Current Conditions Report

Pontiac North Campus
Volume I of IV

General Motors Corporation
Pontiac, Michigan

January 31, 2001

ENCORE

January 30, 2001

Mr. Peter Ramanauskas
United States Environmental Protection Agency
Region V
77 West Jackson Street
Chicago, ILL 60604-3590
DW-8J

Re: Voluntary Corrective Action Agreement GM Pontiac North Campus

Dear Mr. Ramanauskas

In accordance with the above captioned agreement I am forwarding the Current Conditions Report prepared by General Motors Corporation. As we discussed I am forwarding one copy, should you require additional copies please contact me.

Sincerely,

Keith West/mw

G. Keith West

encl

C: Jean Caufield w/attach
Anthony Thrubis w/attach

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1. Introduction

1.1 General

This Current Conditions Report (CCR) for the Pontiac North Campus, Pontiac, Michigan Site was prepared by ENCORE Environmental Consortium, LLC (EEC) (a consortium consulting group consisting of Blasland, Bouck, & Lee, Inc. [BBL], Conestoga-Rovers & Associates [CRA], and Haley and Aldrich, Inc.) for Environmental Corporate Remediation (ENCORE), a wholly-owned subsidiary of General Motors Corporation (GM, GMC).

On October 10, 2000, the U.S. Environmental Protection Agency (USEPA) and GM entered into a Voluntary Corrective Action Agreement for the GM Pontiac North Campus (hereafter referred to as the "Site"). The agreement calls for GM to work independently and voluntarily to investigate and, as necessary, stabilize and remediate releases of hazardous wastes or hazardous constituents at or from the Site in accordance with the Resource Conservation and Recovery Act (RCRA) and relevant USEPA corrective action guidance documents. This report was prepared and is submitted in accordance with Section V(1)(a) of the Voluntary Corrective Action Agreement.

The Site encompasses approximately 595 acres in the northwest quadrant of the City of Pontiac (Figure 1-1). This report covers four facilities, including:

- Chevrolet-Pontiac-Canada Group (CPC) Pontiac Fiero Assembly Plant (formerly GMC Fisher Body Division – Pontiac; USEPA ID No. MID 005356910);
- GMC Central Foundry Division - Pontiac Plant (USEPA ID No. MID 085470102);
- CPC - Pontiac (USEPA ID No. MID 005356886); and
- GMC Warehousing and Distribution Division (USEPA ID No. MID 076331289).

Each of these facilities is shown on Figure 1-2. Because Site operations have changed significantly in recent years, this report has grouped the operations according to current activities as follows:

- Fiero;
- Demolition Area (DA);
- Metal Fabrication Division (MFD);
- Powertrain; and
- Service Parts Operations (SPO).

Each of these operational areas are shown on Figure 1-3. Figure 1-4 provides an overlay of the facilities with the operational areas. A sixth sitewide area consists of the storm sewer system.

A wide range of automotive-related production processes have been performed at the Site since 1925, including car assembly, engine assembly, plating, heat treating, painting, metal stamping, machining, foundry operations, metal casting, and wastewater treatment operations.

1.2 Areas of Interest

Historically, two documents have been prepared regarding Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs). The first document, titled *Certification Regarding Potential Releases from Solid Waste Management Units, CPC Pontiac Facility (USEPA ID No. MID 005356886)*, was completed by GM at the request of the USEPA in February 1986 (GM, 1986c) (Appendix A). This survey included the current MFD, Powertrain, and portions of the DA operational areas and identified seven SWMUs.

The second document, a report entitled *Preliminary Assessment/Visual Site Inspection* (PA/VSI) *Report, General Motors Corporation, Pontiac Fiero Plant, Pontiac, Michigan* (hereafter referred to as the Fiero PA/VSI Report), was prepared in February 1992 by PRC Environmental Management, Inc. (PRC), under contract to the USEPA (PRC, 1992) (Appendix A). The Fiero PA/VSI Report identified a total of 11 SWMUs and/or other AOCs at Fiero (MID 005356910). PA/VSIs have not been performed at the other three facilities.

For the purpose of this RCRA Corrective Action at the Site, areas identified during prior investigations using terms such as SWMUs and AOCs have been re-identified using the single term Area of Interest (AOI).

Presented within this CCR are a total of 64 AOIs, which were identified in the following manner:

- Seven SWMUs identified by GM in the 1986 *Certification Regarding Potential Releases from Solid Waste Management Units* (GM, 1986c);
- 11 SWMUs identified by PRC in the Fiero PA/VSI Report (PRC, 1992); and
- 46 other AOIs identified by GM as a result of a thorough review of historical GM files, Freedom of Information Act (FOIA) requests to regulatory agencies, discussions with GM personnel, and multiple Site walkthroughs.

A description of each AOI is provided in Section 6 of this report.

1.3 Purpose and Scope

The purpose and scope of this report is to provide the following:

- Brief overview of the pertinent features of the Site;
- Brief summary of the regional setting of the Site;
- Review of available information concerning the current and historical uses of the Site for the treatment, storage, or disposal of hazardous wastes or hazardous constituents;
- Summary of previous investigations;
- Summary of remedial activities conducted at the Site;
- Identification of any AOIs that may warrant further investigation or evaluation; and
- Justification for no further action at other AOIs identified in this report that do not warrant further investigation or evaluation.

1.4 Document Organization

This document is organized into six main sections. Section 1 presents the background, purpose, and organization of the document. Section 2 presents a brief description of the Site, including Site location, historical and current operations, and historical and current waste management practices. Section 3 presents regional information pertaining to the Site, including surrounding land use, demographics, climate, geology, hydrogeology, and hydrology. Section 4 presents a listing of previous investigations conducted at the Site. Section 5 presents a listing of remedial actions conducted at the Site. Finally, Section 6 presents a description and summary of the various AOIs, organized by operational area. A list of references and acronyms used in the report are provided following Section 6.

Tables, figures, and appendices referenced throughout this document provide additional supporting information.

2. Description of Site

This section provides a general description of the Site location, historical and current operations at the Site, a review of historical topographic and Sanborn maps and aerial photographs, RCRA regulatory history, and historical and current waste management practices.

2.1 Site Location

Comprising approximately 595 acres, the Site is located in the City of Pontiac, Oakland County, Michigan (see Figure 1-1). The Site is bounded to the south by Montcalm Street, to the west by Baldwin Avenue and the Grand Trunk Western Railroad Line, to the east by Joslyn Avenue and a plant service road, and to the north by Walton Boulevard and the Grand Trunk Western Railroad Line. Surrounding areas consist of residential subdivisions and mixed commercial and light industrial use properties.

2.2 Current and Historical Operations

This subsection contains information regarding current and historical operations at each of the five operational areas at the Site as shown on Figure 1-3. Information regarding the Site prior to development in 1924 was not available.

Historically, a wide range of automotive-related production processes, including car assembly, engine assembly, plating, heat treating, painting, metal stamping, machining, foundry operations, metal casting, and wastewater treatment activities, have been performed at the Site. Currently, the Site is used for metal fabrication, warehousing, and engineering. Many of the plants have changed designations during the life of the facility. Table 2-1 presents a summary of historical and current plant designations and associated activities. The locations of the plants, with current designations, are shown on Figure 1-3.

2.2.1 Fiero

The Fiero operational area consists of approximately 81 acres located at the southwestern portion of the Site (Figure 1-3) and includes Plant 17. Currently, this area is used for prototyping, storage, and other non-production purposes.

Operations began at the Fiero facility in 1925 as the GMC Fisher Body Plant. This plant supplied closed-type automotive bodies for the Oakland Motor Car Company, located at the Site. In 1932, the Oakland Motor Car Company became the Pontiac Motor Division. In 1935, the original GMC Fisher Body Plant, located at the Site, combined operations with the GMC Fisher Body Pontiac Plant with operations consisting of metal fabrication, soft trim fabrication, and body assembly. In 1942, operations at the Fiero facility converted to defense production work, which included production of military vehicle parts.

The facility was modernized to a two-line automotive assembly operation from 1959 to 1961. In August 1982, the facility ceased operations, and the Pontiac Motor Division took possession of the Site and renamed it Fiero. From 1983 to 1988, the Pontiac Fiero was assembled in Plant 17 on a one-car assembly line. The plant was divided into a body shop, chassis department, paint shop, and trim department. Fiero assembly operations ceased in August 1988. Since 1988, the facility has been used for various non-production purposes, including storage and prototyping.

Current and historical wastes generated from car assembly at Fiero may have included scrap metal and metalworking fluids and oils (petroleum-based, oil-water emulsions, or synthetic emulsions), paints, paint solvents, and plasticizers. A wastewater treatment plant was in operation at the Site from 1973 to 1983 and managed wastewater, wastewater treatment sludge, paint sludge, and bonderite sludge.

2.2.2 Demolition Area (DA)

The DA consists of approximately 48 acres of the south-central portion of the Site. There are currently no buildings or operations within the DA portion of the Site. The three former main operational buildings (the Foundry [Plant 6], Final Vehicle Assembly [Plant 8], and Engine Construction [Plant 9]) were demolished in 1995, 1997, and 1997, respectively. Since 1996, the DA has been the subject of ongoing soil and groundwater investigations and various interim measures that will be discussed in Section 6. The former plant locations are shown on Figure 1-3.

Construction of the Foundry (Plant 6) and Final Vehicle Assembly Plant (Plant 8) took place from 1927 to 1929. During this time, operations within these plants included production of parts and cars for the Oakland Motor Car Company. Expansions of the Foundry took place in 1937, 1940, 1941, 1945, 1946, 1957, and 1962. Expansions to Plant 8 took place in 1956, 1960, 1962, 1963, 1964, and 1970. Fisher Body Division commenced construction of the Engine Construction Building (Plant 9) in 1925, with construction completed by the mid-1930s. Expansions to Plant 9 took place in 1945, 1954, 1959, and 1967. In 1987, operations in Plants 6, 8, and 9 ceased. Plant 6 was demolished in 1995, and Plants 8 and 9 were demolished in 1997.

West of the Foundry (Plant 6) is an area referred to as the West Yard (see Figure 1-3). The West Yard was used for material disposal activities, including foundry sand disposal, refuse disposal, sludge dumping, and trash burning. An area designated as the Railroad Marshalling Area, located along the western side of the West Yard, was used for temporary storage of railcars loaded with scrap metal prior to being shipped off site. Also located in the West Yard were the Flammable Liquids Storage Building, the Compressor Building, and the Salvage Building. The Salvage Building, which included a refuse incinerator, was constructed in 1945 to separate reusable material from unusable wastes. The Salvage Building was demolished in 1998. The Compressor Building was constructed in the early 1970s and subsequently demolished in 1998. Also located in this area are the Montcalm Substation and the former crane bay.

In the 1970s, the West Yard was divided between two GM business units. The eastern and central portion of the West Yard became a portion of the Central Foundry Division, and the western area became property of the Automotive Manufacturing and Support Operations (Pontiac Motor Division, later CPC). In 1982, CPC constructed a Hazardous Waste Storage Pad to store hazardous waste for periods greater than 90 days. Closure activities for the Hazardous Waste Storage Pad were initiated in July 1988 by CPC.

Current and historical wastes generated in the DA may have included wastewater (which may have contained cadmium and lead), calcium carbide desulfurization slag, baghouse dust, and foundry sand. Additionally, solvents may have been used for cleaning.

2.2.3 Metal Fabrication Division (MFD)

The MFD area consists of approximately 236 acres in the center of the Site (Figure 1-3). It also represents the most active area of the Site with regard to current manufacturing operations. Plants currently located in the MFD area include Plants 5, 11, 12, 14, 15, 23, 25, 33, 49, 56, and ELPO (electrodeposition). Also present in the MFD area is a wastewater treatment plant (WWTP), which is located directly west of Plants 5 and 23. The locations of each of these plants and the WWTP are shown on Figure 1-3. Table 2-1 provides a cross-reference of historical and current plant numbers.

Plant 11 currently is used for repair work and maintenance activities. Plants 12 and 56 are vacant in preparation for demolition. Plants 14, 15, 49, and the eastern portion of Plants 5 and 23 house pressed metal operations, maintenance operations, and other support activities. The eastern portion of Plants 5 and 23 also houses axle and differential operations. The western portion of Plants 5 and 23 is used to store miscellaneous machine parts and also contains a waste storage and accumulation area. Plants 25 and 33 are undergoing renovation.

A significant portion of the MFD area is covered with paved parking areas, roadways, pallet storage areas, and truck trailer storage areas.

Plants 5 and 56 were originally constructed in 1927 and were used for the storage and final shipping of automobiles for the Oakland Motor Car Company. By 1945, Plant 56, originally designated Plant 2, had been converted for metal plating operations, and Plant 5 had been converted for axle operations. Metal plating operations at Plant 56 ceased in 1987. Plant 11, originally designated as Plant 1, was constructed in 1945 as the heat treating plant. Expansions to these buildings took place in 1958, 1963, 1964, 1966, and 1969, with Plant 5 subsequently being subdivided into Plants 5 and 23.

The Car Storage and Shipping Building (Plant 12) was constructed from 1950 to 1951 and was expanded in 1963. Two pressed metal plants (Plant 14 and Plant 15) were added in 1951 and 1952, respectively. Plant 14 was expanded in 1966. Plant 15 was expanded in 1954 and 1966. The Car Finishing Plant (Plant 16) was added in 1954. Plant 16 has since been demolished. Plant 49 was constructed in 1965 as a storage and shipping plant with an expansion occurring in 1969.

A chassis parts and machining plant (formerly Plant 51, currently Plant 25) was constructed from 1967 to 1968 and expanded in 1971. In 1981, an engine plant (formerly Plant 55, currently Plant 33) was constructed adjacent to Plant 25.

The ELPO Building is divided into two operations, with the northern portion used for enamel, lacquer, painting, and phosphating operations and the southern portion used as a chemical storage room, a flammable materials storage room, and a paint mix room with painting booths. The ELPO Building was originally constructed in 1927 as the Frame Storage Building. It was used to introduce frames to Plant 8. In 1955, the southern portion of the ELPO Building was constructed as the Apprentice School. In the late 1970s, both sections were converted to their present usage of parts painting and storage.

In 1957, the on-site WWTP was constructed to treat alkali-oily wastewater and metallic wastewater. The WWTP treats both alkali-oily wastewater and strong metallic wastewater.

Current and historical wastes generated in the MFD area from metal finishing, electroplating, and painting/finishing may include solvents, paint-related wastes, and metal- and cyanide-containing wastes.

2.2.4 Powertrain

The Powertrain area consists of approximately 150 acres located along the eastern portion of the Site (Figure 1-3). The Powertrain area primarily consists of office space contained within the Powertrain Headquarters Building and the Powertrain Engineering Building. A gasoline underground storage tank (UST) farm and fueling station occupy the southwest corner of the Powertrain Headquarters Building. Test laboratories and office space were located in the Emissions Control Building. Paved parking areas and roadways occupy much of the land. A vacant area also exists where former Plant 18 was located (see Figure 1-3).

The Powertrain Headquarters Building was constructed in 1967, with a cafeteria adjoining the building constructed in 1990. The Powertrain Engineering Building was constructed between 1966 and 1970. A former car wash, located west of the Powertrain Engineering Building, was constructed in 1967 and was subsequently demolished in 1998. The Emissions Control Building was constructed between 1966 and 1970 and is still present.

On the west portion of the current Powertrain area, an Engine Plant (Plant 18) was constructed in 1942 and was expanded in 1953. Plant 18 ceased operations and was demolished in 1998.

Current and historical wastes generated at Powertrain may have included general trash and non-hazardous wastes, paint-related materials, waste solvents, laboratory wastes, batteries, and waste gasoline and diesel fuel.

2.2.5 Service Parts Operations (SPO)

The SPO area consists of 80 acres of land located at the northern portion of the Site (Figure 1-3) and includes Warehouse Storage and Shipping & Receiving operations and parts painting (Plant 75). The building and adjacent paved roadways and parking areas encompass nearly all of this area.

The eastern portion of Plant 75 was built in 1964. Several expansions of Plant 75 occurred until the 1990s.

Current and historical wastes generated at SPO may have included paint-related material, parts washer solvent, plant trash, light ballast, and scrap auto parts (including leaded batteries).

2.3 Historical Mapping and Aerial Photographs

Historical topographic maps, Sanborn maps, and aerial photographs from Site records were reviewed. A detailed summary of the information obtained from these documents is provided in Appendix B. In general, the topographic map and aerial photograph reviews show a progression of development of the Site, which included filling of low areas/wetlands and construction of plants/buildings.

2.4 RCRA Regulatory History

A history of the Site with respect to RCRA compliance activities for each of the four facilities shown on Figure 1-2 is chronicled below.

2.4.1 CPC Pontiac Fiero Assembly Plant of GMC (USEPA ID No. MID 005356910)

GM submitted a Notification of Hazardous Waste Activity (USEPA Form 8700-12) on August 8, 1980 (GM, 1980c) and a RCRA Part A Permit Application on November 11, 1980 (GM, 1980e). The Part A Permit Application listed the GMC Fisher Body Division Pontiac as a treatment, storage, and disposal (TSD) facility. The permit cited processes requiring container storage (S01), tank storage (S02), tank treatment (T01), and other treatment (T04). In the June 1985 revision to the Part A Permit Application, the name of the facility was changed to CPC Pontiac Fiero Assembly Plant of GMC (GM, 1985c).

A discussion of the Interim Status Units for the CPC Pontiac Fiero Assembly Plant of GMC is provided below. Available RCRA Part A Permit Applications and related correspondence are provided in Appendix C.

2.4.1.1 Container Storage

The container storage interim status unit was located outside Plant 17 in the southwest driveway adjacent to the railroad tracks. The container storage area had an 18,700 gallon capacity and was used to store F001, F002, F007, F008, F003, F005, F010, F011, F017, and D001 waste (GM, 1980c). GM removed all waste codes except D001 waste in the June 1985 Part A Permit Application revision (GM, 1985c). GM received clean closure for the container storage area in February 1988 (MDNR, 1988a). A new container storage area was constructed on the south side of the storage dock of the assembly plant to replace the former container storage area (GM, 1985c). The new area had the same storage capacity as the former area and was used to store D001, F001, and F003 wastes (GM, 1987i). A closure report for the new container storage area was submitted in January 1995 (RUST, 1995); however, GM has not received official notification of clean closure from MDEQ.

2.4.1.2 Tank Storage and Treatment

In the November1980 Part A Permit Application, the interim status units for tank storage (600,000 gallon capacity), tank treatment (768,000 gallons per day [gpd] capacity), and other treatment (3,501,600 gpd capacity) were related to the WWTP (GM, 1980e). The November 1980 Part A permit application cited 384,000 gpd wastewater treatment sludge dewatering, 3,110,400 gpd paint sludge dewatering, and 86,400 gpd bonderite sludge dewatering in the "other treatment" (T04) treatment category. The WWTP stored and/or treated F018, F006, F009, F017, and D002 wastes. The tank storage, tank treatment, and other treatment processes associated with the WWTP were removed from the Part A Permit Application in June 1985 due to the January 4, 1985 RCRA Amendments (GM, 1985c).

A new interim status unit for tank storage was included in the June 1985 Part A Permit Application revision. This interim status unit was the waste purge thinner UST, located north of Plant 17 and west of the paint mix building. This unit had a capacity of 12,000 gallons and was used to store D001 waste (GM, 1985c). This waste category was changed to F005 waste in the February 1986 Part A Permit Application revision (GM, 1986b). A closure report for the waste purge thinner UST was submitted in January 1995 (RUST, 1995); however, GM has not received official notification of clean closure from MDEQ.

2.4.2 GMC Central Foundry Division Pontiac Plant (USEPA ID No. MID 085470102)

GM submitted a Notification of Hazardous Waste Activity in August 1980 (GM, 1980a) and a RCRA Part A Permit application to the USEPA on November 17, 1980 (GM, 1980f). The Part A Permit application listed the GMC Central Foundry Division Pontiac Plant as a TSD facility. The permit cited processes requiring container storage (S01) and treatment (T04). The container storage and treatment area was located west of the northern end of the former casting plant. Baghouse dust (D006) was the only waste listed on the application.

In February 1981, GM received a letter from USEPA (waste analysis program) that the baghouse dust stored at the plant did not meet the definition of a hazardous waste under 40 CFR Part 261.24 (USEPA, 1981). The *Arc Furnace Baghouse Dust EP Toxicity Study* by Clayton Environmental Consultants, Inc. (CEC) confirmed the previous USEPA findings (CEC, 1981).

Based on the CEC report, GM withdrew the RCRA Part A Permit application in July 1982 (GM, 1982b). Based on the information submitted by GM, the USEPA (waste management branch) confirmed that the baghouse dust was not defined as a hazardous waste (40 CFR 261.3); therefore, they concluded that the facility was not required to have a hazardous waste permit under Section 3005 of RCRA (USEPA, 1983).

The RCRA Part A permit application and associated correspondence are presented in Appendix D.

2.4.3 CPC Pontiac of General Motors Corporation (USEPA ID No. MID 005356886)

GM submitted a Notification of Hazardous Waste Activity on August 8, 1980 (GM, 1980b) and a RCRA Part A permit application on November 18, 1980 (GM, 1980g). The Part A Permit Application listed the Pontiac Motor Division of GMC as a TSD facility. The permit cited process codes for container storage (S01), tank storage (S02), surface impoundment storage (S04), tank treatment (T01), surface impoundment treatment (T02) and other treatment (T04). The facility name was changed to CPC Pontiac of General Motors Corporation in the June 1985 Part A Permit application revision (GM, 1985b). A discussion of Interim Status Units for CPC Pontiac of General Motors Corporation is presented below. Available RCRA Part A Permit Applications and associated correspondence are provided in Appendix E.

2.4.3.1 Container Storage

In the November 1980 Part A Permit Application, container storage at the facility was listed with a total capacity of 222,100 gallons (GM, 1980g). According to the map included with the November 1980 Part A Permit Application, there were numerous container storage areas throughout the facility. These areas were used to store F001, F002, F003, D001, F005, F006, F012, F018, F007, F008, F009, F010, F011, and F017 wastes. The number of container storage areas was reduced in the September 1982 Part A Permit Application revision due to the removal of paint sludge from hazardous classification (GM, 1982c). The only container storage area that retained interim status was the barrel storage area located southwest of the former engine plant.

The barrel storage area was a diked, concrete pad with a storage capacity of 45,000 gallons and was used to store D001 waste. GM revised the Part A Permit Application in January 1986 to address revisions to the solvent listings. As a result, the F001, F005, and D008 wastes were cited for the barrel storage area (GM, 1986a). In November 1987, GM informed USEPA that they wanted to convert their hazardous waste operations to "generator only" status. GM indicated that they had recently enclosed a portion of their barrel storage area and that they intended to use the enclosed area for accumulation of hazardous waste (GM, 1987h).

2.4.3.2 Tank Storage and Treatment

In the November 1980 Part A Permit Application, the interim status units for tank storage (496,700 gallon capacity), tank treatment (3,000,000 gpd capacity), and other treatment (500 gpd capacity) were related to the WWTP (GM, 1980g). The WWTP interim status unit was removed from the Part A Permit Application in September 1982 based on exemption by rule for wastewater treatment facilities (GM, 1982c).

