units requiring cleanup and the vertical extent of contamination.
- Excavating contaminated near-surface soils exceeding selected cleanup levels to maximum depths of 2.5 feet bgs at residential and commercial properties and 6 feet bgs within utility corridors;
- Transporting and disposing of excavated soils at a permitted RCRA Subtitle D landfill (for soils less than 50 ppm PCBs) or TSCA landfill (for soils greater than 50 ppm PCBs);
- Backfilling excavated areas with uncontaminated off-site backfill soil and topsoil;
- Restoring areas impacted by the cleanup work to original conditions, to the extent practicable;
- Providing watering services for up to 4 weeks to ensure successful restoration of remediated properties; and

- Implementing ICs and/or a visual barrier, if deemed necessary, for properties where PCB concentrations exceed selected cleanup levels in soil deeper than the maximum excavation depths described above. In some cases, limited additional soil may be excavated if determined to be more cost-effective than implementing ICs, installing a visual barrier, and/or needing to conduct five-year reviews at the properties in question.

The maximum excavation depths for Alternative 2 (2.5 feet bgs at residential and commercial properties and 6 feet bgs within utility corridors) are based on the following factors:

PCBs are the Sole Contaminant of Concern at this Site

- PCBs are a unique class of contaminants that are classified by EPA as possible cancer-causing chemicals. The chemical properties of PCBs, and how PCBs can affect human receptors, are very different from many other contaminants typically found at Superfund residential cleanups, such as lead and other inorganics/metals.

Residential and Commercial Properties

- Based on the sampling that was conducted to determine the nature and extent of the contamination, soil at residential and commercial properties with PCB concentrations exceeding the respective residential and commercial cleanup levels is believed to occur within the top 2.5 feet bgs. (See Section 5.0, *Site Characteristics*.)
- The PCB cleanup levels for soil at residential and commercial properties are based on ARARs, specifically the TSCA regulations found at 40 CFR 761.61(a)(4)(i)(A) and 40 CFR 761.61(a)(4)(i)(B), respectively. These regulations have no recommended depth limitations. The intent of Alternative 2 is to clean up residential and commercial properties to allow for unlimited use and unrestricted exposure for the associated land use to the extent practicable. Alternative 2 gives EPA the flexibility to excavate deeper than 2.5 feet bgs if determined to be more cost-effective than implementing ICs and conducting FYRs at the properties in question, and includes the use of ICs where needed.

Utility Corridor Soil

- Based on the sampling that was conducted to determine the nature and extent of the contamination, soil within utility corridors with PCB concentrations exceeding the utility-corridor-soil cleanup level is believed to occur within the top 6 feet bgs, with the maximum concentration in one parkway (2,100 ppm) found at a depth of 4 to 5 feet bgs. (See Section 5.0, *Site Characteristics*, and summary table below.)
- The PCB cleanup level for soil in utility corridors is a site-specific risk-based cleanup level, designed to be protective for a utility/construction worker exposure scenario. Cleaning up the contamination to a maximum depth of 6 feet bgs is necessary to protect such workers from the risks associated with exposure to PCBs – including inhalation, ingestion, and direct contact (i.e., dermal) exposure

pathways – during construction work. Alternative 2 gives EPA the flexibility to excavate deeper than 6 feet bgs if determined to be more cost-effective than implementing ICs and conducting FYRs at the properties in question, and includes the use of ICs where needed.

Based on data presented in the RI Report, the range of PCB concentrations detected in near-surface soils at the site compared to the relevant cleanup levels is presented below.

Concentration Range of PCB-impacted Soils			
Property Type	**Range of Detected Concentrations**	**Depth of highest concentration**	**Cleanup level**
Residential*	0.23 ppm to 14 ppm	0 to 0.5 feet bgs in parkway	1 ppm
Commercial**	0.6 ppm to 530 ppm	1.5 to 2 feet bgs underneath paved parking lot	10 ppm
Utility Corridor**	0.23 ppm to 2,100 ppm	4 to 5 feet bgs	21 ppm

* Geostatistical sample data
** Discrete sample data

Based on extrapolations from currently available data, EPA estimates that approximately 102 residential decision units (or approximately 68 properties), 2 commercial properties, and 3 utility corridor decision units in parkways would need to be cleaned up, with an estimated total volume of 9.955 cubic yards of contaminated soil excavated. Alternative 2 would therefore require an estimated 247 truck trips to haul away excavated PCB-contaminated soil and 247 truck trips to haul in clean backfill and topsoil.

In developing the cost estimate for Alternative 2, EPA assumed – based on the existing data – that the PCB concentrations on residential properties would not be high enough to require excavated soils to be disposed of in a TSCA-permitted landfill. Based on the discrete sample data from commercial and utility corridor soils, the FS cost estimate assumed that excavated soils from those properties would require off-site disposal at a TSCA landfill. Pre-design geostatistical sampling would be conducted to determine whether any of the near-surface soils would need to go to a TSCA-approved landfill for disposal.

Estimated Capital Cost: $7.68 million
Estimated Annual O&M Cost: $0
Estimated Periodic Cost: $20,000 (every five years)
Estimated Total Present Worth: $7.79 million
Estimated Remedial Action Construction Timeframe: 6 months

10.0 Summary of Comparative Analysis of Alternatives

Section 121(b)(1) of CERCLA presents several factors that EPA is required to consider in its assessment of alternatives. Building upon these specific statutory mandates, the NCP articulates nine evaluation criteria to be used in assessing the individual remedial alternatives. The purpose of this evaluation is to promote consistent identification of the relative advantages and disadvantages of each alternative, thereby guiding selection of remedies offering the most effective and efficient means of achieving site cleanup goals. While all nine criteria are important, they are weighed differently in the decision-making process depending on whether they evaluate protection of human health and the environment or compliance with federal and state requirements, standards, criteria, and limitations (threshold criteria); consider technical or economic merits (primary balancing criteria); or involve the evaluation of non-EPA reviewers that may influence an EPA decision (modifying criteria). These nine criteria are described below, followed by a discussion of how each alternative meets or does not meet each criterion.

Explanation of the Nine Evaluation Criteria

Threshold Criteria

1. ***Overall Protection of Human Health and the Environment*** addresses whether a remedy provides adequate protection of human health and the environment and describes how risks posed by the site are eliminated, reduced or controlled through treatment, engineering, or institutional controls.
2. ***Compliance with Applicable or Relevant and Appropriate Requirements.*** Section 121(d) of CERCLA requires that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate federal and state requirements, standards, criteria, and limitations which are collectively referred to as "ARARs," unless such ARARs are waived under CERCLA Section 121(d)(4). Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances found at a CERCLA site. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Only those state standards that are identified in a timely manner, and that are more stringent than federal requirements, may be relevant and appropriate.

Primary Balancing Criteria

3. ***Long-Term Effectiveness and Permanence*** refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup levels have been met.
4. ***Reduction of Toxicity, Mobility, or Volume Through Treatment*** addresses the statutory preference for selecting remedial actions that employ treatment technologies that permanently and significantly reduce toxicity, mobility, or volume of the hazardous substances as their principal element. This preference is satisfied when treatment is used to reduce the principal threats at the site through destruction of toxic contaminants, reduction of the total mass of toxic contaminants, irreversible reduction in contaminant mobility, or reduction of total volume of contaminated media.
5. ***Short-Term Effectiveness*** addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community and the environment during construction of the remedy until cleanup levels are achieved. This criterion also considers the effectiveness of mitigative measures and time until protection is achieved through attainment of the remedial action objectives.
6. ***Implementability*** addresses the technical and administrative feasibility of a remedy from design through construction, including the availability of services and materials needed to implement a particular option and coordination with other governmental entities.
7. ***Cost*** includes estimated capital costs, annual O&M costs, other periodic costs, and the total present worth of capital, O&M (including long-term monitoring) and periodic costs.

Modifying Criteria

8. ***State Agency Acceptance*** considers whether the state support agency concurs with the Selected Remedy.
9. ***Community Acceptance*** considers the public's general response to the remedial alternatives and whether the public supports the Selected Remedy.

Comparison of Alternatives

The 2017 *Near-Surface Soils FS Report* contains a detailed discussion of the comparative analysis of alternatives, where the various alternatives are compared against each other in terms of how they fare against the nine evaluation criteria. Each of the nine evaluation criteria are discussed below with respect to the alternatives under consideration for this remedial action.

1. Overall Protection of Human Health and the Environment

Under Alternative 1, no action would be taken to address PCB concentrations exceeding selected cleanup levels in the near-surface soils at the site. Alternative 1 would provide no improvement over current conditions, would provide no risk reduction, and would not be protective of human health and the environment.

Alternative 2 is expected to be an effective remedy for near-surface soils that would be protective of human health and the environment by eliminating the direct contact, ingestion, and inhalation exposure pathways through excavation and off-site disposal of the contaminated soil.

Alternative 2 would be permanent and protective. However, PCB concentrations exceeding selected cleanup levels may be encountered at a few residential and commercial decision units at depths greater than 2.5 feet. At such properties, depending on the specific circumstances, EPA may elect to extend excavations in selected areas to remove the affected soils. Such excavation work below 2.5 feet would occur only if the limited additional soil removal is determined to be more cost-effective than implementing ICs, installing a visual barrier, and/or needing to conduct five-year reviews at the residential or commercial properties in question. If removing the additional soils is not cost-effective, EPA would rely on ICs and/or a visual barrier placed above the contaminated soil and beneath the clean backfill soil, such as orange construction fence or landscape fabric, to provide a warning barrier to help prevent direct human contact and exposure.

2. Compliance with ARARs

Alternative 1 would not meet the ARARs that have been identified for this remedial action.

Alternative 2 would meet all federal and state ARARs that have been identified for this remedial action. A list of the ARARs can be found in Table 1.

3. Long-term Effectiveness and Permanence

Alternative 1 would provide no long-term effectiveness or permanence, as no remedy would be implemented.

Alternative 2 would be effective in the long term and permanent because soils with PCB concentrations exceeding selected cleanup levels in the uppermost 2.5 feet at impacted residential and commercial decision units, and in the uppermost 6 feet within parkway utility corridors, would be permanently removed from the properties and replaced with clean materials.

As noted earlier, pre-design sampling may show that a few residential and/or commercial decision units have PCB concentrations exceeding selected cleanup levels at depths

greater than 2.5 feet bgs. At such locations, EPA may elect to extend excavations in selected areas to remove the affected soils if it is determined to be more cost-effective to do so than implementing ICs, installing a visual barrier, and/or conducting five-year reviews at such properties. If removing the additional soils is not cost-effective, then ICs and/or a visual barrier would be required for the contamination remaining in place at depth. Such measures are considered to be effective in the long term and permanent and would serve to minimize the potential for future disturbance of contaminated soil at depth. If deemed to be cost-effective, excavation of the soils at depth would also be effective in the long term and would provide an added degree of permanence because the deeper contaminated soils would be permanently removed from the property.

4. Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment

Neither Alternative 1 nor Alternative 2 employs treatment technologies to reduce the toxicity, mobility, or volume of the contaminated soils. Neither alternative satisfies EPA's statutory preference for remedial actions that employ treatment technologies as a principal element. The majority of the PCB-contaminated near-surface soil at the TMD site is considered low-level threat waste material that does not lend itself to any cost-effective treatment.

5. Short-term Effectiveness

Alternative 1 has no action associated with it so would have no associated short-term impacts.

Alternative 2 could have some short-term impacts to workers, the community, and the environment because of disruption caused by cleanup activities, such as soil excavation work and additional truck traffic to haul excavated soil to off-site disposal facilities and to import clean fill to excavated areas. However, these potential impacts could be controlled through adequate monitoring and appropriate mitigative actions.

If excavation occurs during dry conditions, dust suppression measures would be required to prevent residents and construction workers from being exposed to contaminated airborne dust particles. Additional short-term risks to workers include occupational risks associated with construction equipment. Such risks would be mitigated by site-specific health and safety measures, a traffic plan, and a construction quality assurance plan. Other potential impacts from soil excavation are related to the potential for runoff to infiltrate the storm water drainage system. Such impacts would be averted by environmental control plan measures and through the use of erosion and sediment controls and good housekeeping practices.