GM submitted a revised Part A Permit Application in March 1984 due to the construction of a 950 gallon bulk ignitable liquid storage tank adjacent to the Emissions Control building (GM, 1984a). This tank was subsequently removed from the Part A Permit Application in September 1986 because the tank storage was regulated under 40 CFR 262.34 and should not have been included on the Part A Permit Application (GM, 1986h).

GM submitted a revised Part A Permit Application in June 1985 due to the January 1985 RCRA amendments that defined recycled wastes as hazardous. A 7,000-gallon tank in the ELPO building was issued interim status (GM, 1985c). This tank was used to store thinner (F005 waste). The thinner tank was removed from the Part A Permit Application in August 1987 because it had not been used to store waste for greater than 90 days (GM, 1987f).

2.4.3.3 Surface Impoundment Storage and Treatment

In the November 1980 Part A Permit Application, interim status units for surface impoundments were listed with a total storage capacity of 7,507,000 gallons and a total treatment capacity of 100,000 gpd (GM, 1980g). These units were used for F001, F006, F012, F018, F007, F008, F009, F010, F017, and P030 wastes. The surface impoundment interim status units included various wastewater transfer sumps and two sludge consolidation areas.

The wastewater transfer sumps were located throughout the facility. The storage and treatment sumps were removed from the Part A Permit Application in September 1982 because they did not meet the definition of a surface impoundment (GM, 1982c).

One of the sludge consolidation areas was located adjacent to the container storage area in the southwest corner of the facility and had a capacity of 3,858,000 gallons. This sludge consolidation area was removed from the Part A Permit Application in September 1982 because it was no longer used (GM, 1982c).

The other sludge consolidation area was located adjacent to the WWTP and had a capacity of 240,000 gallons. On September 15, 1981, GM submitted a petition to USEPA to delist wastewater sludge from electroplating operations (F006), based on the characteristics of the sludge generated at the facility (GM, 1981b). On January 18, 1982, GM submitted a similar petition to the Michigan Department of Natural Resources (MDNR) (GM, 1982a). USEPA granted the facility a temporary delisting for F006 waste in November 1982 (USEPA, 1982c). MNDR issued the facility a redesignation of waste in June 1983 (MDNR, 1983a). As a result of the temporary exclusion granted by

USEPA, the WWTP sludge consolidation area was removed from the Part A Permit Application in September 1982 (it was also noted that the area should be classified as a waste pile [S03]) (GM, 1982c). In April 1986, the USEPA denied the facilities petition to delist wastewater treatment sludge from electroplating operations and indicated that the temporary exclusion would be revoked in May 1986 (USEPA, 1986). Because the electroplating sludge waste was no longer stored in the waste pile, GM did not submit a Part B Permit Application. Additionally, because the waste remained on-site for less than 90 days, GM did not submit a revised Part A Permit Application (GM, 1986g). In 1987, GM notified USEPA that the electroplating process had been removed and the electroplating waste was no longer generated (GM, 1987a).

2.4.4 GMC Warehousing and Distribution Division (USEPA ID No. MID 076331289)

GM submitted a Notification of Hazardous Waste Activity (USEPA Form 8700-12) on August 18, 1980 (GM, 1980d) and a RCRA Part A Permit Application to the USEPA on November 18, 1980 (GM, 1980h). The Notification of Hazardous Waste Activity listed GMC Warehousing and Distribution Division as a hazardous waste generator.

2.5 Historical and Current Waste Management Practices

This subsection presents a description of historical and current waste management practices.

2.5.1 Historical Waste Management Practices

Between 1926 and 1979, the northern portion of the Site in the vicinity of Plants 25 and 33 was used by GM for placing nonsalvage waste materials related to engine assembly, car assembly, foundry operations, painting and stamping, engine machining, metal plating, and wastewater treatment. In addition to the direct disposal of industrial process material into this fill area, waste was reportedly burned or partially burned at the salvage building incinerator and transported to the fill area for disposal. Waste disposal was also performed in the West Yard Area, and also included filling and burning of various waste products.

The WWTP, which began operations in 1957, has consisted essentially of two separate batch treatment systems. The first is for the treatment of metallic-acidic wastewaters, including hexavalent chromium, paint wastes, and powerhouse boiler blowdown. The second is for the treatment of alkali-oily wastewater. A separate WWTP was also in operation at Fiero from 1973 to 1983. The Fiero WWTP treated paint and bonderite sludge.

Process wastewaters from Plant 56 and Plant 5 were historically generated from the plating and axle manufacturing operations and were transported by overhead piping to the WWTP for treatment prior to discharge to the City of Pontiac publicly owned treatment works (POTW). When the electroplating operations were active, cyanide wastewaters were also treated by the WWTP. In 1987, GM ceased electroplating operations.

2.5.2 Current Waste Management Practices

Containerized non-hazardous wastes generated throughout the MFD area are transported to a waste storage area located in the western portion of Plant 23. Wastes are accumulated and shipped off site for disposal from this location.

Four satellite hazardous waste storage areas exist on site. The first is located in the ELPO Building, the second is located in the Powertrain Engineering Building, and two are located at Fiero. According to plant personnel, all hazardous wastes are shipped off site within three days of accumulation.

Sanitary and treated process wastewater and noncontact cooling water are discharged into the City of Pontiac sanitary sewer system. Storm water from the roofs of Site structures is directed through roof drains and downspouts to exterior Site surfaces or through underground piping to the storm-water sewer system. Most storm-water runoff from exterior Site surfaces flows into catch basins that discharge to the storm-water sewer system. There are five permitted storm-water outfall points from the Site: four discharge to the City of Pontiac Storm Sewer System, and one discharges to Harris Lake, as shown on Figure 2-1.

3. Site Setting

This section provides an overview of pertinent information on the regional and local setting of the Site. Section 3.1 provides relevant information regarding land use, Section 3.2 describes basic demographics within a 5-mile radius of the Site, Section 3.3 describes regional climate, Section 3.4 describes regional geologic conditions, Section 3.5 describes regional hydrogeologic conditions, Section 3.6 describes regional hydrologic conditions, Section 3.7 describes the Site geology, Section 3.8 describes the Site hydrogeology, and Section 3.9 describes the Site hydrology.

3.1 Land Use

The Site is zoned for industrial use, and areas surrounding the Site are zoned for a mixture of residential, commercial, and industrial use. Zoning determinations were based on a review of the City of Pontiac zoning map (Figure 3-1). The area south of the Site is occupied by two city parks (Perry Park and Oakland Park). The areas east and west of the Site are occupied by residential neighborhoods. Additionally, there is a residential neighborhood south of the SPO area in the northeast quadrant of the Site (Figure 1-3). The area north of the Site is occupied by a city park (Jaycee Park) and is also zoned for residential and industrial uses.

3.2 Demographics

Demographic information from the 1990 census indicated that approximately 14,300 people lived within a 1-mile radius of the Site, and approximately 109,800 people lived within a 5-mile radius of the Site (USEPA, 2000). More complete demographics information is presented in Appendix F.

3.3 Climate

Oakland County's weather is generally temperate, with an average winter temperature of 25.3° F and an average summer temperature of 70.2° F. The sun shines 38% of the time during the winter and 67% of the time in the summer. Average seasonal snowfall is 34.6 inches. Average annual precipitation is 29.7 inches with 58% (17.2 inches) occurring between the months of April and September. The average relative humidity for Oakland County is 80% (Feenstra, 1982). The prevailing winds are typically from the northwest in the winter months and the southwest in the summer months.

3.4 Regional Geology

Information on the regional geologic setting of the Site is based on published information.

East-central Oakland County is characterized by glaciofluvial deposits that are common to Oakland County. The regional overburden material consists of glacial till composed mainly of clay and some sands. Overburden material is regionally underlain by shales of Early Mississippian age.

3.4.1 Overburden

Continental glaciers advanced into this area of Michigan at least twice, once in each of the last two glacial stages of the Illinoian and Wisconsinan glaciers of the Pleistocene epoch. During the Wisconsinan stage, ice sheets of the Huron-Erie glacial lobe advanced from the southeast across the area of the Site. During the advance and retreat of this ice sheet, a series of end moraines (Fort Wayne, Defiance, and Birmingham) and a thick sequence of ground moraine (glacial till) composed of clay, silt, and rock fragments were deposited in this area. As the ice sheet retreated to the southeast, large volumes of meltwater formed glacial Lake Maumee between the Fort Wayne Moraine and the retreating glacier. The ice again advanced, forming the Defiance Moraine, and subsequently retreated, forming glacial Lake Arkona. As the ice advanced yet again from the east, the Birmingham Moraine was formed.

Pleistocene glaciation deposited glacial drift in a thickness of over 400 feet in parts of Oakland County. The buried bedrock surface is highly irregular. The Site is located in an area that is part of the lake plain of southeastern Michigan, formed by lakes that were ancestral to the present Great Lakes. Dunes, offshore bars, and lake-bottom sands, silts, and clays associated with the lakes are found in Oakland County. Figure 3-2 presents the regional surficial geology.

3.4.2 Bedrock

Oakland County is located along the southeast side of the Michigan Basin, a "bowl-like" feature in which the sedimentary rocks dip inward from all directions toward the center of the Southern Peninsula of Michigan.

The Coldwater Shale, of Early Mississippian age, is the first bedrock formation encountered in the area. The shale is primarily gray to dark gray. Other lithologies within this unit include red fossiliferous or nonfossiliferous shale, carbonate (limestone or dolomite), siltstone, and sandstone. Total thickness of the Coldwater Shale ranges across the Michigan Basin. In the vicinity of the Site, the unit may be up to 1,300 feet thick (Westjohn and Weaver, 1996). Located beneath the Coldwater Shale are sedimentary formations of the Berea Sandstone - Bedford Shale unit. Figure 3-3 presents the regional bedrock geology.

3.5 Regional Hydrogeology

Regional groundwater flow in both bedrock and glacial overburden appears to be predominantly to the east and south. Groundwater flow in glacial deposits in the Pontiac area is generally eastward towards local stream valleys, primarily the Clinton River (see Figure 3-6).

Groundwater resources in the Clinton River watershed exist in both the glacial drift and bedrock of the area. In the region surrounding the Site, groundwater is encountered in four general water-bearing units, as discussed in the following subsections:

- unconfined water table zone;
- glacial till aquifer(s);
- lower sand and gravel aquifer; and
- bedrock aquifer(s).

3.5.1 Unconfined Water Table Zone

The upper glacial till of the area contains an unconfined water table that is influenced by seasonal precipitation, local drainage patterns, and topography. The water table is located at a depth of approximately 10 to 30 feet below ground surface (bgs). The unconfined water table zone is not used for water supply purposes. The use of this zone as a potable supply would be generally prohibited by Michigan Department of Public Health regulations (Part 127 of Act 368 [Groundwater Quality Control], 1978) because it is at a depth of less than 25 feet.

3.5.2 Glacial Aquifer(s)

The regional glacial till is quite extensive, both areally and vertically. The glacial till moraines consist of poorly stratified clays, sand, and gravel that are not always continuous with depth. This material does not transmit large quantities of water and as a result, water bearing zones within this unit are not considered significant aquifers. However, in some areas, glacial outwash underlies the moraine material. In the vicinity of the Site, the outwash appears in a more complex, bedded sequence with the moraine. It is within these interbedded layers of outwash that larger quantities of water can be yielded over longer periods of time. Figure 3-4 identifies the Site within the regional aquifer characterization. As illustrated on Figure 3-5, impervious material (e.g., aquitards) may protect the lower, useable aquifers from surface contamination in the general vicinity of the Site (Western Michigan University, 1981).

3.5.3 Lower Sand and Gravel Aquifer

The regional lower sand and gravel aquifer is glacial outwash that generally consists of beds of well-sorted sand and gravel. This regional aquifer unit underlies the glacial till and the interbedded local outwash aquifers described above. Although the lower sand and gravel aquifer is not widespread throughout southeastern Michigan, it is prevalent throughout the region of the Site where the outwash is in distinct channels. This unit is considered the most important aquifer in the region because it provides storage for large quantities of water that can be used for both residential and industrial supplies.

3.5.4 Bedrock Aquifer(s)

On a regional basis, the Coldwater Shale and Bedford Shale are commonly considered nonproductive aquifers, typically yielding only small amounts of water. However, on a local basis, within parts of the region, the Coldwater Shale contains beds of sandstone. This occasional sandstone layer and the Berea Sandstone (where present) yield enough water for residential use. A more abundant water supply is found at impractical greater depths and with significant increases in mineral content.

3.6 Regional Hydrology

The Site is located within the Clinton River basin. The Clinton River basin drains an area of approximately 760 square miles, covering almost half of Oakland County and the majority of Macomb County to the east. The location of the Site within the Clinton River basin is shown on Figure 3-6. The Clinton River discharges into Lake St. Clair (approximately 25 miles to the east), which is used as a municipal drinking water supply for the City of Detroit.

Based on a review of the U.S. Geological Survey (USGS) Pontiac North Quadrangle map (USGS, 1983) (Figure 1-1), the nearest surface water bodies are Harris Lake, Terry Lake, and Osmun Lake, which are approximately 600 to 3,200 feet southwest to west of the Site, and the Clinton River, which is approximately 5,200 to 6,000 feet south to southeast of the Site.

Topography in the area of the Site is typically identified by relatively flat lake plain. This is separated from the undulating morainal hills of the northwest by relic beaches, which extend to the northeast.

3.7 Site Geology

Characterization of the overburden deposits at the Site have been limited to a few areas, mainly in the Powertrain and DA portions of the Site. Where information is available, the overburden at the Site is composed of fill materials underlain by sand or clay. These fill materials consist mainly of spent foundry sand that contains a variety

of debris including slag fragments and steel casings. Intermixed with the foundry sand is gravel, gray clay stringers, clayey fill material, and light brown sand. Fill material is typically encountered to depths of 4 to 14 feet bgs.

The fill material is underlain by either a sand or a clay unit. The sand unit contains lenses of silt or organic-rich peat and marl. The clay unit contains some interbedded sand lenses and silt, generally at depths of more than 14 feet bgs. Pebbles are often also encountered within the clay units. Local water well records indicate that the thickness of the clay unit in the vicinity of the Site ranges from 20 to 80 feet and that the clay is underlain by a sand and gravel unit that is approximately 20 feet thick. Fine-grained (e.g., silt or clay) and coarse-grained (e.g., sand or gravel) units alternate until bedrock is reached, at approximately 320 feet bgs.

3.8 Site Hydrogeology

Site groundwater is typically found at depths ranging from 10 to 20 feet bgs. Groundwater within this unit typically flows west-southwest, toward a series of small lakes (Harris Lake, Terry Lake, and Osmun Lake). Detailed Site-specific hydrogeologic information is restricted to areas of previous investigations, such as the West Yard portion of the DA.

Groundwater in the area near the Site is not currently used as a municipal water supply source. There are no municipal drinking water supply wells within a 5-mile radius of the Site (USEPA, 2000). The area surrounding the Site is on a municipal water supply from the City of Detroit (MDNR, 1987e). The nearest private well is approximately 5,000 feet from the Site (Superior, 2000).

3.9 Site Hydrology

Surface water drainage in the area surrounding the Site is to the west-southwest, toward a series of small lakes (Harris Lake, Terry Lake, and Osmun Lake) as shown on Figure 1-1. Site drainage is controlled by the paved surfaces and is typically directed to the storm sewer system.

4. Listing of Previous Investigations

This section provides a listing of the areas of the Site where previous investigations have occurred. It should be noted that all areas of the Site that were previously investigated are identified as an AOI, even if further investigations are not necessary. A detailed discussion of investigations for each AOI, if any, is presented in Section 6.

4.1 Fiero

Various investigations were conducted between 1986 and 1995 at the Fiero facility. These investigations consisted of:

- closure activities and additional subsurface investigation for the Container Storage Area (CSA) (AOI F-3);
- closure activities for the Closed CSA (AOI F-4); and
- closure activities for the Waste Purge Thinner UST and Three Product USTs (AOI F-6).

4.2 Demolition Area (DA)

Various investigations were conducted between 1971 and the present in the DA. These activities consisted of:

- various soil, groundwater, and light non-aqueous phase liquid (LNAPL) investigations in the West Yard (AOI W-1);
- various soil, chemical, and geotechnical and groundwater investigations in the area of the Former Hazardous Waste Storage Pad (AOI W-2);
- soil investigations related to the Former Plant 8 Flammable Liquids Storage Tank Farm (AOI W-3);
- wipe samples related to the polychlorinated biphenyl (PCB)-stained concrete floor of Plant 8 at Transformer Substation D-1 (AOI W-4);
- closure assessment for the Plant 9 Turbo Tank (Tank 9-1) (AOI W-7);
- various soil and groundwater investigations related to the Former Central Foundry (Plant 6), including closure assessment investigations (AOI W-9);

- soil and visual investigation related to the Railroad Marshalling Area (AOI W-10); and
- influent and effluent sampling during dumping at the Salvage Yard Sump Drain (AOI W-11).

4.3 Metal Fabrication Division (MFD)

Various investigations were conducted between 1985 and 2000 at MFD. These investigations consisted of:

- soil sampling adjacent to the WWTP (AOI M-1);
- residual material sampling in and around the Former Plating Operations Area (AOI M-2);
- various soil and groundwater investigations related to the Former Track 31 (AOI M-3);
- a soil and groundwater investigation in the vicinity of the Plant 25 Former Gasoline UST and Current Gasoline Aboveground Storage Tank (AST) Location (AOI M-4);
- a soil and groundwater investigation to characterize the material within the Former A-2 Fill Area (AOI M-5);
- analysis of spilled hydraulic fluid for PCBs at the Plant 5 Hydraulic Fluid Spill (AOI M-6); and
- a soil and concrete investigation at Track 26 (AOI M-15).

4.4 Powertrain

Various investigations were conducted between 1984 and 2000 at Powertrain. These investigations consisted of:

- various soil and groundwater investigations of the Powertrain Former UST Farm (AOI P-1);
- various soil and groundwater investigations of the Powertrain Existing UST Farm (AOI P-2);
- various soil and groundwater investigations of the Former Car Wash UST Farm (AOI P-3);
- various soil investigations of the Former Powertrain Used Oil UST and Utility Line (AOI P-4);
- a soil investigation of the Former Powertrain Stoddard Solvent UST (AOI P-5);

- a soil and groundwater investigation of the Former Emissions Control Building UST Farm and Stoddard Solvent AST (AOI P-6); and

- various soil and groundwater investigations of the Vacant Lot Former UST (AOI P-8).

4.5 Service Parts Operation (SPO)

The following investigations were conducted from 1991 to 1992 at SPO:

- a soil and groundwater investigation associated with the Former SPO Gasoline UST (AOI S-1); and

- a soil and groundwater investigation associated with the Former SPO Diesel UST (AOI S-2).

5. Listing of Previous Remedial Actions

This section provides a listing of the areas of the Site where remedial actions have occurred. It should be noted that all areas of the Site where previous remedial activities have occurred are identified as an AOI, even if further remedial activities are not necessary. A detailed discussion of remedial actions for each AOI, if any, is presented in Section 6.

5.1 Fiero

Several remedial actions and tank removal activities were conducted between 1986 and 1996 at Fiero. These activities consisted of:

- removal, transport, and disposal of wastes stored at the CSA (AOI F-3);
- closure and removal of the Closed CSA (AOI F-4);
- removal of the Waste Purge Thinner UST and Three Product USTs (AOI F-6); and
- removal of oily pea gravel, concrete, and debris from the Former Oily Gravel Area (AOI F-13).

5.2 Demolition Area (DA)

Various remedial actions and tank removals were conducted between 1971 and 1999 in the DA. These activities consisted of:

- removal of LNAPL from wells located in the West Yard (AOI W-1);
- remediation of leaking PCB transformers in the Compressor Building (AOI W-1);
- initiation of closure activities for the Former Hazardous Waste Storage Pad (AOI W-2);
- removal of PCB-containing transformer and 2 to 3 inches of concrete beneath the transformer at Transformer Substation D-1 (AOI W-4);
- removal of the Plant 9 Turbo Tank (Tank 9-1) (UST) (AOI W-7);
- remediation of resin spill in the Former Central Foundry (Plant 6) (AOI W-9);

- closure of the Former Central Foundry (Plant 6) (AOI W-9); and

- installation of the Railroad Marshalling Area Drainage System (AOI W-10).

5.3 Metal Fabrication Division (MFD)

Various remedial actions and tank removal activities were conducted between 1985 and 1996 at MFD. These activities consisted of:

- excavation of PCB-contaminated soil at the Former Track 31 (AOI M-3);

- removal of a UST and associated contaminated soils and installation of a hydrocarbon recovery system at the Plant 25 Former Gasoline UST and Current Gasoline AST Location (AOI M-4);

- removal of blacktop, concrete, and soil from the Plant 5 Hydraulic Fluid Spill (AOI M-6); and

- removal of soil and concrete potentially affected by the Plant 12 Transformer Oil Spill (AOI M-24).

5.4 Powertrain

Various remedial actions and tank removal activities were conducted between 1984 and 1999 at Powertrain. These activities consisted of:

- removal of a UST farm and excavation of contaminated soils associated with the Powertrain Former UST Farm (AOI P-1);

- removal of dispensing equipment and excavation of contaminated soils associated with the Powertrain Former UST Farm, at the location of the Powertrain Existing UST Farm (AOI P-2);

- removal of three USTs and excavation of contaminated soils associated with the Former Powertrain Car Wash (AOI P-3);

- removal of a UST and excavation of contaminated soils associated with the Former Powertrain Used Oil UST and Utility Line (AOI P-4);

- removal of a UST and excavation of contaminated soils associated with the Former Powertrain Stoddard Solvent UST (AOI P-5); and

- installation of recovery wells and removal of the USTs at the Former Emissions Control Building UST Farm and Stoddard Solvent AST (AOI P-6).

5.5 Service Parts Operations (SPO)

Two tank removals have been conducted in the SPO area. The activities consisted of:

- removal of an UST and excavation of contaminated soils associated with the Former SPO Gasoline UST (AOI S-1); and

- removal of an UST and excavation of contaminated soils associated with the Former SPO Diesel UST (AOI S-2).

5.6 Sitewide Storm Sewer System

The storm sewer system has been identified as an AOI due to the presence of PCBs. Remedial activities implemented to date include:

- cleaning of the storm sewer section that flows to the storm-water retention pond;

- removal of sediment from the storm-water retention pond; and

- upgrading of the storm-water treatment system.

6. Areas of Interest

This section provides a description and summary of Site AOIs. These AOIs were identified based on a review of available Site records, interviews with Site personnel, Site reconnaissance, historical investigations and remedial actions, the 1986 *Certification Regarding Potential Releases from Solid Waste Management Units* (GM, 1986c), the Fiero PA/VSI Report (PRC, 1992), and knowledge of past or present Site processes. AOIs were identified on the basis of whether a release of hazardous wastes and/or hazardous constituents to the environment had been determined to have occurred (i.e., prior documentation or verbal information) or was likely to have occurred (e.g., oil-saturated flooring or ground covering, staining of floor or ground surfaces coupled with cracks and holes in floor or ground coverings).

This section is organized with respect to the five operational areas that make up the Site, and a sixth area, which is the Site storm sewer system for Outfall 001:

- Fiero;
- Demolition Area (DA);
- Metal Fabrication Division (MFD);
- Powertrain;
- Service Parts Operations (SPO); and
- Site Storm Sewer System (Outfall 001).

These operational areas are illustrated on Figure 1-3.

A total of 64 AOIs have been identified, including various manufacturing processes and process components, process waste facilities, tanks, known or suspected areas of prior release of hazardous waste or hazardous constituents, waste handling areas, and prior remedial activities. A breakdown of the number and type of AOIs for each area is discussed below. Each AOI is discussed with respect to AOI description, historical and current operations, previous remedial investigations and actions, and current status, such as Further Action or No Further Action. Any AOIs designated as No Further Action either have approved Closures or can be visually inspected with little potential for historic releases to have impacted the surrounding area. Any AOIs not meeting these criteria have subsequently been designated as a Further Action AOI.

6.1 Fiero

There are 14 AOIs located within Fiero. The 14 AOIs in the Fiero area are shown on Figure 6-1 and consist of:

- six waste and/or container storage areas (AOI F-1, AOI F-2, AOI F-3, AOI F-4, AOI F-8, and AOI F-9);
- one former WWTP (AOI F-5);
- two UST or AST locations (AOI F-6 and AOI F-14);

- one wastewater collection sump system (AOI F-7);
- two fly ash storage silos (AOI F-10 and AOI F-11);
- one coal storage area (AOI F-12); and
- one former debris pile (AOI F-13).

These AOIs are summarized in Table 6-1 and discussed below. A listing of ASTs and USTs for the Fiero area is provided in Table 6-2.

6.1.1 Powerhouse Satellite Accumulation Areas (AOI F-1)

AOI F-1 consists of two satellite accumulation areas identified as SAA1 and SAA2, which are both located in the Powerhouse south of Plant 17. SAA1 was identified as a SWMU (SWMU 1) in the Fiero PA/VSI Report (PRC, 1992); therefore, it is considered an AOI.

SAA2 was not identified as a SWMU in the Fiero PA/VSI Report; however, it has been identified as an AOI due to its proximity to SAA1.

6.1.1.1 Historical and Current Operations

SAA1 is located in the basement of the Powerhouse and consists of one 55-gallon drum that stores waste paint thinner and is placed directly on the concrete floor. SAA1 has been active since August 1988, when Plant 17 ceased assembly operations.

SAA2 is located in the compressor room of the Powerhouse and consists of approximately fifteen 55-gallon drums that store waste oils. When a drum is filled, it is transferred to Plant 5 for disposal.

There have been no documented releases from either SAA1 or SAA2.

6.1.1.2 Previous Investigations and Remedial Actions

No investigations or remedial actions have been conducted in association with SAA1 or SAA2.

The Fiero PA/VSI Report stated that no known releases had occurred from SWMU 1 (SAA1), and there were no visual indications of past releases (PRC, 1992).

6.1.1.3 Current Status

There have been no documented releases associated with either SAA1 or SAA2. During the August 2000 Site walkthrough, which evaluated potential AOIs for this report, both of the SAAs were observed to be in good condition (i.e., the concrete was not cracked, no extensive staining was observed).

Based on the visual Site walkover, documented releases, and information in the Fiero PA/VSI Report, **NO FURTHER ACTION** is recommended for AOI F-1.

6.1.2 Waste Gasoline Accumulation Area (AOI F-2)

AOI F-2 consists of a waste gasoline accumulation area located in the maintenance area of Plant 17. This area was previously identified as a SWMU (SWMU 2) in the Fiero PA/VSI Report (PRC, 1992); therefore, this area is considered an AOI.

6.1.2.1 Historical and Current Operations

The waste gasoline accumulation area consists of one 55-gallon drum used to store waste gasoline with the drum placed directly on the concrete floor. The Fiero PA/VSI Report stated that this area had been operational since at least August 1988, when the plant ceased assembly operations (PRC, 1992).

There have been no documented releases related to the waste gasoline accumulation area.

6.1.2.2 Previous Investigations and Remedial Actions

No investigations or remedial actions have been conducted in association with the waste gasoline accumulation area.

The waste gasoline accumulation area was identified in the Fiero PA/VSI Report (PRC, 1992). At that time, there were no known releases in the area and the drum was observed to be in good condition. During an August 2000 Site walkthrough, the area indicated on the Site figure provided in the Fiero PA/VSI Report was located. However, there was no evidence of a waste gasoline accumulation area being present.

6.1.2.3 Current Status

The Fiero PA/VSI Report stated that there had been no documented releases from the waste gasoline accumulation area. Based on this information, **NO FURTHER ACTION** is recommended for AOI F-2.

6.1.3 Container Storage Area (CSA) (AOI F-3)

AOI F-3 consists of a CSA (RCRA Interim Status Unit) located outside on the south side of the storage dock of the assembly plant. This area managed both liquid and solid waste and was previously identified on the Part A Permit Application (GM, 1987i) and as a SWMU (SWMU 3) in the Fiero PA/VSI Report (PRC, 1992); therefore, the area is considered an AOI.

6.1.3.1 Historical and Current Operations

The CSA (RCRA Interim Status Unit) was constructed in July 1986 to replace the closed CSA (AOI F-4). The CSA managed both solid and liquid wastes generated from a number of areas in the Fiero assembly plant. The CSA consisted of a concrete pad that was approximately 65 feet by 90 feet, with a thickness of 8 inches. The area was partially bermed with 1- to 4-foot-high concrete berms. The pad's concrete joints are sealed and if a release occurred, it was routed through a collection sump to the existing WWTP located on the MFD portion of the Site. Wastes were stored in this area for greater than 90 days. Wastes included ignitable waste, chlorinated solvents, and various paint wastes. The maximum capacity of the CSA was three hundred eighty 55-gallon drums. When the Fiero plant ceased automobile assembly activities in August 1988, GM closed the CSA. Closure activities were completed in 1989 (Techna, 1990).

Two ASTs were located in a separately contained area in the southwest corner of the CSA. GM originally planned to use the tanks for waste oil storage but decided that the tanks were not required and they were never used.

There have been no documented releases from the CSA.

6.1.3.2 Previous Investigations and Remedial Actions

Previous investigations included a soil investigation as part of the CSA closure activities, and a supplemental soil and groundwater investigation. Remedial actions consisted of the CSA closure activities. Table 6-3 provides a summary of historical soil and groundwater analytical data.

Prior to closure activities, the wastes stored on the CSA were removed, transported, and disposed of at a hazardous waste treatment or disposal facility. GM cleaned and decontaminated the concrete pad, the collection sump, and the trench and piping.

Twenty-one confirmation soil samples were collected by Techna as part of the closure activities. Techna recommended additional investigation at the CSA because select volatile organic compounds (VOCs) (1,1,1-

trichloroethane, trichloroethane, tetrachloroethene, 1,1,2,2-tetrachloroethane, and 1,1-dichloroethene) in soil were above the applicable criteria at that time (Techna, 1990).

In August 1991, Testing, Engineers and Consultants, Inc. (TEC) conducted an additional subsurface investigation at the CSA (TEC, 1992). TEC collected 37 soil samples and three groundwater samples. Tetrachloroethene and 1,1,1-trichloroethene exceeded Michigan Type B soil criteria values. RUST concluded from the previous data that the VOCs present in soils below the CSA were most likely attributable to historical activities (RUST, 1995).

In January 1995, GM submitted a RCRA Closure Report for the CSA to MDNR (RUST, 1995). This report summarized the two previous investigations conducted at the CSA. MDNR sent a letter to GM on March 31, 1995 stating that the agency would begin review of the RCRA Closure Report in early 1996 (MDNR, 1995a). No further communication was noted in the files. The RCRA Closure Report is provided in Appendix G.

6.1.3.3 Current Status

A RCRA Closure Report for the CSA was submitted to the MDNR in January 1995 (RUST, 1995). GM will pursue final closure certification from the MDEQ. Based on the closure activities described previously, **NO FURTHER ACTION** is recommended for the CSA.

6.1.4 Closed Container Storage Area (CSA) (AOI F-4)

AOI F-4 consists of a closed CSA (RCRA Interim Status Unit) located outside Plant 17 in the southwest driveway, adjacent to the railroad tracks. This area managed both liquid and solid waste and was previously identified on the Part A Permit Application (GM, 1980e) and as a SWMU (SWMU 4) in the Fiero PA/VSI Report (PRC, 1992); therefore, the area is considered an AOI.

6.1.4.1 Historical and Current Operations

The closed CSA was in operation from before 1977 to August 1985. The closed CSA was situated on a bermed concrete pad. Wastes were stored in this area for greater than 90 days. Wastes included scraped sealers, adhesives, paint thinners, and waste solvents. The maximum capacity of the closed CSA was three hundred seventy 55-gallon drums. The closed CSA was dismantled, removed, and paved.

There were no documented releases from the closed CSA.

6.1.4.2 Previous Investigations and Remedial Actions

Previous investigations and remedial actions consisted of closure of the CSA.

GM submitted a closure plan to MDNR for the closed CSA in April 1986 (after the area was out of service) (GM, 1986b). Closure certification was submitted to MDNR in November 1986 (GM, 1986k). GM received clean closure certification of the area from the MDNR in February 1988 (MDNR, 1988a). The MDNR closure certification is provided in Appendix H.

6.1.4.3 Current Status

The closed CSA area terminated operations on August 15, 1985. GM received clean closure certification of the area from the MDNR in February 1988 (MDNR, 1988a). Based on this information, **NO FURTHER ACTION** is recommended for AOI F-4.

6.1.5 Former Fiero Wastewater Treatment Plant (WWTP) (AOI F-5)

AOI F-5 consists of the former Fiero WWTP located along Portland Street, 100 yards north of Owens Street. This area was identified as a SWMU (SWMU 5) in the Fiero PA/VSI Report (PRC, 1992); therefore, the former Fiero WWTP is considered an AOI.

6.1.5.1 Historical and Current Operations

The former Fiero WWTP operated from 1973 to 1983 (PRC, 1992). The location of the former WWTP was paved over and is used as a driveway. The former Fiero WWTP managed wastewater, wastewater treatment sludge, paint sludge, and bonderite sludge.

The Fiero PA/VSI Report (PRC, 1992) stated that there had been no documented releases from the former Fiero WWTP. According to plant personnel, the former Fiero WWTP was constructed of above-grade steel tanks situated on a concrete pad with secondary containment. Liquids from the plant were decanted to the City of Pontiac POTW. Solids from the plant were removed and placed directly into trucks for off-site disposal.

6.1.5.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the former Fiero WWTP.

6.1.5.3 Current Status

Based on the construction of the former Fiero WWTP on a concrete pad with secondary containment, **NO FURTHER ACTION** is recommended for AOI F-5.

6.1.6 Waste Purge Thinner UST and Three Product USTs (AOI F-6)

AOI F-6 consists of a waste purge thinner UST (RCRA Interim Status Unit) and three product USTs located north of Plant 17, directly west of the paint mix building. The waste purge thinner was previously identified on the Part A Permit Application (GM, 1985c) and as a SWMU (SWMU 6) in the Fiero PA/VSI Report (PRC, 1992). This area is considered an AOI because affected soils were discovered during UST closure activities in 1989 and because it was identified on the Part A Permit Application and in the Fiero PA/VSI Report.

6.1.6.1 Historical and Current Operations

The waste purge thinner UST (RCRA Interim Status Unit) was located in a tank farm north of Plant 17, directly west of the paint mix building. The three product USTs that stored xylenes, purge thinner, and cellosolve acetate were also located within the tank farm. The 12,000-gallon waste purge thinner UST was a single-walled steel tank. The system was located 3 feet below grade and was encased within 15 inches of reinforced concrete. The USTs were in operation from approximately 1969 to May 1989. The waste purge thinner UST received waste purge thinner from the paint mix building and two paint spray booths in the assembly plant. A licensed transporter removed the waste purge thinner from the tank every 60 to 90 days and transported it to an off-site reclamation center. A spill of 50 to 100 gallons of waste purge thinner occurred in August 1985. The USTs were removed in 1989.

6.1.6.2 Previous Investigations and Remedial Actions

Previous investigations included a RCRA closure investigation conducted during the waste purge thinner UST closure activities. The three product USTs were closed at the same time but were not required to be closed pursuant to RCRA, while the waste purge thinner UST was subject to closure under RCRA. Table 6-4 provides a summary of historical soil analytical results. Remedial actions included removal of the four USTs and adjacent soils.

Prior to removal of the USTs, the waste purge thinner and product were removed and hauled to an off-site licensed waste treatment facility. The four USTs were rinsed out and decontaminated. No holes, pits, or staining were noticed on the USTs after removal. However, during the UST removal process, solvent odors were noticed in the surface soils. Approximately 60 cubic yards of surface soil were removed and placed in roll-off boxes. The excavated soils were transported off site to a licensed hazardous waste disposal facility for disposal. Soil excavation was continued beyond visually affected surficial soils and stockpiled on the pavement near the tank

farm. VOCs were not detected above MDNR Type B Cleanup Criteria Standards in these soils and the soil was disposed of at the City of Pontiac Landfill (RUST, 1995).

Twenty confirmation soil samples were collected by Techna from the UST excavation (all four USTs). In addition, four borings were completed north of the tank farm area to determine area-specific background levels of metals in the surrounding soil. Soil underlying the tank farm exceeded typical background levels.

RUST concluded from Techna's data that the metals in the soil are typical of Michigan soils (RUST, 1995). RUST also concluded that waste purge thinner does not contain metal wastes that could be associated with the elevated levels of metals in the soil; therefore, these metals were not related to the waste purge thinner UST.

RUST concluded (RUST, 1995) the following from Techna's data:

- VOCs in the soil did not exceed the MDNR Type B cleanup criteria;
- VOCs were not detected in the soil near the waste purge thinner UST; and
- VOCs were below method detection limits in the approved closure plan.

In January 1995, GM submitted a RCRA Closure Report for the waste purge thinner UST to MDNR (RUST, 1995). This report summarized the previous investigation conducted at the UST. MDNR sent a letter to GM on March 31, 1995, stating that the agency would begin review of the RCRA Closure Report in early 1996 (MDNR, 1995a). No further communication was noted in the files.

6.1.6.3 Current Status

A RCRA Closure Report for the waste purge thinner UST was submitted to the MDNR in January 1995 (RUST, 1995), and GM will pursue final closure certification from the MDEQ. Therefore, NO FURTHER ACTION is recommended for AOI F-6.

6.1.7 Wastewater Collection Sumps (AOI F-7)

AOI F-7 consists of a series of wastewater collection sumps located underneath the basement of the Powerhouse, south of Plant 17. These sumps were identified as a SWMU (SWMU 7) in the Fiero PA/VSI Report (PRC, 1992); therefore, the sumps are considered an AOI.

6.1.7.1 Historical and Current Operations

The sumps have been in use since July 1973, and are used to collect industrial wastewater and water from outdoor and indoor collection drains throughout the Fiero portion of the Site. The wastewater is currently routed to the

WWTP located on the MFD portion of the Site. No known releases have occurred from the wastewater collection sumps.

6.1.7.2 Previous Investigations and Remedial Actions

No investigations or remedial actions have been conducted in association with the wastewater collection sumps.

The sumps were inactive during the Fiero PA/VSI and were stated to be in good condition. During an August 2000 Site walkthrough, all the sumps were full of liquids and could not be inspected.

6.1.7.3 Current Status

There have been no known releases from the wastewater collection sumps. The Fiero PA/VSI Report stated that during the VSI the condition of the sumps were good. However, during the August 2000 site walk, these sumps were noted to be full of liquids and could not be inspected; therefore, **FURTHER ACTION** is recommended for AOI F-7.

6.1.8 Former Paint Sludge Storage Area (AOI F-8)

AOI F-8 consists of a former paint sludge storage area located north of the paint and mixing building. This area previously managed solid wastes and was also identified as a SWMU (SWMU 8) in the Fiero PA/VSI Report (PRC, 1992); therefore, the area is considered an AOI.

6.1.8.1 Historical and Current Operations

The former paint sludge storage area is 12 feet by 24 feet and consists of a concrete pad covered by a corrugated metal roof. There are no berms surrounding the storage area. The Fiero PA/VSI Report stated that if any spills occurred in this area, the spill would have been conveyed to the former wastewater treatment plant (PRC, 1992). This area was used between 1983 and 1988 to manage non-hazardous paint sludge and sludge from filter waste bonderite. The Fiero PA/VSI Report stated that observations made in February 1992 during the VSI indicated the concrete structure was in good condition and showed no evidence of a release.

The concrete pad is currently used to store road salt. The concrete pad was completely covered in road salt and the condition of the concrete was unable to be observed during the August 2000 Site walkthrough.

There have been no documented releases from the paint sludge storage area.

6.1.8.2 Previous Investigations and Remedial Actions

No investigations or remedial actions have been conducted at the former paint sludge storage area.

6.1.8.3 Current Status

The Fiero PA/VSI Report stated that there had been no documented releases from the former paint sludge storage area and the concrete was observed to be in good condition with no evidence of a release (PRC, 1992). However, the pad is currently covered with salt and could not be inspected during the August 2000 walkover; therefore, **FURTHER ACTION** is recommended for AOI F-8.

6.1.9 Temporary Container Storage Area (CSA) (AOI F-9)

AOI F-9 consists of a temporary CSA located east of the powerhouse. This area was identified in the Fiero PA/VSI Report (PRC, 1992) as a SWMU (SWMU 9); therefore, the area is considered an AOI.

6.1.9.1 Historical and Current Operations

The Fiero PA/VSI Report stated that the temporary CSA was located east of the powerhouse (PRC, 1992). The area was used between August 1985 (when the closed CSA [AOI F-4] became inactive) and July 1986 (when the CSA [AOI F-3] became active). The PA/VSI stated that this area was used to store containers of waste gasoline, solvent, and paint wastes. According to Site personnel, the existence of the temporary CSA is questionable because Site records do not indicate operation of this unit (Appendix I).

There have been no documented releases from the temporary CSA.

6.1.9.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions conducted in association with the temporary CSA. During the VSI, PRC personnel could not inspect this area due to snow cover; however, the Fiero PA/VSI Report states that there was no evidence of any release controls (PRC, 1992). Based on the location provided on the figure in the Fiero PA/VSI Report, this area was inspected during the August 2000 site walk, with no signs of the reported CSA nor any evidence of past releases.

6.1.9.3 Current Status

The temporary CSA ceased operations in 1986, when the CSA (AOI F-3) began receiving waste. There were no documented releases from the temporary CSA, no evidence that the temporary CSA ever existed, and no visual signs of a release. Based on this information, **NO FURTHER ACTION** is recommended for AOI F-9.

6.1.10 High-Pressure Fly Ash Storage Silo (AOI F-10)

AOI F-10 consists of a high-pressure fly ash storage silo located east of the powerhouse. This area was identified as a SWMU (SWMU 10) in the Fiero PA/VSI Report (PRC, 1992); therefore the area is considered an AOI.

6.1.10.1 Historical and Current Operations

The high-pressure fly ash storage silo has been in operation since 1985. This storage unit consists of a capped concrete cylinder and is used to store non-hazardous high-pressure fly ash. The total capacity of the silo is between 500 and 600 tons. Ash is watered down during the transfer process to reduce dust.

The Fiero PA/VSI Report stated that thirty-seven 55-gallon drums were temporarily stored in this area during the closure of AOI F-4 (PRC, 1992).

There have been no documented releases from the high-pressure fly ash storage silo.

6.1.10.2 Previous Investigations and Remedial Actions

There have been no investigations or remedial actions conducted in association with the high-pressure fly ash storage silo. The Fiero PA/VSI Report stated that the silo was in good condition with no evidence of a release (PRC, 1992).

6.1.10.3 Current Status

The high-pressure fly ash storage silo has been in operation since 1985 and contains non-hazardous fly ash. There have been no documented releases. The Fiero PA/VSI Report stated that observations made during the VSI indicated the silo was in good condition with no evidence of release. Based on this information, **NO FURTHER ACTION** is recommended for AOI F-10.

6.1.11 Low-Pressure Fly Ash Storage Silos (AOI F-11)

AOI F-11 consists of two low-pressure fly ash storage silos located east of the powerhouse. The silos were previously identified as a SWMU (SWMU 11) in the Fiero PA/VSI Report (PRC, 1992); therefore, they are considered an AOI.

6.1.11.1 Historical and Current Operations

The two low-pressure fly ash storage silos have been used to store non-hazardous low-pressure fly ash since the 1940s. Each silo can store approximately 200 to 300 tons of fly ash.

The Fiero PA/VSI Report stated that there had been no documented releases from the low-pressure fly ash storage silos (PRC, 1992).

6.1.11.2 Previous Investigations and Remedial Actions

No investigations or remedial actions have been conducted in association with the low-pressure fly ash storage silos. The Fiero PA/VSI Report stated that observations made during the VSI showed that the silos were in good condition with no indication of a release.

6.1.11.3 Current Status

The low-pressure fly ash storage silos have been in use since the 1940s to store non-hazardous low-pressure fly ash. The Fiero PA/VSI Report stated that there had been no documented releases from the silos and the silos were in good condition (PRC, 1992). Based on this information, **NO FURTHER ACTION** is recommended for AOI F-11.

6.1.12 Coal Storage Area (AOI F-12)

AOI F-12 consists of a coal storage area located southeast of the powerhouse. Also located within the footprint of the coal storage pile was the CSA (AOI F-3). This area is considered an AOI because of the materials handled in the area.

6.1.12.1 Historical and Current Operations

The coal storage area is used for stockpiling of coal for the Powerhouse. Historically, it has been reported that waste solvents may have been added to the coal to increase British Thermal Unit (BTU) value. The CSA (AOI F-3) also historically occupied a portion of this area.

6.1.12.2 Previous Investigations and Remedial Actions

There are no records of investigations or remedial actions performed for the coal storage area. For activities associated with the CSA, please refer to Section 6.1.3.

6.1.12.3 Current Status

This area is currently used to store coal with no records of previous investigations. Therefore, FURTHER ACTION is recommended for AOI F-12.

6.1.13 Former Oily Pea Gravel, Concrete, and Debris Area (AOI F-13)

AOI F-13 consists of an area that formerly contained oily pea gravel, concrete, and debris, located south of the assembly plant scale, at the northeast corner of Plant 17. This area is considered an AOI because of the historical presence of oily material.

6.1.13.1 Historical and Current Operations

The area that formerly contained oily pea gravel, concrete, and debris is currently a parking area. There are no records indicating where the oily materials originated or what the chemical composition of the material was.

6.1.13.2 Previous Investigations and Remedial Actions

There have been no previous investigations conducted in association with the oily materials. Remedial actions included removal of the oily materials in February 1996; however, there are no available records documenting these activities.

6.1.13.3 Current Status

The oily material was removed in February 1996; however, there is no documentation describing these removal activities or any analytical data for the soils remaining in place. As a result, **FURTHER ACTION** is recommended for AOI F-13.

6.1.14 Fuel AST Area (AOI F-14)

AOI F-14 consists of a fuel AST area located west of the low-pressure fly ash storage silos. The fuel AST area is considered an AOI because of the materials (diesel fuel and gasoline) stored in the ASTs.