The cleanup goals would be met in soils at residential and commercial decision units to a depth of 2.5 feet upon completion of the excavation work. Cleanup goals would be met in soils to a depth of up to 6 feet upon completion of the excavation work in utility corridors, with the depth of excavation dependent on pre-design sample results. Based upon the

assumed number of properties/decision units that may be found to require cleanup, the entire length of time for the remedial action construction (including excavation, backfilling, and restoration work) is estimated to be 6 months for Alternative 2.

6. Implementability

Alternative 1 has no actions that would be implemented.

The remedy components of Alternative 2 are proven, readily implementable, and have been used successfully for other environmental cleanup projects. Alternative 2 could be implemented with readily available materials and methods, and is administratively feasible. The most critical factors associated with the ability to implement Alternative 2 are community acceptance and obtaining access agreements from property owners to conduct pre-design sampling and remedial action work.

7. Cost

In accordance with EPA guidance, FS cost estimates are expected to be accurate within a range of +50 to -30 percent. A present worth analysis is used to evaluate expenditures that occur over different time periods by discounting all future costs to a common base year, usually the current year. This allows the cost of remedial action alternatives to be compared on the basis of a single figure representing the amount of money that, if invested in the base year and disbursed as needed, would be sufficient to cover all costs associated with the remedial action over its planned life. EPA used a discount rate of 1.4% to calculate the total present worth costs, consistent with the current Office of Management and Budget Circular A-94.

The total present worth cost estimate for Alternative 1 is $95,000, since five-year reviews would need to be conducted.

The total present worth cost estimate for Alternative 2 is $7.79 million. The final cost estimate for this alternative would be developed and refined during the remedial design process.

8. State/Support Agency Acceptance

MDEQ has concurred with the selection of Alternative 2. MDEQ's concurrence letter is included in Appendix B.

9. Community Acceptance

During the public comment period, the community expressed its support for Alternative 2, with an emphasis on expediting the start of residential cleanup activities. EPA has prepared a Responsiveness Summary that summarizes the public comments and EPA's responses to those comments. The Responsiveness Summary is included in Part III of this ROD.

11.0 Principal Threat Waste

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site, wherever practical (40 CFR §300.430(a)(1)(iii)(A)). The principal threat concept is applied to the characterization of "source material" at a Superfund site. Source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contaminants to groundwater, surface water or air, or acts as a source for direct exposure. EPA has defined principal threat wastes as those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur.

This response action does not address source materials constituting principal threats because EPA has not identified any such materials in the near-surface soils portion of the TMD site. The PCB-contaminated near-surface soils are primarily due to track-out of PCB contamination from the commercial property located at the corner of Harper Avenue and Lakeland Street. The re-deposited contamination has been mixed with near-surface soils, and the concentrations of PCBs in the near-surface soils are considered to be low-level threat wastes that do not lend themselves to any cost-effective treatment.

12.0 Selected Remedy

EPA is selecting *Alternative 2 – Excavation and Off-Site Disposal of Contaminated Near-Surface Soils* as the remedy for the near-surface soils portion of the TMD site.

Summary of the Rationale for the Selected Remedy

Alternative 1 does not meet either of the two threshold criteria and is therefore not eligible to be selected. Alternative 2 meets both threshold criteria, provides an effective, permanent solution, is readily implementable, and is cost-effective. Alternative 2 does not reduce the toxicity, mobility or volume of the contamination through treatment because effective treatment technologies or resource recovery technologies are not practical for soil containing low levels of contamination.

Alternative 2 is protective against exposure to PCB contamination in near-surface soils by soil excavation and off-site disposal, coupled with appropriate ICs if needed. ICs will be needed if contamination extends deeper than the maximum excavation depths specified for each property type, and will also be considered for any properties where EPA is denied access to conduct pre-design sampling or remedial action.

Alternative 2 is expected to achieve long-term risk reduction, will meet RAOs within a reasonable time frame and at a reasonable cost, and will allow the current land uses (residential, commercial, and utility corridors areas) to be used for the reasonably

anticipated future land uses, which is expected to be the same. Alternative 2 provides protection of human health and the environment by meeting all chemical-specific ARARs and site-specific risk-based cleanup numbers.

Description of the Selected Remedy

The Selected Remedy – Alternative 2 – will excavate near-surface soils with total PCB concentrations exceeding selected cleanup levels to a specific maximum depth (depending on property type), followed by off-site disposal at an appropriate landfill. The major elements of the selected remedy include the following:

- Pre-design sampling will be conducted to determine the actual number of decision units requiring cleanup and the vertical extent of contamination;
- Excavating contaminated near-surface soils exceeding selected cleanup levels to maximum depths of 2.5 feet bgs at residential and commercial properties and 6 feet bgs within utility corridors;
- Transporting and disposing of excavated soils at a permitted RCRA Subtitle D landfill (for soils less than 50 ppm PCBs) or TSCA landfill (for soils greater than 50 ppm PCBs);
- Backfilling excavated areas with uncontaminated off-site backfill soil and topsoil;
- Restoring areas impacted by the cleanup work to original conditions, to the extent practicable;
- Providing watering services for up to 4 weeks to ensure successful restoration of remediated properties;
- Implementing ICs and/or a visual barrier, if deemed necessary, for properties where PCB concentrations exceed selected cleanup levels in soil deeper than the maximum excavation depths described above. In some cases, limited additional soil may be excavated if determined to be more cost-effective than implementing ICs, installing a visual barrier, and/or needing to conduct five-year reviews at the properties in question; and
- ICs will also be considered for any properties where EPA is denied access to conduct pre-design sampling or remedial action. For properties where owners deny access for pre-design sampling or remedial action, EPA will work with local governmental bodies to track ownership and occupancy of the properties. EPA will evaluate the status of these tracked properties in subsequent five-year reviews and recommend follow-up actions as appropriate.

EPA will need to obtain access agreements from current property owners for pre-design sampling and cleanup work. Pre-design soil sampling is necessary to determine the actual number of decision units requiring cleanup and the vertical extent of contamination. Pre-design sampling using geostatistical sampling methods will be conducted at residential yards, parkway/utility corridors and commercial properties that were either not previously sampled or sampled only through discrete sampling.

Pre-design sampling will verify the CSM, determine excavation limits, and identify residential and/or commercial properties where ICs and/or visual barriers may be needed after the upper 2.5 feet of soil are removed. With adequate pre-design sampling, confirmation soil samples following excavation will not be required. The analytical results from surface soil samples collected during the site investigations indicate PCB concentrations decrease with depth at both residential and commercial properties, with the highest concentrations typically found within 2.5 feet bgs, so exceedances of cleanup levels at depths greater than 2.5 feet bgs are not anticipated on residential and commercial properties.

Summary of Estimated Remedy Costs

The estimated total present worth of implementing the selected remedy is $7.79 million. This is based upon anticipated capital costs of $7.68 million for pre-design sampling, site preparation, excavation and off-site disposal, and property restoration, and periodic costs of $20,000 to conduct five-year reviews for an estimated 30 years.

Pre-design studies will be needed to determine the total number of residential, commercial and utility corridor decision units requiring cleanup. New properties will likely be sampled as part of this effort. Additional sampling may also be needed at other properties if EPA determines that more information is needed to complete the remedial design. Properties that are currently known to require pre-design geostatistical sampling include the following:

- Three parkways (utility corridor soils) that have only discreet samples;
- Approximately 28 decision units at 18 properties (17 residential and 1 commercial) that have only discreet samples from earlier investigations;
- Nine of the 32 residential decision units that exceed 1 ppm but do not have the vertical extent of PCB contamination delineated deeper than 2 feet bgs;
- Approximately 35 decision units from Investigation Area 1 that have not been sampled; and
- Approximately 77 back yard and front yard decision units from Investigation Area 2 that have not been sampled.

Based on the above factors, EPA currently estimates that 152 decision units will need pre-design sampling.

For purposes of volume and cost estimating in the FS, EPA had to estimate the number of residential, commercial, and utility corridor decision units (or properties) and the volume of soil that would require remediation, as follows:

- The estimated number of residential decision units that will likely require remediation is 102 (approximately 68 properties). This number includes the existing 32 decision units already known to exceed 1 ppm plus an estimated 70

additional decision units that might be identified during pre-design sampling in Investigation Areas 1 and 2.

- The estimated number of commercial properties that will likely require remediation is 2.
- The estimated number of utility corridor decision units in parkways that will likely require remediation is 3.
- The estimated volume of contaminated soil that will likely need to be excavated is 9,955 cubic yards.

A detailed cost estimate for Alternative 2 can be found in Table 2. The information in the cost estimate summary table is based on the best available information regarding the anticipated scope of the Selected Remedy. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedy. As noted earlier, this is an order-of-magnitude engineering cost estimate that is expected to be accurate within a range of +50 to -30 percent of the actual project cost.

Expected Outcomes of the Selected Remedy

The Selected Remedy will reduce risks to human health and environment to levels within EPA's acceptable risk range by removing PCB-contaminated near-surface soils from affected residential, commercial, and parkway utility corridor properties. Land and groundwater use at the site is not expected to change in the foreseeable future. The near-surface soils portion of the TMD site is and will continue to be a mixed residential/ commercial area, and this ROD does not address groundwater. The RAOs that were established for the near-surface soils remedial action will be met immediately upon completion of the remedial action construction work. The final PCB cleanup levels for near surface soils, along with the basis for the cleanup levels, are as follows:

- Residential soil: 1 ppm, based on TSCA ARAR (40 CFR 761.61(a)(4)(i)(A)).
- Commercial soil: 10 ppm, based on TSCA ARAR (40 CFR 761.61(a)(4)(i)(B)).
- Utility corridor soil: 21 ppm, based on site-specific risk-based calculations for utility/construction worker exposure scenario (HI of 1, ELCR of $1x10^{-6}$).

More detailed information about the cleanup levels is provided in Section 8.0, *Remedial Action Objectives and Cleanup Levels*.

13.0 Statutory Determinations

Under CERCLA Section 121 and the NCP, the lead agency must select remedies that are protective of human health and the environment, attain federal and state requirements that are applicable or relevant and appropriate to the remedial action (or invoke an appropriate waiver), are cost-effective, and utilize permanent solutions and alternative treatment technologies (or resource recovery technologies) to the maximum extent practicable. In

addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principal element and a bias against off-site disposal of untreated wastes. The following subsections discuss how the Selected Remedy addresses these statutory requirements.

Protection of Human Health and the Environment

The Selected Remedy, Alternative 2, provides overall protection of human health and the environment from PCB-contaminated near-surface soils at the TMD site. Protection of human health and the environment will be achieved through excavation and proper off-site disposal of contaminated soils, in conjunction with ICs where needed to prevent exposures to any contamination remaining at depth. The Selected Remedy will reduce exposure levels to protective ARAR or risk-based cleanup levels, and will reduce risks to within EPA's generally accepted risk range of $1x10^{-4}$ to $1x10^{-6}$ and/or a non-cancer HI below 1.

The Selected Remedy will meet RAOs immediately upon completion of construction work, which is estimated at 6 months. The remedy will then be protective for residential and/or commercial purposes. The Selected Remedy also will provide adequate protection of the environment. No unacceptable short-term risks are anticipated by implementation of the remedy. Any short-term risks associated with construction activities will be minimized through adequate monitoring and appropriate mitigative measures during construction. In addition, no adverse cross-media impacts are expected from the Selected Remedy.

Compliance with ARARs

The Selected Remedy is expected to comply with the state and federal ARARs that are specific to this remedial action. The federal and state ARARs for this action are listed in Table 1.

Cost-Effectiveness

EPA has determined that the Selected Remedy is cost-effective and represents a reasonable value for the money to be spent. In making this determination the following definition was used: "A remedy shall be cost-effective if its costs are proportional to its overall effectiveness." (NCP Section 300.430(f)(1)(ii)(D)). "Overall effectiveness" was evaluated by assessing three of the five balancing criteria (long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; and short-term effectiveness). Overall effectiveness was then compared to costs to determine cost-effectiveness. The relationship of the overall effectiveness of the remedial action was determined to be proportional to its costs and hence the remedy represents a reasonable level of protectiveness for the money spent.