6.1.14.1 Historical and Current Operations

AOI F-14 is composed of three ASTs: one 1,000-gallon AST for diesel fuel, one 300-gallon AST for diesel fuel, and one 560-gallon AST for gasoline. The diesel fuel ASTs were staged on a concrete pad with no secondary containment. The 300-gallon diesel AST and the 560-gallon gasoline AST were removed.

The 1,000-gallon diesel fuel AST is still in use, although it is located west of its former location. According to Site personnel, the tank was moved to its current location in 1998. At its current location, the 1,000-gallon diesel fuel AST is stored within a secondary containment area. According to Site personnel, this area previously held a sodium hydroxide AST and a sulfuric acid AST.

There have been no documented releases from the diesel fuel or gasoline ASTs in this area.

6.1.14.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions conducted in association with the fuel AST area.

6.1.14.3 Current Status

The 300-gallon diesel fuel AST and 560-gallon gasoline UST have been removed. The 1,000-gallon diesel fuel AST is still in use and is stored within a secondary containment area. There have been no documented releases from any of these ASTs; however, there is no documentation of closure activities for the removal of the ASTs. As a result, **FURTHER ACTION** is recommended for AOI F-14.

6.2 Demolition Area (DA)

There are 13 AOIs located within the DA. The 13 AOIs in the DA are shown on Figure 6-2 and consist of:

- a former fill area (AOI W-1);
- a former hazardous waste storage pad (AOI W-2);
- five former UST or AST locations (AOI W-3, AOI W-6, AOI W-5, AOI W-7, and AOI W-8);
- three electrical transformers (AOI W-4, AOI W-12, and AOI W-13);
- the former foundry (AOI W-9);
- the railroad marshalling area (AOI W-10); and
- a sump drain (AOI W-11).

Each of these AOIs for the DA is summarized in Table 6-5 and discussed below. A listing of ASTs and USTs for the DA is provided in Table 6-6.

6.2.1 West Yard (AOI W-1)

AOI W-1 consists of the West Yard, an area of approximately 20 acres located in the southwest corner of the DA. It is bounded to the south by Montcalm Street, to the west by the Grand Trunk Western Railroad, to the east by the former Foundry (Plant 6) and to the north by the former Plant 9 (demolished in 1995). The West Yard area also includes the former A-1 fill area. The former landfill and a former waste pile were identified as SWMUs by GM in the *Certification of Potential Releases from Solid Waste Management Units* (GM, 1986c); therefore, the West Yard area is considered an AOI.

6.2.1.1 Historical and Current Operations

The entire area of the West Yard was historically used for material management activities related to the automotive manufacturing and support activities and foundry operations at the Site. Disposal activities occurred in the West Yard from the 1940s until 1979 and included foundry sand disposal, refuse disposal, sludge dumping, and trash burning. Soil borings indicate that the foundry sand extends from the surface to a depth of 18 feet bgs. A Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (Section 103(c)) Notification was filed by GM in 1981, which indicated that past land use included the disposal of "organics, inorganics, and heavy metals" in this area until 1979 (GM, 1981a). GM also completed the *Certification Regarding Potential Releases from Solid Waste Management Units* in 1986. The CERCLA notification and the *Certification Regarding Potential Releases from Solid Waste Management Units* are presented in Appendix A.

During the 1940s, the Salvage Building was constructed to separate reusable/salvageable materials from unusable wastes. Wastes such as wood and cardboard ash from incineration were disposed in the West Yard.

The Compressor Building was located on the western boundary of the West Yard, immediately east of the Railroad Marshalling Area. The building contained two transformers, one inside the building and one immediately adjacent to it, that have been historically noted as leaking PCB-containing fluids.

After the complex was reorganized in the 1970s, part of the West Yard came under control of the Former Central Foundry (AOI W-9), while the rest of the West Yard came under control of the automotive manufacturing and support operations (originally the Pontiac Motor Division, later the CPC Division). CPC built and operated the Former Hazardous Waste Storage Pad (AOI W-2) on the western portion of the West Yard, which was used from 1982 through 1988 to support the automotive manufacturing and support services.

The West Yard has soils and groundwater that are known to contain organics and inorganics (i.e., heavy metals) due to disposal of wastes from the foundry, plating and polishing, and automotive assembly operations as reported in the *Certification Regarding Potential Releases from Solid Waste Management Units* (GM, 1986c). Light non-aqueous phase liquids (LNAPL) containing PCBs is also present in the West Yard. The area also contains a closed bermed settling basin (backfilled with sand) used for settling solids from water generated from foundry processes and a Railroad Marshalling Area Drainage System (AOI W-10) where railroad cars were used to load metal scrap for transport.

6.2.1.2 Previous Investigation and Remedial Actions

In 1996 and 1997, Parsons Engineering Science, Inc. (Parsons) conducted a review of historical field investigations. Parsons also conducted a field investigation in 1997 to further delineate contamination in this portion of the Site. As summarized by Parsons in its *West Yard Investigation Report* (Parsons, 1997b), various monitoring wells, geotechnical borings, test trenches, and soil borings were installed and sampled between 1988 and 1997. Included in the Parsons summary are historical investigations conducted by Dames & Moore and Groundwater Technology, Inc (GTI) with respect to the closure and decommissioning of the Former Hazardous Waste Storage Pad (AOI W-2). The Dames & Moore and GTI investigations are further discussed in Section 6.2.2 (AOI W-2). The Parsons' report is provided in Appendix J. Table 6-7 provides a summary of historical soil and groundwater analytical data with a comparison to current MDEQ Part 201 applicable standards.

The analytical results from the Parsons investigation are summarized below for both soil and groundwater.

Soil

Twenty surface samples were collected and analyzed for Target Compound List (TCL) VOCs, TCL semivolatile organic compounds (SVOCs), total PCBs, and Target Analyte List (TAL) metals. VOCs were detected in surface soil samples collected at the Site. Most VOC detections were below 79 micrograms per kilogram (ug/kg), with the exception of acetone, which was detected at a maximum concentration of 360 ug/kg. SVOCs were detected at a maximum concentration of 110,000 ug/kg. PCBs were detected at a maximum concentration of 3,100 ug/kg.

Various metals were also detected within the surficial soil samples. Manganese was detected in nine of the surficial soil samples at concentrations above the MDEQ Part 201 Criteria for the Generic Particulate Soil Inhalation Criteria.

Forty-eight subsurface soil samples were collected and analyzed for TCL VOCs, TCL SVOCs, PCBs, and TAL metals. VOCs were detected at a maximum concentration of 150,000 ug/kg. Generally, SVOC detections were below 480,000 ug/kg, although a maximum concentration of 1,100,000 ug/kg was detected for butyl benzyl phthalate, which exceeded the soil saturation (Csat) criteria. PCBs were detected at a maximum concentration of 43,000 ug/kg.

All results were below applicable criteria with the exception of butyl benzyl phthalate, which was detected once at a concentration above the Csat Criteria; PCBs and antimony, which were detected once at a concentration above MDEQ Part 201 Direct Contact Criteria; lead, which was detected at concentrations above the MDEQ Part 201 Direct Contact Criteria in three surficial soil samples; and manganese, which was detected at concentrations above the MDEQ Part 201 Criteria for the Generic Particulate Soil Inhalation Criteria in seven surficial soil samples.

Groundwater

Groundwater flow in the West Yard is generally to the southwest. The depth to groundwater varies from approximately 5 to 27 feet bgs and is present in the sand and fill zones underlain by a lower permeability clay zone. Groundwater samples were collected and analyzed for VOCs, SVOCs, PCBs, dioxins/furans, and metals. VOCs were detected at a maximum concentration of 310 micrograms per liter (ug/L). SVOC detections were generally below 50 ug/L, although a maximum concentration of 390 ug/L was detected for 2,4-dimethylphenol. PCBs were detected at a maximum concentration of 37 ug/L. Dioxins were detected at a maximum concentration of 0.00117 ug/L TEFs. The only constituents that exceeded applicable Part 201 criteria were vinyl chloride, which was detected once at a concentration above the MDEQ Part 201 Generic Groundwater Contact Criteria; and total PCBs, which were detected twice at concentrations above the MDEQ Part 201 Generic Groundwater Contact Criteria.

In January 1998, CRA initiated a bi-monthly LNAPL Recovery Program and Interim Remedial Measure (IRM). The IRM consisted of bail-down tests, sample collection and LNAPL removal activities from selected wells. Recovered LNAPL was containerized into 55-gallon drums, sealed, labeled, and disposed off site. The bi-monthly activities were conducted until August 1999. Currently, the LNAPL Recovery Program is conducted approximately monthly.

CRA performed an LNAPL investigation in 1999 to further delineate the nature and extent of LNAPL in the West Yard. The LNAPL investigation included the installation of soil borings and monitoring wells, LNAPL monitoring, the collection of soil samples, and the collection of LNAPL samples. The results of the LNAPL investigations are presented in the Draft LNAPL Delineation Report (CRA, 2000c; Appendix J). Figure 6-4 presents new and historical monitoring well locations where the LNAPL measurements were made. Soil and LNAPL analytical results are presented in the Draft LNAPL Delineation Report (CRA, 2000c).

LNAPL was also observed in the "Montcalm" well, which is located along the southern perimeter of the West Yard. The well is a former production well that is 13 inches in diameter and approximately 190 feet bgs. Investigations of the well performed by CRA determined that the LNAPL did not originate through migration from the surrounding soils in the West Yard (CRA, 2000c, draft). All LNAPL has been removed from the well, and the well is scheduled to be abandoned.

Figure 6-3 presents the estimated limits of LNAPL in the West Yard based on available information in CRA's report. CRA concluded from the investigation that there appear to be at least three sources of LNAPL present at the Site. CRA also concluded that the potential exists for further lateral migration of LNAPL based on the fill materials present at the West Yard.

Internal GM documentation (presented in Appendix J) reported historical issues with respect to leaking transformers in the Compressor Building. Transformer 451, located inside the Compressor Building, was noted as leaking on March 2, 1988, and was remediated daily (i.e., cleaned with solvents) until the leak was sealed on March 7, 1988. Transformer 450, located west of the Compressor Building, was noted as leaking on October 29, 1985, and was remediated daily (method of remediation unknown) until the leak was sealed on November 18, 1985. The transformers have been removed and the compressor building has been decommissioned and demolished. The concrete slab from the Compressor Building remains in place.

6.2.1.3 Current Status

Based on historical site usage and the data obtained during previous investigations indicating subsurface contamination, including the presence of LNAPL, **FURTHER ACTION** is recommended for AOI W-1.

6.2.2 Former Hazardous Waste Storage Pad (AOI W-2)

AOI W-2 consists of a former hazardous waste storage pad located in the western portion of the West Yard. This area is considered an AOI due to correspondence with the MDNR, as discussed under Section 6.2.2.3.

6.2.2.1 Historical and Current Operations

In 1982, a hazardous waste storage pad was constructed to store RCRA hazardous waste (RCRA Interim Status Unit). The hazardous waste storage pad is located immediately south of the former Salvage Building and west of the former Compressor Building. The pad is an approximate 27,000-square-foot, 8-inch-thick concrete pad with a 4-inch curb. Activities conducted on the pad included waste storage, drum washing, and empty drum storage. The pad was used for the storage of solid and liquid hazardous and non-hazardous wastes (i.e., paint, paint thinner, gasoline, chlorinated solvents, machine wastes, lead chips, and spent halogenated solvents) prior to July 1, 1988, at which time closure activities were initiated by CPC. As reported in the *Certification Regarding Potential*

Releases from Solid Waste Management Units, a waste pile containing WWTP sludge, machine sludges, and paint sludges occupied the storage pad from 1979 to 1981 (GM, 1986c).

6.2.2.2 Previous Investigations and Remedial Actions

Prior to pad construction, TEC conducted a soil/geotechnical investigation, the results of which are summarized in the report *Soil Investigation for Barrel Storage Area* (TEC, 1982). TEC stated that analytical testing was performed for chemicals and metals, although only select metals were presented in the report and the full analytical list was not provided. Based on the data, TEC concluded the soil could remain in place to allow for the construction of the Hazardous Waste Storage Pad. TEC's report is presented in Appendix K.

Closure plans were subsequently submitted by GM to MDNR in November 1987 (GM, 1987g), February 1988 (GM, 1988a), and May 1988 (GM, 1988c) to allow for the decommissioning of the pad. The MDNR rejected the first two closure plans, and in June 1988 approved the May 1988 plan (MDNR, 1988b). The May 1988 closure plan and MDNR's approval letter are presented in Appendix K. Closure activities conducted by Dames & Moore commenced in July 1988. As part of the decommissioning activities, Dames & Moore conducted two phases of soil sampling as summarized in the *Interim Closure Report - Former Container Storage Area* (Dames & Moore, 1989; Appendix K). It was noted in this report that the pad was heavily cracked and that much of the contamination was found in low-lying areas. All soil and groundwater samples were analyzed for lead, benzene, toluene, xylenes, 1,1,1-trichlorethane, methylene chloride, methyl ethyl ketone and 1-butanol. A summary of the soil and groundwater analytical results is presented in Table 6-8.

Dames & Moore reported in the *Endangerment Assessment - Former Container Storage Area* (Dames & Moore, 1990; draft) that there was a significant risk associated with the carcinogenic contamination. The estimated worst-case current use exposures and associated potential health risks were identified to be within the USEPA's target risk range.

GTI conducted a soil vapor extraction feasibility study that is summarized in both the *Subsurface Investigation and Soil Vapor Pilot Test - Feasibility Study* (GTI, 1990a) and the *Soil Vapor Pilot Test #2 – Feasibility Study* (GTI, 1990b). GTI installed several monitoring wells and obtained soil samples. Analytical results are summarized in Table 6-8. During a subsequent investigation, as reported in the *RCRA Pad Review - Hazardous Waste Storage Area* (GTI, 1991), it appears that GTI installed two additional monitoring wells, however well logs were not included. In this report, GTI summarizes the ongoing history of the hazardous waste storage pad without making any further discoveries in addition to those outlined previously.

A Parsons Site investigation conducted in 1996 and 1997 (Parsons, 1997b), which included AOI W-2, summarized historical investigations and remedial activities, concluding that it appeared infeasible to remediate the underlying soil and groundwater at the pad to the pad closure criteria. The Parsons investigation further stated:

The source of compounds in soils and groundwater under the pad most likely was not the activities at the pad, but historical waste management activities in the entire West Yard area associated with automotive manufacturing and support operations... GM agreed to conduct a West Yard area-wide investigation to evaluate the environmental conditions and assess the need for any appropriate corrective actions (Parsons, 1997b).

This conclusion is further supported by groundwater sampling and analysis conducted by Parsons in January 1996, which indicated that the LNAPL sampled from different wells originated from different sources and consisted of different concentrations and combinations of constituents (Parsons, 1997b).

6.2.2.3 Current Status

As outlined in a letter from the MDNR (MDNR, 1991), the former hazardous waste storage area did not meet "clean closure" criteria due to the unknown extent of contamination, and the inability of the proposed vapor extraction process to provide a final remediation. MDNR's letter is provided in Appendix K. GM previously reached an agreement with MDEQ that final closure of the pad would be granted upon implementation of remediation activities pertaining to historical impacts in the West Yard. GM will pursue final approval of the pad closure at an appropriate time. Based on this information, **NO FURTHER ACTION** is recommended for the hazardous waste storage pad.

6.2.3 Former Plant 8 Flammable Liquid Storage Tank Farm (AOI W-3)

AOI W-3 consists of a former flammable liquid storage tank farm located near the former Plant 8 in the northwestern corner of DA. This area is considered to be an AOI because of the materials historically stored in the former ASTs.

6.2.3.1 Historical and Current Operations

The former flammable liquid storage tank farm (tank farm) was historically used for the storage of flammable liquids, including diesel fuel, line thinner, gasoline, and solvents. The tank farm consisted of two separate areas, a north area and south area, each contained within a 3-foot-high dike. The condition or construction of the floor was not discussed in the available documents. The tank farm contained nine ASTs ranging in capacity from 13,000 to 26,000 gallons. The north section contained five ASTs and the south section contained four ASTs. Table 6-6 provides a summary of the tanks.

6.2.3.2 Previous Investigations and Remedial Actions

In the *Preliminary Soils Contamination Assessment - Plant 8 Flammable Liquid Tank Farm* completed by Keck Consulting Services (Keck) (Keck, 1984a), it was reported that many minor spills have occurred at the tank farm. The spills occurred during filling of the ASTs, when excess product in fill hoses was routinely drained inside the diked area surrounding the ASTs.

Keck evaluated the extent of fuel-contaminated soils in the *Preliminary Soils Contamination Assessment - Plant 8 Flammable Liquid Tank Farm* (Keck, 1984a) by placing eight soil borings and collecting soil samples for analysis. This assessment indicated that hydrocarbon-contaminated soil (concentrations not reported) was present from ground surface to depths of 8 to 16 ft bgs, where at six locations, a silt/clay layer was encountered. Keck concluded that the contamination had not entered the groundwater system because the clay layer was impeding the downward flow of the contaminants, and there was no evidence of hydrocarbon contamination in the deeper saturated sands of other borings. It was further recommended that the investigation be expanded in order to delineate the lateral extent of contamination outside the tank farm area. The 1984 assessment is included in Appendix L.

6.2.3.3 Current Status

The former flammable liquids storage tank farm has been decommissioned and demolished. There is no documentation indicating that recommended remedial investigations have taken place in the area of the tank farm nor is there documentation of the tank closure activities. Based on this information and historic information indicating subsurface contamination, **FURTHER ACTION** is recommended for AOI W-3.

6.2.4 Transformer Substation D-1 (AOI W-4)

AOI W-4 consists of transformer substation D-1, which was previously located in the southeast quadrant of the former Plant 8. This area is considered an AOI because of documented PCB transformer oil spills within the substation.

6.2.4.1 Historical and Current Operations

Transformer Substation D-1 was located within Plant 8 until it was removed prior to the demolition of Plant 8 in 1997.

6.2.4.2 Previous Investigations and Remedial Actions

As part of the demolition of Plant 8, PCB-containing transformers were removed from substation D-1 located within the plant. Following removal of the transformers, staining observed on the concrete floor was cleaned by the contractor who removed the transformers. Wipe samples taken after the spill cleanup indicated residual PCB contamination. Remedial actions were subsequently undertaken by SUNPRO and summarized in the *Final Report-PCB Remediation Substation D-1* (SUNPRO, 1996). The SUNPRO report is provided in Appendix M.

SUNPRO provided environmental remediation services in August 1996 to address residual PCB contamination after transformer decommissioning and removal. SUNPRO removed 2 to 3 inches of concrete from where the transformers were formerly located. Concrete removal was conducted under negative air to suppress dust migration during removal activities. Post remedial wipe sampling indicated compliance with the USEPA PCB cleanup requirement of less than 10 ug/100 cm^2.

6.2.4.3 Current Status

The transformer substation D-1 has been decommissioned and demolished. Cleanup activities relative to the concrete staining were completed in 1996 and met USEPA cleanup requirements. Based on this information, **NO FURTHER ACTION** is recommended for AOI W-4.

6.2.5 Plant 8 Basement AST Area (AOI W-5)

AOI W-5 consists of ASTs located in the basement of the former Plant 8. The basement AST area of the former Plant 8 is considered an AOI because of the materials (weak metallic wastewater, alkali wastewater, and unknown materials) historically stored in the former ASTs.

6.2.5.1 Historical and Current Operations

Undated CPC documents indicate that the basement of Plant 8 contained 17 ASTs, of which three had a capacity of 680 gallons, seven had a capacity of 7,400 gallons, and seven had a capacity of 11,300 gallons each. The documentation further indicates that 15 of the ASTs were empty, while two of the 7,400-gallon ASTs were used to store weak metallic wastewater and alkali-oily wastewater, respectively. This information is summarized in Table 6-6.

6.2.5.2 Previous Investigations and Remedial Actions

No documentation available.

6.2.5.3 Current Status

Plant 8 has been decommissioned and was demolished in 1997. There is no current information available on closure of the ASTs; therefore, **FURTHER ACTION** is recommended for AOI W-5.

6.2.6 Former Plant 8 Flammable Materials Storage Building (AOI W-6)

AOI W-6 consists of the former Plant 8 Flammable Materials Storage Building located in the northwestern corner of the DA, west of the Flammable Liquid Tank Farm (AOI W-3). This area is considered an AOI because of the materials (oils and glycols) historically stored in the building.

6.2.6.1 Historical and Current Operations

Undated documentation provided by CPC indicates that the Flammable Materials Storage Building housed 17 tanks containing oils and glycols, of which nine were 15,000-gallon tanks and eight were 22,000-gallon tanks. A summary of the tanks is presented in Table 6-6. The doors of the storage building were above ground level, causing the storage building to act as a diked area. The railroad and truck unloading areas contained catch basins that were connected to the WWTP.

The area is now vacant land.

6.2.6.2 Previous Investigations and Remedial Actions

No documentation available.

6.2.6.3 Current Status

The flammable materials storage building has been decommissioned and demolished. Portions of the building foundation remain in place. There is no information available on the closure of the tanks prior to demolition; therefore, **FURTHER ACTION** is recommended for AOI W-6.

6.2.7 Plant 9 Turbo Tank (Tank 9-1) (AOI W-7)

AOI W-7 consists of a turbo tank (Tank 9-1) that was previously located in the area immediately northwest of the former Plant 9. This area is considered an AOI because of the material historically stored in the UST.

6.2.7.1 Historical and Current Operations

Tank 9-1 was a registered UST installed as early as 1983, and was used for storing gasoline. Tank 9-1 is presented on the UST summary presented in Table 6-6. The 550-gallon UST was reportedly removed in June 1991, and was requested to be considered "closed" in an application to the Michigan State Police, Fire Marshal Division, Hazardous Materials Section, in three letters from CPC dated September 11, 1990 (GM, 1990), June 27, 1991 (GM, 1991), and March 6, 1992 (GM, 1992a). These letters are presented in Appendix N.

6.2.7.2 Previous Investigations and Remedial Actions

TEC's *UST Closure Site Assessment* could not be located but was mentioned in the letter from GM dated June 27, 1991 (see Appendix N). The TEC Tank 9-1 site assessment showed no contamination, and was therefore considered closed by CPC Pontiac.

6.2.7.3 Current Status

Based on the closure activities associated with the UST, **NO FURTHER ACTION** is recommended for AOI W-7.

6.2.8 Former Plant 9 Basement AST Area (AOI W-8)

AOI W-8 consists of 12 ASTs formerly located in the Plant 9 basement. This area is considered an AOI because of the materials (kerosene, coolants, and unknown materials) historically stored in the ASTs. Furthermore, during recent storm sewer cleaning activities, kerosene-like odors were observed in the section of storm sewer near former Plant 9.

6.2.8.1 Historical and Current Operations

According to undated CPC correspondence, the basement of Plant 9 contained 12 ASTs (ASTs 9-2 through 9-13). Of the 12 ASTs, five tanks (four 10,000-gallon, and one 6,400-gallon) previously contained kerosene, three tanks (two 1,4000-gallon and one 2,000-gallon) were empty, and four tanks (all 10,000-gallon) previously contained coolant. Table 6-6 presents a summary of the tanks formerly contained in the basement of Plant 9.

6.2.8.2 Previous Investigations and Remedial Actions

No documentation available.

6.2.8.3 Current Status

All tanks have been removed and Plant 9 has been decommissioned and demolished. However, there is no documentation on the closure of the ASTs. Kerosene-like odors have also been reported in the storm sewers in this area. As a result, **FURTHER ACTION** is recommended for AOI W-8.

6.2.9 Former Central Foundry (Plant 6) Resin Spill and UST (AOI W-9)

AOI W-9 consists of the former Central Foundry (Plant 6) previously located in the southeast corner of the DA, which was bordered on the south by Montcalm Street, on the west by the West Yard, on the east by Glenwood Avenue, and on the north by Plant 9. The former Central Foundry Building covered approximately 900,000 square feet. This area is considered an AOI because of the historical use of PCBs in the foundry, a resin spill that occurred in the plant, and a former 20,000-gallon tank that was located in this area.

6.2.9.1 Historical and Current Operations

The foundry was originally built for the Oakland Motor Car Company and was later transferred to Pontiac Motor Division around 1932. Major modifications to the foundry included the installation of a rotary mechanical iron pourer and a new mold line. The foundry produced iron from metallic ore, which was cast into automotive parts, such as cast iron engine blocks and heads. The Pontiac Central Foundry ceased production and closed in May 1987 and was demolished in April 1995. Foundry sand from the plant was used as fill material in the West Yard as discussed in AOI W-1, and was also reportedly disposed off site in at least one former Oakland County Landfill.

6.2.9.2 Previous Investigations and Remedial Actions

On November 17, 1980, GM filed a RCRA Part A permit application for the GM Central Foundry Plant (MID 085470102) (GM, 1980f). The only waste listed on the application was baghouse dust (code D006) from the facility's electric arc melt furnaces. The RCRA Part A permit application and associated correspondence are provided in Appendix D.

The RCRA Part A permit application was withdrawn on July 12, 1982 on the basis that the baghouse dust was not a hazardous waste under 40 CFR part 261 (GM, 1982b). A March 29, 1983 letter from USEPA acknowledged the withdrawal of the RCRA Part A permit application (USEPA, 1983).

In 1985, a resin spill occurred in Plant 6. The resin storage building was located in the northwest quadrant of the foundry. Within the resin storage building there were two 6,000-gallon tanks located on a steel grilled floor, each positioned over a sump designed to contain spills and overflows. During the summer of 1985, it was discovered that the sumps were leaking resin, and the situation was reported to the MDNR.

Between August and December of 1985, Schleede-Hampton Associates Inc. (SHA) performed a preliminary exploration of the area surrounding the resin storage facility to determine the soil conditions and the extent of resin contamination in the area. SHA concluded that the resin constituents are confined to the area within approximately 20 feet of the resin storage building. Based on the information gathered during this exploration, a work plan for the cleanup was developed. This work plan is presented in the report entitled *Department 671 Resin Storage Facility - Outline for the Design of a Remedial Action Program* (SHA, 1985). This report contains the preliminary exploration information as well as guidelines for further soil sampling exploration. It was approved by the MDNR on February 11, 1987 (MDNR, 1987a).

In a letter to the MDNR dated July 1, 1987, GM noted that the implementation of the 1985 work plan was scheduled to begin on July 6, 1987 (GM, 1987e). The *Department 671 Resin Storage Facility - Site Exploration and Environmental Action Plan* (SHA, 1988) presents the results of the additional investigation. A summary of soil and groundwater samples analyzed during this study are presented in Table 6-9.

The *Results of Final Soil Sampling and Analysis for Clean-Up Verification* report, summarizes the resin remedial activities that took place on site (SHA, 1989). The report is provided in Appendix O. The dates of the cleanup and the specific actions taken are not presented in any of the documentation. The remedial action instituted at the Site was limited to excavation of resin contaminated soils. At a nominal depth of 20 feet below the ground surface verification sampling and analytical testing were completed on a grid pattern. The results verified that no evidence of resin constituents were present in any of the grid positions. On December 11, 1989, the MDNR approved closure of the Department 671 Resin Storage Facility (MDNR, 1989) (see Appendix O).

Several recommendations with respect to areas of concern within the foundry were identified and included the removal, decontamination, and proper disposal of the 20,000-gallon UST on the south side of the facility within nine months after the tank is removed from service.

The *Deactivation Assessment (Final Draft Report)* (O'Brien & Gere [OBG], 1994) mentions that the UST was removed prior to plant shutdown. No other documentation is available for the UST removal. The *Deactivation Assessment (Final Draft Report)* identifies items of environmental concern at the foundry prior to the demolition of equipment and facilities.

A reconnaissance survey by OBG revealed three distinct basement areas within the foundry: basement area 2, the cleanup room and the foundry basement. Basement area 2 was inaccessible due to an accumulation of 1.25 ft of water on the floor. The water contained dissolved arsenic at a concentration exceeding MDNR Type B Criteria for groundwater.

The cleanup room and the foundry basement held significant accumulation of sediment and dust. Analytical results showed that the concentration of total metals and organics in both areas and the cyanide concentration in the foundry basement exceeded the MDNR Type B Criteria for soil. Leachability tests indicated that the detected metals in both areas do not readily leach. PCBs were present in concentrations above Toxic Substances Control Act (TSCA) regulated levels on stained surfaces in the cleanup room and in soil/dust samples in the foundry basement.

Analysis of the first floor, second floor and penthouse level of the foundry building indicated the presence of asbestos containing materials (ACMs) existing in the form of dust and debris on the first floor. Equipment that may contain PCBs, mercury, oil and/or hydraulic fluid was found on all three levels. Paint chips collected from the first and second floors contain lead concentrations exceeding MDNR Type B Criteria for soil. Soil, sediment, and dust samples collected within the first floor and penthouse level indicate the presence of total metals in concentrations that exceed the MDNR Type B Criteria for soil. Leachability analyses of the paint chips and the soil/sediment/dust indicate that the metals do not readily leach.

Demolition of the foundry structure was completed in April 1995. No correspondence regarding the decommissioning and demolition activities was available for review.

From May 22 through May 24, 1995, the USEPA performed a PCB soil and/or debris sampling inspection. The *PCB Sampling Report* (Chester, 1996) is presented in Appendix O. At the time of the sampling, the foundry was demolished. The remaining structures included the compressor, salvage, and melt shop buildings and part of the core storage office and East Loading Dock area.

Five soil and/or debris samples were taken at locations throughout the demolition site where PCB's had been identified during a GM-conducted Facility Assessment. Four samples were collected by removing soil and/or debris from the top of concrete slabs. The fifth sample was collected in the Molding area at the soil surface. Two samples were taken from each location and were individually tested by both USEPA and GM. Aroclor 1242 was the only Aroclor detected at the East Loading Dock at a concentration 82 mg/kg and 36 mg/kg from the USEPA and GM, respectively. As stated in the *PCB Sampling Report*, the USEPA informed GM that this was the only area of concern, as it was the only area with a PCB concentration greater than 50 mg/kg (USEPA result) (Chester, 1996).

Prior to demolition, the East Loading Dock area was swept and the debris placed in 55-gallon drums. These drums were sealed, removed from the site, and disposed at an EPA approved landfill. To confirm the cleanliness of the area, the USEPA requested four wipe samples be taken. Five wipe samples were taken from the concrete surface, and analysis showed that the highest PCB concentration was 4.4 ug/wipe. The report concludes at this point and does not suggest any further action is required.

6.2.9.3 Current Status

The Foundry (Plant 6) has been decommissioned and demolished. Previous remedial activities have addressed the former resin spill and the presence of PCBs. However, documentation does not exist for closure of the 20,000-gallon UST; therefore, **FURTHER ACTION** is recommended.

6.2.10 Railroad Marshalling Area Drainage System (AOI W-10)

AOI W-10 consists of a railroad marshalling area that extends the entire length of the western boundary of the West Yard. This area is considered an AOI because of historical operations.

6.2.10.1 Historical and Current Operations

Historical operations at the Railroad Marshalling Area included the temporary storage of railcars loaded with scrap metal and grinding waste to be shipped off site. Waste from the waste metal chips drained out of the railcars and into the railway ballast/soil immediately beneath the tracks. An oily discharge originating from the railroad area was noted in July 1971 immediately south of the marshalling area in a culvert on school property. The culvert is known to drain into Harris Lake.

6.2.10.2 Previous Investigations and Remedial Actions

The following information was obtained from a CPC Environmental Evaluation Report dated August 5, 1971 (GM, 1971), and subsequent internal handwritten CPC documents dated as late as February 1972. Available documentation is provided in Appendix P. The superintendent of the Pontiac School District bus garage, Mr. Carl Burnside, reported to CPC that an oily discharge was seen coming from a culvert originating from CPC property. A sample from the culvert was obtained by Ron Grimes of the Oakland County Environmental Health Department and analyzed for coliform, which indicated 214,000 counts, a concentration above Michigan State guidelines. A visual inspection of the area indicated that oil had run off the CPC property from the railroad area, down the roadway, and entered an on-site storm sewer discharging to Harris Lake. The oil in the storm sewer was pumped out, and daily monitoring of the area ensued. The duration and extent of the monitoring activities is not known. An earthen sump existed at the marshalling area that collected the oily runoff, and a pump was installed that directed oily wastewater to the WWTP. Overflow during periods of rain was noted during the months of September and October, and sampling during this period indicated coliform counts remained above guidelines. It is unclear where the samples were obtained. Correspondence could not be located for periods between February and November of 1972.

As a result of the incident, the railroad marshalling area drainage system was installed by CPC in November 1972. The drainage system was designed to collect the oily discharge dripping out of railcars and to pump the oil to the WWTP.

6.2.10.3 Current Status

The railroad marshalling area is no longer used for the storage of railcars. The railroad marshalling area drainage system remains at the Site. Based on reported oily discharges and historic operations associated with the railroad marshalling area, **FURTHER ACTION** is recommended for AOI W-10.

6.2.11 Salvage Yard Sump Drain (AOI W-11)

AOI W-11 consists of the Salvage Yard sump drain. The location of the sump drain is unclear. The Salvage Building was located on the western boundary of the West Yard, north of the Compressor Building, and immediately east of the rail lines. This area is considered an AOI because of the historical disposal activities that took place at this location.

6.2.11.1 Historical and Current Operations

The location of the Salvage Yard sump drain is unclear, since it is not directly mentioned in the documentation. It should be noted that there is a sump located immediately adjacent to the Salvage Building, within the hazardous waste storage pad, but it is not known if this is the location where dumping activities took place.

Internal CPC documentation dated September 24, 1985, indicates that 69 barrels with various liquid contents were dumped down the salvage sump during June and July 1985. The documentation indicates that numerous city sewer ordinance limits were breached by CPC. Samples of water were taken from the influent and effluent tanks at the WWTP each day of the dumping. Chloride concentrations exceeded the city limits on each of the eight days of dumping. Total Kjeldahl Nitrogen (TKN) was exceeded on six of the eight days of dumping, and nickel was exceeded on two of the days of dumping.

6.2.11.2 Previous Investigations and Remedial Actions

Samples of water were taken from the influent and effluent tank at the WWTP each day of the dumping. Chloride concentrations exceeded the city limits on each of the eight days of dumping. TKN was exceeded on six of the eight days of dumping, and nickel was exceeded on two of the days of dumping.

6.2.11.3 Current Status

Information is not available on the condition of the sump drain. Due to the past reported incidents at this location, **FURTHER ACTION** is recommended for AOI W-11.

6.2.12 Catalina Substation (AOI W-12)

AOI W-12 consists of the Catalina Substation located south of Montcalm Street and east of the storm-water retention pond. This area is considered an AOI because there were reported spills of PCB-containing oils with subsequent remedial action implemented.

6.2.12.1 Historical and Current Operations

The substation is owned by GM and leased to Detroit Edison. This power station was used to service the foundry operations.

Access to the substation was restricted during the recent Site walkthrough.

6.2.12.2 Previous Investigations and Remedial Actions

In response to a release of PCB-containing transformer oils on August 19, 1985, GM initiated a sampling and analysis program for PCB-contaminated soils followed by remedial action (GM, 1986j). These remedial actions involved removal of PCB-contaminated soils. These remedial efforts were approved by the MDNR in a letter dated May 27, 1987 (MDNR, 1987b), and are provided in Appendix R.

6.2.12.3 Current Status

Based on the approved remedial activities, **NO FURTHER ACTION** is recommended for AOI W-12.

6.2.13 Montcalm Substation (AOI W-13)

AOI W-13 consists of the Montcalm Substation, located east of Saginaw Street and north of Montcalm Street. This area is considered an AOI because transformer oil that potentially contained PCBs was used at the substation.

6.2.13.1 Historical and Current Operations

The Montcalm Substation is located east of Saginaw Street and north of Montcalm Street. This substation was used to service the Site and acted as a backup to the Catalina Substation.

Access to the substation was restricted during the recent Site walkthrough. There have been no documented releases associated with the power substation.

6.2.13.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the substation.

6.2.13.3 Current Status

There is no information available on this area; therefore, **FURTHER ACTION** is recommended for AOI W-13.

6.3 Metal Fabrication Division (MFD)

There are 25 AOIs located within the MFD portion of the Site. The 25 AOIs in the MFD area consist of:

- one wastewater treatment plant (AOI M-1);
- one former plating area (AOI M-2);
- three former PCB-containing fluid spills (AOI M-3, AOI M-6, and AOI M-24);
- nine UST or AST locations (AOI M-4 and AOI M-7 to AOI M-14);
- one former fill area (AOI M-5);
- two railroad spurs (AOI M-15 and AOI M-19);
- two building sump areas (AOI M-16 and AOI M-25);
- one piping trench (AOI M-17);
- one waste accumulation area (AOI M-18);
- one plant basement (AOI M-20); and
- three electrical substations (AOI M-21 to AOI M-23).

Figure 6-5 shows the locations of the AOIs within the MFD portion of the Site. A summary of the MFD AOIs is presented in Table 6-10. A detailed listing of the ASTs and USTs is presented in Table 6-11.

6.3.1 Wastewater Treatment Plant Area (AOI M-1)

AOI M-1 consists of the WWTP located west of Plants 5, 14, and 23. Historically, the WWTP has utilized up to 55 ASTs, which were related to the industrial wastewater treatment process (including system influent, system effluent, and materials used during treatment). The WWTP and two waste piles located within the WWTP area were identified as SWMUs by GM in the *Certification of Potential Releases from Solid Waste Management Units* (GM, 1986c). This area is considered an AOI because of the type of materials stored and treated (industrial wastes), a history of documented releases, and it was previously identified as a SWMU.

6.3.1.1 Historical and Current Operations

The WWTP began operation in March 1957. Historically, the area has contained up to 55 ASTs that together have provided wastewater treatment capabilities. Most of the existing ASTs do not have secondary containment systems. The WWTP consists of two separate batch treatment systems, one for metals removal and one for alkali-oily waste removal.

The ASTs are used to store:

- treated metals, including hexavalent chromium, from paint booths, ELPO, the powerhouse, and assembly;
- treated alkali-oily wastes from engine plants, metal stamping, and parts washers; and
- oil, sludge, sulfuric acid, lime, alum, polymer, caustic, and pickle liquor.

The *Certification of Potential Releases from Solid Waste Management Units* documents various releases in the WWTP area between 1975 and 1984 (GM, 1986c). Potential releases may have included alkali-oily water, cyanide plating solution, acidic alkali water, lime slurry, reclaimed oil, strong metallic water, chrome solution, and cyanide solution. Waste piles located within the WWTP area were used for water treatment sludge (F006), and non-hazardous painting and machining sludge (GM, 1986c).

In 1995 PCBs were detected in reclaimed oil that had been separated from wastewater.

Water from the WWTP discharges to the sanitary sewer on Montcalm Street via Outfall 003 (see Figure 2-1), and ultimately discharges to the City of Pontiac POTW. During the August 2000 site walkover, areas of stained soil were noted around several of the tanks.

6.3.1.2 Previous Investigations and Remedial Actions

The wastewater treatment system receives oily wastewater from the manufacturing and press plants at the Site. This wastewater is treated to remove the oil before being discharged to the City of Pontiac POTW. The recovered oil

is further processed and sold to buyers. During the bidding process in 1995, samples of the oil were collected and analyzed for various parameters. The lab data indicated the presence of PCBs above the allowable level for sale. Additional sampling was conducted to properly characterize the waste oil. Further sampling indicated levels of PCBs in the WWTP system above the TSCA regulatory limit. The PCB-contaminated oil was subsequently collected and disposed off site in compliance with TSCA regulations.

A preliminary subsurface soil boring program was conducted by CRA in September 1999, with soil samples obtained from four boreholes, and submitted for analysis of VOCs, SVOCs, PCBs, and metals. Results of this program are presented in a memorandum prepared by CRA (CRA, 1999) and provided in Appendix S. In general, PCBs were the only constituents detected.

6.3.1.3 Current Status

Based on the type of materials historically stored and treated, records of previously documented releases, and visual observation of stained soils in the area, **FURTHER ACTION** is recommended for AOI M-1.

6.3.2 Former Plating Operations Area (AOI M-2)

AOI M-2 consists of a former plating operations area located in the western portion of Plant 2, near Dock 34. This area is considered an AOI because of the type of materials historically used in plating operations (metals, solvents, and acids) and the nature of their use. In addition, the plating pits showed evidence of corrosion during a recent Site walkthrough. This area also has six metal lined mix tanks located below the concrete floor east of the plating pits.

6.3.2.1 Historical and Current Operations

Metal-plating operations were conducted in this area from at least 1964 through 1985. Metal plating operations conducted at the Site included meacher (copper coating) and utilyte (nickel and chrome plating) processes. The plating operations were conducted in metal dip tanks within a concrete sump or bermed concrete area. Metal parts were placed on a rack and dipped in tanks containing either an etching, cleaning, or plating solution. Parts were transferred between tanks by an overhead hoist. Overflow from the tanks was contained in the concrete sumps or bermed areas. Chlorinated solvents were used extensively in the plating area to clean the metal parts prior to plating.

The area consists of several former process plating pits and USTs. During the September 2000 Site walkthrough, signs of corrosion were observed in the plating pits and area truck docks.

In addition, six metal lined mix tanks associated with the plating operations are located in the plating area north of the railroad track between Plants 2 and 5. These mix tanks are located below the concrete floor. According to Site personnel, solutions were off-loaded from railcars into the mix tanks for use in the plating process.

Two sumps are also located in this area, described as a parts washer sump and a machine sump. Both sumps are part of the Site WWTP system.

There have been no documented releases from the former plating operations area.

6.3.2.2 Previous Investigations and Remedial Actions

A limited investigation of the plating area was completed as part of a building decommissioning assessment (BDA) of Plants 2 and 5. No remedial actions have been conducted in association with the former plating operations area.

On November 23 and 24, 1998, CRA conducted a limited investigation in the area of the plating pits. Samples of various materials were collected: surficial solids and dust, sediment and bulk/staged solids, sludge and oil, water, wood floor blocks, paint, and concrete cores. Samples were collected from trenches/sumps/pits/vaults, drums and containers, surficial material and stains, and concrete flooring.

Exceedances of cleanup criteria (e.g., toxicity characteristic leaching procedure [TCLP], TSCA, Part 201) were identified in residuals in floor trenches, pits, vaults, sumps, and concrete flooring for the following parameters: arsenic, chromium, copper, lead, cyanide, PCBs, corrosivity, and reactivity.

6.3.2.3 Current Status

During the September 2000 Site walkthrough, signs of corrosion were observed in the plating pits and area truck docks. Sumps were also observed in the plating pits. Roof leaks allow rainwater to accumulate in some of the pits and truck docks. As a result of these observations and the results of sampling conducted as part of the BDA, **FURTHER ACTION** is recommended for AOI M-2.

6.3.3 Former Track 31 (AOI M-3)

AOI M-3 consists of former Track 31, a railroad spur located west of Plant 14 and northwest of the WWTP. This area is considered an AOI because of a documented historical release of PCB-containing hydrocarbons.

6.3.3.1 Historical and Current Operations

Former Track 31 was used for transporting materials within the facility. The nature of the materials transported on Track 31 is not known at this time. In October 1986, GM personnel reported oil staining on Track 31.

6.3.3.2 Previous Investigations and Remedial Actions

Previous investigations included several soil and groundwater investigations that were conducted between 1986 and 1995. Remedial actions consisted of excavation of PCB-contaminated soil in September and October 1996. Previous investigations and remedial actions are detailed below.

In October 1986, GM personnel reported surficial oil staining on Track 31. According to GM personnel, the source of the release was likely to be a pre-1978 spill of a potentially PCB-containing fluid. Five surface soil samples were collected and analyzed for PCBs. The results indicated the presence of PCBs, predominantly Aroclor 1260 (OBG, 1997).

Between December 1986 and January 1989, additional soil and groundwater investigations were conducted to evaluate the presence of PCBs and the potential presence of USEPA priority pollutants. Based on these investigations, the vertical and lateral extents of PCB contamination (Aroclors 1260 and 1242) above the MDEQ generic residential direct contact value for PCBs (2.3 mg/kg) were determined. Concentrations of total PCBs in soil ranged from nondetect to 20,100 ppm. The PCB-impacted area extended along Track 31 in a north-south direction (OBG, 1997). Soil samples collected from within the impacted area did not indicate the presence of other priority pollutants above the MDEQ generic residential direct contact criteria values.

In 1988, eight monitoring wells were installed and initially analyzed for PCBs. Two of the wells were originally sampled for the full priority pollutant list. Only bis(2-ethylhexyl)phthalate was present above MDEQ health-based drinking water criteria. This was determined to be laboratory contamination, not indicative of Site conditions. Trace concentrations of PCBs were detected below regulatory criteria at three of the monitoring wells. PCBs were not detected in filtered groundwater samples from these wells. The monitoring wells were sampled quarterly for PCBs from November 1988 to April 1993. With the exception of trace levels of PCBs (below regulatory criteria) in three of the wells during the initial sampling event, PCBs were not detected in groundwater. Based on the groundwater sampling results and the absence of current and foreseeable use of the groundwater, groundwater was not considered a media of potential concern.

GM submitted a Remedial Action Plan (RAP) for Part 201 industrial/restricted access closure on July 23, 1996 (GM, 1996a). On September 26, 1996, MDEQ approved the RAP with modifications as an interim measure (MDEQ, 1996).

In September 1996 and October 1996 soils and rail materials were excavated from the Track 31 area. A total of 3,609 tons of debris (soils and rail line) were transferred to specially lined railcars on Track 35 (to the west). Laidlaw/USPCI assumed transportation responsibility for the railcars, and the PCB-contaminated debris was taken to the TSCA permitted Grassy Mountain Facility in Lakepoint, Utah, for disposal.

The RAP completion report was submitted to the MDEQ in January 1997 (OBG, 1997) and is provided in Appendix S.

6.3.3.3 Current Status

The Former Track 31 and surrounding PCB-contaminated soils were excavated in 1996. Track 31 was removed during remedial activities in 1996 and has not been replaced. The area is currently covered with soil. Based on the successful soil remediation completed in 1996, **NO FURTHER ACTION** is recommended for AOI M-3.