The estimated cost of the selected near-surface soils remedial action is a capital cost of $7.68 million, with a total present value over 30 years of $7.79 million.

Utilization of Permanent Solutions and Alternative Treatment Technologies (or Resource Recovery Technologies) to the Maximum Extent Practicable/Preference for Treatment as a Principal Element

EPA has determined that the Selected Remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the site. The Selected Remedy satisfies the criteria for long-term effectiveness by doing the following: removing soil with PCB concentrations exceeding selected cleanup levels from residential yards, utility corridors/parkways, and commercial properties; and backfilling the excavated areas with clean soil.

The Selected Remedy, Alternative 2, meets both threshold criteria, provides an effective, permanent solution, is readily implementable, and is cost-effective. The other alternative, Alternative 1, did not meet the threshold criteria and was not eligible to be selected. In selecting Alternative 2, EPA also considered the statutory preference for treatment as a principal element and bias against off-site disposal of untreated waste, as well as state and community acceptance. The Selected Remedy does not include treatment as a remedy component because the low-level PCB contamination in the near-surface soils does not lend itself to any cost-effective treatment.

Five-Year Review Requirements

The first remedial action selected in September 2011 resulted in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, thereby triggering statutory five-year reviews to evaluate whether the remedy is, or will be, protective of human health and the environment. The first five-year review for the site was completed in April 2017. Because this remedy will also result in hazardous substances remaining on-site above levels that allow for UU/UE (since the remaining areas of the TMD system and the Lange and Revere Street canals have not yet been addressed), statutory five-year reviews are still required.

14.0 Documentation of Significant Changes

The Proposed Plan identified Alternative 2 as the preferred remedial action alternative for the near-surface soils portion of the TMD site. The Proposed Plan public comment period ran from April 23 through June 22, 2018. CERCLA Section 117(b) and NCP Section 300.430(f)(5)(iii) require an explanation of significant changes from the remedy presented in the Proposed Plan that was published for public comment. Based upon its review of the written and oral comments submitted during the public comment period, EPA has determined that no significant changes to the remedy, as originally identified in the Proposed Plan, are necessary or appropriate.

PART III: RESPONSIVENESS SUMMARY

In accordance with CERCLA Section 117, 42 U.S.C. Section 9617, EPA released the Proposed Plan and AR on April 23, 2018, and the public comment ran through June 22, 2018 (following a 30-day extension), to allow interested parties to comment on the Proposed Plan. EPA held an open house and public meeting regarding the Proposed Plan on May 10, 2018, at the City of St. Clair Shores Council Chambers, St. Clair Shores, Michigan. Approximately 30 people attended both the meeting and open house. Representatives from EPA, MDEQ, Michigan Department of Health and Human Services (MDHHS, formerly Michigan Department of Community Health), Macomb County Health Department and the City of St. Clair Shores were present at the public meeting.

This Responsiveness Summary provides both a summary of the public comments EPA received regarding the Proposed Plan and EPA's responses to those comments. EPA received written comments (via regular and electronic mail) and a verbal comment (at the public meeting) during the public comment period. Copies of all the comments received (including the verbal comments reflected in the transcript of the public meeting) are included in the AR for the site. The AR index is attached as Appendix A to this ROD. EPA, in consultation with MDEQ, carefully considered all comments prior to selecting the remedy documented in this ROD. A complete copy of the Proposed Plan, AR, and other pertinent documents are available at the St. Clair Shores Public Library, 22500 E 11 Mile Road, St. Clair Shores, Michigan.

EPA received comments from community members, a commercial property owner and the City of St. Clair Shores. For purposes of this Responsiveness Summary, most comments are repeated here "as received" by mail or as recorded during the public meeting, although a few comments are shortened and summarized. Comments in their entirety can be found in the AR.

1. **Comment:** A community member who lives near the intersection of Bon Brae Street and Harper Avenue (Investigation Area 1) supports Alternative 2 and sent in a comment via e-mail. "I am writing this to express our interest in proceeding with excavation of the contaminated soil in both residential and commercial properties in the area. We have put considerable research and thought into this decision and although we would prefer to leave our and our neighbor's yards intact (if they are in-fact contaminated) we strongly believe excavation of the contaminated soil is the correct and necessary action to take for many reasons. "

   Response: *EPA appreciates the support for Alternative 2.*

2. **Comment:** A community member who lives along the Lange and Revere Street canals (Investigation Area 2) supports Alternative 2 and sent in a comment via e-mail. "I was unable to go to the meeting you held on the Ten Mile Drain at the City of Saint Clair Shores, however I did listen on-line to the entire presentation. It was very informative and I appreciate all the time, hard work and commitment your Team has put into this important project.

"My wife and I live on the Lange Canal so this PCB clean-up very much concerns us both from a health and monetary stand point for home values and the right thing to do for the health and well-being of current and future generations. I currently continue to see folks in boats fishing in the canal despite the "NO FISHING" signs posted and can only imagine the risk of health from eating those fish.

"I would very much support the Alternative 2 plan to excavate and clean up those areas affected that are above the EPA Safe Risk levels. In my opinion, I agree that the current levels are unacceptable and clean up sooner than later is the best option and decision before clean-up costs soar.

"Finally, I would like to be included on test sampling my property when you get to that point in the process. I know that prior to me purchasing the home in 2017 that the former owners had a sprinkling system that used canal water for watering the lawn."

Response: *EPA appreciates the support for Alternative 2.*

In response to the comment about witnessing fishing from the Lange and Revere Street canals despite "NO FISHING" signage throughout the canal, the community member is correct that the current advice from MDHHS is that people "do not eat fish" from the Lange and Revere Street canals. The amount of PCBs in the fish is far higher than the amount that is safe for people to eat. For more information about eating fish from Lake St. Clair or the St. Clair Shores area, please go to www.michigan.gov/eatsafefish and refer to the Southeast Michigan Guide.

EPA will request access to conduct pre-design sampling for all residents living within Investigation Area 2 and will implement cleanup activities if near-surface soils sample results are above the selected cleanup level of 1 ppm in residential soil.

3. **Comment:** A community member who lives near the intersection of Bon Brae Street and Harper Avenue (Investigation Area 1) commented during the public meeting and supports Alternative 2. "Just looking forward to it being over. I've been dealing with it since 2002 and I appreciate the work you guys are doing. I appreciate the fact that I'm not the one that's being exposed to this stuff, the people working on it are, but I really look forward to it being done."

   Response: *EPA appreciates the resident's support of EPA's work.*

4. **Comment:** A resident who lives on Ardmore Street in St. Clair Shores, outside the two Investigation Areas, e-mailed a comment expressing "my preference for option 2 in St. Clair Shores. (Excavation and off-site disposal of contaminated near-surface soil.) I also live in the area and would like my soil tested. We have been growing

vegetables in our yard for years and were never offered soil testing. I want to make sure we get it if we are in a troubled area."

Response: *EPA appreciates the support for Alternative 2. Based on soil collected during previous investigations, EPA has narrowed down the PCB-impacted near-surface soils areas as depicted on Figure 4 of this ROD. In general, these areas include the residential and commercial properties surrounding the commercial property at the corner of Harper Avenue and Lakeland Street as well as properties along the Lange and Revere Street canals. At this time, EPA does not have plans to sample residents on Ardmore Street north of the two investigation areas' boundaries. In regard to garden soil testing, EPA recommends contacting Macomb County Health Department at 586-469-5236 to discuss local labs that test garden soil samples.*

5. **Comment:** A community member mailed in a comment that said, "I lend my support to a number of environmental non-profit groups. Some of these allege that the current administration plans to gut or even shut down the EPA as some point in the near future. I've never been entirely sure how close these allegations are to reality. Looking at your timeline for this project, I'm willing to take it as evidence to the contrary. In any case, I hope you are able to get as far along with this cleanup as you can, considering who is in charge of your agency right now."

   Response: *This community member's comment is noted.*

6. **Comment:** John Caron, St. Clair Shores City Council Member, supports Alternative 2 and asks "the EPA to address the further cleanup of the drain system and the sediments in the contaminated canals. Also, as soils are removed from the surface lawns along the canals, that sprinkler systems be inspected to ensure they do not get re-contaminated until the canals are cleaned up."

   Response: *EPA is currently drafting a separate site-wide feasibility study to address the remaining PCB contamination in the TMD storm sewer system and the sediments in the Lange and Revere Street canals. When the site-wide FS is complete, EPA intends to develop a Proposed Plan and ROD to select a final remedy for those remaining impacted areas of the TMD Superfund site.*

   EPA recognizes that most of the residents along the Lange and Revere Street canals have sprinkler systems that pull water from the canal. Currently, MDHHS recommends that community members not use water from the canal for watering yards, rinsing off produce, or gardening until the contaminated sediment is removed. Until the cleanup is completed, pumping water from the canals may disturb sediment contaminated with PCBs and move it into residential yards. EPA will coordinate with the City of St. Clair Shores as cleanup work progresses to address this issue. Additionally, EPA will continue to work closely with MDHHS to provide public health messages regarding exposures to PCB-contaminated

sediments and use of the canal water during and after the residential cleanup work.

7. **Comment:** The Triangle Development Services (Shores), LCC ("TDS"), current owner of the commercial building located at the corner of Harper Avenue and Lakeland Street (Investigation Area 1) with PCB contamination below its parking lot, supports Alternative 2. "TDS believes that for the benefit of its property and those of the neighboring commercial and residential properties, the continued risk of having PCB-contaminated soil concentrations is too high when other alternatives are available and the Site is eligible for cleanup funds under EPA's Superfund program."

   In addition, TDS requested "that needed work to be performed on the parking lot and Lakeland Street be performed in a phased manner, preferably with as much work time during non-business hours, such that at least the entrance and part of the parking lot is available for patient access vehicles, including ambulances, healthcare delivery vans and automobiles, and parking. Further consideration should be given to additional off-site parking to accommodate longer term parking for patients or staff."

   TDS also asked that a schedule of work be provided to them in a reasonable advanced time so the TDS can alert both tenants, who in turn would alert and direct patients and healthcare providers of access times and locations to ensure no interruption in patient care at this property.

   Response: *Once a remedy for the near-surface soils is selected in a ROD, the remedial design phase can begin. TDS requested that the cleanup work be performed in a phased approach to allow for the availability of at least the entrance and part of the parking lot to ensure no interruption in patient care. It is important to note that property owners will be involved in discussions about how the cleanup will be implemented on their property and how their property will be restored, and the needs of each property owner will be taken into consideration as much as possible. Decisions on work schedules and how to best accommodate parking for patients and staff during the cleanup will be made during the remedial design phase. EPA will consider using a phase approached for commercial property cleanup activities.*