6.3.4 Plant 25 Former Gasoline UST and Current Gasoline AST Location (AOI M-4)

AOI M-4 consists of two tanks (one UST and one AST) adjacent to Plant 25 (formerly Plant 51) located in the northwest corner of the MFD portion of the Site. This area is considered an AOI because of a prior documented release from the former UST.

6.3.4.1 Historical and Current Operations

Plants 25 and 33 housed engine machining and assembly operations. Material storage and shipping associated with these operations were also conducted in these plants.

The former 20,000-gallon UST was located north of Plant 25 and stored leaded gasoline. The UST was removed in 1985.

The 1,000-gallon AST is located north of Plant 25 and contains gasoline. The AST is surrounded with a secondary containment basin that has a blind sump.

6.3.4.2 Previous Investigations and Remedial Actions

Previous investigations included an investigation of the soils and groundwater in the vicinity of the UST in March 1985. Remedial actions included removal of the UST and excavation of contaminated soils associated with the UST as well as installation of a hydrocarbon recovery system in 1985, as detailed below. There have been no previous investigations or remedial actions associated with the AST.

On March 2, 1985, GM reported a release of an unknown amount of gasoline to the MDNR, the local fire department, and the U.S. Coast Guard (USCG) due to the discovery of gasoline in a sewer near the former UST.

GM rapidly responded to the release, as documented in a letter to the USCG (GM, 1985a). Upon discovery of gasoline in the sewer, emulsifier (Slix) was added to the liquid in the sewer to raise the flash point. The sewer was subsequently plugged to prevent additional gasoline from being transferred to the WWTP. To stop the release of gasoline, the UST was pumped dry. No records are available indicating the volume of gasoline pumped from the UST. A skimmer was installed in the sewer manhole to remove gasoline from the sewer.

The UST and associated piping were subsequently removed from the ground and disposed of. A total of 1,100 cubic yards of contaminated soil were removed from the area surrounding the tank. This soil was characterized and disposed of at an off-site landfill. Approximately 2,000 gallons of gasoline were recovered from the excavation.

In March 1985, O.H. Materials (OHM) installed five soil borings to assess gasoline impacts to upgradient and downgradient locations. Three 2-inch-diameter monitoring wells were installed in the vicinity of the UST to monitor for the presence of dissolved phase hydrocarbons. One of these monitoring wells was covered over when a new concrete pad was installed in the area. Results from the two remaining monitoring wells indicated the presence of acrylonitrile, benzene, ethylbenzene, 1,2-dichloroethane, toluene, and total xylenes. Details of the analytical program's actual laboratory analytical results are not available.

A large-diameter well and hydrocarbon recovery system were installed by OHM. The recovery system consisted of a two-pump set up with a clarifier for the discharged water. Approximately 500 gallons of product were recovered by means of this recovery system. The system was replaced in mid-1985 by MPC Environmental (MPC) with a similar two-pump system. The recovery system was removed from the well for the winter in December 1985 and reinstalled in April 1986. There was no measurable product in the well when the recovery system was reinstalled.

A summary of the UST removal activities and subsequent investigations and remedial actions was presented in the *Groundwater Remediation Summary Report*, submitted to the MDNR in February 1987 (MPC, 1987). Based on decreasing dissolved hydrocarbon concentrations and no recoverable amounts of gasoline in the recovery well, MDNR approved termination of the cleanup program (with monthly monitoring requirements through December 1987) in August 1987 (MDNR, 1987d).

6.3.4.3 Current Status

There have been no documented releases from the existing AST, which is located within a secondary containment system. Remediation of the gasoline spill from the former UST was completed in August 1987. However, the limited available analytical data show that in 1991 benzene still exceeded Part 201 criteria (Table 6-13). Based on

this information, **FURTHER ACTION** is recommended for AOI M-4 to verify the previous remedial action and to determine actual groundwater quality condition.

6.3.5 Former A-2 Fill Area (AOI M-5)

AOI M-5 consists of the former A-2 fill area, which covers approximately 10 acres under Plants 25 and 33 (previously Plants 51 and 55), the east parking lot area in the MFD area, and under the SPO Building (Plant 75). The former landfill was identified as a SWMU by GM in the *Certification of Potential Releases from Solid Waste Management Units* (GM, 1986c). This area is considered an AOI because of previous fill activities and it was also previously identified as a SWMU.

6.3.5.1 Historical and Current Operations

The former A-2 fill area occupies a previously low-lying area of the Site. The A-2 fill area was reportedly used between 1926 and 1979 for placement of non-salvage waste materials related to engine assembly, car assembly, foundry operations, painting and stamping, engine machining, metal plating, and wastewater treatment. In addition to the direct disposal of industrial process material into the A-2 fill area, waste was reportedly burned or partially burned at other on-site locations and transported to the A-2 fill area for disposal.

The area is currently occupied by the western portion of Plant 75, all of Plant 33, a portion of Plant 24, and the parking area between Plants 33 and 75 (see Figure 6-5).

6.3.5.2 Previous Investigations and Remedial Actions

Previous investigations include a soil and groundwater investigation to characterize the material within the former A-2 fill area in December 1999. No remedial actions have been conducted in association with the former A-2 fill area.

During December 1999, CRA installed seven soil borings and two monitoring wells within the estimated limits of the former A-2 fill area. In most of the borehole locations, the underlying fill material consisted of sand and clay. However, at two of the borehole locations in the parking lot area between Plants 25 and 33 and Plant 75, foundry sand and slag were encountered. Although a number of chemical compounds were detected in the fill material, the concentrations were below the identified Part 201 Generic Industrial Cleanup Criteria (Direct Contact and Volatilization to Indoor Air Inhalation). Similarly, a number of chemical compounds were detected in groundwater underlying the fill unit. However, only bis(2-ethylhexyl)phthalate exceeded Part 201 Generic Industrial Cleanup Criteria (Groundwater Direct Contact) at one monitoring well. A summary of the investigation activities and results is presented in the *Site Investigation Report* (CRA, 2000c) which is provided in Appendix T. A summary of soil and groundwater analytical results is presented in Table 6-14.

6.3.5.3 Current Status

CRA concluded in their *Site Investigation Report* (CRA, 2000c) that the fill materials in the former A-2 fill area have not significantly impacted groundwater quality with the exception of one questionable detection of bis(2-ethylhexyl)phthalate in groundwater. However, dioxin sampling of soil and groundwater was not part of this investigation. Therefore, **FURTHER ACTION** is recommended for AOI M-5.

6.3.6 Plant 5 Hydraulic Fluid Spill (AOI M-6)

AOI M-6 consists of an area adjacent to Plant 5, where PCB-containing fluid was spilled. The area near loading dock 35 is considered to be an AOI because of a spill of PCB-containing hydraulic fluid in September 1992.

6.3.6.1 Historical and Current Operations

Plant 5, built in 1927, was one of the first buildings constructed at the Site. Plant 5 was used for the storage and final shipping of automobiles from 1927 through at least 1950. Plant 5 contained metal working operations from at least the early 1960s through approximately 1985, including the manufacturing of ring and pinions for rear axles. From 1985 through 1990, Plant 5 was used for the storage of automobiles and the long-term storage of miscellaneous equipment. In 1994, a waste accumulation operation was relocated from another part of the Site to the west end of Plant 5.

At the time of the hydraulic fluid spill in September 1995, CPC Headquarters Tooling Procurement leased space from GM to operate an investment recovery operation. This investment recovery operation received shipments of equipment and materials transferred from other GM plants. A spill of PCB-containing hydraulic fluid occurred on September 3, 1992, during unloading of a hydraulic press transferred from another GM plant.

6.3.6.2 Previous Investigations and Remedial Actions

Previous investigations consisted of analyzing spilled hydraulic fluid to determine if it contained PCBs. Remedial actions included removal of blacktop, concrete, and soil from the hydraulic soil spill area.

On September 3, 1992 a hydraulic press was unloaded from a flatbed trailer in the rear of Plant 5. During unloading, the press was tipped on its side and hydraulic fluid was spilled onto the blacktop. The facility hazardous materials team contained the spill with absorbent and collected a sample of the spilled material. Results of the analysis conducted at the GM on-site laboratory indicated the presence of Aroclor 1254. Additional samples were

collected and sent to National Environmental Testing (NET) for verification. These results also indicated the presence of Aroclor 1254. A copy of the analytical results are presented in Appendix U.

Based on the analytical results, GM decided to excavate the spill area plus a 1-foot buffer zone. The excavation was completed on September 18, 1992. No information was available that disclosed the actual size or depth of the excavation. The excavated blacktop, concrete, and soil were placed in two 20-cubic-yard roll-off boxes. Samples of the excavated material were submitted for TCLP analysis. Based on the results of the TCLP analysis, the excavated material was identified as a non-hazardous/non-TSCA waste.

6.3.6.3 Current Status

Material exposed to the PCB-containing hydraulic fluid was excavated in 1992. No visible staining was observed in the area during a recent Site walkthrough. As a result, **NO FURTHER ACTION** is recommended for AOI M-6.

6.3.7 ELPO Building (AOI M-7)

AOI M-7 consists of the ELPO Building, which includes the ELPO operation and flammable liquids storage areas. The ELPO operation is located east of Plants 5 and 8 and southwest of Plant 18. The current flammable liquids storage area and paint mix room are located in the southern part of the ELPO building. The ELPO building is considered an AOI because of the materials (solvents, flammable material) stored and processed in that area. In addition, numerous spills in the interior of the ELPO process area are evident, and staining was observed on the outside wall of the ELPO Building during the September 2000 Site walkthrough.

The Flammable Liquids Storage Building (formerly called Plant 8 Paint Storage) is located south of the ELPO building. This building stores pails, drums, and totes containing various oils and corrosive materials.

The paint mix room is located south of the Flammable Liquids Storage Building within the ELPO building. The paint mix room contains multiple solvent process tanks, paint containers, paint storage cabinets, and the satellite hazardous waste storage area.

6.3.7.1 Historical and Current Operations

The purge thinner tank area is located at the south end of the ELPO building. The two ASTs stored dirty solvent from the Paint Booth and Paint Mix Room. The combined capacity of the ASTs is approximately 7,000 gallons. The ASTs have a welded, steel-plate secondary containment system. Plant 8 was shutdown in 1987. As a result, in March 1988 the ASTs and associated piping were emptied and cleaned. Additionally, the piping was disconnected in March 1988. The tanks are still located within the ELPO building.

Fifteen ASTs with secondary containment are housed within the ELPO Building. The ASTs contain alkali cleaner (two ASTs), phosphoric acid (two ASTs), chromic acid (one AST), paint (three ASTs), paint bath (one AST), water and conditioner (one AST), water and permeate (one AST), and water (four ASTs). Numerous process tanks used in ELPO operations are also housed within this building. The ELPO building also contains a number of electric transformers that, at one time, may have utilized PCB-containing hydrocarbons. During the August 2000 site walkover, portions of the concrete floor appeared to be significantly corroded. Additionally, the outside east wall at the south end of the building was stained black, suggesting material may have leaked from an inside tank. No evidence of stained soil was observed at this location.

6.3.7.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions conducted in connection with the ELPO building.

6.3.7.3 Current Status

The purge thinner ASTs were emptied and cleaned in March 1988 and are no longer in use. Other ASTs and process tanks in the ELPO building are still in use. Current processes utilize tanks and vats that have the potential for leakage. During the September 2000 Site walkthrough, evidence of previous releases, including staining of walls and floors, was observed. Based on this information, **FURTHER ACTION** is recommended for AOI M-7.

6.3.8 Plant 25 Oil Storage Area (AOI M-8)

AOI M-8 consists of an oil storage building located to the west of Plant 25. Six ASTs are located within the oil storage building. One AST is located outside the oil storage building to the south. This area is considered an AOI because of the various petroleum-based materials stored in the ASTs.

The oil storage building contains five 15,000-gallon ASTs and one 20,000-gallon AST. The 15,000-gallon ASTs are used to store soluble oil (one tank), hydraulic oil (one tank), semi-synthetic grinding oil (one tank), engine oil (one tank), and lubrication oil (one tank). The 20,000-gallon AST is empty. The ASTs do not have individual secondary containment, but the entire building is surrounded by a diked containment system that drains to the WWTP via the Plant 25 basement sump area.

6.3.8.1 Historical and Current Uses

Plants 25 and 33 housed engine machining and assembly operations. Material storage and shipping associated with these operations were also conducted in these plants. The oil storage building was used to house ASTs containing various types of oil, as detailed below.

A paint booth is located in the building, south of the ASTs. A diesel AST is located just outside the oil storage building on the south end.

There have been no documented releases from either the oil storage ASTs or the diesel AST.

6.3.8.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the oil storage ASTs or the diesel AST.

6.3.8.3 Current Status

Six oil ASTs and one diesel AST were observed during a recent Site walkthrough. The concrete containment inside and outside the building appeared to be in good condition with no evidence of releases. There have been no documented releases from any of the ASTs in this area. Based on this information, **NO FURTHER ACTION** is recommended for AOI M-8.

6.3.9 Plant 11 Heat Treat Oil Storage Area (AOI M-9)

AOI M-9 consists of four ASTs located near the eastern wall of Plant 11, contained inside a floor pit with a sump that discharges to the WWTP. This area is considered an AOI because of the type and quantity of oils and coolant materials historically stored in the ASTs. In addition, evidence of staining was observed on the outside of the eastern wall of Plant 11 during a recent Site walkthrough.

6.3.9.1 Historical and Current Operations

Plant 11 was historically used for heat treating operations. During that time, the two ASTs (8,000-gallon and 8,400-gallon capacities) stored dirty heat treat quench oil. Additionally, two ASTs (5,600-gallon and 8,000-gallon capacities) stored LC-7 coolant. Former plant drawings indicate that acidic material may have also been stored in this area. Currently, the Plant 11 area is used for repair operations and maintenance activities. Three of the four ASTs have been washed, rinsed, and sit empty. One AST stores used oil that is periodically pumped and hauled off site.

There have been no documented releases from the oil storage area.

6.3.9.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the oil storage area.

6.3.9.3 Current Status

During a recent Site walkthrough, only one AST was in use. The contents were labeled as used oil, non-RCRA regulated. The floor pit and sump had a moderate amount of oily liquid in them. The outside of the eastern Plant 11 wall was stained an oily color, suggesting that oil may have seeped out. Based on this information, **FURTHER ACTION** is recommended for AOI M-9.

6.3.10 Plant 23 Basement AST Area (AOI M-10)

AOI M-10 consists of three ASTs located in the basement of Plant 23. This area is considered an AOI because of the type and quantity of materials (synthetic coolant) stored in the former ASTs.

6.3.10.1 Historical and Current Operations

Pressed metal operations and maintenance activities have historically been conducted in Plants 5 and 23. Three 12,500-gallon ASTs are located in the basement of Plant 23. The ASTs previously contained 593-KC synthetic coolant. Plant personnel confirmed that the ASTs are empty and no longer used. The tanks have a below-grade containment system and a sump that discharges to the WWTP. No documented releases have occurred in the Plant 23 basement AST area.

6.3.10.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the Plant 23 basement AST Area.

6.3.10.3 Current Status

During a recent Site walkthrough, the ASTs were observed to be intact and no evidence of staining was observed. Based on this information, **NO FURTHER ACTION** is recommended for AOI M-10.

6.3.11 Plant 12 Former Gasoline Storage Area (AOI M-11)

AOI M-11 consists of a former gasoline storage area located outside, near the northeast corner of Plant 12. This area is considered an AOI because of the type and quantity of the materials (gasoline) stored in the area.

6.3.11.1 Historical and Current Operations

Plant 12 was originally constructed in 1951, with 170,000 square feet of floor space. Major expansions to the east and the west occurred in 1953, increasing the total floor space to 366,000 square feet. From the 1950s through the early 1990s, Plant 12 was used for the final storage and shipping of new automobiles. These automobiles were stored in Plant 12 and loaded on railcars for shipment off site. The eastern portion of Plant 12 was also historically used for maintenance and testing of company-owned vehicles. This area was referred to as the reliability garage, and contained a car wash area, a paint booth, and numerous automobile hoists. During the 1990s, Plant 12 was used for a variety of small non-production operations, including a small tin shop, welding shop, machine shop, training center, fire station, and exercise gym.

Records indicate that one 480-gallon unleaded gasoline AST was located within the Plant 12 former gasoline storage area. The AST rested atop a concrete slab, which is present along the entire north side of Plant 12. The AST had a secondary containment system that included a sump leading to the WWTP. There were no documented releases from the AST.

Currently, the building is empty and scheduled for future demolition.

6.3.11.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the Plant 12 former gasoline storage area.

6.3.11.3 Current Status

There were no documented releases from the former AST. According to Site personnel, the AST was emptied and removed from the Site. Cracks were observed in the concrete slab along the north wall of Plant 12 during a recent Site walkthrough, but no signs of leakage or stains were observed. However, there is no documentation available on the AST closure; therefore, **FURTHER ACTION** is recommended for AOI M-11.

6.3.12 AST East of Plant 49 (AOI M-12)

AOI M-12 consists of an AST located east of Plant 49 at the water storage building. Historically, the AST has contained both fuel oil and diesel fuel. This area is considered an AOI because of the type and quantity of materials (petroleum-based products) stored in the AST.

6.3.12.1 Historical and Current Operations

Plant 49 housed pressed metal operations and was used for storage and shipping activities. Additionally, a truck repair shop was previously located in the northeast corner of Plant 49.

The 550-gallon AST is currently contained in a secondary containment basin that has a blind sump. There have been no documented releases for this AST.

6.3.12.2 Previous Investigation and Remedial Actions

There have been no previous investigations or remedial actions associated with the AST.

6.3.12.3 Current Status

During a recent Site walkthrough, the concrete containment basin and sump were in good condition and there was no evidence of spills. There have been no documented releases for this AST. Based on this information, **NO FURTHER ACTION** is recommended for AOI M-12.

6.3.13 ASTs Area West of Plant 14 (AOI M-13)

AOI M-13 consists of three ASTs located west of Plant 14. This area is considered an AOI because of the type and quantity of materials (diesel fuel and gasoline) stored in the ASTs.

6.3.13.1 Historical and Current Operations

Plant 14 was built in 1951 for pressed metal operations. A former 480-gallon AST was located west of Plant 14. The AST stored diesel fuel and had a secondary containment system.

During the September 2000 Site walkthrough, two small fuel tanks were also observed outside the west end of Plant 14. One of the ASTs contained gasoline and had a secondary containment system. The other AST was empty and was not contained. Plant personnel stated that these ASTs are owned by a GM contractor, not by GM.

There have been no documented releases related to the former 480-gallon diesel fuel AST or the two existing ASTs.

6.3.13.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the current or former ASTs in this area.

6.3.13.3 Current Status

There have been no documented releases related to the ASTs in this area. However, secondary containment was not present for one AST and there is no closure information on the former AST; therefore, **FURTHER ACTION** is recommended for AOI M-13.

6.3.14 Current AST Area East of Plant 12 (AOI M-14)

AOI M-14 consists of an AST area located east of Plant 12. This area is considered an AOI because of the gasoline and diesel fuel stored in the ASTs. A summary of ASTs located in this area is presented in Table 6-11.

6.3.14.1 Historical and Current Uses

Plant 12 was originally constructed in 1951, with 170,000 square feet of floor space. Major expansions to the east and the west occurred in 1953, increasing the total floor space to 366,000 square feet. From the 1950s through the early 1990s, Plant 12 was used for the final storage and shipping of new automobiles. These automobiles were stored in Plant 12 and loaded on railcars for shipment off site. The eastern portion of Plant 12 was also historically used for maintenance and testing of company-owned vehicles. At a later date, this area was referred to as the reliability garage, and contained a car wash area, a paint booth, and numerous automobile hoists. During the 1990s, Plant 12 was used for a variety of small non-production operations, including a small tin shop, welding shop, machine shop, training center, fire station, and exercise gym. Currently, Plant 12 is vacant and scheduled for future demolition.

The AST area contains two 1000-gallon ASTs (one gasoline, one diesel) and associated dispensing equipment that were installed in 1999. The ASTs are constructed of double-lined steel and have secondary containment systems

that drain to a closed blind-sump. Water in the sump is periodically pumped and hauled off site. There have been no documented releases associated with these ASTs.

6.3.14.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with this AST area.

6.3.14.3 Current Status

Both ASTs have secondary containment systems that were observed to be in good condition during a recent Site walkthrough. There have been no documented releases associated with these ASTs. Based on this information, **NO FURTHER ACTION** is recommended for AOI M-14.

6.3.15 Track 26 (AOI M-15)

AOI M-15 consists of Track 26, a railroad spur that originates from the main railroad line and extends between Plant 2 and Plant 14. Track 26 is considered an AOI due to the types of materials that were potentially transported on the railway and historical investigation showing the possible presence of PCBs. In addition, soil is exposed directly beneath the railway.

6.3.15.1 Historical and Current Operations

Track 26 is used to transport materials for operations in Plant 14 (pressed metal), Plant 49 (storage, shipping, and pressed metal), Plant 2 (metal plating), and Plant 11 (heat treating).

6.3.15.2 Previous Investigations and Remedial Actions

Previous investigations of the Track 26 area indicated the potential presence of elevated concentrations of PCBs on concrete and soil (CRA, 1998a). There are PCB analytical results referencing *Program E & Track 26 Cement Piles* but no other literature or reports about these investigations are available at this time. CRA conducted a concrete and soil investigation on March 5 and 6, 1998. Four concrete core samples and 21 soil samples were collected. All of the samples were analyzed for the presence of PCBs and three soil samples were additionally analyzed for the presence of VOCs, SVOCs, and metals. PCBs were not detected in the four concrete core samples with the exception of one core sample, where Aroclor-1260 was detected at a concentration of 450 ug/kg. No PCBs were detected above the Michigan Industrial Direct Contact Criteria for soil. Of the 21 soils samples analyzed, only two soil samples had detections of Aroclor-1260 (9,100 and 2,400 ug/kg). VOCs and SVOCs were not detected

above Michigan Generic Residential or Industrial Direct Contact Criteria for soil. Arsenic and beryllium were the only metals detected above Michigan Generic Residential Drinking Water Protection Criteria for soil, but below the Michigan Industrial Direct Contact Criteria for soil (CRA, 1998a). A summary of soil analytical results is presented in Table 6-15. The results are provided in Appendix U.

During the August 2000 site walkover, there were no areas of observed staining or other indications of releases.

6.3.15.3 Current Status

Based on results of previous investigations, **NO FURTHER ACTION** is required for AOI M-15.

6.3.16 Plant 25 Basement Sump Area (AOI M-16)

AOI M-16 consists of the basement area of Plant 25, which contains a sludge tank, pumping system, and several floor sumps. This area is considered an AOI because oily liquid was observed in several of the floor sumps during a recent Site walkthrough, and the condition of the sumps is unknown.

6.3.16.1 Historical and Current Operations

Plants 25 and 33 housed engine machining and assembly operations. Material storage and shipping associated with these operations were also conducted in these plants.

The Plant 25 basement sump area contains a sludge tank, a pumping system, multiple floor sumps, and three former process pits. The three process pits have recently been filled with a flowable material. During a recent Site walkthrough, oily liquid was observed in several of the floor sumps. Some of the liquid was overflowing onto the basement floor. According to Site personnel, the basement continually collects water. The source of this water may be groundwater seeping through the basement walls. There have been no documented releases associated with the basement sump area.