FIGURES

FIGURE 1

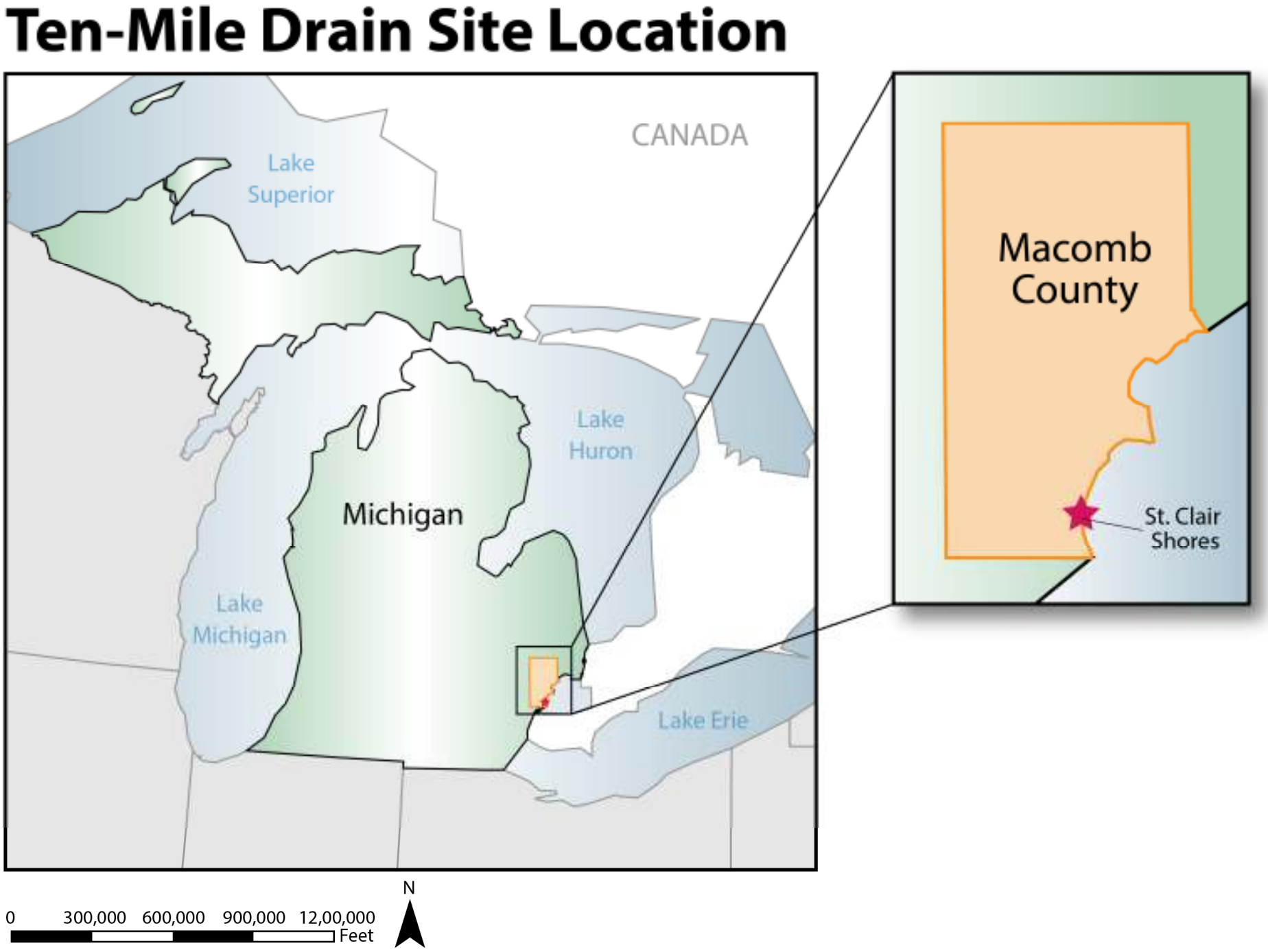

Ten-Mile Drain Site Location
CANADA
Lake Superior
Lake Huron
Michigan
Lake Michigan
Lake Erie
Macomb County
St. Clair Shores
N
0
300,000
600,000
900,000
12,00,000
Feet

FIGURE 2
Ten Mile Drain Storm Sewer System

FIGURE 3

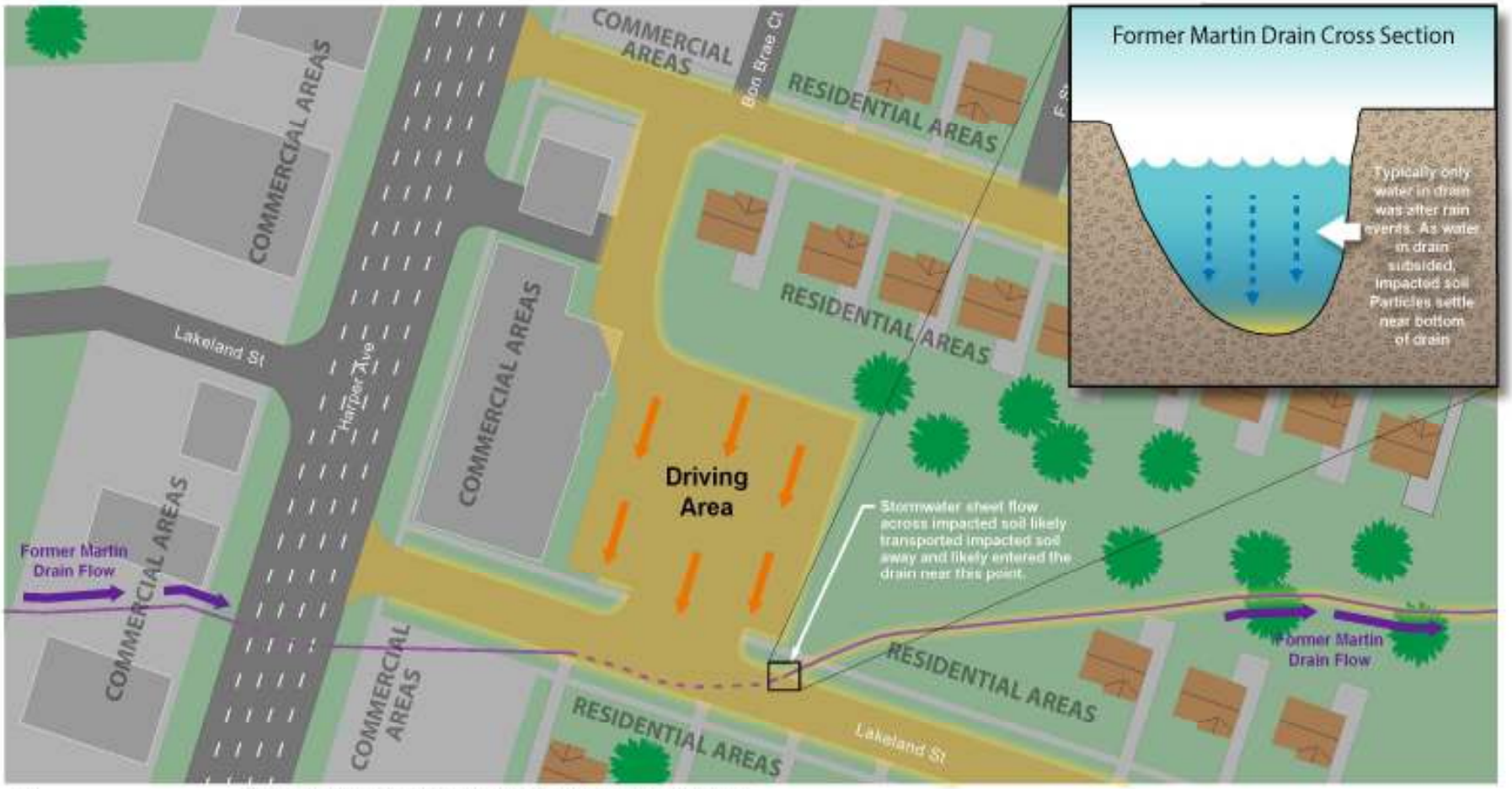
Lange and Revere Street Canals (outfall)

FIGURE 4

Investigation Area 1 and Investigation Area 2
(Former Martin Drain pathway)

FIGURE 5

Conceptual Site Model– Former Martin Drain



Notes: This is a contaminant pathway model only and is not intended to represent actual conditions at specific property locations.

Residential property depiction based on 1962 aerial photograph.

LEGEND

Areas Potentially Impacted by PCBs — Former Martin Drain

Stormwater Sheet Flow

Stormwater Runoff to Old Martin Drain Contaminant Transport Model
Ten-Mile Drain Site
St. Clair Shores, Michigan

ch2m:

FIGURE 6

Conceptual Site Model– Track-Out

FIGURE 7

Site-Wide Conceptual Site Model– TMD System

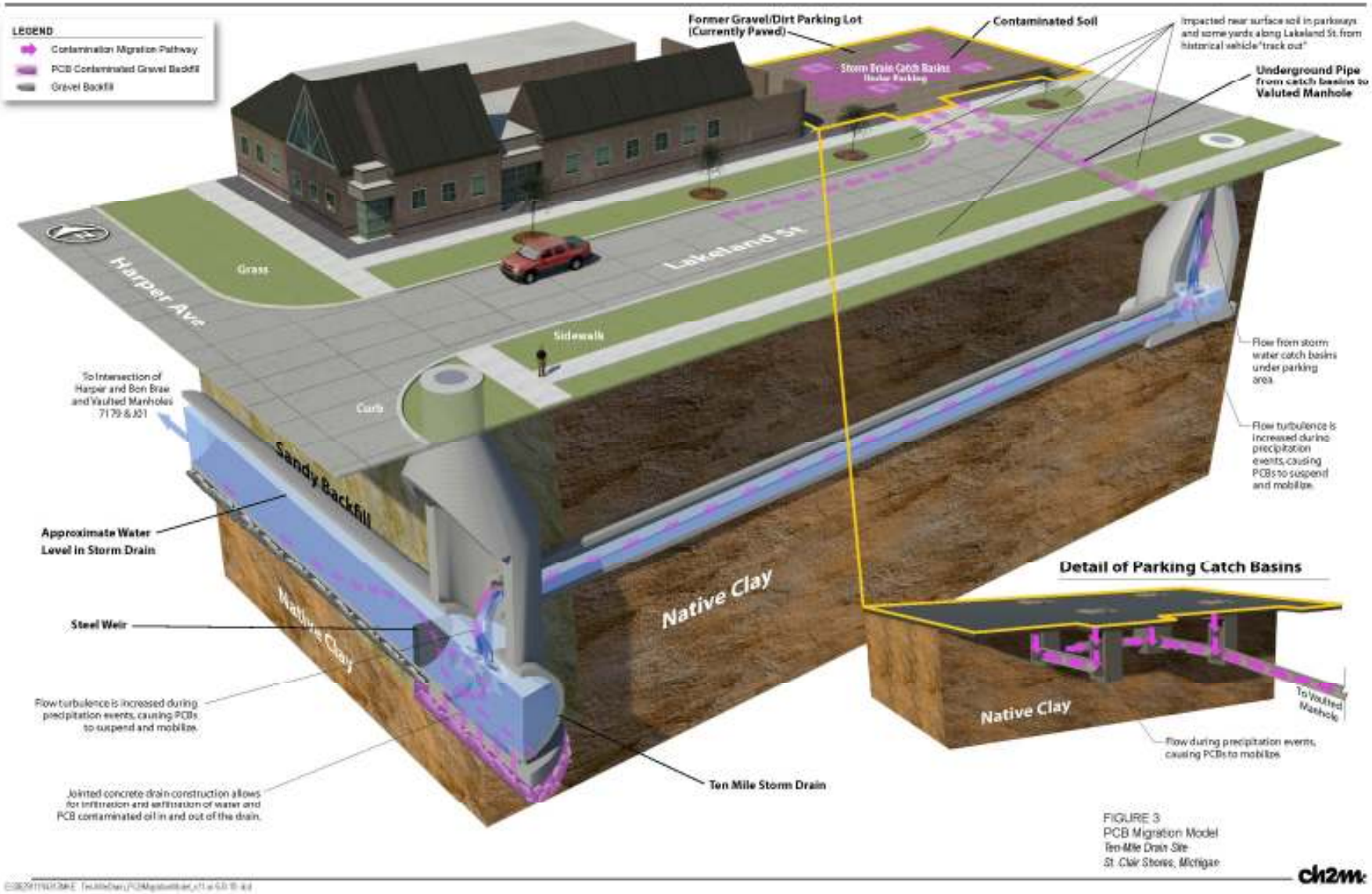
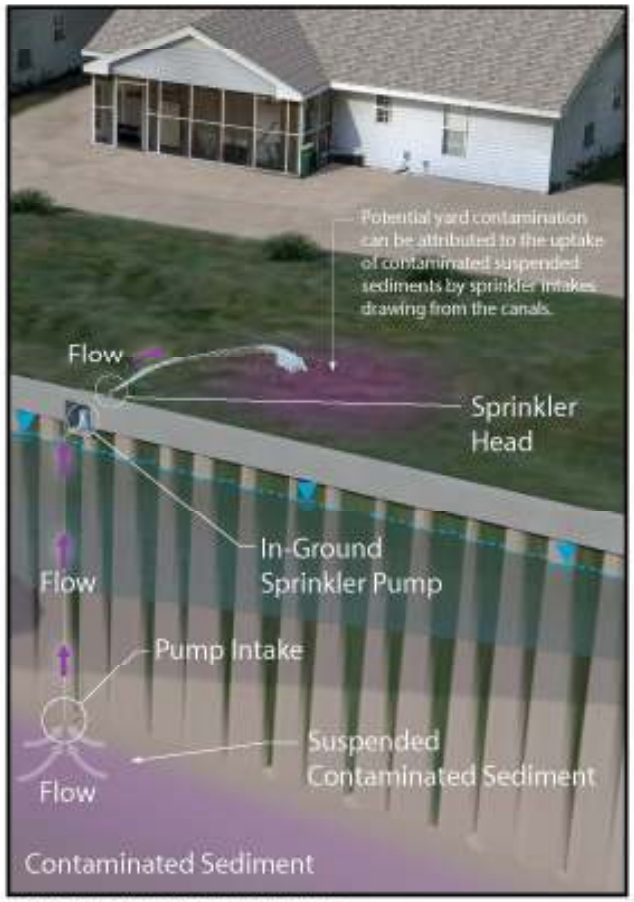


FIGURE 8

Conceptual Site Model– Lange and Revere Street Canals

(PCB-contaminated sediment particles)

Note: This is a contaminant pathway model only and is not intended to represent actual conditions at specific property locations



Note: Seiche effect assists in stirring bottom sediments to suspend them.

LEGEND

= Water Level

= Contaminated Suspended Sediments

FIGURE 5
Canal Property Contamination Model
Ten Mile Drain Site
St. Clair Shores, Michigan

ch2m:

TABLES

Table 1: Applicable or Relevant and Appropriate Requirements and To-Be-Considered Standards- Near-surface soils

Ten-Mile Drain Superfund Site, St. Clair Shores, Michigan

Regulation	Requirement	Potential ARAR Status	Analysis
Chemical-specific ARARs or TBCs			
Federal			
40 CFR 761.61(a)(1)(ii) and 40 CFR 761.61(c) –TSCA Regulations	Establishes requirements and thresholds for remediation and management of PCBs. Provides for risk-based cleanup.	Relevant and Appropriate	Relevant and appropriate for establishing remedial goals for soil that is PCB Remediation waste. Requirements are not binding on CERCLA sites 761.61 (a)(1)(ii)).
CERCLA Guidance on Land Use in the CERCLA Remedy Selection Process	Establishes appropriate considerations in defining future land use.	TBC	CERCLA provides guidance to EPA in selecting land use for remedy selection purposes. These requirements are TBCs.
EPA Regional Screening Level Table for Chemical Contaminants at Superfund Sites	Screening levels developed using risk assessment guidance from the EPA Superfund program. They are risk-based concentrations derived from standardized equations combining exposure information assumptions with EPA toxicity data. Screening levels are considered to be protective for humans over a lifetime; however, screening levels do not address non-human health endpoints, such as ecological impacts.	TBC	Levels may be considered for use as initial cleanup goal. These requirements are TBCs.
State			
Part 201, Environmental Remediation, of NREPA, 1994 PA 451, as amended. (MCL 324.201, et seq.) Michigan Administrative Codes R 299.46, R299.48, R299.49, and R299.50	Part 201 provides for the identification, risk assessment, evaluation, remediation, and long-term management of contaminated sites within Michigan. Part 201 provides that response actions shall be protective of human health, safety, welfare and the environment of the state and identifies risk levels to be used in the development of those response actions at MCL 324.20120a.	Relevant and Appropriate	Establishes cleanup criteria for sites of environmental contamination based on current and future land use. Regulates cleanup of releases of hazardous substances in concentrations that constitute a facility as that term is defined in Section 20101(o) of Act 451 to soil and groundwater.

Table 1: Applicable or Relevant and Appropriate Requirements and To-Be-Considered Standards- Near-surface soils

Ten-Mile Drain Superfund Site, St. Clair Shores, Michigan

Regulation	Requirement	Potential ARAR Status	Analysis
Location-specific ARARs or TBCs			
Federal			
Migratory Bird Treaty Act of 1972 16 USC 703-712	Establishes federal responsibility for the protection of the international migratory bird resources. Consultation with the USFWS during remedial design and remedial construction is strongly encouraged to ensure that the cleanup of the site does not unnecessarily impact migratory birds. Taking, killing, or possessing migratory birds is unlawful with authorization from USFWS.	Applicable	Michigan is located within the Mississippi flyway. If migratory birds, their nests, or eggs are discovered, disturbed will be avoided to the extent practicable, and will be coordinated with USFWS.
50 CFR 17 – Threatened and Endangered Species Protection	Requires that federal agencies ensure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any threatened or endangered species or destroy or adversely modify critical habitat.	Applicable	Habitats and the presence of threatened and endangered species and their habitats will be evaluated as the alternatives assessment progresses. Measures will be taken to avoid jeopardizing fish, wildlife, or plant species or destroying or adversely modifying critical habitat, to the extent practicable.
15 CFR 930 – Coastal Zone Management	Requires that federal agencies conducting activities directly affecting the coastal zone conduct those activities in a manner that is consistent, to the maximum extent practicable, with approved state coastal zone management programs.	Applicable	Coastal zone management applies to construction activities and aims to achieve a balance between natural resources preservation and economics. Because the project does not include economic development, it is unlikely that substantive requirements will relate to the remedy.
State			
NREPA, Part 365, Endangered Species Protection, and MCL 324.36501-36507), and Michigan Administrative Code R 299.1021-1028	Establishes requirements for conservation, management, enhancement, and protection of species either endangered or threatened with extinction.	Relevant and Appropriate	Relevant and appropriate for actions that are likely to jeopardize fish, wildlife, or plant species or destroy or adversely modify critical habitat. Would not be considered applicable unless federal endangered species law is less stringent.

Table 1: Applicable or Relevant and Appropriate Requirements and To-Be-Considered Standards- Near-surface soils

Ten-Mile Drain Superfund Site, St. Clair Shores, Michigan

Regulation	Requirement	Potential ARAR Status	Analysis
NREPA Part 401, Wildlife Conservation. (MCL 324.40101-40120)	Regulates wildlife conservation.	Relevant and Appropriate	May be applied to identifying wildlife habitat near environmental sites of contamination where an ecological risk assessment(s) may be conducted. May be used in conjunction with the Michigan Features Inventory List to identify habitat where an environmental site of contamination may impact wildlife.
Action-specific ARARs or TBCs			
State			
NREPA Part 115, Solid Waste Management). (MCL 324.1 1501 et seq.) Michigan Administrative Code R 299.41 01-4122 (Formerly known as Act 641 [1978])	Addresses solid waste management and imposes geographic limitations on where nonhazardous solid waste can be disposed.	Relevant and Appropriate	Regulates the disposal of nonhazardous solid waste. Remedial action may produce nonhazardous solid waste. Used for determining the process and type of disposal facility that solid waste or contaminated media may be removed to. It is anticipated that site soils will contain less than 50 ppm PCBs and will be disposed of in a commercial Resource Conservation and Recovery Act Subtitle D facility approved under the CERCLA Offsite Rule.
NREPA, R 323.1709 – Erosion and Sediment Control	Establishes requirements for the control of erosion and sedimentation during earth change operations.	Applicable or Relevant and Appropriate	Relevant and appropriate to the excavation of highly contaminated soil. Applicable if more than 1 acre will be disturbed or for any disturbance within 500 feet of the water's edge of a lake or stream. Requires development of measures to minimize the erosion of soil and discharge of soils and sediment to nearby waters.
NREPA, R 336.1372(8)(b) – Control of Fugitive Dust	Establishes common measures to mitigate the generation of fugitive dust during small construction work.	Relevant and Appropriate	Relevant and appropriate for remedial actions where contaminated soil may become airborne. Measures such as wetting of airborne soil during excavation activities are often effective at controlling dust.

MCL = Michigan Compiled Laws

USFWS = U.S. Fish and Wildlife Service

Table 2-Detailed Cost Estimate of Selected Remedy

Alternative 2 - Offsite Disposal of Excavated Material - Residential Properties (Includes 2 Parkway/Utility Corridors)

January 30, 2017

Feasibility Study Construction Cost Estimate

Ten-Mile Drain Superfund Site, Saint Clair Shores, Michigan

Description - Excavation of soil exceeding PCB PRG (1ppm) on residential properties to a maximum depth of 2 1/2 feet below ground surface, transportation and offsite disposal of excavated material, and restoration (backfill, topsoil, and sod).

Description	Quantity	Unit	Unit Cost	Cost
Pre-Design Sampling				
Access Agreements	120	EA	$ 500	$ 60,000
Pre-Design Sampling	152	EA	$ 2,500	$ 380,000
Pre-Design Sampling Subtotal				**$440,000**

Property Remediation				
Description	**Quantity**	**Unit**	**Unit Cost**	**Cost**
Site Specific Project Plans and Project Pre-Planning				
Site Specific Plans	1	LS	$ 25,000	$ 25,000
Community Involvement	1	LS	$ 25,000	$ 25,000
Site Preparation				
Mobilization (Includes Office Trailer, Temporary Utilities)	1	LS	$ 40,000	$ 40,000
Pre-Construction Survey	105	EA	$ 1,000	$ 105,000
Private Utility Locates	105	EA	$ 188	$ 19,688
Site Clearing/Tree Removal	105	EA	$ 1,500	$ 157,500
Property Excavation/Restoration				
Soil Excavation	7134	CY	$ 210	$ 1,498,140
Air Monitoring	105	EA	$ 500	$ 52,500
Lab Analysis for Disposal	105	EA	$ 500	$ 52,500
Transportation & Disposal Soil - Non-Hazardous Waste	9988	TN	$ 60	$ 599,280
General Fill	4780	CY	$ 170	$ 812,600
Topsoil Placement	2354	CY	$ 170	$ 400,180
Landscaping - Sod Installation	125528	SF	$ 2	$ 188,292
Tree/Shrub Replacement	105	EA	$ 550	$ 57,750
Sprinkler Re-Installation	105	EA	$ 2,000	$ 210,000
Post-Construction Property Survey	105	EA	$ 830	$ 87,150
Demobilization	1	LS	$ 37,400	$ 37,400
Implement Institutional Controls	1	LS	$ 11,500	$ 11,500
Bonds	1	EA	$ 80,000	$ 80,000
Property Remediation Subtotal				**$4,459,000**

Pre-Design Sampling and Property Remediation Subtotal	**$4,899,000**

Associated Planning and Construction				
Remedial Design	4%		$ 4,899,000	$ 195,960
Project Management	5%		$ 4,899,000	$ 244,950
Construction Oversight	8%		$ 4,899,000	$ 391,920
Construction Competion Report	1	LS	$ 30,000	$ 30,000
Contingencies	10%		$ 4,899,000	$ 489,900
Associated Planning and Construction Subtotal				**$1,353,000**

Total Capital Cost	**$6,252,000**

Periodic Costs				
Description	**QTY**	**UNIT**	**UNIT COST**	**TOTAL COST**
2019 5-yr Review	1	EA	$20,000	$20,000
2024 5-yr Review	1	EA	$20,000	$20,000
2029 5-yr Review	1	EA	$20,000	$20,000
2034 5-yr Review	1	EA	$20,000	$20,000
2039 5-yr Review	1	EA	$20,000	$20,000
2044 5-yr Review	1	EA	$20,000	$20,000

Present Value Analysis				
Present Value Analysis	**DISCOUNT RATE**	**1.4%**		
YEAR	**COST TYPE**	**COST**	**DISCOUNT RATE (1.4%)**	**PRESENT VALUE**
0	Capital Cost	$6,252,000	1.00	$6,252,000
5	5-yr Review	$20,000	0.93	$18,657
10	5-yr Review	$20,000	0.87	$17,404
15	5-yr Review	$20,000	0.81	$16,235
20	5-yr Review	$20,000	0.76	$15,145
25	5-yr Review	$20,000	0.71	$14,128
30	5-yr Review	$20,000	0.66	$13,179
Total Present Value				**$6,347,000**

This is not an offer for construction and/or project execution. Please note, these order of magnitude cost estimates are assumed to represent the actual installed cost within the range of - 30 percent to + 50 percent of the costs indicated. The cost estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive variable factors. Due to these factors, project feasibility and funding needs must be carefully reviewed prior to making specific decisions to help ensure proper project evaluation and adequate funding.