6.3.16.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the basement sump area.

6.3.16.3 Current Status

During a recent Site walkthrough, oily liquid was observed in several of the floor sumps and overflowing onto the basement floor. Based on this information, **FURTHER ACTION** is recommended for AOI M-16.

6.3.17 Plant 15 Southern Piping Trench (AOI M-17)

AOI M-17 consists of a piping trench located along the southern wall in the western portion of Plant 15. The trench contains pipes that distribute wastewater below grade to the WWTP. This area is considered an AOI because of the type of material transported and the unknown condition of the trench.

6.3.17.1 Historical and Current Operations

Plant 15 has historically housed pressed metal operations. The piping trench is a pit containing wastewater piping that leads to the WWTP. The trench is approximately 10 to 15 feet deep and is designated as a permit-required confined space. There have been no documented releases associated with the piping trench.

6.3.17.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the piping trench.

6.3.17.3 Current Status

Although there have been no documented releases associated with the piping trench, the interior of the piping trench could not be observed during the recent Site walkthrough. Based on this information, **FURTHER ACTION** is recommended for AOI M-17.

6.3.18 Plant 5 Waste Accumulation Area (AOI M-18)

AOI M-18 consists of a waste accumulation area located in the west end of Plant 5. This area is considered an AOI because this area is used to accumulate and store various waste materials.

6.3.18.1 Historical and Current Operations

Plant 5, built in 1927, was one of the first buildings constructed at the Site. Plant 5 was used for the storage and final shipping of automobiles from 1927 through at least 1950. Plant 5 contained metal working operations from at least the early 1960s through approximately 1985, including the manufacturing of ring and pinions for rear axles. From 1985 through 1990, Plant 5 was used for the storage of automobiles and the long-term storage of miscellaneous equipment. In 1994, a waste accumulation operation was relocated from another part of the Site to the west end of Plant 5.

The waste accumulation area occupies approximately 13,000 square feet in the west end of Plant 5, and is separated from the remainder of the building by its location and a small guardrail. The wastes are accumulated from various processes throughout the Site and stored in 55-gallon drums or on pallets, as appropriate. Empty containers are also stored in this area. There is no secondary containment system for the waste accumulation area. Wastes are accumulated in this area and sent off site for disposal. Wastes stored and labeled included PCB light ballast, and non-RCRA wastes (labeled). Numerous 55-gallon drums containing various materials were observed in the waste accumulation area during a recent Site walkthrough (CRA, 2000f; draft).

6.3.18.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the waste accumulation area.

6.3.18.3 Current Status

No evidence of spills or leaks was observed in the area. The materials stored in this area are non-hazardous. Based on this information and the type and quantity of materials stored in this area, **NO FURTHER ACTION** is recommended for AOI M-18.

6.3.19 Plant 5 Southern Access Railway (AOI M-19)

AOI M-19 consists of an access railway located at the southwestern end of Plant 5. The access railway area is considered an AOI due to the types of materials that were potentially transported on the railway. In addition, soil is exposed directly beneath the railway.

6.3.19.1 Historical and Current Operations

Plant 5, built in 1927, was one of the first buildings constructed at the Site. Plant 5 was used for the storage and final shipping of automobiles from 1927 through at least 1950. Plant 5 contained metal working operations from at least the early 1960s through approximately 1985, including the manufacturing of ring and pinions for rear axles. From 1985 through 1990, Plant 5 was used for the storage of automobiles and the long-term storage of miscellaneous equipment. In 1994, a waste accumulation operation was relocated from another part of the Site to the west end of Plant 5.

The access railway is located at the southwestern end of Plant 5. The railway is approximately 600 feet long and spans the western half of the building along the southern side. The railway was used to transport materials into and out of Plant 5. The railway was used for shipping materials associated with metal working and automotive assembly operations. Soil is exposed directly underneath the railway tracks. There have been no documented releases associated with the access railway.

6.3.19.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the access railway.

6.3.19.3 Current Status

There have been no documented releases associated with the access railway and no staining was observed during the September 2000 Site walkthrough. However, the type and extent of materials potentially transported on the railway is unknown, and soils are exposed directly below the railway tracks. Based on this information, **FURTHER ACTION** is recommended for AOI M-19.

6.3.20 Plant 23 Basement Area (AOI M-20)

AOI M-20 consists of the basement area of Plant 23. The Plant 23 basement is considered an AOI because standing liquids and discolored basement walls were observed on the south-central side of the basement during a recent Site walkthrough.

6.3.20.1 Historical and Current Operations

Plants 5 and 23 contained metal working operations from at least the early 1960s through approximately 1985, including the manufacturing of rings and pinions for rear axles. Currently, pressed metal operations and maintenance activities are conducted in Plant 23.

There have been no documented releases within the basement area. During the September 2000 Site walkthrough, liquid was observed to be collecting in low-lying areas of the basement. The liquid appeared to be condensate water from a pipe. Discolored basement walls were also observed, along with evidence of groundwater seepage into the basement. Subsequent activities at the plant revealed this seepage was due to a sanitary sewer break.

6.3.20.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the Plant 5 basement area.

6.3.20.3 Current Status

During recent Site walkthroughs, evidence of liquid accumulation, groundwater seepage, and discolored basement walls were observed. Subsequent activities at the site revealed this was due to a sanitary sewer leak. Based on this information, **NO FURTHER ACTION** is recommended for AOI M-20.

6.3.21 Plant 14 Transformer Station (AOI M-21)

AOI M-21 consists of a transformer station located between Plant 14 and Plant 2, adjacent to Track 26. The transformer station is considered an AOI because evidence of oil-stained concrete was observed during a recent Site walkthrough and the potential for PCBs to be present in the transformer oil.

6.3.21.1 Historical and Current Operations

Plant 14 houses pressed metal operations, while Plant 2 formerly housed plating operations. The transformer station is located between Plant 14 and Plant 2, adjacent to Track 26. Approximately 25 transformers are located on an elevated concrete pad with no secondary containment system. The area immediately north of the transformer station (in the vicinity of Track 26) is covered with gravel, leaving the underlying soils potentially exposed. There have been no documented releases associated with the transformer station. However, evidence of oil stains on the north edge of the concrete pad was observed during a recent Site walkthrough.

6.3.21.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the transformer station.

6.3.21.3 Current Status

Evidence of oil stains was observed on the north edge of the transformer station concrete pad during a recent Site walkthrough. Based on this information and the fact that PCB-containing oils were historically used in electrical transformers throughout the Site, **FURTHER ACTION** is recommended for AOI M-21.

6.3.22 Plant 15 - Columbia Avenue Switch House (AOI M-22)

AOI M-22 consists of the Columbia Avenue Switch House, located on the western side of Plant 15. This area is considered an AOI because transformer oil that potentially contained PCBs was used at the switch house.

6.3.22.1 Historical and Current Operations

The Columbia Avenue switch house has historically handled electrical service for Plant 12 and Plant 15. The switch house is enclosed within a brick building located on the western side of Plant 15, between the plant building and the Site fencing. Access is restricted to the enclosed switch house. During a recent Site walkthrough, the exterior of the building (excluding the western side) was observed. No staining was observed that may be associated with transformer oil. There have been no documented releases associated with the switch house.

6.3.22.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the switch house.

6.3.22.3 Current Status

There have been no documented releases associated with the switch house. During a recent Site walkthrough, there was no evidence of staining associated with the switch house and all transformers are enclosed within the switch house. Based on this information, **NO FURTHER ACTION** is recommended for AOI M-22.

6.3.23 Plants 25, 33, and 75 Substation and Power Building (AOI M-23)

AOI M-23 consists of a substation and power building located southwest of Plant 25 and north of Columbia Avenue. This area is considered an AOI because transformer oil that potentially contained PCBs was used at the substation and power building.

6.3.23.1 Historical and Current Operations

Plants 25 and 33 housed engine machining and assembly operations. Material storage and shipping associated with these operations were also conducted in these plants. Plant 75 is home to the SPO, which includes warehousing and distribution operations.

The Plants 25, 33, and 75 substation and power building currently provide electrical service to the northern portion of the Site. There have been no documented releases from the Plants 25, 33, and 75 substation and power building.

6.3.23.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the Plants 25, 33, and 75 substation and power building.

6.3.23.3 Current Status

There have been no documented releases associated with the substation and power building. Although access to the outside substation area and building were restricted during the recent Site walkthrough, no visible staining was observed from outside the area. However, due to the potential for PCBs to be present, **FURTHER ACTION** is recommended for AOI M-23.

6.3.24 Plant 12 Transformer Oil Spill (AOI M-24)

AOI M-24 consists of an area adjacent to Plant 12 where PCB-containing fluid was spilled. This area is considered an AOI because there was a documented release of an unknown quantity of PCB-containing transformer oil to the concrete surface in 1994.

6.3.24.1 Historical and Current Operations

Plant 12 was originally constructed in 1951, with 170,000 square feet of floor space. Major expansions to the east and the west occurred in 1953, increasing the total floor space to 366,000 square feet. From the 1950s through the early 1990s, Plant 12 was used for the final storage and shipping of new automobiles. These automobiles were stored in Plant 12 and loaded on rail cars for shipment off site. The eastern portion of Plant 12 was also historically used for maintenance and testing of company owned vehicles. This area was referred to as the reliability garage, and contains a car wash area, a paint booth, and numerous automobile hoists. During the 1990s, Plant 12 was used for a variety of small non-production operations, including a small tin shop, welding shop, machine shop, training center, fire station, and exercise gym. The building is currently vacant and scheduled for near-term demolition.

A release of an unknown quantity of transformer oil occurred in May 1994 on concrete surfaces near Plant 12.

6.3.24.2 Previous Investigations and Remedial Actions

There were no soil or groundwater investigations for the transformer oil spill. Remedial actions consisted of removal of soil and concrete potentially impacted by the transformer oil spill.

6.3.24.3 Current Status

Plant 12 is currently vacant. Soil and concrete that may have been impacted by the transformer oil spill were removed in May 1994. However, there is no documentation confirming removal activities; therefore, **FURTHER ACTION** is recommended for AOI M-24.

6.3.25 Plant 33 Basement Sump Area (AOI M-25)

AOI M-25 consists of the basement area of Plant 33, which contains several floor sumps and process pits. This area is considered an AOI because the condition of the floor pits could not be evaluated during a recent Site walkthrough.

6.3.25.1 Historical and Current Operations

Plants 25 and 33 housed engine machining and assembly operations. Material storage and shipping associated with these operations were also conducted in these plants. The basement sump area is located along the east wall of Plant 33 and contains one floor sump and an unknown number of pits that have been filled with flowable fill. This floor sump discharges to the Plant 25 sump separation process, which ultimately discharges to the WWTP. According to Site personnel, framing system wax commonly used in Plant 33 operations was the primary constituent in the wastewater. The process pits have recently been filled with flowable material; therefore, their condition could not be evaluated. There have been no documented releases associated with the basement sump area.

Plants 25 and 33 are currently undergoing extensive renovation for future production purposes.

6.3.25.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the basement sump area.

6.3.25.3 Current Status

During a recent Site walkthrough, the number and condition of the floor pits could not be evaluated due to them recently being filled with flowable fill. Based on this information, **FURTHER ACTION** is recommended for AOI M-25.

6.4 Powertrain

The Powertrain Headquarters Building (formerly the Engineering North Building) is located along the eastern Site property boundary. There are eight AOIs (AOI P-1 to AOI P-8) located within the Powertrain portion of the Site. Figure 6-6 shows the locations of the AOIs within the Powertrain area. All of the AOIs in the Powertrain area are UST- or AST-related.

Each of the AOIs for the Powertrain area is summarized in Table 6-16 and discussed below. A listing of ASTs and USTs for the Powertrain area is provided in Table 6-17.

6.4.1 Former Powertrain UST Farm (AOI P-1)

AOI P-1 consists of the former Powertrain gasoline fueling area UST farm previously located adjacent to the south wall of the engine testing laboratory. This area is considered an AOI because of a documented release of gasoline that was discovered in April 1990.

6.4.1.1 Historical and Current Operations

The Powertrain Headquarters building formerly housed design, engineering, and testing laboratories for automotive powertrain.

The former UST farm was located adjacent to the south wall of the engine testing laboratory. The former UST farm contained seven tanks (PE-A through PE-G) that were used for dispensing fuel. The tanks were installed in 1952 and removed in 1990. The tanks were mounted on concrete cradles, resting on a concrete slab approximately 18 inches thick. A concrete sump was located adjacent to Tank PE-G. Three leak detection monitoring wells were installed around the UST farm in 1984.

Gasoline was delivered to the truck unload area on the south side of the former UST farm. From the former UST farm, fuel flowed to the east through a piping trench then north to enter the building where a manifold provided fuel to the dynamometer rooms along the north wall of the building. The manifold proceeded west inside the building to the west wall, where it entered the gas line trench to the old dispensing pump. The old dispensing pump was located where the current UST farm is located (AOI P-2) (GM, 1992).

This area is now paved over as parking spaces.

6.4.1.2 Previous Investigations and Remedial Actions

Previous investigations include sampling of the leak detection monitoring wells and soil and groundwater investigations associated with UST removal activities in August 1990. Remedial actions include activities associated with removal of the USTs in August 1990.

Three leak detection monitoring wells were installed around the UST farm in 1984. Initial analytical results for gasoline content were non-detect. However, a concentration of 1,500 milligrams per liter (mg/L) was found in a sample collected from the sump adjacent to the tank vault. Concentrations of BTEX from one of the monitoring wells during the March 1990 leak detection monitoring event were indicative of a possible release near the northwest corner of the UST farm. Based on these results, a release was reported to the State Fire Marshall on April 12, 1990.

Because of the construction of the new UST farm (AOI P-2), these USTs were already scheduled for removal. UST removal activities are summarized in a UST removal monitoring report (TEC, 1990b). Approximately 1,200 yards of soil surrounding the USTs were removed and disposed off site. Perched water that accumulated in the excavation area during removal of the tanks was pumped out each morning and taken to the on-site WWTP. Analytical results of this perched water indicated the presence of BTEX compounds [Note: Analytical results not available].

Confirmation soil samples were collected from the floor of the excavation area on both the north and south ends of each removed tank (16 samples total). Additionally, 12 confirmation soil samples were collected from the sidewalls of the excavation (two from the east wall, two from the west wall, four from the south wall, and four from the north wall). BTEX compounds were detected above MDNR remediation guidelines, Type B criteria, for soil contamination. The remaining samples exhibited levels below MDNR guidelines. No free product was encountered during excavation activities (TEC, 1990b).

In January 1991, an additional soil investigation was completed adjacent to the former UST area to determine if the surrounding soils had been impacted by the presence of the former USTs. These investigation activities are summarized in the remedial investigation report (TEC, 1991). Sixteen samples were collected from eight soil borings and submitted for analysis of BTEX compounds. No BTEX compounds were detected in these soil borings. No groundwater or free product was encountered during the soil investigation. TEC concluded that although minor pockets of contamination may remain around the edges of the former UST farm, this contamination was limited in areal and vertical extent and was separated from groundwater by a stiff clay. As a result, TEC recommended Type B closure for the site.

In response to MDNR comments (MDNR, 1992), additional soil and groundwater activities were conducted in 1993.

Atwell-Hicks was retained to complete a Closure Investigation. Contamination was defined in both horizontal and vertical directions. BTEX and lead levels were found to be below Michigan Type B Criteria level. (Atwell-Hicks, 1994). Closure was granted in September 1994 (MDNR, 1994). These documents are provided in Appendix V.

6.4.1.3 Current Status

The area is currently paved with concrete. There is no visible sign of the former UST farm. Closure of the former UST tank farm was granted by the MDNR in September 1994. Based on this information, **NO FURTHER ACTION** is recommended for AOI P-1.

6.4.2 Existing Powertrain UST Farm (AOI P-2)

AOI P-2 consists of the current Powertrain UST farm located outside the southwest end of the Powertrain Headquarters Building, just south of a storage building. This area is considered an AOI because of a documented release that was discovered in 1989, during excavation for the current UST farm.

6.4.2.1 Historical and Current Operations

The Powertrain Headquarters building formerly housed a design, engineering, and testing laboratory for automobiles.

The current UST farm consists of six MDEQ-regulated USTs (NL-1 through NL-6) that store gasoline. There are two 12,000-gallon USTs that are subdivided into three, 4,000-gallon sections each. There are also three 15,000-gallon USTs and one 2,000-gallon UST. The tanks are double steel, unlined tanks and were installed in 1990.

The old dispensing pump was located where the current UST farm is located presently. Gasoline was supplied to the old dispensing pump via a manifold from the former UST farm (AOI P-1), through the building, and finally through the gas line trench.

The current UST farm receives fuel at the east side of the farm. Fuel is piped to the northeast through the gas line trench. Piping enters the building at the west wall and proceeds in an easterly direction to supply the dynamometer rooms (GM, 1992).

During excavation for the current UST farm, contaminated soils were encountered near the southeastern corner of the storage building.

6.4.2.2 Previous Investigations and Remedial Actions

Previous investigations include a soil and groundwater investigation in 1989 and 1990. Remedial actions include removal of contaminated soils during excavation for the current UST farm.

During excavation for the current UST farm in August 1989, contaminated soils were encountered near the southeastern corner of the storage building. A release was reported to the State Fire Marshall on August 28, 1989. TEC was contracted to oversee the excavation and identify any areas of contamination. Soils were monitored for the presence of contamination via HNU headspace readings during the excavation and temporarily stored on site prior to off-site disposal. Soil samples were collected from the sidewalls (five samples) and floor (one sample) of the excavation and analyzed for TPH. Results indicated the presence of contamination in the east, west, and north walls of the excavation. The area of heaviest contamination was in the northeast corner of the excavation. Approximately 2,767 cubic yards of soil were removed from the excavation, half of which was considered contaminated. On September 13, 1989, a 6-foot section of abandoned sewer pipe was located which contained approximately 1 gallon of free product. Groundwater was not encountered during excavation activities. These activities were summarized in a site investigation report (TEC, 1989), which is provided in Appendix W.

In January 1990, TEC conducted a soil investigation around the excavation for the current UST farm. Nine soil borings were installed around the excavation, concentrated in the northeast corner. A total of 13 soil samples were collected and analyzed. Laboratory results indicated non-detectable levels of BTEX compounds. No groundwater was encountered during installation of these soil borings. These activities were summarized in the Final Site Investigation (TEC, 1990a), which is provided in Appendix W.

During a subsurface investigation in the vicinity of the UST farm, a low concentration of naphthalene was detected in groundwater. As a result, a suspected release report was submitted to MDEQ on June 29, 2000. Subsequently, GM contracted Oscar W. Larson Co. to conduct interstitial testing on each tank. All of the tanks held pressure, and no liquid or odor were detected in the monitoring devices. Laboratory reanalysis of the groundwater sample indicated that naphthalene was not detected in the sample. As a result, GM requested that the MDEQ cancel the suspected release report (GM, 2000). This request is provided in Appendix W.

6.4.2.3 Current Status

There are currently six gasoline USTs in the tank farm. There have been no confirmed releases associated with the current USTs. Contaminated soils associated with the dispensing system for the previous USTs were removed during excavation for the new USTs. Although formal closure has not been granted by the MDEQ, **NO FURTHER ACTION** is recommended for AOI P-2.

6.4.3 Car Wash (AOI P-3)

AOI P-3 consists of the car wash area located west of the Powertrain Headquarters building. Previously, three USTs were located in this area. The car wash tank farm is considered an AOI because of two previous confirmed releases.

6.4.3.1 Historical and Current Operations

The car wash was built in 1970 and used to wash plant vehicles.

Two 20,000-gallon gasoline USTs were installed in 1972. Site records suggest that one of the USTs may have contained diesel fuel at one time. Releases relating to these USTs were reported in 1985 and in 1990. The USTs were removed in December 1990.

One 20,000-gallon gasoline UST was installed in 1991 to replace the two earlier USTs removed in 1990. This UST was constructed of unlined steel. It was removed in December 1999. No documented releases associated with this UST have been reported.

6.4.3.2 Previous Investigations and Remedial Actions

Previous investigations relating to the two earlier USTs include a soil investigation in 1985 and closure and post-closure soil and groundwater investigations in 1991. A closure investigation was conducted during closure of the UST in 1999. Remedial actions include excavation of soils in 1985 and 1990 associated with the two documented releases from the earlier USTs.

In September 1985, a documented release was reported after piping connected to a diesel fuel UST failed a leak test. The pipe was capped and subsequently removed. Upon removal, it was determined that the leak had occurred through a 0.1" diameter hole in the pipe. Approximately 5 to 10 gallons of diesel fuel were estimated to have leaked from the piping. An unknown quantity of contaminated soils adjacent to the piping were excavated during removal of the piping (GM, 1985e).

In December 1990, two 20,000-gallon gasoline USTs were removed and replaced with one new 20,000-gallon gasoline UST. An unknown quantity of soils were also removed to facilitate the installation of the new UST. The removed soil was subsequently disposed of at Wayne Disposal in Belleville, Michigan. Upon removal of the USTs, seven confirmation soil samples were collected from the excavation floor (three samples) and sidewalls (one sample per side) and analyzed for BTEX, polynuclear aromatic hydrocarbons (PNAs), methyl-tert-butyl-ether (MTBE), and lead. Analytical results indicated the presence of BTEX contamination in the northwest portion of the excavation. Removal of these soils was not practicable because they support a utility conduit containing the electrical supply for two Site plants. Additional soil sampling was conducted in May 1991 to determine the

horizontal and vertical extent of contamination in the northwest portion of the excavation. Additional sampling was requested by the MDNR. TEC completed eight soil borings around the former excavation and pump island area. Analytical results indicated the presence of BTEX compounds in only one boring, located in the utility trench. In September 1994, Atwell Hicks submitted a Type C Closure proposal based on industrial land use exposure assumptions (Atwell-Hicks, 1994b). The closure was approved by the MDNR in September 1995 as a Tier II Risk-Based Corrective Action (RBCA) evaluation with the condition that a restrictive covenant be placed on the property and that semi-annual groundwater sampling be conducted for five years (MDNR, 1995b). Initiated by conversations between plant personnel and MDEQ personnel, a Leaking Underground Storage Tank (LUST) Closure Report summarizing previous investigation activities is in the process of being prepared for the purpose of superceding the previous Tier II Closure and restrictive covenant (Superior, 2000).

In December 1999, one 20,000-gallon gasoline UST was removed. Four confirmation soil samples were collected from the excavation floor (two samples) and the dispenser/pipeline area (two samples) and analyzed for BTEX. Analytical results indicated that no BTEX compounds were detected. On behalf of GM, a closure report for the UST was submitted to the MDEQ in January 2000 (CRA, 2000a). GM received closure from the MDEQ on February 16, 2000 (MDEQ, 2000). A summary of all available analytical results is presented in Table 6-20, and key project documents are provided in Appendix X.

6.4.3.3 Current Status

No USTs are currently located in this area. GM received industrial closure for the two original USTs in September 1995 using a Tier II RBCA evaluation and by placing a restrictive covenant on the property. A revised closure report for these USTs will be submitted to the MDEQ in the near future for the purpose of superceding the restrictive covenant. This action has been verbally agreed upon with MDEQ personnel. GM received residential closure for the third UST (removed in 1999) from the MDEQ in February 2000 (MDEQ, 2000). Based on this information, **NO FURTHER ACTION** is recommended for AOI P-3.