Assumptions

1. Property Assumptions

Assumes average exposure unit size of 1207 square feet and 68.6 cubic yards of soil to be excavated (based on average size and quantity of 30 exposure units already sampled). Excavation will not be performed under impervious surfaces.

2. Sampling Requirements

Includes pre-design sampling on an estimated 152 additional exposure units. Estimate assumes that confirmation sampling will not required after excavation. Includes two air monitoring samples per property.

3. Excavation and Disposal

All soil from residential exposure units will be disposed as non-hazardous. Assume up to 2 trees per lot will be removed (average 12-18 in diameter).

4. Site Restoration

Backfill production includes place/spread/compact, setup at each property, and relocate to the next. Backfill includes clean fill and 4 inches of topsoil. Placement of sod to expedite restoration and minimize O&M costs. Trees and shrubs will be replaced in lots only where they previously existed. Inventory taken before clearing and grubbing. Replacement of fences, repair to sidewalks, driveways and other landscape features. Also includes restoration to damaged underground utilities.

5. General Assumptions

Community outreach/communication via newspaper television, and prepare fact sheets. Two public meetings
Meeting costs include preparation, poster printing, and travel costs.

Required Subcontractor plans include, but not limited to, Work Plan/Schedule, Health & Safety Plan (HASP), and Activity Hazard Analyses (AHA), Transportation and Disposal Plan, Storm Water Pollution Prevention Plan (SWPPP), Environmental Control Plan (ECP), Spill Prevention, Control and Countermeasures (SPCC) Plan. Subcontractor home office support for project coordination and management. Assume subcontractor is located within 50 miles of the site; therefore, no per diem included. Field office trailers and related utilities. 3rd party utility locate prior to site excavation.

Clearing and grubbing - Includes removal of vegetation only: small trees and brush; removal or grinding of stumps and roots; and felling and removal of dead trees, partially dead trees and limbs, and trees and limbs that are a safety hazard to workers. Debris removal, movement of non-permanent property (swing sets, pools, fountains, etc. are the responsibility of the property owner).

Design, project management, construction oversight costs, and contingencies are estimated based on USEPA 540-R-00-002 A Guide to Developing and Documenting Cost Estimates During the Feasibility Study. Estimate contingency includes 10% scope + 10% Bid = 20%.

Alternative 2 - Offsite Disposal of Excavated Material - Commercial Property 1

January 30, 2017

Feasibility Study Construction Cost Estimate

Ten-Mile Drain Superfund Site, Saint Clair Shores, Michigan

Description - Excavation of soil exceeding PCB PRG (10 ppm) on commercial property to a maximum depth of 2 1/2 feet below ground surface, transportation and offsite disposal of excavated material, and restoration (backfill, asphalt).

Property Remediation				
Description	**Quantity**	**Unit**	**Unit Cost**	**Cost**
Site Preparation				
Site Specific Plans	1	LS	$ 5,000	$ 5,000
Mobilization (Includes Office Trailer, Temporary Utilities)	1	LS	$ 20,000	$ 20,000
Pre-Design Sampling	1	LS	$ 5,000	$ 5,000
Private Utility Locates	1	EA	$ 1,200	$ 1,200
Site Preparation	1	EA	$ 7,800	$ 7,800
Property Excavation/Restoration				
Soil Excavation	1778	CY	$ 18	$ 32,004
Post Excavation Survey	1	LS	$ 1,000	$ 1,000
Transportation & Disposal Soil - TSCA Soil	2667	TN	$ 180	$ 480,060
Air Monitoring	1	LS	$ 500	$ 500
General Fill	1185	CY	$ 29	$ 34,365
Aggregate Base - 6"	356	CY	$ 55	$ 19,580
18" RCP Storm Drain	200	LF	$ 55	$ 11,000
Replace Catch Basins	4	EA	$ 4,700	$ 18,800
Asphalt	19200	SF	$ 4	$ 76,800
Surveying	2	EA	$ 1,800	$ 3,600
Striping Allowance	1	LS	$ 1,500	$ 1,500
Property Remediation Subtotal				**$718,000**

Associated Planning and Construction				
Remedial Design	4%		$ 718,000	$ 28,720
Project Management	5%		$ 718,000	$ 35,900
Construction Oversight	8%		$ 718,000	$ 57,440
Construction Completion Report	1	LS	$ 10,000	$ 10,000
Contingencies	10%		$ 718,000	$ 71,800
Associated Planning and Construction Subtotal				**$204,000**

Total Capital Cost	**$922,000**

Periodic Costs				
Description	**QTY**	**UNIT**	**UNIT COST**	**TOTAL COST**
2019 5-yr Review - Included as Part of Residential Cost Estimate	0	EA	$20,000	$0
2024 5-yr Review - Included as Part of Residential Cost Estimate	0	EA	$20,000	$0
2029 5-yr Review - Included as Part of Residential Cost Estimate	0	EA	$20,000	$0
2034 5-yr Review - Included as Part of Residential Cost Estimate	0	EA	$20,000	$0
2039 5-yr Review - Included as Part of Residential Cost Estimate	0	EA	$20,000	$0
2044 5-yr Review - Included as Part of Residential Cost Estimate	0	EA	$20,000	$0

Present Value Analysis				
Present Value Analysis	**DISCOUNT RATE**	**1.4%**		
YEAR	**COST TYPE**	**COST**	**DISCOUNT RATE (1.4%)**	**PRESENT VALUE**
0	Capital Cost	$922,000	1.00	$922,000
5	5-yr Review	$0	0.93	$0
10	5-yr Review	$0	0.87	$0
15	5-yr Review	$0	0.81	$0
20	5-yr Review	$0	0.76	$0
25	5-yr Review	$0	0.71	$0
30	5-yr Review	$0	0.66	$0
Total Present Value				**$922,000**

Alternative 2 - Offsite Disposal of Excavated Material - Commercial Property 1

January 30, 2017

Feasibility Study Construction Cost Estimate

Ten-Mile Drain Superfund Site, Saint Clair Shores, Michigan

Description - Excavation of soil exceeding PCB PRG (10 ppm) on commercial property to a maximum depth of 2 1/2 feet below ground surface, transportation and offsite disposal of excavated material, and restoration (backfill, asphalt).

This is not an offer for construction and/or project execution. Please note, these order of magnitude cost estimates are assumed to represent the actual installed cost within the range of - 30 percent to + 50 percent of the costs indicated. The cost estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive variable factors. Due to these factors, project feasibility and funding needs must be carefully reviewed prior to making specific decisions to help ensure proper project evaluation and adequate funding.

Assumptions

1. Property Assumptions

Assumes area to be excavate is 120 x 160 feet in size and will be excavated to a depth of 2.5 feet below ground surface.

2. Sampling Requirements

Includes pre-design sampling. Estimate assumes that confirmation sampling will not be required after excavation. Includes 2 air monitoring sample

3. Excavation and Disposal

All soil from commercial property will be disposed at a TSCA landfill

4. General Assumptions

Required Subcontractor plans include, but not limited to, Work Plan/Schedule, Health & Safety Plan (HASP), and Activity Hazard Analyses (AHA), Transportation and Disposal Plan, Environmental Control Plan (ECP), Subcontractor home office support for project coordination and management. Assume subcontractor is located within 50 miles of the site; therefore, no per diem included. Field office trailers and related utilities. 3rd party utility locate prior to site excavation.

Alternative 2 - Offsite Disposal of Excavated Material - Commercial Property 2 (Additional Property)

January 30, 2017

Feasibility Study Construction Cost Estimate

Ten-Mile Drain Superfund Site, Saint Clair Shores, Michigan

Description - Excavation of soil exceeding PCB PRG (10 ppm) on commercial property to a maximum depth of 2 1/2 feet below ground surface, transportation and offsite disposal of excavated material, and restoration (backfill, topsoil, and sod).

Property Remediation				
Description	**Quantity**	**Unit**	**Unit Cost**	**Cost**
Site Preparation				
Site Specific Plans	1	LS	$ 5,000	$ 5,000
Mobilization (Includes Office Trailer, Temporary Utilities)	1	LS	$ 20,000	$ 20,000
Pre-Design Sampling	1	LS	$ 5,000	$ 5,000
Private Utility Locates	1	EA	$ 1,200	$ 1,200
Site Preparation	1	EA	$ 7,800	$ 7,800
Property Excavation/Restoration				
Soil Excavation	975	CY	$ 18	$ 17,550
Transportation & Disposal Soil - TSCA Soil	1463	TN	$ 180	$ 263,340
General Fill	650	CY	$ 29	$ 18,850
Aggregate Base - 6"	195	CY	$ 55	$ 10,725
18" RCP Storm Drain	50	LF	$ 55	$ 2,750
Replace Catch Basins	1	EA	$ 4,700	$ 4,700
Asphalt	10535	SF	$ 4	$ 42,140
Surveying	2	EA	$ 1,800	$ 3,600
Striping Allowance	1	LS	$ 1,500	$ 1,500
Property Remediation Subtotal				**$404,000**

Associated Planning and Construction				
Remedial Design	4%		$ 404,000	$ 16,160
Project Management	5%		$ 404,000	$ 20,200
Construction Oversight	8%		$ 404,000	$ 32,320
Construction Completion Report	1	LS	$ 10,000	$ 10,000
Contingencies	10%		$ 404,000	$ 40,400
Associated Planning and Construction Subtotal				**$119,000**

Total Capital Cost	**$523,000**

Periodic Costs				
Description	**QTY**	**UNIT**	**UNIT COST**	**TOTAL COST**
2019 5-yr Review - Included as Part of Residential Cost Estimate	0	EA	$20,000	$0
2024 5-yr Review - Included as Part of Residential Cost Estimate	0	EA	$20,000	$0
2029 5-yr Review - Included as Part of Residential Cost Estimate	0	EA	$20,000	$0
2034 5-yr Review - Included as Part of Residential Cost Estimate	0	EA	$20,000	$0
2039 5-yr Review - Included as Part of Residential Cost Estimate	0	EA	$20,000	$0
2044 5-yr Review - Included as Part of Residential Cost Estimate	0	EA	$20,000	$0

Present Value Analysis				
Present Value Analysis	**DISCOUNT RATE**	**1.4%**		
YEAR	**COST TYPE**	**COST**	**DISCOUNT RATE (1.4%)**	**PRESENT VALUE**
0	Capital Cost	$523,000	1.00	$523,000
5	5-yr Review	$0	0.93	$0
10	5-yr Review	$0	0.87	$0
15	5-yr Review	$0	0.81	$0
20	5-yr Review	$0	0.76	$0
25	5-yr Review	$0	0.71	$0
30	5-yr Review	$0	0.66	$0
Total Present Value				**$523,000**

Alternative 2 - Offsite Disposal of Excavated Material - Commercial Property 2 (Additional Property)

January 30, 2017

Feasibility Study Construction Cost Estimate

Ten-Mile Drain Superfund Site, Saint Clair Shores, Michigan

Description - Excavation of soil exceeding PCB PRG (10 ppm) on commercial property to a maximum depth of 2 1/2 feet below ground surface, transportation and offsite disposal of excavated material, and restoration (backfill, topsoil, and sod).

This is not an offer for construction and/or project execution. Please note, these order of magnitude cost estimates are assumed to represent the actual installed cost within the range of - 30 percent to + 50 percent of the costs indicated. The cost estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive variable factors. Due to these factors, project feasibility and funding needs must be carefully reviewed prior to making specific decisions to help ensure proper project evaluation and adequate funding.

Assumptions

1. Property Assumptions

Assumes area to be excavate is 120 x 160 feet in size and will be excavated to a depth of 2.5 feet below ground surface.

2. Sampling Requirements

Includes pre-design sampling. Estimate assumes that confirmation sampling will not be required after excavation. Includes 2 air monitoring samples.

3. Excavation and Disposal

All soil from commercial property will be disposed at a TSCA landfill.

4. General Assumptions

Required Subcontractor plans include, but not limited to, Work Plan/Schedule, Health & Safety Plan (HASP), and Activity Hazard Analyses (AHA), Transportation and Disposal Plan, Environmental Control Plan (ECP), Subcontractor home office support for project coordination and management. Assume subcontractor is located within 50 miles of the site; therefore, no per diem included. Field office trailers and related utilities. 3rd party utility locate prior to site excavation.

APPENDICES

APPENDIX A

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR
ST. CLAIR SHORES DRAIN SITE
ST. CLAIR SHORES, MACOMB COUNTY, MICHIGAN

ORIGINAL
FEBRUARY 1, 2006

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	05/00/05	Weston Solutions Of Michigan, Inc.	MDEQ	Work Plan for Source Area Investigation Activities at the Ten Mile Drain Site	59
2	10/00/05	Weston Solutions Of Michigan, Inc.	MDEQ	April-May 2005 Site Investigation Report and Focused Feasibility Study at the St. Clair Shores Drain Site, Volume II	192
3	11/15/05	Podolski, K., City of St. Clair Shores	Kimble, J., U.S. EPA	Letter re: MCPWC and the Recontamination of the Lange/Revere Canals w/Attached Timeline of Events at the 10-Mile Drain Remediation Project	10
4	01/03/06	Kimble, J., U.S. EPA	Berak, R., MDEQ	Letter re: U.S. EPA's Request that MDEQ Identify All ARARs for the Proposed Removal Action at the St. Clair Shores PCB Drain Site	1
5	02/01/06	Kimble, J., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum: Request for a Time Critical Removal Action at the St. Clair Shores Drain Site (PORTIONS OF THIS DOCUMENT HAVE BEEN REDACTED)	16

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR
TEN MILE DRAIN SITE
ST. CLAIR SHORES, MACOMB COUNTY, MICHIGAN

ORIGINAL
JUNE 30, 2011
(SDMS ID: 405229)

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	2002-2003	U.S. EPA	Public	Administrative Record for Removal Action (Original-Update #4) at the Ten Mile Drainage System PCB Site (DOC-UMENTS CONTAINED ON THE INDEX ARE INCORPORATED BY REFERENCE INTO THE REMEDIAL AR FOR THE TEN MILE DRAIN SITE) **(SDMS ID: 167738)**	3
2	02/01/06	U.S. EPA	Public	Administrative Record for Removal Action at the St. Clair Shores Drain Site (DOCUMENTS CONTAINED ON THE INDEX ARE INCORPORATED BY REFERENCE INTO THE REMEDIAL AR FOR THE TEN MILE DRAIN SITE) **(SDMS ID: 249256)**	1
3	12/03/09	MDEQ	File	Site Inspection Report for the St. Clair Shores Drain Site **(SDMS ID: 355378)**	387
4	03/00/10	U.S. EPA	File	HRS Documentation Record for the St. Clair Shores Drain Site **(SDMS ID: 355373)**	41
5	06/08/10	Kozel, L., Weston Solutions, Inc.	Kimble, J., U.S. EPA	Letter re: Bon Brae/ Harper Site Removal Action w/ Attachments **(SDMS ID: 405228)**	290
6	03/18/11	CH2M Hill	U.S. EPA	Technical Memorandum re: Interim Action Measures for PCB Oil/Sediment Monitoring and Removal **(SDMS ID: 405221)**	5
7	03/24/11	Environmental Consulting & Technology, Inc.	File	Maps: Sediment Sampling Results May 2010 - February 2011 **(SDMS ID: 394563)**	7

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
8	05/00/11	Environmental Consulting & Technology, Inc.	File	Map: Ten Mile Drain Sediment Results Total PCBs **(SDMS ID: 405227)**	1
9	05/03/11	DeMaria, A., Environmental Consulting & Technology, Inc.	Babcock, B., City of St. Clair Shores	Memorandum re: 10 Mile Drain Sampling Summary **(SDMS ID: 394565)**	22
10	06/09/11	DeMaria, A., Environmental Consulting & Technology, Inc.	Babcock, B., City of St. Clair Shores	Memorandum re: 10 Mile Drain Sampling Summary **(SDMS ID: 405220)**	19

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR
TEN MILE DRAIN SITE
ST. CLAIR SHORES, MACOMB COUNTY, MICHIGAN

SUPPLEMENT #3 TO THE ADMINISTRATIVE RECORD
SEPTEMBER 30, 2011
(SDMS ID: 405572)

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	09/30/11	Wyant, D., MDEQ	Karl, R., U.S. EPA	Letter re: MDEQ Concur- with the Interim Record of Decision for the Ten Mile Drain Site **(SDMS ID: 405571)**	3

U.S. Environmental Protection Agency
Remedial Action

Administrative Record
For
Ten Mile Drain
St. Clair Shores, Macomb County, Michigan

Supplement 4
November 22, 2013
SEMS ID: 910260

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	407524	2/1/11	CH2M Hill	U.S. EPA	Health and Safety Plan	150
2	407523	3/1/11	CH2M Hill	U.S. EPA	Sampling and Analysis Plan	221
3	423797	1/1/12	CH2M Hill	U.S. EPA	2011 Source Area Investigation Report	401
4	434534	4/1/12	Environmental Quality Management	U.S. EPA	Field Sampling Plan and Quality Assurance Project Plan for Source Control Activities	174
5	906789	5/22/12	Environmental Quality Management	U.S. EPA	May 2012 Oil and Sediment Results	1
6	906788	5/31/12	Doan, J., Environmental Quality Management	Moynihan, C., U.S. EPA	April 2012 Inspection and Sampling Report	47
7	906797	11/20/12	Environmental Quality Management	U.S. EPA	November 2012 Oil and Sediment Results	1
8	906798	12/20/12	Environmental Quality Management	U.S. EPA	December 2012 Oil and Sediment Results	1
9	906808	1/21/13	Corbin, E., Environmental Quality Management	Moynihan, C., U.S. EPA	Quarterly Inspection Report for July through September 2012	113
10	906800	1/28/13	Environmental Quality Management	U.S. EPA	January 2013 Oil and Sediment Results	1

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
11	906801	2/13/13	Environmental Quality Management	U.S. EPA	February 2013 Oil and Sediment Results	1
12	906802	3/13/13	Environmental Quality Management	U.S. EPA	March 2013 Oil and Sediment Results	1
13	906803	4/13/13	Environmental Quality Management	U.S. EPA	April 2013 Oil and Sediment Results	1
14	906805	5/23/13	Environmental Quality Management	U.S. EPA	May 2013 Oil and Sediment Results	1
15	906804	6/18/13	Environmental Quality Management	U.S. EPA	June 2013 Oil and Sediment Results	1
16	460908	7/3/13	Corbin, E., Environmental Quality Management	Moynihan, C., U.S. EPA	Quarterly Inspection and Sampling Report for October through December 2012	139
17	907163	8/1/13	Corbin, E., Environmental Quality Management	Moynihan, C., U.S. EPA	Quarterly Inspection and Sampling Report for January through March 2013	157
18	910257	8/15/13	Environmental Quality Management	U.S. EPA	July 2013 Oil and Sediment Results	1
19	910258	9/11/13	Environmental Quality Management	U.S. EPA	August 2013 Oil and Sediment Results	1
20	909029	10/1/13	CH2M Hill	U.S. EPA	Final Focused Feasibility Study for Vaulted Manholes	74
21	910259	10/21/13	Environmental Quality Management	U.S. EPA	September 2013 Oil and Sediment Results	1

U.S. Environmental Protection Agency
Remedial Action

Administrative Record
for the
Ten-Mile Drain Site
St. Clair Shores, Macomb County, Michigan

Supplement 5
April 11, 2014
SEMS ID: 911828

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	910156	11/1/13	U.S. EPA	Public	Proposed Plan for Cleanup at the Ten-Mile Drain Site	41
2	910155	11/2/13	U.S. EPA	Public	Fact Sheet: Interim Plan Proposed for Cleanup of PCBs	8
3	467809	12/12/13	Jensen Litigation Solutions	U.S. EPA	Transcript of Public Meeting for Proposed Plan	45
4	467808	1/1/14	Public	U.S. EPA	Public Comment Sheets for the Proposed Plan	9

U.S. Environmental Protection Agency
Remedial Action

Administrative Record
for the
Ten-Mile Drain Site
St. Clair Shores, Macomb County, Michigan

Supplement 6
April 30, 2014
SEMS ID: 911182

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	912276	12/17/13	Environmental Quality Management	U.S. EPA	Source Control Activities: Oil and Sediment Results	1
2	912277	2/18/14	Environmental Quality Management	U.S. EPA	Source Control Activities: Oil and Sediment Results	1

U.S. Environmental Protection Agency
Remedial Action

Administrative Record
for the
Ten-Mile Drain Site
St. Clair Shores, Macomb County, Michigan

Supplement 7
May 29, 2014
SEMS ID: 912024

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	912023	5/29/14	Wyant, D., MDEQ	Karl, R., U.S. EPA	Letter re: Record of Decision Concurrence	2

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR THE
TEN-MILE DRAIN SITE
ST CLAIR SHORES, MACOMB COUNTY, MICHIGAN

SUPPLEMENT 8
SEPTEMBER 12, 2016
SEMS ID: 929425

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	479104	9/10/15	Frey, R., U.S. EPA	Moynihan, C., U.S. EPA	Email re: Ten Mile Drain Interim Action- Remove and Replace Vaults	8
2	479105	9/10/15	Frey, R., U.S. EPA	Moynihan, C., U.S. EPA	Email re: Ten Mile Drain SSC Amendment Needed	3

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR THE
TEN-MILE DRAIN SITE
ST CLAIR SHORES, MACOMB COUNTY, MICHIGAN

SUPPLEMENT 9
SEPTEMBER 23, 2016
SEMS ID: 928423

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	508881	9/20/16	Ballotti, D., U.S. EPA	File	Explanation of Significant Differences (ESD)	18
2	928424	9/23/16	Kline, D., MDEQ	Ballotti, D., U.S. EPA	MDEQ Letter Re: Concurrence with the Explanation of Significant Differences	2

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR THE
TEN-MILE DRAIN SITE
ST CLAIR SHORES, MACOMB COUNTY, MICHIGAN

SUPPLEMENT 10
JUNE 11, 2018
SEMS ID: 939101

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	939082	8/9/04	Augustyn, J., U.S. EPA	File	Federal on Scene Coordinator's (OSC) Report ***(Redacted)***	46
2	939083	7/9/04	Kimble, J., U.S. EPA	Mankowski, M., U.S. EPA	Memo re: Completion of PCB Removal Activities by SFD, ERB1, RS1 ***(Redacted)***	86
3	922686	10/1/17	Weston Solutions of Michigan Inc.	MI Dept. of Environmental Quality	April-May 2005 Site Investigation Report & Focused Feasibility Study - Vol. 1-2 (Reference #8) (Redacted Version)	189
4	922687	6/8/10	Kozel, L., Weston Inc.	Kimblel, J., U.S. EPA	Letter re: Bon Brae/Harper Site Removal Action W/ Attachments (Redacted Version)	288
5	939080	8/8/14	Kozel, L., Tetra Tech, Inc.	Lippert, J., U.S. EPA	***(Redacted)*** Removal Letter Report for St Clair Shores PCB Drain Removal #2 ***(Redacted)***	23
6	939079	2/1/16	CH2M Hill, Inc.	U.S. EPA	Human Health Risk Assessment ***(Redacted)***	426
7	939089	2/1/16	CH2M Hill, Inc.	U.S. EPA	Final Screening-Level Ecological Risk Assessment ***(Redacted)***	61
8	932384	9/1/16	CH2M Hill, Inc.	File	Final Remedial Investigation Report (Redacted Version)	1562
9	932458	2/16/17	Fusinski, K., U.S. EPA	Moynihan, C., U.S. EPA	Memo re: Technical Review of PCB Cleanup Level in Residential Yards & Parkways	2
10	935045	7/11/17	CH2M Hill, Inc.	U.S. EPA	Technical Memo re: Preliminary Remediation Goal for PCBs in Utility Corridor Soil	4