6.4.4 Powertrain Former Used Oil UST and Utility Line (AOI P-4)

AOI P-4 consists of a former used oil UST and nearby utility line. The Powertrain Headquarters Building (formerly the Engineering North Building) is located along the eastern Site property boundary. The former UST was located west of the Powertrain Headquarters Building. The utility line is located south of the former UST. This area is considered an AOI because a documented release from the UST was discovered in October 1996.

6.4.4.1 Historical and Current Operations

The Powertrain Headquarters Building formerly housed a design, engineering, and testing laboratory for automobiles. A dynamometer laboratory was previously operated in the Powertrain Headquarters Building.

The former UST was discovered on October 25, 1996, during renovation activities. The used oil UST reportedly stored oil associated with the dynamometer laboratory (Remtech Environmental Services, Inc. [Remtech], 1996a).

6.4.4.2 Previous Investigations and Remedial Actions

Previous investigations include an investigation of the soils adjacent to the UST in October 1996 and an investigation of the soils adjacent to the utility line also in October 1996. Remedial actions included removal of the UST and excavation of contaminated soils associated with the UST. No remedial actions were conducted related to the utility line.

The former UST was discovered on October 25, 1996, during Site renovation activities. Analytical results from a soil sample collected adjacent to the UST indicated that a release had occurred from the UST. A confirmed release was submitted to the MDEQ-UST Division on October 28, 1996 (GM, 1996).

On October 30, 1996, the contents of the UST were emptied by Inland Waters and transported to the WWTP for disposal. The UST was subsequently removed from the ground, rendered unusable, and disposed of. Visual inspection of the UST at the time of removal revealed no visible holes in the UST itself. As a result, the release was determined to have come from the pipe joint that led into the UST (located on the north side of the UST).

A total of 80 cubic yards of contaminated soil (based on PID measurements) were excavated from the area surrounding the UST and associated vent pipe. The contaminated soil was placed in roll-off boxes prior to off-site disposal. After removal of the UST and contaminated soil, the excavation pit measured approximately 10 feet by 12 feet and had a total depth of 10 feet. Confirmation soil samples were collected from the excavation floor (two samples) and sidewalls (one sample from each wall) and analyzed for BTEX, MTBE, halogenated volatile organics (HVOs), PNAs, PCBs, cadmium, chromium, and lead in accordance with the MDEQ verification of soil remediation (VSR) guidance document. No groundwater or free product was observed in the excavation. Analytical results from the confirmation sampling did not indicate any parameters above Tier I Residential Criteria. A UST Closure Report was submitted to MDEQ on November 27, 1996 (Remtech, 1996a) and is provided in Appendix Y.

During the same Site renovation activities, discolored soils were found adjacent to an excavated utility line located south of the former UST. A sample of the discolored fill material collected adjacent to the utility line was analyzed for BTEX, HVO, and PNA compounds. The laboratory results were non-detect for the indicator parameters analyzed. A report was submitted to the MDEQ on December 10, 1996 (Remtech, 1996b) and is provided in Appendix Y. A summary of analytical results available for AOI P-4 is provided in Table 6-21.

6.4.4.3 Current Status

The former UST was removed in 1996 along with 80 cubic yards of contaminated soil. There were no environmental impacts from the utility line, which is still located in the area. Based on this information, **NO FURTHER ACTION** is recommended for AOI P-4.

6.4.5 Powertrain Former Stoddard Solvent UST (AOI P-5)

AOI P-5 consists of a former Stoddard solvent UST located outside, near the northwest corner of the Powertrain Headquarters Building. The UST was identified as a SWMU by GM in the *Certification of Potential Releases from Solid Waste Management Units* (GM, 1986c). The former UST is considered an AOI because a confirmed release was reported to the MDEQ in August 1995 and it was previously identified as a SWMU.

6.4.5.1 Historical and Current Operations

The Powertrain Headquarters building formerly housed a design, engineering, and testing laboratory for automobiles. The building is currently used as an office and laboratory.

The former 550-gallon steel UST was located west of the Powertrain Headquarters building. Previous Site activities indicate that the UST stored Stoddard solvent. The tank was removed in August 1995 by Carlo Environmental Technologies, Inc. (CET) (Atwell-Hicks, 1995b).

6.4.5.2 Previous Investigations and Remedial Actions

Previous investigations included an investigation of the soils adjacent to the UST in August 1995. Remedial actions included removal of the UST and excavation of contaminated soils associated with the UST.

On August 14, 1995, Atwell-Hicks collected soil samples in the vicinity of the UST and submitted the samples for laboratory analysis. Analytical results indicated that a release had occurred from the UST. A confirmed release was reported to the MDNR UST division on August 21, 1995, within 24 hours of discovery of the release.

CET removed the UST on August 25, 1995. Visual observation of the UST upon removal indicated the presence of holes and severe pitting. Based on these observations, contaminated soils adjacent to the UST were also excavated [volume of material removed not given]. A total of 75 gallons of residual product and perched water from the UST and associated backfill were removed and treated at the on-site WWTP. Soil contamination was limited to the sand backfill of the tank pit. Native soils, consisting of gray to brown clay, were not impacted. Confirmation soil samples were collected from the excavation floor (two samples) and sidewalls (one sample from each wall) and analyzed for BTEX and HVO compounds in accordance with Michigan Environmental Response

Act (MERA) guidance and oral communication with the MDNR. No groundwater was identified within 10.5 feet of ground surface in the UST area. The water encountered during tank removal was trapped within the sand fill area by the surrounding native clay unit. Laboratory results indicated that BTEX and HVO levels in the confirmation soil samples were below MDNR Tier 1 criteria. A UST closure report was submitted to the MDEQ (formerly part of the MDNR) on September 8, 1995 (Atwell-Hicks, 1995) (see Appendix Z). A summary of analytical results for AOI P-5 is presented in Table 6-15.

6.4.5.3 Current Status

Although no formal letter of approval of the closure report has been received from MDEQ, the Site was closed as of March 1996 per Act 451 Section 21315, because the MDEQ did not audit the closure report within 6 months of receipt of the report. As a result, **NO FURTHER ACTION** for AOI P-5 is recommended at this time.

6.4.6 Emissions Control Building Former UST Farm and Stoddard Solvent AST (AOI P-6)

AOI P-6 consists of a former UST farm and former Stoddard solvent AST located west of the northwest corner of the Emissions Control Building. This area is considered an AOI because a release from one or more of the USTs was discovered in June 1994.

6.4.6.1 Historical and Current Operations

The Emissions Control Building was used for vehicle emissions testing, including flow testing carburetors and fuel injectors. In 1986, emissions testing activities were transferred to another GM facility.

The former UST tank farm contained seven USTs that were installed in the early- to mid-1970s. The USTs stored several types of materials, including unleaded gasoline (three USTs), Indolene I clear gas (one UST), GM calibration solvent (one UST), and water (two USTs). The USTs were constructed of metal with no corrosion protection. The associated piping was made of galvanized steel. A documented release from one or more of the USTs was discovered in June 1984. The USTs were taken out of service in November 1986 and removed in July 1987.

The 950-gallon AST was placed on a concrete pad and contained by a concrete dike. The AST was used to store waste Stoddard solvent, generated by flow testing carburetors and fuel injectors of non-running engines in the Engineering Emissions Testing Laboratory. An underground transfer line connected the AST with the Emission Control Building. The transfer line had undergrade concrete containment. This AST was incorrectly included in the RCRA Closure Plan for the Site submitted to the USEPA in the early 1980s. The AST did not need to be included in the closure plan because the contents were stored for less than 90 days. The AST was closed in

accordance with the closure plan in November 1986, although formal correspondence with MDEQ and/or EPA was not necessary.

A concrete paved parking lot is currently at the location of the former UST farm and former AST.

6.4.6.2 Previous Investigations and Remedial Actions

Previous investigations include a soil and groundwater investigation of the tank farm area in 1984. Remedial actions include installation of recovery wells in 1984 and removal of the USTs in July 1987. There have been no previous investigations or remedial actions associated with the Stoddard solvent AST.

On June 15, 1994 while excavating to install a new waste Stoddard tank west of the Emission Control Building, soils contaminated with some type of fuel or solvent were encountered. Subsequently, Keck conducted a field investigation to characterize the nature and extent of the release. Twelve soil borings were installed in the vicinity of the tank farm. Analytical results from three of the soil borings showed evidence of contamination. Based on the location of the three borings, it was concluded that fugitive product from the USTs had become trapped in sand backfill used during the construction of new concrete curbing and precast planks in the area.

A monitoring well was installed at the location of one of the soil borings, located northwest of the tank farm. Water samples collected from the monitoring well and a dewatering sump showed no evidence of hydrocarbon contamination. A sample of the product was collected and analyzed. Analytical results indicated that the material was gasoline or a mixture of gasoline and waste solvent material.

The USTs in the tank farm were hydrostatically tested by OHM after discovery of the release. Two of the tanks "failed" the testing.

6.4.6.3 Current Status

The USTs were removed in July 1987. The Stoddard Solvent AST was removed in November 1996. A concrete paved parking lot is currently present at the location of the former UST farm and former AST. Because the investigation and remedial activities were carried out in the absence of regulatory oversight and a limited amount of information is available regarding this AOI, **FURTHER ACTION** is recommended for AOI P-6.

6.4.7 Former Plant 18 Coolant AST Location (AOI P-7)

AOI P-7 consists of an 11,000-gallon coolant AST formerly located in the basement of Plant 18. The former coolant AST location is considered an AOI because of the materials stored in the AST.

6.4.7.1 Historical and Current Operations

Plant 18 (formerly Plant 71) was constructed in the mid-1960s and housed engine operations. The building was demolished in 1998.

The AST was located in the basement of former Plant 18 near column L7. The 11,000-gallon AST was installed in February 1966 and stored 38LB coolant. The AST had a secondary containment system. There were no documented releases from this former AST. The AST was cleaned and removed in 1998 before Plant 18 demolition activities.

6.4.7.2 Previous Investigations and Remedial Actions

There have been no previous investigations or remedial actions associated with the former Plant 18 coolant AST.

6.4.7.3 Current Status

The AST was removed in 1998 before Plant 18 demolition activities. There were no documented releases from the AST and the AST had secondary containment. In addition, at the time of removal, the area was reported to be in good condition. Based on this information, **NO FURTHER ACTION** is recommended for AOI P-7.

6.4.8 Former Vacant Lot UST (AOI P-8)

AOI P-8 consists of a former UST located on a vacant lot southeast of the Powertrain Headquarters building, across Joslyn Avenue. The lot is bounded to the west by Joslyn Avenue, to the north by Westbrook Street, to the south by Lenox Avenue, and to the east by an unnamed paved alley. The vacant lot is considered an AOI because a release from a previously unknown UST was discovered in 1996.

6.4.8.1 Historical and Current Operations

The vacant lot is located southeast of the Powertrain Headquarters building, across Josyln Avenue. There are no records indicating that Site operational activities occurred on the vacant lot. The former UST location and construction information are not known.

6.4.8.2 Previous Investigations and Remedial Actions

Previous investigations included a soil investigation in 1996 and 1997 and a groundwater investigation in 1998. No remedial actions have been performed in this area.

During Site investigation activities in November 1996, a release was discovered from a previously unknown UST. The release was reported to the MDEQ on November 1, 1996. No free product was observed during the soil investigations at the vacant lot. Soil sample(s) were analyzed for BTEX, PNA, and inorganic constituents and 1-methylnaphthalene and 2-methylnaphthalene. None of the soil sample(s) had concentrations above the Tier I Residential Direct Contact Criteria. An *Initial Assessment Report* for the release was submitted to MDEQ on January 30, 1997 (Parsons, 1997a), and an incomplete *Final Assessment Report* was submitted on October 29, 1997 (Parsons, 1997c).

Several groundwater investigations were conducted by CRA in 1998. Groundwater investigation activities consisted of the installation and sampling of three monitoring wells in February 1998, the installation and sampling of seven temporary monitoring wells in March 1998, and the installation and sampling of six monitoring wells in August 1998. No free product was observed during groundwater investigation activities at the vacant lot. Groundwater sample(s) were analyzed for BTEX, MTBE, PAHs, PCBs, and select inorganics (cadmium, chromium, and lead). The *Leaking Underground Storage Tank Closure Report* was submitted to the MDEQ on October 30, 1998 (CRA, 1998b) (see Appendix AA). A summary of groundwater analytical results is presented in Table 6-23.

6.4.8.3 Current Status

Although no formal letter of approval of the UST Closure Report has been received from MDEQ, the vacant lot UST was closed as of April 1999 per Act 451 Section 21315, because the MDEQ did not audit the closure report within 6 months of receipt of the report. As a result, **NO FURTHER ACTION** for AOI P-8 is recommended at this time.

6.5 Service Parts Operations (SPO)

There are three AOIs located within the SPO portion of the Site. Of the three AOIs, two are UST-related (AOI S-1 and AOI S-2) and one is a portion of a former fill area (previously mentioned for the MFD area as AOI M-5). Figure 6-7 shows the locations of the AOIs within the SPO portion of the Site. Each of the AOIs for the SPO area is summarized in Table 6-24 and discussed below. A listing of the USTs for the SPO area is provided in Table 6-25. Since AOI M-5 was previously discussed in Section 6.3.5, it will not be discussed further in this section.

6.5.1 Former SPO Gasoline UST Location (AOI S-1)

AOI S-1 consists of a former SPO Gasoline UST located outside on the southern side of Plant 75, and adjacent to Columbia Avenue. This UST is identified as an AOI because of the gasoline contents of the tank.

6.5.1.1 Historical and Current Uses

Plant 75 is used exclusively for warehousing. A 10,000-gallon gasoline UST was removed from a location on the south side of Plant 75. The tank was installed in 1966 and removed on August 21, 1990 (OBG, 1991a).

6.5.1.2 Previous Investigations and Remedial Actions

OBG submitted a UST Removal Report (OBG, 1991a) and Hydrogeological Investigation Report (OBG, 1991b) to the MDNR. The UST Removal Report is provided in Appendix AB. The tank was cleaned prior to removal and the cleaning solution was taken to the Environmental Waste Control disposal site in Inkster, Michigan (OBG, 1991a). The tank itself was transported to Sam Allen & Sons, Inc. of Pontiac, Michigan where it was recycled for scrap metal. The impacted soils excavated during the tank removal were disposed of at the BFI Lyon Development landfill in New Hudson, Michigan.

Dissolved lead was detected at low levels (6 to 17 ug/L) in groundwater, slightly above the generic Part 201 groundwater criteria (see Table 6-26). Constituents of concern include BTEX, lead, and petroleum hydrocarbons. During the removal of the UST, two soil samples were taken from the excavation and analyzed for BTEX. Xylene was detected below generic Part 201 criteria. A summary of analytical results is presented in Table 6-26.

6.5.1.3 Current Status

Based on existing information, which indicates no significant impact to subsurface conditions, **NO FURTHER ACTION** is recommended for AOI S-1.

6.5.2 Former SPO Diesel UST Location (AOI S-2)

AOI S-2 consists of a former diesel UST located outside, east of Plant 75 and adjacent to Joslyn Avenue. This UST is identified as an AOI because of the diesel fuel stored in the tank and a reported release from the tank.

6.5.2.1 Historical and Current Uses

Plant 75 is used exclusively for warehousing. A 10,000-gallon gasoline UST was removed from a location on the south side of Plant 75. A 4,000-gallon fiberglass UST used to store diesel fuel was removed January 28, 1992.

6.5.2.2 Previous Investigations and Remedial Actions

O'Brien & Gere submitted a 45-day report describing the removal activities in March 1992 (OBG, 1992) (see Appendix AC). As a result of BTEX and PAH detection in the soil and water samples collected during the removal, GM was required to complete a hydrogeological investigation to define the horizontal and vertical extent of the impacted soil and groundwater. A summary of analytical data is presented in Table 6-27.

A 4,000-gallon fiberglass UST used to store diesel fuel was removed January 28, 1992. The tank was cleaned by K & D Industrial Services and removed by Prewitt Enterprises (OBG, 1992). During the excavation, stained and odorous soil was observed to a depth of 6 feet below grade. No free product was observed during the removal (OBG, 1992). Five soil samples were collected from the excavation. Additionally, a sample of the standing water in the excavation was collected. The only constituent detected above Part 201 generic criteria was benzo(a)anthracene (see Table 6-27). There was no visible evidence of the former UST observed during a recent site walkthrough. The UST removal report was submitted to the MDNR in 1992 (OBG, 1992).

6.5.2.3 Current Status

Based on existing information, which indicates no significant impact to subsurface conditions, **NO FURTHER ACTION** is recommended for AOI S-2.

At the site, there are a total of six storm sewer outfall points, as shown on Figure 2-1. Two outfalls are at Fiero (001-F and 002-F) and four are located throughout the remainder of the site (001, 002, 010, and 011). Five of these outfalls are not considered AOIs, since there is no historic data indicating a potential environmental issue with these outfalls.

6.6 Sitewide Storm Sewer System

Outfall 001, which conveys storm water from Plant 14 south has been identified as an AOI (ST-1) due to the presence of PCBs. AOI ST-1 is summarized in Table 6-28 and discussed below.

6.6.1 Storm Sewer Outfall 001 (AOI ST-1)

The storm sewer system, which discharges to Outfall 001, has been identified as a sitewide AOI due to the presence of PCBs detected in water and sediment samples obtained from the storm sewer system. This storm water system collects and conveys storm-water runoff from Plant 14 southward including portions of MFD and DA. Storm water is retained in the storm-water retention pond on the south side of Montcalm Street for subsequent treatment.

6.6.1.1 Historical and Current Operations

The storm-water conveyance system comprising this AOI is located in the oldest portions of the site and was built as the site was developed in the early 1900's. This system originally conveyed storm water from the Foundry, West Yard, Plant 2, Plant 8, Plant 14, Plants 5 and 23, the WWTP, portions of Powertrain parking lots, and areas of MFD north to Walton Avenue. Recently the area served by this system was reduced in areal extent and now only conveys water from the north side of Plant 14 southward to the retention pond. Laterals to the West Yard, WWTP, Powertrain parking lots, and other nonessential areas have also been plugged off.

In 1985, a storm-water retention pond and treatment system was installed to collect and treat storm water from this system for oil and grease prior to discharge to the City of Pontiac storm sewer system (Outfall 001). In 1999 as part of the MDEQ National Pollutant Discharge Elimination System (NPDES) repermitting process, PCBs were added to the analytical list for Outfall 001 and were subsequently detected at levels above the proposed NPDES permit limits. As a result, GM installed an activated carbon system to treat storm water prior to discharge. This system was recently upgraded to treat up to 800 gallons per minute (gpm) of storm water.

6.6.1.2 Previous Investigations and Remedial Actions

On February 5, 2000 GM initiated a storm sewer cleaning program to address PCBs detected within the storm water. These sediments were known to potentially contain PCBs. This cleaning program was completed on September 2, 2000 and resulted in the removal of approximately 200 cubic yards of materials from approximately five linear miles of storm-water pipe. During this process storm-water samples were obtained at various points within the system to ascertain the effectiveness of cleaning activities and also to determine the upgradient limits of PCB contamination. Memoranda summarizing storm-water PCB analytical results are provided in Appendix AD. Analytical results obtained on the sediments as part of disposal characterization are also provided in Appendix AD.

After the completion of storm sewer cleaning activities sediments were removed from the storm-water retention pond. Cleaning activities were performed from September 26, 2000 to October 1, 2000 and were performed in accordance with the project work plan. Approximately 300 cubic yards of sediments were removed from the retention pond. Sediment characterization data for the retention pond are provided in Appendix AD.

6.6.1.3 Current Status

Additional work is currently being implemented to identify, if possible, the source(s) of PCBs which have been identified in the outfall storm water. Remedial activities implemented to date have drastically reduced the levels of PCBs within the storm-water system with most recent analytical results showing levels just above method detection levels (0.15 ppb versus greater than 1.0 ppb at start of program). The activated carbon system will

continue to operate to treat storm water prior to discharge. Based on these on-going activities, **FURTHER ACTION** will be required for the storm sewer Outfall 001 AOI.

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List of Acronyms

ACM - Asbestos containing material
AOC - Area of concern
AOI - Area of interest
AST - Aboveground storage tank
BBL - Blasland, Bouck & Lee, Inc.
BDA - Building decommissioning assessment
bgs - Below ground surface
BTEX - Benzene, toluene, ethylbenzene, and xylenes
BTN - British Thermal Unit
CCR - Current Conditions Report
CEC - Clayton Environmental Consultants, Inc.
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
CET - Carlo Environmental Technologies, Inc.
CPC - Chevrolet-Pontiac-Canada Group
CRA - Conestoga-Rovers & Associates, Inc.
CSA - Container storage area
Csat - Soil saturation criteria value
DA - Demolition Area
EEC - ENCORE Environmental Consortium, L.L.C.
ELPO - Electrodeposition
ENCORE - Environmental Corporate Remediation
FOIA - Freedom of Information Act
GM - General Motors Corporation
GMC - General Motors Corporation
gpd - Gallons per day
gpm - Gallons per minute
GTI - Groundwater Technology, Inc.
HVO - Halogenated volatile organics
IRM - Interim Remedial Measure
LNAPL - Light non-aqueous phase liquid
LUST - Leaking underground storage tank
MDEQ - Michigan Department of Environmental Quality
MDNR - Michigan Department of Natural Resources
MERA – Michigan Environmental Response Act
MFD - Metal Fabrication Division
MPC - MPC Environmental
MTBE - Methyl-tert-butyl-ether

NPDES - National Pollutant Discharge Elimination System
OBG - O'Brien & Gere
OHM - O.H. Materials
PA/VSI - Preliminary Assessment/Visual Site Inspection
PCB - Polychlorinated biphenyls
PNA - Polynuclear aromatic hydrocarbon
POTW - Publicly owned treatment works
ppb - Parts per billion
PRC - PRC Environmental Management, Inc.
PVC - Polyvinyl chloride
RAP - Remedial Action Plan
RBCA - Risk-Based Corrective Action
RCRA - Resource Conservation and Recovery Act
RFI - RCRA Facility Investigation
RUST - RUST Environmental and Infrastructure
SAA - Satellite Accumulation Area
SHA – Schleede-Hampton Associates, Inc.
SPO - Service Parts Operations
SVOC - Semivolatile organic compound
SWMU - Solid Waste Management Unit
TAL - Target Analyte List
TCL - Target Compound List
TCLP - Toxicity Characteristic Leaching Procedure
TEC - Testing, Engineers, and Consultants, Inc.
TEF - Toxicity Equivalence Factor
TKN - Total Kjeldahl Nitrogen
TSCA - Toxic Substances Control Act
TSD - Treatment, storage, and disposal
ug/kg - Micrograms per kilogram
ug/L - Micrograms per liter
USEPA - United States Environmental Protection Agency
USGS - United States Geological Survey
USPCI - United States Pollution Control, Inc.
UST - Underground storage tank
VOC - Volatile Organic Compounds
VSR - Verification of soil remediation
WMD - Waste Management Division
WWTP - Wastewater Treatment Plant