11	939077	8/1/17	CH2M Hill, Inc.	U.S. EPA	Final Feasibility Study (Revision 1)	62
12	939078	1/29/18	Flaga, C., MDEQ	Ferris, J., MDEQ	Memo re: Review of Utility Preliminary Remediation Goal for PCBs in Utility Corridor Soil at Ten Mile Drain	2
13	940536	4/1/18	U.S. EPA	Public	Proposes PCB Cleanup Plan for Contaminated Soil - Fact Sheet	8
14	940537	4/1/18	U.S. EPA	Public	Proposed Plan - Near Surface Soils	38
15	941021	5/8/18	Nichols, D., Triangle Development Services (Shores) LLC	Leon, H., U.S. EPA	Letter Re: Ten Mile Drain Superfund Site Comments - St. Clair Shores, Michigan	2
16	941016	5/10/18	Lexitas	File	Report of Proceeding - EPA Proposes Cleanup Plan - Public Meeting	4
17	941017	5/10/18	Lexitas	File	Report of Proceeding - EPA Proposes Cleanup Plan - Public Meeting	8
18	941018	5/10/18	U.S. EPA	Residents	Public Comments on Proposed Cleanup Plan for Investigation Areas 1 and 2 of the Ten-Mile Drain Site	1
19	941427	5/10/18	U.S. EPA	Residents	Public Comments on Proposed Cleanup Plan for Investigation Areas 1 and 2 of the Ten-Mile Drain Site	2
20	941019	5/24/18	Leon, H., U.S. EPA	Residents	Email Re: 10 Mile Drain Site - Saint Clair Shores, MI	1
21	941020	5/24/18	Leon, H., U.S. EPA	Residents	Email Re: Ten-Mile Drain - Saint Clair Shores - Michigan	2

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR THE
TEN-MILE DRAIN SITE
ST CLAIR SHORES, MACOMB COUNTY, MICHIGAN

SUPPLEMENT 11
SEPTEMBER 12, 2018
SEMS ID: 943736

NO.	SEMS ID	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	943749	9/7/18	Grether, H., MDEQ	Moynihan, C., U.S. EPA	Letter re: Concurrence - Record of Decision (ROD) - Residential and Commercial Surface Soil Removals	2

APPENDIX B

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

RICK SNYDER
GOVERNOR

C. HEIDI GRETHER
DIRECTOR

September 7, 2018

Ms. Colleen Moynihan
United States Environmental Protection Agency
Region 5, Cleveland Office
25063 Center Ridge Road
Westlake, Ohio 44145

Dear Ms. Moynihan:

SUBJECT: Concurrence – Record of Decision
Residential and Commercial Surface Soil Removals
Ten Mile Drain Site, St. Clair Shores, Macomb County, Michigan

The Michigan Department of Environmental Quality (MDEQ) has reviewed the Record of Decision (ROD) for the Residential and Commercial Surface Soil Removals for the Ten Mile Drain (TMD) Superfund Site in St. Clair Shores, Macomb County, Michigan. The MDEQ formally concurs with the remedy selected by the United States Environmental Protection Agency (USEPA) in this ROD.

In September 2010, the TMD Site was added to the National Priorities List. This ROD addresses the PCB contamination in the surface soils located on various residential and commercial properties in the TMD storm sewer system along with properties along the Lange and Revere Street Canals. The selected action is to excavate the PCB contaminated soils and dispose of them at an off-site location. The PCB contamination located within the actual storm sewer system and the impacted sediments in the Lange and Revere Street Canals will be addressed as part of a future decision document for the TMD Site.

The response action selected in this ROD is necessary to eliminate the potential direct contact exposures associated with the contaminated surface soils.

If you have any questions, please contact Ms. Jessica Ferris, Superfund Section, Remediation and Redevelopment Division, at 517-284-5130; ferrisj6@michigan.gov; or MDEQ, P.O. Box 30426, Lansing, Michigan 48909-7926; or you may contact me.

Sincerely,

C. Heidi Grether

C. Heidi Grether
Director
517-284-6700

cc: Ms. Rebecca Frey, USEPA, Region 5
Ms. Joan Tanaka, USEPA, Region 5
Mr. Aaron B. Keatley, Chief Deputy Director, MDEQ
Ms. Susan Leeming, MDEQ
Ms. Kathy Shirey, MDEQ
Mr. David A. Kline, MDEQ
Mr. Robert L. Franks, MDEQ
Ms. Jessica Ferris, MDEQ

APPENDIX C

Table A
Cancer Toxicity Data Summary
Remedial Investigation/Feasibility Study
Ten Mile Drain, St. Clair Shores, Michigan

Pathway: Ingestion, Dermal

Chemical of Concern	Oral Cancer Slope Factor	Dermal Cancer Slope Factor(1)	Slope Factor Units	Weight of Evidence/Cancer Guideline Description	Source	Date (MM/DD/YYYY)
Non-Dioxin Like PCBs (2)	2.0E+00	2.0E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS (RSL)	05/12/2013
PCB TEQ (Dioxin-Like PCBs) (3)	1.3E+05	1.3E+05	$(mg/kg\text{-}day)^{-1}$	NA	Cal EPA (RSL)	05/12/2013
Total PCBs (4)	2.0E+05	2.0E+05	$(mg/kg\text{-}day)^{-1}$	B2	IRIS (RSL)	05/12/2013

Pathway: Inhalation

Chemical of Concern	Unit Risk	Units	Inhalation Cancer Slope Factor	Units	Weight of Evidence/Cancer Guideline Description	Source	Date (MM/DD/YYYY)
Total PCBs (4)	5.7E-04	$(\mu g/m^3)^{-1}$	--	--	B2	IRIS (RSL) (5)	05/12/2013

NA = not applicable
EPA = United States Environmental Protection Agency
IRIS = Integrated Risk Information System
Cal EPA = California Environmental Protection Agency
mg/kg-day = milligram per kilogram-day
$\mu g/m^3$ = microgram per cubic meter
PCB = polychlorinated biphenyl
TEQ = dioxin toxicity equivalence
-- = No information available
B2 = Probable human carcinogen agent for which there is sufficient evidence of carcinogenicity in animals but inadequate or a lack of evidence in humans
(1) Source: Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Section 4.2 and Exhibit 4-1. USEPA recommends that the oral RfD should not be adjusted to estimate the absorbed dose for compounds when the absorption efficiency is greater than 50%. Constituents that do not have oral absorption efficiencies reported on this table were assumed to have an oral absorption efficiency of >50%.
(2) Non-dioxin-like PCBs = Sum of all PCB congener concentrations - Sum of dioxin-like-PCB congener concentrations.
(3) PCB TEQ = 2,3,7,8 TCDD toxic equivalent concentration; calculated for detected dioxin-like PCB congeners only and is sum of the products (concentration multiplied by toxic equivalency factor per congener).
(4) Total PCBs = Sum of individual Aroclor concentrations.
(5) RSL = As cited in EPA Regional Screening Level Table

Table B
Non-Cancer Toxicity Data Summary
Remedial Investigation/Feasibility Study
Ten Mile Drain, St. Clair Shores, Michigan

Pathway: Ingestion, Dermal

Chemical of Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Dermal RfD	Dermal RfD Units	Primary Target Organ	Combined Uncertainty Modifying Factors	Sources of RfD:Target Organ	Dates of RfD:Target Organ (MM/DD/YYYY)
Non-Dioxin Like PCBs (1)	Chronic	2.00E-05	mg/kg-day	2.0E-05	mg/kg-day	Fingernails, Eyes	300	IRIS	07/23/2014
PCB TEQ (Dioxin-Like PCBs) (2)	Chronic	7.00E-10	mg/kg-day	7.0E-10	mg/kg-day	Testes, Development	30	IRIS	07/23/2014
Total PCBs (3)	Chronic	2.00E-05	mg/kg-day	2.0E-05	mg/kg-day	Fingernails, Eyes	300	IRIS	07/23/2014

Pathway: Inhalation

Chemical of Concern	Chronic/ Subchronic	Inhalation RfC	Inhalation RfC Units	Inhalation RfD	Inhalation RfD Units	Primary Target Organ	Combined Uncertainty Modifying Factors	Sources of RfC:RfD:Target Organ	Dates (MM/DD/YYYY)
Total PCBs (3)	Chronic	NA	NA	NA	NA	NA	NA	NA	NA

NA = not applicable
IRIS = Integrated Risk Information System
mg/kg-day = milligram per kilogram-day
RfC = reference concentration
RfD = reference dose
PCB = polychlorinated biphenyl
TEQ = dioxin toxicity equivalence
(1) Non-dioxin-like PCBs = Sum of all PCB congener concentrations - Sum of dioxin-like-PCB congener concentrations.
(2) PCB TEQ = 2,3,7,8 TCDD toxic equivalent concentration; calculated for detected dioxin-like PCB congeners only and is sum of the products (concentration multiplied by toxic equivalency factor per congener).
(3) Total PCBs = Sum of individual Aroclor concentrations.

Table C
Risk Characterization Summary - Carcinogens
Remedial Investigation/Feasibility Study
Ten Mile Drain, St. Clair Shores, Michigan

Scenario Timeframe:		Current					
Receptor Population:		Resident					
Receptor Age:		Aggregate Adult/Child					
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil (0-2 ft) and Total Soil (0-3 ft)	Surface Soil (Parkway) and Total Soil (Yard)	Total PCBs	NA	NA	NA	NA
Soil	Total Soil (0-7 ft)	Martin Drain Yard	Total PCBs	NA	NA	NA	NA
Scenario Timeframe:		Current/Future					
Receptor Population:		Utility Worker					
Receptor Age:		Adult					
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Total Soil (0-10 ft)	Utility Corridor along Bon Brae Street	Total PCBs	NA	NA	NA	NA
Soil	Total Soil (0-10 ft)	Utility Corridor along Lakeland Street	Total PCBs	NA	NA	NA	NA
Soil	Total Soil (0-10 ft)	Martin Drain Utility Corridor along Bon Brae Street	Total PCBs	NA	NA	NA	NA
Scenario Timeframe:		Current/Future					
Receptor Population:		Commercial Worker					
Receptor Age:		Adult					
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Total Soil (0-10 ft)	Commercial property parking lot at the corner of Harper Avenue and Lakeland Street	Total PCBs	NA	NA	NA	NA

ft = feet

NA = not applicable; carcinogenic risk estimates are within the target risk range ($1x10^{6}$ to $1x10^{-4}$). PCBs were identified as chemicals of concern based on non-cancer risk estimates.

PCB = polychlorinated biphenyl

Table D
Risk Characterization Summary - Non-Carcinogens
Remedial Investigation/Feasibility Study
Ten Mile Drain, St. Clair Shores, Michigan

Scenario Timeframe:	Current							
Receptor Population:	Resident							
Receptor Age:	Aggregate Adult/Child							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil (0-2 ft) and Total Soil (0-3 ft)	Surface Soil (Parkway) and Total Soil (Yard)	Total PCBs	Fingernails, Eyes	2.6E+00	NA	6.7E-01	3E+00
Soil	Total Soil (0-7 ft)	Martin Drain Yard	Total PCBs	Fingernails, Eyes	2.6E+00	NA	6.7E-01	3E+00
Scenario Timeframe:	Current/Future							
Receptor Population:	Utility Worker							
Receptor Age:	Adult							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Total Soil (0-10 ft)	Utility Corridor along Bon Brae Street	Total PCBs	Fingernails, Eyes	1E+01	NA	4E+00	1E+01
Soil	Total Soil (0-10 ft)	Utility Corridor along Lakeland Street	Total PCBs	Fingernails, Eyes	3E+00	NA	1E+00	4E+00
Soil	Total Soil (0-10 ft)	Martin Drain Utility Corridor along Bon Brae Street	Total PCBs	Fingernails, Eyes	2E+01	NA	1E+01	3E+01
Scenario Timeframe:	Current/Future							
Receptor Population:	Commercial Worker							
Receptor Age:	Adult							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Total Soil (0-10 ft)	Commercial property parking lot at the corner of Harper Avenue and Lakeland Street	Total PCBs	Fingernails, Eyes	not calculated (1)	NA	not calculated (1)	not calculated (1)

ft = feet
MDEQ = Michigan Department of Environmental Quality
NA = not applicable
PCB = polychlorinated biphenyl
(1) PCB concentrations beneath the parking lot are orders of magnitude higher than MDEQ's direct contact criteria for commercial properties and the risk exceeds an HI of 1.